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TEACHING FORUMS
Information Literacy: A Systematic Integration into Interior Design Curriculum

ERIN E. ADAMS / JANE NICHOLS
Western Carolina University

NARRATIVE

Evidence-based learning: What it is and why it is needed in the curriculum

According to the University of North Carolina at Greensboro, “Evidence-based learning (EBL) is the key to the development of critical thinking. Using evidence in teaching is scholarly teaching and producing evidence in teaching is the basis of the Scholarship of Teaching and Learning” (University Teaching & Learning Center). Toward this goal, the interior design faculty at North Carolina’s Western Carolina University partnered with their librarian-liaison in developing innovative pedagogy grounded on information literacy, which improved student learning outcomes through the practice of Evidence-based teaching (EBT). Information literacy (IL) is a significant component to the critical thinking and information analysis skills interior designers must routinely practice if they are to develop successful design solutions for clients. Evidence-based design (EBD) parallels Evidence-based Medicine (EBM), as it conscientiously uses current best evidence to make design decisions for unique projects (Berry et al. 2004).

How information literacy facilitates evidence-based teaching and learning

Information literacy (IL) is certainly not new, as it has been used by librarians for over thirty years as a primary means of teaching research competence. IL instills in students critical thinking approach and skills (Rockman, 2004). The American Library Association (ALA) in collaboration with the Association of Colleges and Research Libraries (ACRL) developed and implemented a series of information literacy outcomes that can be measured (American Library Association). The ALA defines information literacy as “a set of abilities requiring individuals to recognize when information is needed and have the ability to locate, evaluate, and use effectively the needed information” (American Library Association). The standards set forth by ALA include:

- **Standard 1:** Determine the Nature and Extent of Information Needed
- **Standard 2:** Access Needed Information Effectively and Efficiently
- **Standard 3:** Evaluate Information and Its Sources Critically and Incorporate Selected Information into Your Knowledge Base and Value System
- **Standard 4:** Individually, or As a Member of a Group, Use Information Effectively to Accomplish a Specific Purpose
- **Standard 5:** Understand the Economic, Legal, and Social Issues Surrounding Use of Information, and Access and Use Information Ethically and Legally

Each one of the above standards includes outcomes and performance standards, allowing librarians and faculty to evaluate learning in a qualitative way. For students to successfully complete courses, be prepared for internships and ultimately be hired into professional positions, information literacy skills are crucial to both their basic education and life-lessons of becoming adults (American Library Association, Nail-Chiwetalu and Ratner, 2006).

How can information literacy standards be integrated and used to support evidence-based teaching and learning?
Interior design students must move beyond a mere ability to access information, but also have the capability to assess the information for credibility and application. This critical thinking process also involves employing information effectively and ethically (Saunders, 2008). Design students must ascertain if evidence gathered is empirical or anecdotal, and evaluate it based upon its relative context. The process of design research parallels the ALA information literacy standards, and the ALA standards can be used to significantly support evidence-based design education.

Each one of the standards has specific outcomes and performance indicators that the librarian and instructor can use to assess student learning. By deciding what outcome and performance indicator to use, the library sessions focus on what the students need to learn. In cases where information literacy lessons are embedded in the course, that is, the librarian teaches the same students more than one time, the outcomes should build on each other.

The researchers suggest that when information literacy is integrated at sequential intervals of interior design content, the evidence-based teaching and learning results in the following:

1. Improves the focus of our teaching (a diagnostic capacity)
2. Focuses students’ attention on their strengths and weaknesses (a motivation capacity)
3. Improves programming and planning (a means of program assessment)

Through the course of implementing IL standards in the interior design program, the presenters focused on standards 1, 2, 3, 4 and 5. The researchers began by examining the potential of each class for integration of information literacy. As indicated in Table 1, a sample matrix is provided to present other librarians and faculty with ideas on how to integrate information literacy in their curriculum.

What follows is an explanation of the application of the IL standards to the curriculum and how evidence-based teaching and learning was derived.

1. The information literate student determines the nature and extent of the information needed.

The interior design projects that students undertake generally require the following information resources and subsequent activities: find current building codes, determine American Disability Act and accessibility norms, research building materials and techniques, examine alternative options for building materials (sustainable), understand the impact of the designer’s work and design decisions on the environment, compare and contrast similar plans, case studies and design solutions, price current products and materials, develop a budget and phasing or staging options, and critically think about how to provide the best designs for their clients.

2. The information literate student accesses needed information effectively and efficiently.

In client-based design projects, librarians are able to assist students in applying what they learn while promoting IL. Students can be led on a journey from collecting primary information to analyzing the data to applying the interpretations immediately to the project. Portions of this expedition may occur in the absence of the teacher and with “no path that has been pre-specified by the instructor...there is no expectation of what the students may find” (Holler, 2009, p. 9). As design students independently find, access and analyze information, without sequenced instructional guidance, they inevitably become constructivist, self-directed learners.

3. The information literate student evaluates information and its sources critically and incorporates selected information into his or her knowledge base and value system.

With the initial lessons of information literacy at the sophomore level, students are instructed to research a product or material’s origins, production, distribution and disposal and summarize it in a Life Cycle Analysis research report. At the junior level, most content is delivered in studio courses. Project-based learning is at the heart of design education, and therefore is an excellent venue for applying information literacy skills. Students in both Contract Design I and Residential Design I courses build on the literacy skills they have learned, and integrate these in their studio projects. Faculty then
assesses skill development by evaluating the quality of students’ evidence-based design.

4. The information literate student, individually or as a member of a group, uses information effectively to accomplish a specific purpose.

The interior-design faculty and librarian team at WCU deemed that the process of systematic integration should be chronologically sequenced and embedded in the existing curriculum. The team learned that students require research skills at an early stage in the program in order to develop higher-level skills they will need as juniors and seniors. As the study continues, IL is being embedded in the majority of interior design courses.

5. The information literate student understands many of the economic, legal, and social issues surrounding the use of information and accesses and uses information ethically and legally.

Client-based projects provide relevant organizational issues that lead to problem-based lessons and evidence-based learning. In providing opportunities for evidence-based projects in the interior design studio courses, students build a greater capacity for information literacy and a commitment to life-long learning. Problem or project-based learning is ideal for information literacy integration, and provides student work that is relatively easy to assess for improvement. Students are expected to synthesize self-constructed meaning and personal values in their design solutions.

The researchers formatively assessed and compared the interior design outcomes with the information literacy outcomes, and have established a sequence for evidence-based teaching and learning success:

- Review of course requirements for the program
- Determine the key objectives for each course
- Examine how the objectives build upon one another
- Incorporate information literacy into learning objectives
- Begin with systematic integration of information literacy into program

As illustrated in Tables 1 and 2, we examined our courses and outlined specific goals we wished to achieve by integrating the IL standards. Table 2 provides evidence of ALA Standard 1 integrated in course IDES 252 Survey of Materials

Laura Saunders states, “Information literacy must extend beyond the walls of the library and into the classroom” (2008, p.311). The presenters believe that IL should also be extended beyond the classroom and into the practitioner’s professional world.

For information literacy to become an integral part of the students’ learning process and progress towards life-long learning objectives, IL must be not only embedded in coursework, but also synthesized across the curriculum in a systematic way, via librarian and faculty collaboration.

**SUMMARY**

The study is longitudinal over the course of five years, with modifications being made periodically, as dictated by evidence-based teaching. Baseline comparisons by student year levels are being compiled, providing quantitative data across the five-year spectrum. The systematic integration will comprise the entirety of the curriculum by 2016.
# APPENDIX

## Table 1: IDES 252- Survey of Materials

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<th>Course</th>
<th>2-3 Learning Objectives</th>
<th>Current Progress Toward Objectives</th>
<th>Assessment of Progress; Problems/Opportunities</th>
<th>Modifications/ Suggestions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Survey of Materials</td>
<td>- Adequately research and understand product origins, fabrication and disposal</td>
<td>- Provide library time and resources</td>
<td>- Wikipedia and .com sources predominate and few scholarly sources used</td>
<td>- Librarian session focused on IL</td>
</tr>
<tr>
<td></td>
<td>- Diagram the Life Cycle of a product</td>
<td>- Show examples of two Life-Cycle Analyses</td>
<td>- Plagiarism (intentional and unintentional)</td>
<td>- Bring Writing Center expert into class and discuss ethical writing</td>
</tr>
<tr>
<td></td>
<td>- Summarize literature search in a well-written paper</td>
<td></td>
<td>- Faculty assumption of basic writing skills</td>
<td>- Additional resources and exercises shared as product Life Cycle examples</td>
</tr>
</tbody>
</table>

## Table 2: IDES 252- SURVEY OF MATERIALS

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<tr>
<th>Standards</th>
<th>Objectives</th>
<th>Assignments</th>
<th>Assessments</th>
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</thead>
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<tr>
<td>American Library Assoc. (ALA)</td>
<td><strong>Standard 1:</strong> The information literate student determines the nature and extent of the information needed.</td>
<td>Life Cycle Analysis report and paper (minimum 10 pgs, APA).</td>
<td>Grade rubric. Student will need to show use of resources from library instruction.</td>
</tr>
<tr>
<td></td>
<td>• St. 1.1: The information literate student defines and articulates the need for information:</td>
<td></td>
<td>1 minute question 3X5 card for library</td>
</tr>
<tr>
<td></td>
<td>• St. 1.1-A: Confers with instructors and participates in class discussions, peer workgroups, and electronic discussions to identify a research topic, or other information need</td>
<td>Library instruction by A&amp;D Library Liaison to review resources &amp; research methods</td>
<td>Pre &amp; Post test on Information Literacy</td>
</tr>
<tr>
<td></td>
<td>• St. 1.1-B: Develops a thesis statement and formulates questions based on the information need</td>
<td>Flooring materials binder (need to include life cycle of one material- assigned)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• St. 1.1-C: Explores general information sources to increase familiarity with the topic</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• St. 1.1-D: Defines or modifies the information needed to achieve a manageable focus</td>
<td></td>
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<tr>
<td>CIDA</td>
<td>9,12,23,24,30,32,36,39,44,51,76,78,88</td>
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Applying Conceptual Methods to Material Applications.

LINDSEY ELLSWORTH BAHE
University of Nebraska-Lincoln

NARRATIVE

“For materiality is more than a technical property of buildings: it is a precondition that promotes ideas, creativity, and pleasure in architecture [design], and it guides us to the loftiest aspirations of theory.”

-Jorge Silvetti.

What drives the selection of materials during the design process? What roles do materials play in our interior environments? Teaching various design studios and the Introduction to Materials course, over the last six years I felt a need to address these questions, and many more. Observations of how and why students apply materials and material objects in their designs led me to believe their decision processes were limited by current available resources or strictly based on personal preferences. Studio critique discussions resulted in conversations about “likes and dislikes” and left little opportunity for depth of analytical discourse and purposeful application. Students could articulate what the materials were, but not convincingly discuss why materials were chosen.

The following is a personal reflection on how the Interior Design Program at the University of Nebraska-Lincoln has implemented pedagogical strategies to reinforce, emphasize, and teach our students to critically think about material selection and its application in interior spaces.

After much review of student processes and output, it was of the department’s belief that a greater emphasis on material application processes must be integrated into academic curricula. More advanced and meaningful understandings of materiality give students the power to intellectually and confidently talk about design and material choices. Justification of materiality could be firmly grounded in conceptual examination¹ and given more academic rigor as to what, why, and how material choices are made.

This mission was put into action with the integration of a new “Material Applications” course into the University of Nebraska-Lincoln’s Interior Design curriculum. The new required third year course, is preceded by the “Introduction to Materials” course².

The course examines WHY and HOW materials are chosen and applied. In return, students come to value and integrate materials innovatively into their studios and design process. Course objectives³ are met through lectures, analytical diagrams, design studies, presentations, bi-weekly sketch assignments and discussions of various projects. The course structure is divided into three units, along with consistent exercises of sketching.

[UNIT 1] MATERIAL MANIPULATION.

A short introductory lesson on materiality is given in the first 2 weeks of class. Students are assigned everyday material objects that are destined for the trash, and asked to study their inherent properties, limits, and qual-

¹ How it connects to users, events, brand, or location, etc.
² Introduction to Materials: A course that addresses basic performance properties and characteristics of common interior finishes. A pragmatic investigation to materiality.
³ [a] To develop analytical sensitivities and reasoning to the application and use of materials in interior environments. [b] To become aware of the power of materiality in our spatial environments and its ability to connect to users and support design concepts. [c] To investigate how the application of materials is a conceptual and integral component in the design process through analysis and diagramming. [d] To understand and experience the affect of materials through the act of making and applying in the built environment. [e] To learn how to quickly communicate and conceptualize materials in space through the act of sketching and writing about materials and design.
ities; then re-create them into new finish material. This project allows student to explore the process of product design and to realize the possibility that materiality does not begin and end on the shelves of the material library. This in turn, provides them with the power to realize that they can create a material surface that they dream of, and that will most successfully tell their design story; not to mention notions of sustainability and economy. [appendix 1 & 2]

[UNIT 2] PROJECT TYPES AND MATERIAL INFLUENCES.

[Hospitality: Hotels & Resorts, Hospitality: restaurants & bars, Education, Office, Health Care, Residential.] This unit provides students with a comparative opportunity to look at the difference of material application as it relates to project types. At its core, project types provide varying influences on material choices due to its variants in event [program] and users. The structure of the unit consists of a lecture that presents current projects and firms chosen from Interior Design magazine’s annual “Top 100 Giants”, Interior Design magazine’s “Best of Year” awards, International Interior Design Association annual awards, and many other astute and recognized recently published projects. The diversity of the successful project type precedents create “lenses” to look through when beginning to conceptualize material concepts and helps students to understand the nature of material methods and theories as they relate to specifically to program. Students begin to understand that particular programmatic necessities, notions of time spent by users, and the tasks which are to be completed in the space all begin to narrow our material “scope” and define the limits, limitless boundaries they may exist. The lecture is followed by an assignment for students themselves to reflect on the lecture content and articulate what they perceive to be the most influential and deciding factors of material selection as it relates the particular project type at hand.

“…seeing that office design brings in the most revenue of project types in the design world today, I believe it is necessary to critically define what makes these spaces so unique. People often inhabit their office space more often than their actual home, because of this creating a space that is comfortable yet productive for its users is imperative to the success of a company. Applying only mundane and neutral materiality will perhaps only provoke average return and engagement with one’s environment and task. Understanding who the employees are and what the company strives to be should be a primary influence. A young, progressive global electronic trading company as displayed in the office of “Liquidnet”, by Studios Architecture tells the story of a new type of financial trading by breaking traditional and classic use of materiality and managerial offices, using notions of transparency with lime-green glazing walls and relaxed and joyful collaboration spaces with plush purple couches, bright lounge chairs, and white lacquer tables.” [a portion of student reflective essay on Office Design: Brandea Stickler]

…Restaurant design is an innovative and dynamic field of design. When designing restaurants there is a lot of freedom because users are there for only a short period of time and the experience can be dramatic and engaging. The designer literally has under an hour to make a lasting impression with the atmosphere. This provides designers with the opportunity to push boundaries of luxury, fantasy, wit, personality, or whatever the experience the chef believes appropriately compliments the food. This project type’s major influence that is greatly different than any other, is FOOD is a primary influence on material selection.”[a portion of student reflective essay on Restaurant Design: Sarah Hitchcock]

Overall, the unit itself provides, if anything, a basis upon which students can begin to critically think about the materiality of projects through a programmatic perspective as they practice in their studios and perhaps spark an interest in particular fields of Interior Design as future professionals.

[UNIT 3] ANALYTICAL AND DIAGRAMMATIC FORMULAS.

In this unit, students are assigned a project which has been recently published in credible design publications and are asked to uncover the core concept of the project itself and analyze how it informs and generates material choices through the likes of diagrams. By de stijl-ing the project into four components; a 500 word concept declaration, a color diagram, a texture diagram, and a materials board, students begin to reveal successful “formulas” of materiality as a “kit of parts” and therefore start to make the realization about the complexity, overlap, and dynamic qualities that materials can portray. The critical juncture of this unit occurs when students begin to make connections between design idea and material
qualities...they separate a label, or brand of materials, and begin to talk about how the material is perceived in space with words like, “shiny”, “rough”, “smooth”, “patterned”, “engaging”, “quiet”, etc. The culminating lessons, that is hopefully projected into their own design process in studio, is to declare design concepts and allow them to be the trajectory of selecting and applying qualities of material in space that will communicate a desired environmental aesthetic. [appendix 3 & 4].

[BRAVO SKETCHES]
Inspired by the many creative and process driven competition design shows found on the BRAVO network [Top Chef, formerly Project Runway, etc] Bi-weekly in-class sketch assignments to the students are incorporated. Students are given an hour to create a hand-crafted perspective that quickly communicated an impactful and impressionable material story as it relates to the occupants/business assigned. The purpose of these exercises are to hone the skill of rendering materials in space through drawing, and to begin to pull together material combinations that were both functional, but also relate to the specific client at hand. Each sketch is then pinned up for students to view. Through their peers, students begin to recognize and talk about drawing technique, and also compare the similarities and discuss the differences of how thirty students interpret the same client/program/use/product in the same space. Spontaneously, students begin to ask each other what their concepts are and how the materials they chose support it. Finally, the sketches provide students and the instructor an opportunity to measure growth in both technical abilities to sketch, and in material application methods. The same space and client was given as the first and last sketch of the semester. The sophistication of applying materials as a primary element defining space and volume appeared, while earlier sketches the materiality of the spaces were mostly passive applications of ornament. [appendix 5]

Although the success and impact that this curricular change has made on our program has not been assessed through measured means, the perceived impact by the faculty is very positive and considered a success. Immediate affects of the course have been an elevated level of student performance in their studio work, a stronger material discourse when discussing projects, and a proactive engagement in material choices early in design process.

APPENDICES

Figure 1: re-use of toilet paper rolls and cereal boxes are cut, folded, and woven to create a wallcovering. Students Sarah Tracey & Emily Broeckmeier.
Figure 2: re-use of plastic target bags to make a “bag” bag chair. Students Alanna Eggers & Sarah Rollman.

Figure 3: student Nolan Gragert’s Analytical Diagrammatic Formulas of Hotel Aire de Bardenas, designed by Emiliano López and Mónica Rivera.
Figure 4: student Laura Klassen’s Analytical Diagrammatic Formulas of Paige West Townhouse, designed by Ghislaine Vinas.

Figure 5: student Lisa Oberlander’s Bravo Sketch 1 and Bravo Sketch 10. Both sketches are of a flower shop located in a 16 foot wide and 48 foot long tenant fit-out.
Stimulation of Critical Thinking: Impact of Natural Elements on Design Composition

ANGELA BOURNE / CHERIF AMOR
Texas Tech University

NARRATIVE

ABSTRACT
The Council for Interior Design Accreditation (CIDA) identifies critical thinking as one of the most significant attributes an entry-level interior designer should possess (CIDA 2011 Professional Standards, Section II). The standards state “Interior Design: Critical Thinking, Professional Values and Processes” (p. II, 13) as necessary knowledge. Therefore, if critical thinking is an important aspect of teaching interior design students how to solve design problems, then the question is how should we teach it?

PURPOSE
The purpose of this forum is to: 1) share best practices in teaching that have proven to stimulate students’ critical thinking; 2) examine the process of engaging students in critical observations to build their design knowledge.

In this class, critical thinking forms the backbone of the pedagogy. Students practice the principles of critical thinking: CRI- Curiosity, Readiness and Innovation. They are encouraged to be ‘curious’ to engage their eyes and brain rather than just merely looking at things. They are also prompted to be ‘ready’ to learn and to approach situations with an open mind and not take situations at face value. A readiness to learn requires the student to be confident in their decision making and comfortable around their classmates. A non-threatening learning environment that fosters open communication and develops the learner’s self-esteem is integral to establishing their ‘readiness’. The collaborative learning model of this class requires the teacher to be an active part of the learning process rather than the “sage on the stage”. Collaboration allows student to let their guard down and to formulate more in-depth understandings of the connection between the design fundamentals and the correlated nature image.

METHODOLOGY
Students enter this sophomore design fundamentals class with a basic understanding of the elements and principles of design, color theory, technical skills and design history. The focus of this course is on color selection for the built environment. Students examine a landscape scheme from nature for its relationship to the elements and principles of design. During the first hour of the first class in this four week module, students visit a conservation area/horticulture gardens near the campus to immerse themselves in nature. They walk through the natural environment, touching, smelling and observing nature and recording their findings in their sketch book. Upon returning to the classroom, the students annotate their hand drawn sketches and digital images in reference to design fundamentals. Then they present their findings to an assigned group of 3-4 people in the class. A small group presentation creates an environment that is non-threatening and less formal than presenting to the entire class. Following this class they choose a nature image from their field study and or an image from a magazine/Internet as inspiration to develop a design scheme that is functional and aesthetically pleasing for a living room. Each student is to recommend furniture, fixtures and equipment (FF & E) that reflect the various elements and principles they observed in their image. The focus of the exercise is to create color compositions, including themes and schemes. Students analyze their nature image for its relationship to the element and principles of design and develop correlations to mimic in their scheme. Compositions that represent color palettes and reflect proportion, scale, balance, texture, pattern, and volume of space are encouraged. The following is a sample of their field study findings. The images
portray the steps taken to meet the project outcomes. (see figures 1 & 2)

Readings as noted in the reference list are assigned and recommended to support and facilitate the students learning. Lectures that include critiques of interior environments in relationship to images of nature are also presented by the instructor. Space and nature images are assessed and analyzed based on the elements and principles of design. (see figures 3)

Using nature as a source of inspiration is not a new methodology for learning. Leonardo Divinci’s sketchbooks are filled with inventions that are closely related to designs found in the natural world. Likewise, architects and interior designers seek inspiration from nature for their creations. Simple organic forms have influenced design decisions for architectural features, furnishings and spaces such as the natal’s seashell shape reflected in the Vatican spiral staircase and the lotus flower prompted the adornment of Egyptian column capitals. (see figure 4)

More recently, the process of using nature to create has been coined “bio-inspired design” described by Reed, (2010) as “design that emulates the growth patterns, structures and natural occurring organisms.” (p. 173). In his book he states that; using “bio-inspired color and design creates a personal connection, familiarity, and relevance to an object or space that may not have existed otherwise” (p. 60). The results of this project support his position and help students formulate a method to solve a design problem and create meaningful design compositions. (see figure 5)

**DISCUSSION/FINDINGS**

Student projects were assessed on a rubric that examined the design solution in relationship to the elements and principles of design relative to the image observed. The spatial environment of the interior envelope was assessed as were the verbal communication skills. (See Appendix 2)

The results of this project showed that this assignment fostered self-discovery and synthesis of information through correlating nature and the built environment. Students took responsibility for their learning rather than looking to the current trends and regurgitating what they saw in magazines. They learned to observe with a critical eye hence develop a sense of design curiosity. Through the collaborative learning experience, students built their confidence in oral communication, using design terminology and supporting their design ideas.

The developed students’ design confidence generated 1) eagerness to learn, 2) readiness to embrace additional design challenges, and 3) meticulous thinking that garnered design innovation.

The findings will be shared with the audience to for more feedback.
APPENDIES

Fig. 1: Sample image from nature (flowing creek) and image of a dining/living room area that reflects the colour scheme and design fundamentals in the flowing creek image Source: Google Images

Fig. 3: Sample Student Work

Fig. 4: Nautilus sea shell image and stair case image Source: http://fiveprime.org/hivemind/Tags/nautilus
Evaluation Assignment #2
Living Room- *Inspired by Nature* 30% of term

**Part 1 IMAGE BOARD**

- **Samples:** Min. 3 fabrics, Min. 2 paints/wall finishes, Min. 2 flooring materials
- All colors connect to the image?-pattern, texture, proportion, scale?
- All colors represent the character of the nature image?
- All finishes represent the character of the nature image?-pattern, texture, proportion, scale?
- All finishes are laid out proportionally to their use in the space
- All items are neatly labeled as per their application in the space

Presentation Format:
Composition is well balanced

**Part 2 LIVING ROOM PERSPECTIVE**

Suggestions for new furnishings, fixtures and accessories are:
- Appropriate for the space given
- Match the image from Nature
- Described using design terminology and are written to their connection with the image from Nature
- Images are of high resolution
- Neatly labeled as per their application in the space

Presentation Format:
Composition is well balanced

**Part 3 Process Booklet**

- Includes: field study- sketches, photographs, brainstorming ideas- items you discarded in your final presentation

**Oral Presentation**

- Class/team participation
- Presentation organization
- Familiarity of content
- Professional image- written, visuals, verbal

Student Name: ___________________________ Grade: /100

Figure 4: Project Evaluation
Living Room - Inspired by Nature

Assignment objective:
To familiarize students with the task of creating a design concept for an interior space that is based on an image from nature. Students will learn how to choose colors and select furniture, fixtures and finishes from a given source of inspiration and distribute them throughout an interior space. Student will also select and make recommendations for the application and distribution of their design concept.

Assignment:
Your client has come to you with a specific image (your nature image) in mind that she would like you to use as inspiration for the redesign of her living room (perspective sketch provided). Your assignment is to create a design concept that relates to her image from nature. You’re concept is to be completed on presentation board and include images and samples that reflect your design decisions. A one page written description of how your proposal meets the client’s needs is to be attached to the back of one of the boards. Documentation of the design process you engaged in to complete this project is also to be attached in a plastic sleeve to the back of one of your boards. The process should include your field study, sketches, photographs, brainstorming ideas- ideas, items you discarded in your final presentation.

Students will presentations their projects to their peers and professor- please see syllabus for dates and times.

In order to communicate your concept to your client you have been provided a black and white line drawing of her living room.

Expected Learning Outcomes:
Upon completion of this assignment the student will be able to:

- Apply the design process as it will be used on a residential project.
- Address client and/or user needs and their responses to the interior environment as they relate to their chosen inspiration.
- Use creative thinking by exhibiting a variety of ideas, approaches, and concepts with originality and elaboration.
- Use critical, analytical and strategic thinking.
- Demonstrate recall the elements and principles of design
- Develop active listening skills leading to effective interpretation of requirements.
- Learn to express ideas clearly in oral presentations and critiques.
- Address the designer’s ability to affect people and the environment.
- Identify how the elements and principles of design present in nature can be used to create color schemes for various interiors.

Figure 5: Project Outline
REFERENCES (APA)


Partnership with SFO Airport: Case Study for Retail Design Education

JULIE CHARLSON
San Francisco State University

NARRATIVE

INTRODUCTION AND PURPOSE
Service-learning when facilitated for interior design students helps to connect the content and enhances the learning experience. Sterling (2007) felt that for a greater understanding of real-world problems, “there is a necessity for students majoring in interior design to have a variety of experiences that simulate work-related projects and processes” (p. 333). A partnership was developed between the interior design program at San Francisco State University and SFO Airport Revenue Development for senior students in the Commercial Design Solutions course to design a store space in the airport terminal. This offered students an experiential learning experience in retail design and provided authentic assessment with proposals being reviewed by members of the airport Design Review Committee (DRC).

The remodel of Terminal 2 is scheduled to open as a sustainable state-of-the-art terminal in spring of 2011. The site plan includes several lease spaces for specialty stores. Mutual interest existed for students to provide a variety of design concepts for travel needs and unique images representing the San Francisco bay area. Benefits for the airport included connection with youthful talent and varied cultural perspectives. Benefits for education included connecting content to real-work practice and mentoring from industry professionals.

Growth in air travel and recent airport expansion projects help create jobs in interior design. Airport terminals in current stages of redesign include Louis Armstrong International in New Orleans, San Antonio Airport in Texas, Hartsfield-Jackson Atlanta Airport, Long Beach Airport, Williamsburg airport in Rhode Island, Sioux Falls Airport in South Dakota, Jackson Hole Airport in Wyoming, and Montrose Regional Airport in Colorado. Airport retail space follows a design review protocol for approval which also builds job opportunities for interior designers. Tenants compete to lease a store space and must meet the design guidelines of the airport. Firms are hired for design planning and presentation experience to acquire approval. Jeff Henry, representing Gensler’s retail division, said that due to the competition “Interiors are one way that retailers can differentiate themselves, and so improve their bottom lines” (Duxbury, 2006, p.2).

The purpose of this paper, written as a case study, is to provide the process for planning a unit on store design connected with business at airport terminals. It provides educators with material and methods with which to incorporate retail design into a commercial design course. The educational experience, integrating experiential learning with components of service learning, contributes greater understanding of ways to apply these learning theories to the interior design discipline.

INSTRUCTIONAL METHODS AND LEARNING THEORY
Syllabus for the SFSU Commercial Design Solutions course outlined a five week unit for retail design. Class size of 24 students worked in self-selected design teams of four. Use of the San Francisco Airport Commission Design Guidelines provided submission document requirements to complete store design proposals for a Design Committee Review as the final presentation. The Airport Store Design Project Rubric evaluating completed parts in the design process, including documents for DRC compliance, can be seen in Figure 2 of Appendix A. Learning theories on experiential and service-learning directed teaching methods used. This section will describe methods for the retail design unit as they relate
to learning theory literature supporting industry partnerships.

The experiential-learning model (Kolb, 1984) is described as a cycle that by offering students a concrete experience progresses through reflection and abstract conceptualization to active experimentation. SFO Architectural Planning division provided instructor a computer drawing of the physical space for the retail specialty store. (See Figure 1 in Appendix A.) Students reflected on the needs of travelers, the potential for store tenant, and DRC recommendations. Conceptualization began by visualization of the store space. After team decision on the type of store and design concept sketches for the location, active experimentation evolved for space planning and design solutions through CAD drafting.

Sterling (2007) proposed a model of experiential learning for interior design formed by overlapping reflection and knowledge with design activities. The experience could also be coordinated as a service-learning project. It recommended connecting with the corporate world through cooperative education so that experiential learning dealt with complex analysis in the workplace. Use of airport design guidelines and authentic assessment through the DRC process added this level of complexity and analysis. Observation of a DRC meeting to review proposal for a Museum Store, provided instructor with an example of design submissions and proposal presentation of the interior designer followed by critique and recommendations of committee members.

Zollinger, Guerin, Hadjiyanni, and Martin (2009) established a framework of four criteria for service-learning in interior design. The priority is to 1) keep activity connected to the curriculum objectives, 2) apply content knowledge to real-life design problems, 3) collaboration with community organizations, and 4) reflective practice on student learning while providing services. The store project documented outcomes of objectives to specify safe and sustainable materials and apply professional practices in the design process for commercial spaces. The airport drawing provided the real-design problem. Ovals on the beam line inside the floorplan, between structural columns indicated diagonal metal crossbeams and elevation dimensions were not provided. Unfamiliar with this symbol, and designing a space not ready to field measure, students had much to learn while providing their service. The collaboration with SFO Airport Revenue Development is an ongoing off-campus relationship also connecting the Interior Design program with area firms doing retail design. At end of the unit, students and community partners are provided the opportunity to articulate if they benefited from the design experience and if a difference was contributed to business and student learning.

OUTCOMES AND DISCUSSION

Results will discuss how the partnership with SFO airport affected the design process, project outcomes, and unit evaluation. Design of a store for the airport contributed to student critical thinking, teamwork, and problem-solving. Similar to Kaye (2004), a benefit of service-learning was student revelations and connections between previously separate ideas. DRC member input helped students understand the relationship between use of retail space and business profit and the application of psychology in merchandising. Use of their design guidelines made students aware of community organization standards for proposal drawings and specifications.

Types of retail outlets designed the first year of the partnership, 2009, included a spa, toy store, stationery gift store, a candy shop, bag and luggage outlet, and wine and cheese shop. Design teams in 2010 proposed an Asian boutique, art gallery with jewelry, a tea shop with pottery, skateboard and accessory store, fair trade gift shop, and floral service with cards and stuffed animals. Figures 3 and 4 in Appendix 2 show examples of drawings, presentation boards, and booklet for class project. Store concepts receiving best reviews were those reflecting a regional image with products supporting local economy. This preference is similar to planning in other national airports in Wisconsin (Van Mell & Steinhoff, 2008), and Florida (Kelly, 2010).

Additional information during construction specified I-beam width at 24 inches. A digital photo showed the two I-beams meeting at the top in the center as a large metal Solutions incorporating the interior I-beams included a central walk-through opening with illuminated niche product displays, service-center with 24” deep worksurface between beams, a greenwall with plants, and refrigerated floral units with storage drawers. Two additional solutions added unique character and style. For industrial image, beams were wrapped in chainlink fencing extended to form walls for hanging displays and viewing of customers. The gallery and jewelry store created
an acrylic see-through wall enclosing painted beams the color of the Golden Gate Bridge. Though students complained at the time, reflection question regarding the beam obstacle received only two negative comments. Rest acknowledged it as a business challenge that designers would need to make work through creative thinking. Most found satisfaction in turning beams into an asset or functional space.

Reflective statements on the learning experience from Review Board participants addressed the same areas as a study on community partners across eight California communities (Sandy & Holland, 2006) asking for their motivation, benefits they perceived for the school, benefits for their organization, impacts on student learning, and areas for improving the partnership. Summarized statements from these five areas will be presented at conference.

Students also received five written reflection questions on the retail design unit, two of which dealt with partnership aspects of the project. Student final reactions were very positive about the experience, with comments similar to Belk (2010). Appreciation was expressed for the real world application and communication time with professionals to better understand job expectations and methods preferred by industry.

CONCLUSION

The partnership with San Francisco International Airport for a retail design project contributed multiple benefits to the senior commercial design course. Graduating at the end of the semester, it helped students connect with community criteria for the planning and review of design proposals. The external industry guidelines and presentation to Design Review Committee professionals maintained student motivation and quality work at the end of their final semester. It better focused the broad knowledge students had on sustainable design through documentation of specifications for LEED points and wattage calculations to satisfy California Title 24 mercantile requirements.

Review panel comments helped students better understand business perspectives and the relationship between design and consumer behavior. Architects, interior designers, and airport facilities working together showed students the integrated teamwork used to design public facilities. Students experienced a three-way analysis through identifying and meeting the concerns and interests of travelers, the airport store tenant, and the design review board. Evaluation statements from SFO members and students confirmed that both felt this form of authentic assessment provided a higher level learning experience, improved presentation methods, and contributed to career transition, and improved employment opportunities.
Appendix A

Figure 1. SFO architectural drawing of store space for SFSU student retail design project.

Airport Store Design Project Rubric

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Figure 2. Airport Store Design Project Rubric

Grade
Appendix B

RETAIL DESIGN for SFO AIRPORT Review Board

Nada Armanios, Johanna Torres, Tina Scherzinger, & Johanna Vente

Metal Beam
Screen Wall Access Divider

Figure 3. Store proposal best DRC review from SFO Airport 2010

NEWS AROUND THE AIRPORT
SFO Partners with San Francisco State University to Mentor Interior Design Students in Retail Design

On May 15, 2009, graduating seniors from San Francisco State University's department of Consumer and Family Studies/Dietetics' Interior Design program presented their final project to design an airport retail store based on an actual retail space at SFO. Each proposal included floor plan, lighting plan, exterior elevations, renderings, timeline, and cost projections. The students participated in an exercise that simulated how designers present plans for corporate clients. They were given feedback from Review Board panel members. Judging from the panelists' comments, these students are ready to graduate into the real world and take their designs to new heights!

Figure 4. SFO newsletter article on partnership with SFSU and student recognition of retail design proposal.
REFERENCES (APA)


The E-Design Studio: Employing Multiple Technologies to Improve Interior Design Teaching and Learning

AMY CRUMPTON / LYNDSEY LAMAS MILLER
Mississippi State University

NARRATIVE

INTRODUCTION
Three-dimensional computer generated modeling is fast replacing the typical design process in the professional world of interior design (RSMeans, 2009; Floyd and Seidler, 2010; Neeley, 2010). As a response to this change in the marketplace, the Interior Design curriculum is increasingly becoming computer based (Floyd and Seidler, 2010). The Mississippi State University Interior Design program currently has three courses that are computer application instruction and five studio courses that require design to be modeled with technology and/or rely on computer applications as the major presentation tool. Many design programs are finding that this technology helps students visualize space earlier in the curriculum, is very exciting, and has great potential (Crumpton, 2010). However, the historical studio process of ‘walking around’ reviewing and marking up students’ drawings is no longer feasible. Students are required to have laptops and use a variety of software programs to create their projects. This intensive use of many different computer programs challenges educators to devise a new methodology to teach design students in preparation for the professional world of design.

ISSUE: THE CURRENT STUDIO CRITIQUE PROCESS
The design studio culture is, by nature, collaborative. It includes the typical professor and student interaction, yet also relies heavily on peer-to-peer learning. The current method of having each student in his own ‘virtual environment’ does not allow students to share information in a timely and effective manner with each other or with the instructor. Intrinsic to design education is allowing work to be publicly displayed for critiques to enhance the learning process for all in the studio. Design professors have been trying to adapt teaching styles originally developed for traditional hand drawn project development to the more immediate, virtual styles which directly reflect the shift in software based design development. Students are increasingly showing a preference for this type of project development, which is ubiquitous throughout the design profession, and react more effectively to the instruction method that correlates. (Macalik, 2008; Peterson, 2009).

Currently professors have two options. One option is that professors require printed copies of drawings for review. While this is feasible, it does not allow the professor to be immediately involved in the design process. Written critiques often require excessive time for professors to complete and, once returned, the student has likely made significant modifications, making the professor’s redlines irrelevant. A second, currently more popular method is for professors to complete individual desk critiques by reviewing drawings on the individual’s computer screen, which are typically 15” in size. While this approach allows for immediate modifications, it is very difficult to observe in-depth issues while hovering over students’ shoulders or to have meaningful conversation because the images are often too small or complex (Figure 1).

Additionally, in design curriculums, time is of the essence. Students and professionals demand that instructors maximize the effectiveness of students’ time in class. Being able to monitor, in real time, what each student is working on during class can allow the instructor to observe progress and immediately provide feedback, both positive and negative, with the individual as well as the class. Corrections can be made before the mistakes are embedded in a project, which helps students produce better designs and final products.
**METHODODOLOGY: A 21ST CENTURY PROCESS**
A significant change to the methods currently used to educate design students in the design studio environment is required. The developed prototype requires a software solution and a mobile, wireless electronic white board with an integrated projector, all procured for a minimal cost. The software allows professors to monitor each student’s computer from either his own computer or on the white board, in real time, which facilitates immediate communication between the professor and students. The white board allows both the students and professor to markup drawings on the fly. The markups can be sent to the student, printed, or simply erased, creating a clean slate for the next student’s project to be reviewed in the same way (Figure 2).

The combination of the whiteboard-type screen, a wireless board controller with a mobile stand, and 30 perpetual software licenses is a brand new way of teaching. While this method can be used with a typical projector, the addition of the short-throw projector mounted on the top of the mobile board is the final piece that makes this a fully contained solution. It eliminates the need to continually setup a projector at the correct height, location and angle for adequate viewing and reduces shadowing while writing on the board.

A grant was requested to create a working prototype to be used in the summer and fall semesters in a Junior Level Interior Design Studio, with typically 30 students. Because of its portability, this system could be used in any course in which the majority of the design is done on the computer.

**RESULTS: A PROTOTYPE REVIEWED**
At this point in the development of this new process, all pieces of equipment and software have been procured and installed. The software is called DyKnow Monitor. It allows the instructor to see student screens in a thumbnail view and then expand any of the selected student screens into a full window view (Figures 3 and 4). The additional equipment includes the Mimio Board Product with a wireless adapter. This product allows the instructor to project individual screen content full screen for review by the entire class. The equipment allows the instructor to mark up drawings and save them to a notebook which can be sent to all students at the end of class.

The researcher has been able to introduce the technology in a sophomore level 3D CAD/Modeling course as a test of the system. Although students were initially very excited about the process, when they realized that their desktops could be viewed, they were a little disturbed. As a result, modifications to the system administration required that each student be asked to join a DyKnow session, eliminating concerns about instructors monitoring personal computer activity at any time. Mississippi State has selected to use the DyKnow servers to host the sessions which creates a short lag between students’ screens and the monitoring process. This does not seem to be an issue at this point.

**CONCLUSION: THE FUTURE OF THE DESIGN STUDIO**
It is necessary, as demanded by students and the profession, to maximize the effectiveness of time spent in the classroom. Overall, it is believed that implementation of this flexible solution will support student learning, enhance the student design process and expand it into the ever increasing digital world.

Additionally, when this process and technology is fully vetted, the same tools can be applied for other departments in the college, particularly Architecture, Building Construction Science (BCS), and Graphic Design - and across Mississippi State. A technology solution such as this can also bridge the interdisciplinary gap and allow students from different departments to work together from different locations. Currently, this is the way work is being done in the field. Ultimately – this will enhance the learning process for all of the students in Interior Design, encourage multidisciplinary work, and can be potentially expanded across the college, and across the university launching the interior design studio into the technology-focused 21st century.
APPENDIX

Figure 1. The current design studio review process

Figure 2. Mobile whiteboard with integrated projector and instructor view of proposed software solution showing instructor view of student screens

Figure 3: Actual Instructor screen showing student screens with REVIT projects
REFERENCES (APA)


Teaching Hand Sketching and Color Rendering: An Art-Full Approach

M. JEAN EDWARDS
University of Louisiana – Lafayette

NARRATIVE

PURPOSE
The purpose of this presentation is to explore the potential of using fine art paintings as a tool for developing hand sketching and color rendering. By “de-constructing” the painted depiction of an interior environment, students discover both the perspective and the color quality of the space.

In addition to this stated purpose, the project presented here also serves as a hands-on graphic introduction to the process of interior design. Students advance the project through self-directed investigations of various aspects of the “painted” interior environments they select to study. These investigations may include issues as diverse as human factors, space planning, history of furniture and interiors, art history, and color theory. This project helps to reinforce and support the design issues they are confronting in their design studio.

IMPORTANCE TO INTERIOR DESIGN EDUCATION
A persistent challenge for interior design educators is teaching students hand sketching and rendering techniques. Reliance on CAD, both for drafting and rendering, has made hand skills seem unnecessary. However, the abilities to conceptualize three-dimensional space and to see the color in that space remain essential skills for any good designer. Doyle (1999) states, “although draftsmanship is no longer the price of admission to a design career, those who master the language of drawing are likely to see, to think and to communicate with more sophistication than those that only master the computer” (p. 3). The value of being able to think in three-dimensions, and then to communicate those thoughts on the spot to a client through sketching cannot be overstated.

Another challenge that educators face is introducing the element of color into the interior design curriculum. Ron Reed reports that fewer than half of 176 CIDA-accredited programs (reviewed on the basis of online data) have a course dedicated to color. In most other programs color is taught in other course contexts. In addition, 27 of 28 respondents to Reed’s survey report that they do not anticipate adding a dedicated color course in the future. These findings suggest that interior design educators need effective means of teaching color in contexts other than dedicated courses. The project outlined here responds to this challenge as well.

BACKGROUND
This project is conducted in a three credit-hour Interior Design Graphic Communication course, taught as a co-requisite with our first-semester second-year design studio. The course follows a first-year, two credit hour Design Communication course that introduces drafting conventions and the principles of perspective. Typically, our students struggle with perspective, and the all too brief first-year introduction to it has proven to be inadequate. Many of the perspective exercises in the introductory course are focused on the exterior of buildings, not the interiors. Consequently, many of our students enter the interior design studio lacking confidence in their hand drawing abilities. This project evolved in an effort to address this weakness.

METHODOLOGY / PROCESS
Students view a series of interior paintings by various artists, and each student selects one for study. The paintings meet at least two of the following criteria: 1) the space includes at least one person; 2) accessories and/or architectural detailing enhance the space; 3) the space includes an opening that provides either a view to the exterior or into another space, and/or 4) the artist
has employed an expressive color scheme or painting technique.

The inclusion of a figure in the painting reinforces the idea that the interior is a space for human activity, and that the "designed" elements of the interior must relate to human scale. The presence of accessories and architectural detailing in the space make the space "come alive" so students are not just drawing empty boxes. The view into another room or to the exterior enhances the perception of the three-dimensional perspective of the space. Finally, the color scheme provides students the opportunity to analyze the role color plays in establishing mood and meaning in an interior.

Once students have selected the painting they wish to explore, a series of assignments require students to "deconstruct" their selected painting in order to discover the perspective (or view point) of the artist and the color strategy employed. Students "complete" the painting by drawing an imagined floor plan of the room (including the unseen side of the space) and a perspective showing the space where the artist stands. They also develop elevation drawings of both a wall they can see in the painting and one they imagine from the side of the room where the artist stands. These plans, elevations and perspectives are then color rendered first using color markers and pencils, and then employing any variety of media they choose. These renderings also offer students the opportunity to practice a variety of rendering techniques – first, by mimicking the painting technique of the artist, and then by "discovering" other techniques through the process of rendering.

This project is conducted throughout a single semester. Students are encouraged to explore as many aspects of the painting and its depicted interior as they can. Because these investigations are self-directed, the students discover for themselves what they need to know, when they need to know it. In addition to learning to draw and to color render, students are introduced informally to the idea of research – finding out what one needs to know to complete a project. The power of this project is that it allows students to learn and develop at their own pace. They learn that they are in control of the process, and thus, that they are in control of the outcome. By the end of the semester many of them have gained confidence in their abilities, not just to draw, but also to advance a project.

**SUMMARY**

One of the goals of the project is, as Dong (1997) asserts, "...to retain the sensitivity of the human touch in color manipulation and representation" (p. xiii). In addition to learning to "see" perspective, students also learn to see color relationally and synthetically. In their study of a painting a broad array of additional questions arise concerning issues of proportion, space planning, and history, to name a few. The painting thus provides a platform for investigating and researching these issues while practicing drawing and rendering skills.

(See Appendix Figures 1 – 3 for the project outline, examples of paintings, and examples of student work).

**NOTES**

1. At a meeting of our student ASID Chapter, designer Todd Zimmerman told the students, based on his 20+ years of experience in the field, that the most necessary and desirable skills a designer could have were hand drawing and rendering skills. He said these skills were critical to effective communication with clients.

2. Ron Reed presented *Color Pedagogy in the Modern Curriculum* at the IDEC SW Regional Conference in Fayetteville, Arkansas, October 9, 2010.
APPENDIX

INDS 230  INTERIOR DESIGN GRAPHIC COMMUNICATION

LEARNING FROM ART: Project Outline

Assignment 1: Select a painting and print out a number of copies of it. Lay a piece of trace paper over one of the copies and find the horizon line and the vanishing point(s). Draw the interior noting where the artist may have deviated from constructed or “correct” perspective. (Added awareness: Overall composition of the painting – composition strategies for interior board presentations)

Assignment 2: Imagine the overall size and layout of the room depicted in the painting and develop a scaled floor plan of the room that includes the part of the room that is unseen in the painting. Using clues in the painting determine appropriate room size and furnishings, window and door placements, as depicted and imagined, and light sources and shadows. Apply drafting conventions in this drawing. (Added awareness: Space planning fundamentals and some drafting conventions, specific to the particular situation presented in each painting; issues of proportion and the relative sizes of common furniture, furnishing and interior accessories; discussion of historical references and conditions in the paintings)

Assignment 3: Draw two scaled elevations of the space, one of which shows a wall not seen in the painting. (Added awareness: review of elevation drawing conventions; understanding the vertical dimension of the room and its furnishings)

Assignment 4: Draw a perspective of the side of the room that is not visible in the painting. If the painting is a single-point perspective, then this drawing should be a two-point perspective and vice-versa. Be sure to include a person in this drawing if there is no person in the original painting. (Added awareness: student “designed” space using human reference; the role of furnishings and accessories in creating the character of the space)

Assignment 5: Students make copies of all of their drawings: the perspectives, the floor plan and the elevations. First on regular copy paper, and later on other types of paper, explore the use of color markers and color pencils to render the drawings in color, paying attention to the artist’s use of color and technique of application. After matching the color seen in the painting and mimicking the artist’s technique, explore other ways of applying color and other color combinations to the same interior. (Added awareness: color theory explored with practical application; the role of complementary color; the “color” in shadows)

Figure 1: Project Outline; Assignments 1 – 5

Figure 2: Paintings by Henri Matisse and Carl Larsson selected by students for use in the project
Figure 3: Examples of student renderings

REFERENCES (APA)


Teaching Sustainable Design Through an Integrated Design Process

TRAVIS L. HICKS
University of North Carolina at Greensboro

NARRATIVE

Sustainable design concepts influence design at various scales, from the selection of a given site to the orientation of a building on that site to the selection of interior finishes for that building. In certain design processes, design decisions at each scale are made independently of those at other scales. A landscape architect locates a building on a site. An architect then designs the core and shell of that building, and then an interior designer completes the interiors of that building. While this particular linear delivery method ensures clarity in the division of responsibilities, the ability to leverage one discipline’s expertise for the benefit of another discipline at multiple phases in the design process is hindered by such division.

Broad sustainable design strategies transcend the division of scale and discipline. Integrated design, the practice of including multiple design disciplines in the design process simultaneously, is a practice model that breaks down the linear process and leads to sustainable outcomes. The role of interior design is integral to sustainable design, and there are plenty of examples where a purely interior project is sustainable. Where projects extend beyond the “four walls” of an existing structure, the roles of other disciplines, such as landscape architecture, architecture, and engineering should be understood in the context of interior design. In order to explore the full range of green concepts and to extend the discussion beyond the interior, I led fourth year interior architecture students at UNC Greensboro through an integrated design process. This process is one that I personally experienced and honed over a thirteen-year career in the practice of architecture and interior design, and I brought that practical experience to the design studio.

PEDAGOGICAL PROBLEM:
How can interior design education equip students to excel in interior design while introducing broader sustainable design concepts through an integrated design process? This project began with the hypothesis that the design of interiors is more successful, and more sustainable, when there is a clear and volitional relationship between the interior architecture and the building and site architecture of the project. Introducing an integrated design process into an academic interior design project suggests that either 1) students from other design disciplines on campus are pulled into the interior design project or 2) interior design students are asked to play the role of these other design disciplines. At UNC Greensboro, the discipline of interior architecture stands alone, without colleagues in architecture, landscape architecture, or city planning represented on campus. For the purpose of this studio, students were asked to play the role of these other design disciplines.

THEORY:
The theoretical framework for an integrated design approach is underpinned by the recent research of Jerry Yudelson, who notes that “there appears to be a trend among a few firms to bring the key building designers all under one roof: architects and interior designers, structural and mechanical engineers, and landscape architects” (66). Additionally, my approach draws inspiration from the work of Susan Winchip, who states that “Site sketches could also identify characteristics of the surrounding area that impact the design of the interior” (280). There is a clear relationship between the professional disciplines operating at different scales; similarly, there is an integral relationship between the formal, spatial, and theoretical territories of those various disciplines. Instead of approaching sustainable design as something that is applied to a building after the building
is designed, this integrated approach to design proposes that sustainability - like design - is integral, not applied.

**APPROACH:**
A number of pedagogical approaches could be used to expose design students to the interrelationships between various design disciplines and sustainability, from studying concepts in the abstract to designing and building a small-scale project. Given my experience as a practic- ing architect and interior designer, I bring a pedagogi- cal approach that is between these two extremes and based in the practical aspects of large-scaled design. I push students to understand general concepts of site planning and architecture through instructor-led design charrettes and student-generated research, and I chal- lenge students to design buildings at a scale larger than they could conceivably construct at full-scale.

**LEE STREET STUDIO:**
In the spring of 2009, I taught a fourth year design studio at UNC Greensboro, called “Lee Street Studio,” in which students worked in three different groups to design a large-scaled academic building at various scales, most particularly that of the interior, along the Lee Street cor- ridor in Greensboro. By semester’s end, each of the groups had analyzed building precedents, analyzed a series of sites, and completed the site design, building design, and interior design for a new studio arts building for UNC Greensboro.

At the scale of the city, students were asked to generate site analyses of a broad swath of land just outside the campus limits along Lee Street. This area is valued by the university for its potential to expand the campus to the south and is included in the campus master plan. Students researched the City of Greensboro’s zoning ordinances, UNC Greensboro’s master plan, and the Lee Street Corridor Improvement Plan. The research expanded the students’ understanding of urban planning and their awareness of forces that urban planning has on interior spaces. In addition, students were given the opportunity to develop attitudes towards sustainable design at an urban scale. Students responded by consider- ing public transportation hubs and their sites’ rela- tionships to those hubs, among other strategies.

The architectural scale for the project was larger than most interior design projects at UNC Greensboro; how- ever, a familiar building type – one based on the Gate- wood Studio Arts Building which houses the Interior Ar- chitecture department – was used in order to alleviate some of the anxiety students felt by being asked to de- sign a large-scale structure. To understand the academ- ic studio building better, students were asked to analyze building precedents, such as Yale’s Art and Architecture Building and IIT’s Crown Hall. Students generated a building program based on the knowledge gained from post-occupancy analysis of the Gatewood Building and the precedent analyses of similar studio buildings. Stu- dents generated a program document that included the building program, site analyses, precedent analyses, a statement about sustainable design, and a survey of the campus master plan.

The program document formed the basis of the concep- tual design that each of the three groups executed. After analyzing the multi-block portion of the city of Greens- boro, studying building precedents, and generating a building program, students zeroed in on three sites to locate their building designs. At the scale of site de- sign, students considered landscape design elements and how they mediate between the urban and the ar- chitectural scales. Students also developed sustainable design strategies for sites, such as rain gardens, pervious pavement, and reduced site disturbance. Instead of understanding these strategies in the abstract, students integrated these features into their work.

Students worked in groups, and each group developed a single building scheme and site plan for their group project. Each scheme varied in form and concept; how- ever, each of the groups followed the program document and the integrated approach to design. Following group work to arrive at the framework for their individual de- signs, students focused their design efforts on specific interior spaces informed by the group’s site and building designs. In suspending their pre-conceptions about the design process, students in the Lee Street Studio expe- rienced an integrated design process that generated in- tegrated sustainable design in a studio project. Interior architecture students experienced the design challenges and successes of allied disciplines such as architecture, landscape architecture, and city planning.

**ANALYSIS OF OUTCOMES:**
Having a concrete understanding of how to apply sus- tainable concepts beyond interior design equipped stu- dents with the vocabulary and skills to collaborate with
allied design disciplines. While the expectation is that most of these students will still go on to practice interior design, they proved that interior designers can design at scales larger than that of the interior. Students proved themselves capable of designing large-scale projects; however, a single semester wasn’t enough time to explore all the pedagogical concepts in depth at the scale of a large academic building. For students who had never designed a site or a building prior to this studio, the program – though familiar – was large and difficult to synthesize in the time allowed. I would alter future integrated design assignments to allow more time for more detailed investigations. There is no structure in place at UNC Greensboro to allow a design studio to extend beyond a single semester; however, a better schedule would allow research and analysis to occur in one semester and design based on that research to occur the following semester.

The students gained a greater appreciation and understanding of integrated design and its relationship to sustainability. Students were capable of designing projects at multiple scales and of relating their interior designs inextricably to their sites and their buildings. In spite of time constraints and students’ lack of previous experience at such a scale, students practiced an integrated design process that led to sustainable interiors.
APPENDICES

Page 1 – Pages from syllabus and assignment.

Lee street studios

Introduction

The latest campus master plan addresses a narrow stretch of urban fabric between the NCRR tracks and West Lee Street. This same stretch of land is considered in a new corridor plan generated by City Planning. The urban fabric offers the university opportunities to create a new gateway, extend the campus south beyond the perceived boundaries of the College of Architecture, and extend the academic and cultural life of the campus. This studio will leverage the power of collaboration and team work. Students will at times work in teams of 4 or 5 and will have the opportunity to work through group charrettes. Students will be asked to challenge the status quo, consider new opportunities that Lee Street offers the university, and address aspects of design particular to institutional projects.

This studio will generate designs around a building program similar to that of the current studio building. Students will be asked to analyze the following, as relevant: various conceptual and physical aspects of design that will be dissected and presented through building precedent analysis. Students will be given the opportunity to explore design at different scales and to practice an integrated design approach through the studio. This studio will generate designs around a building program similar to that of the current studio building. Students will be asked to analyze the following, as relevant:

ASSIGNMENT 1.1 - PRECEDENT ANALYSIS

Various conceptual and physical aspects of design will be dissected and presented through building precedent analysis. Students will be asked to analyze various studio buildings, both domestic and international, by leading architects. Through precedent analysis, reading assignments, and potential building tours, students will develop the conceptual framework and vocabulary with which to execute their designs. Through both digital and physical media, students will generate drawings, diagrams, models, photographs to document their analysis of the site. Site analysis should address the following, as relevant:

- figure/ground
- relationship to site
- structure
- program
- materials
- solar orientation
- scale/proportion

PRECEDENT PROJECTS:

Scole des Beaux Arts
Ecole de l'Est
Ithaca
Glasgow School of Art
Par School of Architecture
Hannover
Königliche Technische Hochschule
Ecole des Beaux Arts

ASSIGNMENT 1.2 - PROGRAMMING

Through both digital and physical media, students will generate drawings, diagrams, models, photographs to document their analysis of the existing STAC building. Students will review the original program for the Gatewood Building, measure existing spaces in the building, and conduct interviews of faculty, administrative staff, and students to arrive at a building program to be taken forward in the studio. The program should address the following, at a minimum:

- numbers of spaces
- square footage, net + gross
- division of program between public/private, faculty/staff/students
- adjacency diagrams
- requirements for technology, power, HVAC
texture descriptions

ASSIGNMENT 1.3 - SITE ANALYSIS

Through both digital and physical media, students will generate drawings, diagrams, models, photographs to document their analysis of the site. Site analysis should address, at a minimum, the following:

- solar orientation
- vehicular circulation
- pedestrian circulation
- site orientation
- historical context
- contemporary context
- streetscape
- scale/massing

Students to arrive at a building program to be taken forward in the studio. The program should address the following, at a minimum:

- numbers of spaces
- square footage, net + gross
- division of program between public/private, faculty/staff/students
- adjacency diagrams
- requirements for technology, power, HVAC
- narrative descriptions
Assignment 2.1 is an individual, not group, exercise. Each student will complete this assignment using the program document generated for Assignment 1 this semester. You have one week to generate a minimum of 10 different schemes (per student) to address your site and building program. Given this brief period of time and the volume of work required, detailed design exploration will be sacrificed in order to focus on building and site concepts, partis, diagrams, and sketches. Consider this a week-long charrette. Each scheme will require a site plan sketch, building sketch, and 3D sketch model. You are required to use at least three different model-making materials for each model, and you are required to integrate color, line, and texture into each sketch.

*As a class on Feb. 12 we will decide the appropriate scale for these drawings and models. Each student will adhere to the agreed-upon scale for the pin-up on Feb. 19.

Assignment 4.2a - Detailed Interior Design

Following the structure of the work plan your group generated in Assignment 4.1, students shall develop the overall interior design for their group's scheme. While you are not responsible for designing every interior space in detail, your group should generate an overall interior design concept and material palette. Significant interior spaces, then, shall be designed in more detail. Documentation of the interior design shall include the following types of presentation materials:

- concept diagrams
- material sample boards
- floor plans
- floor finish plans
- sections + elevations
- details of significant elements
- site/context model - physical
- building model - physical
- perspective renderings

Each group is responsible for generating documentation to include, at a minimum, the following types of material: 2-dimensional and 3-dimensional materials generated by hand; and 2-dimensional and 3-dimensional materials generated by computer. Final presentations shall be pinned up and displayed for the final review.
Sustainable Solutions Diagrams

SITE
Placement of building on site, and natural shading with more vegetation on south side.

WATER
Rainwater collection off building for sewage or irrigation purposes.

Sustainable Design Narrative

“A tree produces thousands of blossoms in order to create another tree, yet we consider it’s abundance not wasteful but safe, beautiful, and highly effective.” – Cradle to Cradle

Human beings are the only creatures that take from the environment and give nothing back. Humans construct buildings, which in turn use about one-third of our total energy, two-thirds of our electricity, and one-eighth of our water in the United States. In aiming to produce a strategy of change, this building should serve as a model to the students and community and return to the environment what it consumes. Albert Einstein stated, “The world will not evolve past its current state of crisis by using the same thinking that created the situation.”

By following Einstein’s philosophy, this building and site should go beyond the basic recommendations of sustainable measures throughout its entire design process. It needs to consider how it uses energy, the resources it uses, the amount of waste it produces, and what it gives back to the environment, using systems of nature as a model for design work.

The American Institute of Architects believe the time for talk is over, encouraging that architecture education “…should serve as a nucleus and catalyst for sustainable exploration, experimentation, demonstration and celebration.”

Building + Site Interaction
- Small building footprint
- Utilize window placement with building orientation
- Maximize natural shading onto the building with the landscape
- Limited impervious areas
- Maximize native vegetation

Water Conservation
- Consider collecting rainwater for irrigation purposes
- Consider treating recycled water for irrigation and sewage purposes
- Low flow fixtures (shaws, toilets, and urinals)

Energy Efficiency
- Design the building to reduce the need for artificial lighting during the day
- Consider using alternative sources of renewable energy
- Artificial lighting should be motion censored or manual to reduce electricity use.

Resourceful Materials
- Use materials that contain recycled content
- Use materials that are manufactured, produced, and/or extracted locally
- Use rapidly renewable materials
- Use materials that have been approved by the USGBC, Green Seal, etc.

Sustainable Solutions Diagrams

INDOOR AIR QUALITY
Incorporate operable vents and natural air flow vents for better air quality.

WASTE
Composting of food scraps and other decomposable matter to reduce the amount of waste sent to landfills to provide nutrients to cafe vegetation with compost.

Healthy Indoor Environmental Air Quality
- Non-smoking facility with a smoking area located 25 feet away from all openings and operable windows
- Design individual lighting systems to be individually controlled
- Use low emitting paints, adhesives, carpet, wood, etc.
- Provide operable windows to provide passive ventilation
- Ventilating necessary areas (e.g. Computer labs, printing stations, workshops)

Waste
- Provide a location for composting to reduce amount of waste sent to landfills
- Provide a location for recycling appropriate materials from buildings users
- Overall goal: Generate less waste

Samples of student work
REFERENCES (MLA)

The Islamic quantitative and qualitative proportion theories in the educational process

DIANA MOH. KAMEL / MAHA MOHAMED ELHALABY
Helwan University

NARRATIVE

INTRODUCTION:
The educational process in the field of interior design follows an integrated system of complete curriculums according to multiple objectives, and one of these goals in most of Arab Universities includes the development of the students’ knowledge skills with their Islamic Style heritage. The courses which accomplish that are History of Interior Design and History of Arts. (Fig. 1)

CONTEMPORARY DESIGN INSPIRED BY THE ISLAMIC HERITAGE:
In advanced levels of undergraduate education, it is always a requirement in many interior design projects to combine a contemporary design with themes inspired by the Old Islamic Style. In this regard, is the History of Islamic style course a sufficient course for that contemporary project? (Fig. 2)

To answer the aforementioned question, the authors designed three questionnaires for three different categories. The first one was for interior design professors, and it was distributed along three different faculties; the Faculty of Applied Arts, Helwan University, the Faculty of Fine Arts, Helwan University, Egypt and The Faculty of Home Economics, King Abdulaziz University, Saudi Arabia.

The average of 75% of faculty members confirmed that they required a project combining contemporary design with themes inspired by the Old Islamic Style. While, the average of 80% of them affirmed their dissatisfaction with the authenticity and results of these projects. Furthermore, 100% affirmed that the History of Islamic Style course was not sufficient for meeting the project requirements. (Chart. a)

THE USE OF QUANTITATIVE AND QUALITATIVE PROPORTIONAL THEORIES IN THE ORIGINAL ISLAMIC STYLE:
What distinguishes timeless architecture and design in Islamic works is their reliance on arithmetic and geometric theories. The old Islamic designers used aesthetic ratios derived from the proportions of the human body and they considered it as the most appropriate and suitable methods to their work. “The Arab Scientists linked quantitative and qualitative proportional theories to design, architecture and fine arts. Mosque of Sultan Hassan in Cairo is an example of the ratios and proportions used in Islamic architecture, the range of ratios are 1:1, 1:1.33, 1:1.25, and these ratios were repeated again in most of the architectural details such as openings and mashrabiya from the façade of the house of Ibrahim Katkhoda Alsnary in Cairo.” (Hamouda) It is noted that these ratios have been used in aesthetic relations between spaces and rooms’ heights facades and openings, and their relationship to each other in Islamic architecture.

Many Muslim scholars have touched the extent of the ratios and proportions, and their influence on the beauty of the form, Ibn al-Haytham stated that: “proportionality alone is beautiful, although when form combining between the beauty of the shape in its parts and the
beauty of the component, composition and proportion between the parts relative to the body, size, location and all the other characteristics that are associated with the proportion, and when the element commensurate with the shape and size of the face as a whole that is the ideal beauty". Necipoglu) The Brethren of Purity also touched the topic of ratio and they did measurements of the body of a child.

**KNOWLEDGE OF ISLAMIC THEORIES GAINED IN THE EDUCATIONAL PROCESS:**

Tracking the sequence of the knowledge students’ gain on the subject of theories of proportion, it is important to clarify courses descriptions that affect this matter:. The course descriptions are displayed in (Fig. 3)

**ANALYZES OF STUDENTS’ WORKS (FEEDBACK OF COURSES PROJECTS)**

The student’s contemporary project in (Fig. 2) showed evidence of copying the Islamic ornaments without a sign of modulation to unify the design and with no innovation. In a positive point of view, the copied drawing of (Fig. 1) demonstrates the student’s skills of drawing identical details of the old Islamic style. It is clear that there is a gap in the educational process that needs to be filled; the capability of students to copy the details of old Islamic styles perfectly is present, but their ability of innovating and implementing the heritage on contemporary designs is significantly lacking as illustrated previously.

**THE DEVELOPMENT OF A NEW COURSE:**

Adding a new course to the curriculum requires approval not only from one’s department chair but also from the University, where a subcommittee reviews new courses proposals. In this regard, authors designed a primary course Proposal that will be followed by several discussions. In the Guide for Faculty and Teaching Assistants (CITL), there are 8 steps to consider when planning and designing a new course. Authors followed these steps, and other references, to plan and design a new course focusing on combining the inspiration of Qualitative and Quantitative Islamic Theories to contemporary design; they suggested that the course title will be called “The Inspiration of Islamic Style”.

**COURSE OVERVIEW**

Aims: The course offers an opportunity to take qualitative and quantitative original Islamic theories as a starting point for contemporary interior design. Through seminars, readings, collaborative work with colleagues and a series of assignments that focus on connecting theory with practice, students will:

1. Build the knowledge, skills, motivation and confidence to enhance their own contemporary design inspired from Islamic style.

2. Expand their skills to judge and select from the various elements of the Islamic style in order to solve a contemporary design problem.

Structure: The course is designed as a full time course that will fit within the schedules of teaching academics at both Faculties – Applied Arts, Helwan University and Faculty of Home Economics, King Abdulaziz University. Nevertheless, students must have completed the aforementioned courses in both programs before taking this course.

Learning Outcomes: By the end of the course, it is expected that students will be able to:

1. Use evidence on the most common qualitative and quantitative theories reasoning, to design and critique original and contemporary works.

2. Link general historical knowledge with its qualitative and quantitative origin

3. Analyze and identify possible solutions to design a contemporary work, based on an understanding of the various factors involved in inspiring from the Islamic Style.

Topics: These goals will be achieved through an exploration of 6 major topics:

- Defining the ideology of ancient Islamic Mathematical and geometrical Scientists

- The foundations of Islamic design

- Proportions used by the Islamic designer

- The role of the decorative element in the different areas of design
• Analysis of original works

• Training on the foundations of inspiration

Course content: The educational process in that course is moving according to a logical sequence:

• Lesson 1: Introduction to the most important Islamic manuscripts, letters that influenced the old design, such as Algorithm manuscript, the Geometry of Bozjani, Brethren of Purity messages (the V and VI letters), the key to account for Kashi, The tricks of Geometry Ismail bin aerosol Jazari,

• Lesson 2: The Islamic design foundations (repetition, unity compatibility, symmetry and sequentially).

• Lesson 3: Practical application of mathematical and geometric on various original Islamic works.

• Lesson 4: Practical application of the Islamic decorative element in different areas, walls, ceilings and floors

• Lesson 5: Qualitative and quantitative methods of abstraction and inspiration.

CONCLUSION

It is clearly evident that the educational process of interior design at some Arab Universities lack important elements for creating a contemporary residence, or public project, inspired by the original Islamic style heritage. Most of these projects are inlaid with ornamental elements, with no consideration to the essence that underlies the authentic cultural styles, since the courses that handle this matter focus on the imitation of original elements with no information on the scientific methods of inspiration from the origin style. This investigation was based on structured questionnaires, where results showed evidence of the need of designing a new course.

This study aimed at developing a comprehensive innovative approach for investigating the appropriate path for combining original Islamic Quantitative and Qualitative Theories with concepts of inspiration to establish a contemporary design in a new course titled “The Inspiration of Islamic Style”.

REFERENCES


Attia, Eman, *The Islamic Content in Architectural Ideology about theory in Islamic Architecture*, Cairo: Faculty of Architecture, Cairo University, 1993.


Program description Interior and Furniture Design Department, Cairo: Faculty of Applied Arts, Helwan University, 2009.

Program description Interior Design Path, Jeddah: Faculty of Home Economics, King Abdulaziz University, Jeddah, Saudi Arabia, 2009.
Figure 1: Student work in the History of Islamic Style course

Figure 2: Paintings by Henri Matisse and Carl Larsson selected by students for use in the project
Chart. a: Faculty Members

A = A demand of contemporary design projects inspired by Islamic style
B = The dissatisfaction of students’ projects
C = Denying the sufficient information of the history of Islamic style course

Chart. b: Student and Graduate

A = sufficient knowledge of Islamic style design theories
B = using their personal efforts for the inspiration
C = lack of understanding towards inspirational methods
Courses Descriptions

Interior Design Department, Faculty of Applied Arts, Helwan University, Egypt

- **Course Title** Fundamentals of interior Design  **Code** 1101(First Year, extended):

  The identification of the concepts of visual perception in interior design through (symmetry - asymmetry - Convergence - Contact - closed), and to identify the Golden Section and its application in interior design.

- **Course Title** Color Theories in interior Design  **Code** 2204 (Second Year, First Semester):

  Among the general objectives of the course: The student identifies multi-techniques of color, and classifies the characteristic colors of various styles (Ancient Egyptian - Coptic – Islamic).

- **Course Title** Theories of interior Design  **Code** 2113 (Second Year, First Semester):

  In the paragraph of Intellectual skills acquired by the student: "It contains a description in the Intellectual skills acquired by the student: Acquire the students' skill of selection and design through the theories of contemporary interior design. Furthermore, at the course contents "Inventory of the most important theories and trends of art and architecture affecting the interior design in the twentieth century such as (organic, functional, structural) theories in terms of the most important foundations, concepts, values, aesthetic and functional".

- **Course Title** History of Islamic interior Design  **Code** 2112 (Second Year, First Semester):

  Developing the students' skills to transfer some of the Islamic Styles' work according to the original, and learn to draw the details of its ornaments

Interior Design Path, Faculty of Home Economics King Abdulaziz University, Jeddah, Saudi Arabia:

- **Course and Code** HHM 211  **Course Title** History of Furniture and Interior Design (1) (Second Year):

  This course offers a thorough examination of the history of furniture, architecture and interior design in classical antiquity, medieval renaissance periods in France and England. The course explores points of analogy and contrast of the various characteristic features and attributes of interior design in each period. With increasing specificity, the course covers aspects of Islamic interior design and architecture from the Ummayad Caliphate of the seventh century to the Ottoman Empire.
Global Partner: International Design Exchange Project

HYUNG-CHAN KIM / DONG-KWAN SHEEN / YONGRHIP KIM
Kansas State University, Sangmyung University

NARRATIVE

INTRODUCTION:
International Design Exchange Project (IDEP) is a collaborative student design exchange program between the interior design program at Kansas State University and the one at Sangmyung University, Chonan, South Korea.

IDEP was created to develop an exchange design project through virtual conference between interior design programs at two universities and two countries. The objectives of IDEP are (1) to provide an enriching international experience for students and faculty through a design project, (2) to enhance students’ international design perspectives, (3) to develop a better understanding of cultural differences, (4) to develop collaborative teaching methods through virtual international conferences, and (5) to expose students to global design issues and international design markets.

BACKGROUND:
One of external accrediting body in US, The Council for Interior Design Accreditation (CIDA; 2006) requires global competency: “Standard 2. Global Context for Design – Entry level interior designers have a global view and weigh decisions within the parameters of ecological, socio-economic, and cultural contexts.” CIDA standard 2 indicated that interior design programs should provide opportunities for students to develop knowledge of other cultures. The program can address this in a wide variety of ways; some examples include study abroad, on-campus cultural exchanges, and interaction with visiting professors. IDEP focuses on campus cultural exchange following CIDA standard guidelines.

In the interior design profession, the US has seen a steady increase in international interior design projects: 7.5% in 2001 to 11.6% in 2006. Since 2006, over 50 major U.S. interior designers have worked in China (36 projects), the United Arab Emirates (26 projects), the UK (25 projects), India (18 projects), and South Korea (14 projects). These projects represent a significant transition in the field to working in other countries (Interior Design Magazine, Jan. 2007) and reveal a need for professional practitioners to compete for international design projects, providing both quality and quantity.

However, Internationalism and globalization are significant issues not only in interior design but also in other disciplines. Cavusgil (2005), a marketing researcher, has presented concepts and resources for teaching globalization. He has provided a comprehensive agenda for globalization in higher education: 1) curricular initiatives, 2) enrichment of student experiences (on campus and abroad), 3) links with foreign institutions, 4) collaboration with businesses, 5) capitalizing on institutional strengths (building campus alliances), and 6) faculty motivation and development.

Knight (2004) proposed another approach to international education with a dual framework for developing meaningful international experiences, suggesting 1) a faculty-based grassroots approach, so faculty can take the lead in curricular development and 2) administrative policy support for implementing international programs on the local and national levels.

Addressing the issue of international projects is a significant element in interior design curricula, one that conforms to the needs of students and institutions.
The Structure of International Design Exchange Project (IDEP):

The IDEP used the International Exhibition Design: LG Electronics Kiosk Design at Seoul, South Korea and Kansas City, Missouri. The client is LG electronics, one of largest global company, with headquarters in Seoul, South Korea. Both schools’ students are familiar with LG, US students especially need the opportunity to work with international clients.

The major design challenge of this project is an LG cell phone kiosk at two different locations. Interior design students at Kansas State University designed a kiosk for at one of largest mall complex plazas in Seoul, South Korea, and interior design students at Sangmyung University designed for a similar mall complex in Kansas City, Missouri. Both programs had the same client and the same physical requirements, but different locations and different measuring systems, with American students using the metric system and Korean students using the US Standard units.

A total of 48 students (21 first semester seniors at Kansas State University; 27 second semester juniors at Sangmyung University) and two instructors participated.

The project ran for six weeks. During weeks one and two, students visited the sites their partner institution would be designing for and collected the necessary field information: general information about country, city, and mall as well as more detailed information about design area, traffic, the interior of the mall, and an analysis of the surrounding area. At the end of week two, this information was exchanged through a series of student presentations during a virtual on-line video conference. Presentations addressed physical conditions of the site as well as information on the cultural and social norms of users in that space. Students met for the first time partner school students and presented for the first time to people of another country culture.

During weeks three through five, students from each programs developed a design solution for the kiosk based on the partner school’s site information and other relevant design requirements. Both countries’ student groups designed using the same design requirements but with several unique design challenges; 1) Kiosk had to be designed for LG cell phone, incorporating client company products and marketing strategies; 2) Kiosk was outdoors and had to consider weather conditions and sun angle; 3) Kiosk had to be moveable, capable of disassembling to pass through typical double door; after business hours it was moved to inside storage space; 4) Kiosk had no power resource and thus had to incorporate a green electric power system like solar panels. In addition, students had to include 5) an anthropometric study for racial differences, incorporating a different anthropometric study for the other country’s people; and 6) use the unit system of the country in question, so Kansas State University students used the metric system and Sangmyug University used US standard units. During week four, student groups attended a schematic design presentation with a study model explaining Kiosk form and shape and spatial relationships.

Final design solutions were shared in another virtual on-line video conference during week six, where students from each program presented solutions and provided feedback on each other’s work.

OUTCOMES:
This study saw learning outcomes of the project according with achievement of the stated objectives: 1) Personal development: this project provided an enriching international experience with very low cost – 1/2 of US students and 1/5 of Korean students did not have any international experiences; 2) Personal development: both student groups learned to communicate with partner institutions; 3) Personal development: both student groups understood different cultural aspects; 4) Professional development: both student groups learned different design development processes and/or approaches from partner institutions; 5) Professional development: both students groups were exposed international design market.

Before the start project, both student groups took a pre-unit test for see what they knew about different measurement systems at that point. After the pre-test, instructors at both school presented a two hour lecture on the metric system and US standard units followed by exercises on the different systems. After finishing the entire project, both student groups took post-test with same questions. In comparing the pre and post test results, among the US students, 71% answered correctly in the pre-test and
91.5% answered correctly in the post-test. Among Korean students, 64% answered correctly in the pre-test, and 80% answered correctly in the post-test. Through pre- and post-tests, both schools’ students showed a better understanding of each other’s measurement systems.

According to student exit interviews, both schools’ students showed global competency within the design project, including global learning experience with foreign students. The most significant learning outcome, however, is that students can meet international project requirements very comfortably.

**DISCUSSION:**

After finishing the project, instructors from both schools discussed any problem with the project. Among the problems that we found: 1) communication: English is a second language for most Korean students, so US students must speak slowly and use professional communication techniques; 2) interaction between the two programs; two video conferences were not enough to share design ideas, so instructors will arrange at least two more video conferences to discuss schematic design. Both instructors should create other methods for communicating between groups, perhaps using Facebook (for sharing information directly), and Skype (for sharing design ideas face to face). In addition, both instructors should modify students contact hours. US students met 8 hours per week, but Korean students met only 3 hours per week. The Korean instructor added an extra class hour for developing the design, but student contact was still unbalanced between the two schools. Both programs should institute the same contact hours for having balance between the schools.

Further changes to this project involve 1) creating different design projects for commercial and/or residential design at two different locations, with the design in a third country, and 2) creating a common assessment method for global competency.

**REFERENCES (APA)**


Figure 1.

Project Statement for US Students and Schedule

1. Learning Objectives:
   a. To have global view and weigh design decisions within the parameters of ecological, socio-economic, and cultural contexts.
   b. To understand globalization and the implication of conducting the practice of design within a world market.
   c. To provide opportunities for developing knowledge of global perspectives.

2. Space will incorporate:
   a. Consciousness of alternate points of view and appreciation of cultural diversity
   b. Apply 3-dimensional design elements and principles to the development of the spatial envelope
   c. Understand & apply metric system
   d. Mobility, ergonomics, flexibility and electrical issues

3. Client: LG Electronics

4. Location & Business Hours:
   a. South-east side of XXX, Asian Country: new developed place for trade, finance, shopping, and entertainment
   b. Coex Mall, Millennium Plaza: Directly connected to subway station, Millennium Plaza is main entrance to Coex Mall, and creates a pleasant transition from outside to the inside of the building. All kinds of people come together here for different reasons
   c. Business Hours: 10 AM to 9 PM (Design may incorporate with exterior weather condition such as enough overhanging for computer monitor, TV screen, and raining)

5. Problem Identification:
   a. Design a moveable kiosk to sell the items:
      Three major components – sales (phones, accessories), services (downloading, upgrading, printing, internet services), and advertisements (new productions, promotion)
      In addition to storage space and electrical power storage
   b. The kiosk must have reflected the flavor of the town and its products
   c. Design must incorporate with site condition because exterior such as orientation, sun angle for both summer and winter, size of overhanging, and raining
   d. Kiosks in open space in by a building. But they are all moveable and easily stored for subsequent use: after business hours Kiosk must move to inside
Figure 2.

Schematic Design

Figure 2-1. Study Model – Kansas State University

Figure 2-2. Discussion – Sangmyung University
Figure 3.

First Presentation

Figure 3-1. First Presentation - Kansas State University

Figure 3-2. First Presentation – Sangmyung University
Figure 4.

Final Solutions

Figure 4-1. Final Solution – Kansas State University

Figure 4-2. Final Solution – Kansas State University
Integrating the Kolb Experiential Learning Theory in Design Fundamentals

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NARRATIVE

PREMISE
The teaching of a freshman course has always been considered as a challenging task, since this involves the formative stages of shaping students’ aptitude in the discipline, as well as providing the exploratory avenue to ignite their interests, and discover their respective creative abilities.

The nexus of the paper emerged from an assigned task to teach a Design Fundamentals (DF) course in spring 2008. The extended undertaking to facilitate the course over four spring semesters has determined a multitude of discoveries worth sharing for those handling a similar course. Over time, the continuous teaching and reflective review of the course, several questions were framed to contextualize the issues necessitating an appropriate pedagogical framework which included:

• What are the major challenges in the DF course planning?

• What is the scope of learning objectives in the DF course, and how it relates to the attainment of the accreditation standards?

• What projects can one introduce to make students understand and apply the required body of knowledge in a single course?

• What are the unique complexities in the process of delivery which can define teaching and learning successes?

• How can the Kolb experiential learning theory be appropriately explored to attain the multiplicity of positive outcomes?

The narrative sums up the results in four clusters namely: (1) a template of issues and challenges to consider for course planning, (2) a methodical way to link projects and satisfy the plethora of accreditation goals, (3) a body of situational facts which established the quality of students’ learning outcomes, and (4) a pedagogical strategy embodied in the Kolb Experiential Learning Theory (Kolb ELT) as illustrated in Figure 1 that resulted into diverse facets of success, both in teaching and learning. Similar to many institutions, DF is a three-credit core course within the Interior Design Program, and introduces six components of visual learning such as: design elements, design principles, composition, media, two-dimensional and three-dimensional literacy, and color theory. Nonetheless, its main essence is related to layers of visual literacy and critical thinking that are crucial to the first year of design engagement.

PEDAGOGICAL RESULTS IN CONTEXT
Parallel to the cognitive styles in psychology, the DF course faces situations and challenges which we could distinguish into a set of dichotomies like “convergent or divergent, focused or flexible, linear or lateral” (Cross, 1995, 115). We can draw the line and state that converging points represent the goals of the course, and the diverging aspects illustrate the scope of projects and outcomes that we choose to adapt. In the same manner, we can remain focused on specific accreditation standards, but still explore with flexibility to ascertain the learning experiences in a singular project or sequential projects. Further, we can provide approaches that address the students’ linearity of thought process or develop their lateral methods of solving basic design problems.
The Kolb ELT is grounded in four phases that uniquely weaves the process of information acquisition and the pragmatic use of skills (Erickson, Peters and Strommer, 2006). The interconnected system of allowing students to have a concrete experience, reflective observation, abstract conceptualization, and active experimentation within associated learning dimensions meaningfully creates a looped process in knowledge building (Fink, 2003). The continuum in the Kolb ELT expresses the multitude of opportunities for first-year students to immerse in learning, cultivate weighty reaction with peers, logically inter-relate their set of activities, and establish a form of collaborative engagement. In the same process, they are able to connect the goals embodied in readings and assignments; class discourse and essay writing; activities in individual, team or group projects; peer assessment and cross-evaluations.

When the Kolb ELT is integrated, some noteworthy points are:

- The scope of intended projects need to match the structure of one semester. The ideal set up for a 16 week-semester is to plan for six or seven individual assignments linked to an equal number of challenging design projects which are either independently or collaboratively done. Project outlines should be carefully planned and explicitly written with references to the intended course objectives. (Refer to Figure 2)

- Oftentimes, collaborative teaching of a DF course will occur within larger programs and such joint efforts will succeed through shared methodologies, viewpoints and resources because of a unified goal in providing parallel experiences for multiple sections.

- Kolb ELT is proven to be equally effective with small or big class sizes. Although, sections of large numbers and diverse levels of thinking can be a challenge for the faculty in terms of grading and charting a common ground for student engagement. One needs to address this with the substantive quality of sequential projects and make provisions for connected graded opportunities. The diversity of projects should be considered to allow multiple types of successes. Further, students from diverse year levels and majors who join the course positively change the atmosphere of learning since they bring with them various interests, skills, and viewpoints.

- Transitional shifts from semesters to quarters, and the shortening of directed studio hours to notional and independent studies occur in many institutions and form part of planned educational strategies. The maxim that “the more time spent on learning, the greater the learning” (McKeachie, 1986, 146) can be re-fitted in DF. Contextually, the amount of time devoted to a focused module when one combines readings with short creative assignments, class discussion with project critiques supports the extended time for learning.

- With focused set of learning activities, any physical classroom setting becomes an immersive and motivated stage even when such is equipped with bare teaching resources. Centered on a looped dimension of interaction, the room transitions into an enclosed space that supports both active and passive learning activities.

The 2007 accreditation report reveals that “Students must have a foundation in the fundamentals of art and design; theories of design, green design, and human behavior; and discipline-related history” (BSU Accreditation Report, 2007, 12). Notably specific to DF is a list of expectations outlined in Figure 3. Introducing the compendium of topics therein for the first time to first-year students can be an overwhelming learning process. This is usually not the case in other interior design programs, where the content of DF is expanded into four or five parallel foundational courses.

Briefly contrasting with multiple models, one can find unique attributes in other programs that considerably raise the level of visual literacy and critical thinking. In
Asian institutions, a separate course in visual perception exists, while in some colleges of North America, delivery of four foundational courses in two and three-dimensional design, color theory and creative thinking strengthens the preparatory period for design students. Further, European schools have their students from fine arts, visual communication, industrial or interior design undergo the same DF course which allows the exchange of ideas. In this premise, adapting the Kolb ELT can assist faculty to direct and inspire students in connecting activities that will promote the enrichment of the intellect and emotional experience.

This paper can only highlight at length how a DF course can be re-structured with the use of the Kolb ELT as a philosophical framework. Other indicative results can be summed up as:

- Integration of selected readings in art theory in every assignment or project design brief supports the cycle of learning. See examples in Figure 4.

- Explanation of expected project outcomes along with exploratory images and examples assists students in visually framing their projects, creating more progressive design interventions, and taking risks at diverse paths of design development.

- Use of multiple critique sessions on students’ works will increase the level of class engagement. Majority of students will become more confident in articulating their feedback to each other. The sharing of rubrics for peer-evaluation or peer-coaching prepares them to be more reflective of their own outcomes and be respectful of other’s ideas.

- The inclusion of assessment guidelines in design briefs and shared with students beforehand prepares them be more attentive to details, allows them to seek more diverse solutions, and assists them in making sound design choices.

- Reflection on student experiences that indicated strengths or weaknesses in every specific project are notably essential in developing future project outlines and time frames for each activity. Although general student feedback will show positive learning experiences, other comments provide insights to teaching.

**CONCLUSION**

Integrating the Kolb ELT in a DF course can generate many facets of positive representations in increased visual literacy and improved critical thinking. Several projects continue to validate the successful development of concepts and contexts. Refer to Figure 5. One will still discover new issues and challenges as each group of students are not comparably the same with the previous. Students’ multiple outcomes can only construe diverse qualities of learning experiences which are individually attained and retained in the process. The integration of the Kolb ELT in DF course establishes many immeasurable points of success which can be pedagogically replicated in various design courses.
Figure 1: Kolb Experiential Learning Theory

Figure 2: Project Guideline Example
Figure 3: Standard 3 of the 2007 CIDA Accreditation Report for BSU.

Projects are undertaken with continuous reference to the standards. Sequential activities done since 2008 included design and development of assignments and briefs; plan of schedules and assigned time for each set of activities; constant review of projects’ content and context; documentation of issues and challenges; observation and documentation of the learning experiences; and assessment of results tangential to accreditation standards.
Figure 4: Images of Completed Assignments in Design Fundamentals.

Figure 5: Images of Completed Projects in Design Fundamentals.

Top to Bottom: Hotseat Project, Visual Narrative of Birth City, Building the Drawing, Motion in Interior Spaces, Design Research, Organic to Geometric Transitional Studies.
REFERENCES (APA)

CIDA Accreditation Report for Ball State University. (2007).
Explorations in Light as an Interactive Studio Project

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NARRATIVE

The intentional manipulation of light, both artificial and natural, is treated as an afterthought in design education, oftentimes relegated to mere appliqué rather than an integral facet of a particular design solution. (Whitehead, 2004).

Within the multiple disciplines and perspectives of lighting design, two paradigms exist: 1) Light is an aesthetic tool used to create the ‘look’ and ‘feel’ of something, and 2) Light is a functional and calculable entity, engineered to achieve code-prescribed standards of illumination. In either case, one must understand the physics of light production and distribution, as well as codes and regulations regarding light.

One such discipline, architectural lighting design, is concerned primarily with the illumination of buildings. ‘Interior’ architectural lighting design, a specialized branch of this discipline, is concerned with the illumination of interiors. Within these specialties, the lighting designer must not only understand the physics of light, but also the physiology and psychology of light perception by humans (Steffy, 2002).

To address the fact that design students lack much needed exposure and experience in the realm of lighting design, this narrative outlines a studio-based learning project: “Explorations in Light”, conducted during the Fall and Spring semesters of 2010. The project’s goal was to provide an outline for a heuristic approach to the introduction of basic concepts involved with interior architectural lighting design.

THE STUDIO

The first of five sequential interior design studios, the sophomore level course used for the investigation of this topic is positioned within the curriculum to introduce students to the “process of design development” with emphasis in applied design theory in three dimensions. Studio-based learning is characterized by: the identification of a problem, followed by a period of design development augmented by lectures, desk critiques and presentation juries (Lackney, 1999). This method was integral to student learning and exploration in this project. Being the first of two semester projects conceived as sequential and complimentary studies; the concepts, skills and techniques learned from the ‘lighting designs’ were intended to inform studies in the second project.

SETTING THE STAGE FOR HEURISTIC EXPLORATION

Two policies: re-submittals and extra credit, were enacted in the studio in order to encourage the ‘learning by doing’ and ‘trial and error’ aspects of the heuristic process. Students were allowed to resubmit updated work after receiving jury feedback for additional grade points (an average of the first and re-submitted grades), and extra credit was available for instructor-approved interdisciplinary lectures and events.

METHODOLOGY

The project began with a series of queries (to the students): What are the physical properties of light? …..the typologies of lighting conditions? …. the effects of color and light in a given spatial condition? (to the instructor): What pedagogical techniques can be implemented to engage students in the comprehension of light as zones and shadows (Madsen, 2006); rather than as object-based fixtures? To this end, the project was divided into four sections intended to: provide observation and
establish a common vocabulary of light and its affects; explore various lighting scenarios through a series of ‘studies’; and provide the students the opportunity to personalize their explorations in ‘light’.

**PHASE I: OBSERVATION**

After an introductory lecture (Appendix A) covering basic physical properties of light, students were instructed to find and photograph five real-world lighting conditions (Appendix B). A slideshow, compiled from the student photographs, served as a “visual catalog” of lighting and framed the discussion to identify: directional lighting, direct vs. indirect lighting, and color temperature effects of lighting and lamps.

**PHASE II: EXPLORATION**

The students were then asked to select and explore three lighting scenarios by means of a small (6”x6”x6”) maquette (Appendix C). These models utilized ‘passive illumination’ (ambient light sources only); and were required to define the interior spatial conditions explored through various lighting schemes previously identified during studio discussions.

**PHASE III: DISCOVERY**

Student-led studio critiques, facilitated by the instructor, were focused on the observation and understanding of the various lighting schemes investigated. Successful explorations and unique discoveries were assessed; evaluations assigned; and the exercise repeated, but varied, ensuring exposure to the many combinations of direct, indirect, and directional lighting situations.

**PHASE IV: SYNTHESIS**

The final study, dubbed the ‘light sculpture’, introduced artificial lighting and the application of color through a synthesis of previous explorations - manifesting in sculptural lighting effects as opposed to sculptural light fixtures (Appendix D).

**OUTCOMES AND SUMMARY**

The students were assigned grades reflecting the degree of investigation into, and application of, topics discussed during each phase of the project.

**INSTRUCTOR COMMENTS ON ASSESSMENT**

Grades were assessed upon the following criteria:

- Depth and rigor of *exploration* of topics discussed via images, models and drawings.
- Design *implementation* of concepts and techniques discussed in class.
- Development of concepts discussed as evidenced in models and drawings.
- *Quality of construction* of explorations in models and drawings.
- *Clarity and thoroughness* of research statements.

The average grades for each phase of the assignments were fairly consistent (B to B+), whereas the quality and complexity of the overall work increased with each successive investigation. The author would pose that ‘learning’ and ‘application’ of these concepts will continue for some time, as the project was geared to simply expose the students to (rather than develop a proficiency in) ‘lighting design’. Along these lines, the second project of the semester saw several students applying (unsolicited) their newly formed knowledge and exploration of light in a completely new context.

**SELECTED STUDENT COMMENTS**

Students were asked to share their thoughts on differing aspects of the project, investigations in light, jury feedback, or final presentations.

“I never really noticed Light before. This project has really made me notice Light in a different way.” (Paul Gomez)

“Our process of investigating Light in multiple steps made me see Light differently in how it is used in every day practice.” (Rhea Jackson)

“Our process of investigating light has made me appreciate light. I have also learned how it can dramatically enhance the appearance of a space.” (Samantha Davila)

“While working through the steps of the project I began to see really how complex lighting is. In most cases I had to reevaluate my techniques to get the lighting to do exactly what I wanted. This insight is going to help me in practice knowing that I will have
to do my research and experiment with light more to get the outcome I was aiming for.” (Stephanie Fleenman)

“Beginning the light study process was eye opening from many aspects…the reflective process of light … the study of how light interacted on surfaces and changed the appearance of materials. What I found most fascinating was how my perception on lighting changed throughout the entire light study process. I now find myself paying attention to even the smallest lighting details…” (Jessica Love)

CONCLUSION
In summary, this narrative documents a studio project designed to determine the efficacy in formalizing a heuristic approach to standardize an exploration in ‘light’. Conclusions drawn from discussions and written feedback indicate that students exposed to lighting concepts did find the sequential exercises helpful and informative.

In all cases, the students showed a marked increase of knowledge and skill in the articulation of light in their work as evidenced by grade evaluations and verbal discussions during, and at the close of, the project. Increased confidence, observed in the students’ attitudes while participating in heuristic explorations, encourages this instructor to refashion additional coursework with a similar structure: 1) observation, 2) exploration, 3) discovery, and 4) synthesis. This approach appears to foster the students’ own inquisitive nature, thereby reinforcing their self-motivated explorations in design.
Appendix A: Sample Project Outline

Explorations in Light as an Interactive Studio Project

What are the physical properties of light? What are the typologies of lighting conditions? What are the affects of color and light in a given spatial condition? How do materiality and color affect the perception and understanding of light?

Observation:
1) Lecture on basic Physics of light (2 slides)
   o Particles and Waves
     ▪ Shadows (photons) vs. interference (waves)
   o Wavelength on energy spectrum scale
     ▪ Cell phones, Microwaves, Visible Light, Infrared Light, X-rays.
   o Color temperature
     ▪ Kelvin scale
     ▪ Lamp typology and associated colors
       • Fluorescent, "Daylight" Sun, Incandescent

2) Photograph (5) "conditions of light" in reality. Try not to focus on light fixtures themselves, but the pools of light or "shadows" of light created.

Exploration:
1) Assemble slideshow from student photos. Observe and facilitate discussion on the following topics:
   o Color temperature – and fixture typology
   o Directionality: Up, down, side, parallel, and back lighting conditions (and combinations thereof).
   o Direct or Indirect lighting schemes: Task vs. Ambient
   o Queries: What type of activity would be ideal for this type of lighting condition? What is being lit by this lighting scheme?...Path, Objects, Space, etc?

2) Assignment: Select 2-3 typologies of lighting to investigate in model form. Model to be constructed to contain a passively lit 6”x6”x6” volume. You may investigate translucent materials and color.

Discovery:
1) Begin with class-led critique. One volunteer selects someone else’s study to critique, then that person selects another until all students have participated at least once. Facilitate discussion to identify “what” is happening with each study. Directionality, Color, and Indirect/Directness of light source.

2) Repeat as necessary.

Synthesis:
1) Design a “Light Sculpture” whose sole purpose is to demonstrate the various lighting effects and techniques from your previous studies, or that you have become interested in along the way.
   a. Final Model to be Artificially Lighted. Use low temperature fixtures and lamps to mitigate fire hazards.
   b. Must be approximately 36”x18”x18”. Portrait or Landscape orientation. All materials previously investigated may be used.
   c. Identify and Explore lighting typologies to explore and model.

2) Create a scale model (1/2 size) to explore materials and methods.
3) Write a 1-paragraph description of your conceptual explorations. (In-class exercise-1 day)
4) Compose a diagram that illustrates your narrative and the lighting effects occurring in your project.
5) Final project, narrative/concept paragraph, and diagram due.
Appendix B: Sample Student Observation Photographs

1. Backlit/Direct - Color of Light

2. Side and Down – Color Temperature

3. Backlit – Translucent Materiality

4. Direct - Volumetric Light
Appendix C: *Exploration/Discovery Studies*

1. Discovery Lighting study - exterior view
   (interior view)

2. Discovery Lighting study - (exterior view)
   (interior view)
Appendix D: Sample Student Project Statements

This study explores the effects of indirect and ambient lighting. Through projection, reflectivity, and directionality of light, various transformations are observed within the model. Light is projected through one plane and onto another, while light rays reflect by means of mirrors creating pools of light within the study. The interplay of various colors of light serve to provide ambient and incidental light throughout the space. Likewise the patterns of light projected to various planes provide a sense of movement.

1).

This project focuses on the transformation of light through a sequence of transparent colored plastics. A single light source is used to create an even distribution of light throughout each space.

Chambers of light are created by layering the colored plastics, and each chamber has a different color as a result of the subtractive and additive light processes utilized.

The subtractive process is observed through the colors (or lack thereof) as each layer is altered, and the additive process comes into play when the light is reflected back into the space (because of the surrounding white surfaces).

Notice that not only the color itself changes, but the light quality also changes dependent on the sequence of the colors.

2).
REFERENCES (APA)


Translating haute couture to interior design: pairing critical thinking with problem solving

MARK S. C. NELSON
University of Wisconsin-Madison

NARRATIVE

Summary: Critical thinking and creativity have been consistently identified as desired skills for interior design students to master. Drawing from writing-based models, cross cultural models and design historical models, the project discussed here fuses haute couture with interior design in order to give students a multifaceted team-based experience. Additionally, the documentation of translating research on student learning into a student project serves as a case study. Creating a student project can be approached as a design problem, with Identification of Need, Programming/Analysis, Design Development, Documentation, and Execution phases. The narrative will follow that order, and introduce the project as it developed rather than as a completed object.

Identification of Need: The project grew from the observation that students taking a capstone hospitality-focused design studio course in a CIDA accredited interior design program were having difficulty transitioning from the knowledge-based design projects that they were familiar with toward the more open ended and multivari-ate types of projects that they would undertake in the professional world. In particular, outside reviewers had commented on a consistent disparity between the strong technical and formal competencies of the students’ final projects and their much weaker conceptual and narrative competencies. This was perhaps a polite way of saying that they tended to be well executed but boring. Students needed some way to make a break with entrenched ways of thinking about both design process and design outcomes.

Programming/Analysis: During programming/analysis, it became apparent that there was a body of theoretical and analytical scholarship to draw from, but few examples of actual application that could be directly applied. Focusing on published research, three broad parameter groups presented themselves (Figure 1): Modes of Thought, Reflective Practice, and Teamwork. It seemed that synthesizing multiple parameters from within each of these groups would create a strong project description that had a rich theoretical and pedagogical base.

Within the broad group of Modes of Thought, critical thinking and creativity were consistently identified as extremely important (if not central to) interior design education and the two were often discussed as linked modes required for effective learning. (Carmel-Gilfilen) (King)(Meneely). Additionally, one study suggested that it was important to address multiple learning styles. (Watson) Another suggested that it was important to address whole-brained thinking (as opposed to learning) styles, as well as to nurture adaptable minds. (Meneely) Another noted the importance of nurturing multiplistic thinking and multifaceted problem solving. (Carmel-Gilfilen) Still another writer stressed the need to balance subjective and objective ways of knowing. (Pable) As a useful example of application, one approach combined design history with design studio work, discussing the use of precedents. To be effective, this writer pointed out some pitfalls of designing with historical knowledge, which could be described as fact based, and the advantage of designing with traditional knowledge, which could be described as founded on typologies that would transfer across time. (King) What findings on these modes of thought all seem to have in common is an emphasis on creating a rich student experience that requires students to think in multiple ways, and especially in ways that may not be familiar or comfortable to the student.

Another area of inquiry that continued to present itself was the concept of Reflective Practice. If students were
able to think reflectively about the processes they were using while designing, they would be more aware of how much their design decisions are shaped by their training, culture, and experience, and would be much more adept at incorporating the new ways of thinking called for in the studies on critical thinking. This parameter group suggests ways to make the transition from theory to application, where translation of ideas and methods from one area to another is done consciously and purposefully. (He) (King) The role of translating processes and thinking from one discipline to another in the context of designing was discussed in some cases related to using historical thematic themes as major ingredients; the goal was to use ideas in meaningful way to structure new insights into design. (Beecher) (Brandt) Another way to apply translation was to reflectively engage in cross-cultural analysis while designing. (Abimbola) One writer discussed something called a “graduated scenario” approach in the context of teaching creative writing, where students reflect on their own processes using tools for critical analysis that they have developed while looking at examples of progressively higher level writing; this seemed especially adaptable to interior design. (Moon) Another area that presented itself for reflection was the structure of the design assignment itself, encouraging students to reflect on the function of “scaffolding,” or supporting structure, as opposed to open ended inquiry during the design process. (Carmel-Gilfilen) Looked at as a group, these sources suggest that a good way to develop a student project that encourages critical thinking is to introduce elements that require conceptual translations from an area outside of students’ typical setting.

The third parameter group that suggested itself was Teamwork; this could be another way to encourage critical thinking during the constant interaction of team members. It had been suggested that effective teams for learning were “wholebrained,” in that the sum of the members’ thinking covered all types of thinking styles, and also that creative abrasion between team members with different types of thinking styles would strengthen the educational process. (Meneely) This same author suggested that engaging in explicit team building would allow teams to overcome frictions caused by creative abrasion. Additionally, on a practical level, teams with complementary skills have a much better chance of working efficiently than ones where team members all have the same skills.

Design Development: Once key elements of the program had been identified, the design of the project could be developed further, with decisions about how to apply the findings. Since Translation/Dialogue with an outside area was an important element, identifying appropriate parameters within that group led to the selection of haute couture within the larger field of apparel design as a good fit for the project. The practices of interior design and apparel design have common historical roots dating back more than 100 years (Sparke), and as academic disciplines are still closely linked at many colleges and universities. A number of recent writers have discussed a link between contemporary architecture/interior design and couture, and there have been a number of important recent museum shows as well. (Clark) (Quinn) (Selgmann) An important aspect of haute couture is its stress on visual, technical and conceptual continuity within a collection (Ames), adding a dimension to design that interior design students may not always examine critically. Other areas that haute couture brings to interior design are the pairing of traditional detailing with cutting edge design, as well as relationships between human experience, the human body, and the design process.

Another parameter group that seemed to lend itself to the project design was Narrative. Translating narrative from its usual context associated with writing to an application of its use as a design tool could add another dimension to students’ critical thinking experiences. Critical reflection could also explore relationships between narrative in the design process and narrative as a presentation tool. Furthermore, students could explore narrative as a way to explain visual comparisons and relationships. Finally, along with narrative, the use of nonlinear video editing to tell a visual story could add a new technical skill.

Documentation: The findings discussed above were incorporated into a project brief (Figure 2) that required a rich variety of learning activities. Parameters included some that were exceedingly concrete, along with others that were exceedingly vague. Grading/evaluation was based on a mixture of both concrete and abstract qualities.

Execution: Before starting the project, students received a lecture outlining an overview of haute couture, its history and its theoretical underpinnings. Students also were directed toward the importance of detailing and
technical construction in haute couture, as well as the way that haute couture transcends the practical at the conceptual and critical levels. Team building included a reflective discussion about the nature of teams and the advantages of a whole-brained team as well as a team with complementary skill sets. Students identified five characteristics, such as leadership or rendering skills, which would be indicators of different ways of thinking, and self-evaluated themselves using a Likert scale. The instructor then divided the students into teams based on their self-evaluations. The students had one week, beginning on the first day of the semester, to complete the project.

The project has been introduced four times and each time has been successful at encouraging students to think critically and creatively. Light fixture designs have been especially creative, abstracting and recontextualizing couture elements. After completing this project, students continued to consult with former team mates while working individually, designing a restaurant project over the subsequent semester, and there have been noticeable differences in the depth of critical and abstract thinking during semesters when students did this project. (Figures 3, 4, 5)

Conclusion: It is hoped that this project can serve as a case study on how to design a project that is based on learning research while providing a rich array of student experiences and outcomes.
### Parameters and Goals for the Design of this Course Project

<table>
<thead>
<tr>
<th>Parameter Group</th>
<th>Individual Parameter</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Modes of Thought</strong></td>
<td></td>
</tr>
</tbody>
</table>
  - Link Critical Thinking and Creativity (Carmel-Gilfillen)(King)(Meneely)
  
  - Address Multiple Learning Styles (Watson)
  
  - Address Wholebrained Thinking Styles (Meneely)
  
  - Nurture Multiplicitous Thinking and Multifaceted Problem Solving (Carmel-Gilfillen)
  
  - Balance Subjective and Objective Knowing (Pable)
  
  - Experience Design based on Precedents (King)
  
  - Nurture Adaptable Minds (Meneely)
  
  - Design Using both Traditional Knowledge and Historical Knowledge (King) |
| **Reflective Practice** |  
  - Translate the Concept of Thematic History (Beecher)(Brandt)
  
  - Reflectively Engage in Cross-Cultural Analysis (Abimbola)
  
  - Engage in Design Translation/Dialogue (He)(King)
  
  - Use a Graduated Scenario Approach (Moon)
  
  - Reflect on the Functions of “Scaffolding” (Carmel-Gilfillen) |
| **Teamwork** |  
  - Assemble “Wholebrained” Teams (Meneely)
  
  - Introduce Concept of Creative Abrasion (Meneely)
  
  - Articulate Practical Reasons for Teams with Complementary Skillsets
  
  - Engage in Explicit Team Building |
| **Translation/Dialogue** |  
  - Explore Conceptual Relationships between Couture and Architecture/Interior Design (Clark)(Quinn)(Seligmann)
  
  - Explore Historical Linkages between Interior Design and Apparel Design (Sparke)(Sparke)
  
  - Translate the Visual, Technical and Conceptual Unity of a Couture Collection to Interior Design (Ames)
  
  - Explore Relationships between Human Experience, the Human Body and the Design Process in Haute Couture
  
  - Explore the Pairing of Traditional Detailing with Cutting Edge Design in Haute Couture |
| **Narrative** |  
  - Explore the Use of Narrative as a Design Tool (Danko)(Moon)
  
  - Explore Relationships between Narrative in the Design Process and Narrative as a Presentation Tool
  
  - Explore Narrative as a Way to Explain Visual Comparisons and Relationships |
| **Technical Skills** |  
  - Introduce Nonlinear Video Editing as a Presentation Tool |
Figure 2: Project Description and Gradesheet

Interior Design IV
Semester 1 Fall 2010-2011

Project 1: Team Design

Project Introduction
In Phase One, you will use and apply the skills you have developed over the course of your previous academic studies. You will work as a team to quickly put together a sketch design package. New skills presented and developed will include effective team formation, effective project timeline scheduling, and effective sketch design generation. Within that framework, your main focus is to think conceptually and turn out the box concepts into something that could be built or fabricated.

Sketch Scenario
You are working on a design firm’s (your first) job. Your boss, Abbitte V. Ague, has asked you and three or four of your colleagues (who have also just graduated from college) to come up with a sketch design for a seasonal nightclub in Madison, Wisconsin. The club is to be a visual, symbolic, and experiential manifestation of the fashion industry, while it should reflect the spirit of our city. The design for the club should allow for a new “change of clothes” every year, to keep up with the latest fashion trends. To research those trends, you must consult online fashion design sites. Your principle has a meeting with the client for your project on Monday, June 22. You must work up some sketch drawings to present the design to the client, and incorporate them into a PowerPoint presentation, along with your image research. You must also create a visual storyboard that communicates the feel of your design. Your boss would like you to present your project in preliminary form on Friday, June 19.

Here is a list of issues and questions to address for all aspects of the project. The answers to these questions should be emphasized in your presentation.

1. What identifies a space as “cutting edge high fashion” to the general public, and how do you address your design concept to communicate the fashion aspect?
2. Which current or recent fashion line can you coordinate with?
3. How can you make the space an extension of the clothing you will be researching?
4. How can you use sketches, research and photos from your life in our city?
5. What are fast ways to integrate manual and digital drawing, modeling and multimedia?
6. What is the purpose of the spaces?
7. Is there a limit of the type of spaces?
8. What are ways that furniture can change identity on a recurring basis?
9. What are ways that furniture can go beyond function and address the experience of users?
10. How can you make the furniture a part of your fashion industry concept?
11. How can you use sketches, research and photos from your life in our city?
12. What are fast ways to integrate manual and digital drawing, modeling and multimedia?
13. What is the purpose of the spaces?
14. Is there a limit of the type of spaces?
15. What are ways that furniture can change identity on a recurring basis?
16. What are ways that furniture can go beyond function and address the experience of users?
17. How can you make the furniture a part of your fashion industry concept?
18. How can you make the furniture a part of your fashion industry concept?
19. How can you make the furniture a part of your fashion industry concept?
20. How can you make the furniture a part of your fashion industry concept?

Evaluation
Here is a list of issues and questions to address for all aspects of the project. The answers to these questions should be emphasized in your presentation.

1. What are the required spaces for the design?
2. How do the spaces relate to each other?
3. What are the design elements at work?
4. How do the design elements relate to the fashion aspect of the design?
5. How do the design elements relate to the fashion aspect of the design?
6. How do the design elements relate to the fashion aspect of the design?
7. How do the design elements relate to the fashion aspect of the design?
8. How do the design elements relate to the fashion aspect of the design?
9. How do the design elements relate to the fashion aspect of the design?
10. How do the design elements relate to the fashion aspect of the design?

Solving Design Problems in a Creative Way

Due Date
This project is due on Wednesday, September 15, 2010 at 12:50 pm. Turn in your files to the dropbox online. We will present at 11:00 AM on Monday, September 20.

Name:
Project Phase One: Team Design

Evaluation:
Note: For many grading sections, the points for the individual items add up to more than the total possible points for that section. This way I can take points off to draw attention to aspects that could be stronger on what is still a strong project. Every project always has room for improvement.

Thinking Outside the Box
(10) Strong imagery, tied to a strong concept, brings the design to life.
(15) Clear link between an apparel design line and the interior design elements.
(15) Design makes a statement about some aspect of design or design’s relationship to society.

Total Points for Thinking Outside the Box

Solving Design Problems in a Creative Way
(10) Design solution addresses the experience of users.
(15) Physical requirements of solution addressed, solved and presented.
(20) Design solution looks beyond space planning and addresses multiple issues.

Total Points for Solving Design Problem in a Creative Way

Visual and Textual Cohesion
(15) Presentation images and verbal descriptions complement each other.
(10) Presentation flows from one idea to the next.
(5) Standard format.
(15) Images relate to concept.
(15) Design elements relate visually to each other.

Total Points for Coherent Visual Quality

Required Presentation Elements
(3) Multimedia Element
(5) Digital presentation
(5) Absence of photos and scans for interior design elements.

Total Points for Required Presentation Elements

Teamwork
(3) Team comes up with product to present.
(2) Documentation of tasks.

Total Points for Teamwork

Presentation Files
(5) Total Points for PowerPoint Turn In Time
(5) Total Points for PowerPoint Possible for semester

Total Points for Project Phase One (Out of 1,000 possible for the semester)
The concept of Macabre has been inspired by the legacy left by the late Alexander McQueen’s haute couture lines. By definition, ‘macabre’ pertains to certain artistic works and representations of death, especially the grimmer aspect with an emphasis on details and symbols. Alexander McQueen specifically used this term to describe his fall 2009 line as he juxtaposed classical beauty with the grotesque.

Macabre is a five-star restaurant by day, serving an eclectic mix of exotic foods. Entrees from the specialty menu include ostrich, kangaroo, and alligator. At night, Macabre transforms into one of Madison’s premier clubs with a notorious VIP section for the frequent elite guests. With interchanging lights and manikins displaying McQueen’s latest fashions, the décor of Macabre can change with the ever-transforming fashion industry.
Figure 4: Student Work Example: Table Design

Figure 5: Student Work Example: Reflected Ceiling Plan
REFERENCES (APA)


Creating Community: The Integration of Meaningful Service Projects in the Design Studio Setting

LAUREN BAUMBACH / LISA PHILLIPS
Philadelphia University

NARRATIVE

Experiential learning is characterized as a cyclical process of “concrete experience, reflective observation, abstract conceptualization, and active experimentation”, by educational theorist David Kolb. (1984) Design education has long used experiential learning in the studio setting. However, there are still discipline-based topics that are typically delivered via traditional lectures, making it challenging to instill deep understanding. It was our belief that certain topics would become more meaningful if students were exposed to relevant and appropriate real world experiences. This led us to the creation of discipline-based service-learning projects that would expand the experiential learning of our students. This presentation discusses one of the successful project types that we implemented.

CONTEXT & OBJECTIVES

Educator Paulo Freire contends that “knowledge emerges only through invention and reinvention, through the inquiry men pursue in the world, with the world, and with each other.” (Freire, 1970, p 72) It is through immersion in the world and real experience that we can attain deep understanding or “true” knowledge.

The studio environment in design education is a strong vehicle for promoting creative problem solving and critical thinking. While useful in developing “true knowledge” in schematic design, design development, and presentation skills, the completed design projects generally remain hypothetical. Our goal was to expose students to real interior design projects in order to experience other critical aspects of their discipline including: working with clients, meeting clients’ authentic needs, and participating in the design process from conception to built reality. Furthermore, we wanted to enhance collaborative teamwork, student engagement, and personal accountability.

Our aim was to have a direct encounter with the topics being studied rather than simply thinking about them, as Lenore Borzak (1981) noted, in her Sourcebook for Experiential Learning.

STRATEGIES & METHODS

The opportunity to pursue our goal came by partnering with Make A Wish Foundation in 2008 and 2009. MAW grants wishes to children who have life threatening illnesses and are between the ages of 2 ½ and 18. Our interior design students became the “wish granters” for MAW children who had dreams of room makeovers. It would be up to us to make their one wish come true via the design-build process and it was a serious undertaking. This had the promise of being a powerful experiential learning tool that would enrich our pedagogy.

In the summer of 2008, we undertook our first trial project with six interior design student volunteers. Based on that initial success, we ultimately accepted four additional MAW rooms into design studios in the following semesters.

Among the children our students designed for were 12 year old Rina, who suffered from mitochondrial disease and wanted to renovate the family room in her own unique vision, 9 year old Dugan who suffers with cystic fibrosis and dreamed of a sports themed playroom, and 7 year old Michael who suffers from severe developmental delays and required a playroom to stimulate his senses.

Our strategy was to involve third and fourth year students, who had acquired a body of knowledge and ex-
experience in interior design. We had clients with special needs, real budgets ($6000-$10,000 per room), and tight design-build schedules. Much of our interior design pedagogy would be put to the test.

“For knowledge to be discovered and internalized the learner must test assumptions and hypotheses.” (National Society for Experiential Learning, 2011) Furthermore, as John Dewey, (1916, p 169) educator and pragmatist noted in “Democracy in Education”, “no experience having a meaning is possible without some element of thought.” Therefore, instructors built in structured times for reflection and dialogue, scheduled at natural transitions during the course of the projects, which would include examination of beliefs, values, practices, and experiences.

We formed three teams, composed of 3 to 4 students per team, for each room renovation. Multiple teams were essential because of tight project schedules, but also because collaboration was a learning objective. Instructors presented background information about the children and their “wishes” and the MAW coordinators explained their policy of limiting renovations to “soft” construction (i.e. no structural changes or major systems changes). Our students then interviewed the children and their families in their homes, and documented the quantitative and qualitative programmatic requirements, including the children’s medical conditions, basic needs, and dreams. In early journal entries it was clear that the students were truly engaged. Kim Madeya ’09 wrote “It was great to meet the family, and fully understand [the child’s] situation before getting into any of the design work...actually a real client in the real world!”

Teams then completed measured and photographic surveys of the rooms. Returning to the studio, they critically examined the program, their “client’s” needs, and brainstormed design solutions. They also balanced group dynamics, assessed individual skills of teammates, assigned tasks, and produced a work plan.

During two-day in class charrettes each team completed: rendered plans, interior elevations, perspectives, FF&E outline specifications, cost estimates, and product/material boards. The teams then presented their designs to the children and their families, which turned out to be emotionally moving experiences for students and family members alike. One student wrote, “I couldn’t stop talking about (the project) . . . imagining what the space would look like, believing that I was going to make a difference in someone’s life and that it would actually become reality.”

After the presentations, the children selected their favorite design scheme to be built and along with the MAW coordinators we planned the construction phase. The MAW coordinators assembled teams of workers including the students and volunteer contractors. A critical factor for most of the MAW rooms was maintaining an element of surprise for the children. Therefore the rooms had to be blocked from view until construction was complete. This necessitated a short turn around time for construction requiring students to specify items with short lead times providing yet another lesson in “real world” practice.

In the end, an unexpected but serendipitous learning opportunity presented itself. At the unveiling of the rooms, local press turned out to witness the excitement and conduct interviews. Our students became the spokesman for their “profession”, their designs, service learning, and community engagement.

OUTCOMES & CONCLUSION
These room renovations were eye-opening experiences for our students. They gained an appreciation of the benefits of collaboration, the power of engagement, and an understanding of what it takes to realize a design vision. Pauses for student reflection confirmed that our learning objectives were successfully met. Crystal Russell ’09 noted, “this was a pivotal step away from hypothetical and conceptual studio projects” and it was a “joy to see designs transformed from hypothetical to real”.

Vanessa Lyman ’09 wrote, “When it was over there was a sense of accomplishment. Yes, I had finished all of my past design projects, but this was real... We had a budget to manage. We had actual clients to work with... And in the end it wasn’t another restaurant or hotel for Philadelphia socialites, it was someone’s kitchen table, their own children’s bed, and their own bedroom.”

Our community partners confirmed that they too saw these as successful projects far exceeding their original expectations. There’s no question that our trials in this type of service learning produced successful outcomes for our community partners and were meaningful learn-
ing experiences for students. The feedback was powerfully clear.

Throughout the development of these projects we refined the strategies and methods that proved successful. Faculty experience, good planning, trial and error, and student feedback has laid a foundation for similar future projects. Our findings are as follows:

• Learning objectives are best met when students are a part of the planning process and “buy in” as early as possible. Meeting the client and understanding their needs goes a long way in motivating students and introducing accountability.

• When students perceive an authentic need they become more motivated and engage at a deeper level than when working on hypothetical projects.

• Projects that will be built are perceived by students as “serious” and the students become more dependable and accountable.

• Reflection by both instructors and students should be ongoing throughout the experiential and service-learning processes.

• Structure and monitoring for collaborative student groups ensures continued success.

• It’s possible to impart empirical knowledge, to students, about working: with a client, within a budget, within a schedule, with a contractor, and with construction constraints.

• Students become more self-confident as a result of working with real clients and real projects.

• Many students continue to volunteer in discipline-based service as a result of these experiences - an unexpected bonus.

Our assessment of the outcomes and the overall impact brought us to the conclusion that experiential discipline-based service learning should be formalized by creating a stand-alone Integrated Community Service course within our interior design curriculum. The creation of this course will allow us to deepen the learning experiences and stimulate student engagement. It will nurture self-confidence and strengthen students to become leaders deeply connected to their communities.
Collaborative student teams work on MAW room designs.

Rina’s room - Students were interviewed and featured in local press.
Figure 2: “Room Renovation Preparation”, Guidelines for Make A Wish Foundation

MAKE A WISH Foundation & the Interior Design Program at Philadelphia University 2009

Room Renovation Preparation:

In order to gain a clear understanding of a child’s wishes, needs, and the environment in which the child lives, a design brief and survey of the room should be completed before design can begin. This is standard procedure for any interior design project and the more information the better. However, it is not necessary for the child or the family to have an exact vision of what the final layout or design will look like. This is typically the role of the interior designer. As long as the child and family state their wishes clearly that is all that we ask. We expect these wishes will vary greatly from family to family and no two will be alike. If wishes are either very broad or very specific that is OK.

However, some specificity will be required in terms of how the child and family plan on using the space including, the functions which must be met in the room and the health needs or limitations of the child. This should be documented clearly.

The best way to go about this is to schedule a meeting with the child and family and to note all of their wishes and needs. Ask for clarity in terms of how they function in the room on a day-to-day basis. Help them picture and articulate how they see a typical 24-hour day in the room. Ask them if the room will also serve any special purposes on an occasional basis. If they have a favorite theme, color, hobby, etc. that they want expressed in the design help them clarify this. If they have existing artifacts that they want to be used in the room then be sure to record this. It could be a favorite piece of furniture, a stuffed animal collection, a photo collection, etc. If any special equipment is to be included be sure to list these items clearly, such as music system with speakers, television, medical equipment, etc. If storage is an issue be sure to note this and the items to be stored. If they have strong ideas about why the room does not currently work for them then be sure to record their reasons.

In addition to the design brief, a physical survey should be made of the space. This will include:

- Digital photos of the entire room.
- A simple hand-drawn plan with overall measurements and the openings located:
  - width x length of room and any irregularities in plan measured
  - door and window openings measured from the corner of room to trim at jambs
  - indicate heights – floor to ceiling, floor to windowsills, floor to window and door heads
  - locate & measure any features, such as fireplaces, stairs, built-in shelving & furniture.
- Locate all outlets and switches, built-in light fixtures, and fans on the plan.
- Locate other electrical or data items, such as cable, telephone, etc.
- Locate all heating & cooling elements, such as, radiators, HVAC diffusers and returns.
- Locate any plumbing fixtures that exist.
- Indicate the functions of adjacent rooms, and adjacent stairways, decks, views, etc.
- Indicate and measure any medical equipment that must be included in the room and the space and electrical needs of such equipment.

Finally discuss time-frame with the family. How long can they be out of the room while renovations take place? When will the room be available for renovation? Keep in mind that the design and planning process takes time. Do not expect a room to be made over next week. This is a process that normally takes several months from beginning to end. Expectations should be realistic. The outcome will be worthwhile.
REFERENCES (APA)

Rethinking Human Factors: A Priori versus Posteriori Proposition

WILLIAM RIEHM
Illinois State University

NARRATIVE

INTRODUCTION
This teaching forum reviews a course, Human Factors, redeveloped to address two opposing ways of knowing: subjective versus objective (priori versus posteriori). In 2009, Jill Pable discusses the ways of knowing debate in interior design in her perspective article in the Journal of Interior Design. She calls out a “smoldering tension” present in the academy of interior design. In this course the issue of this tension, or dialectic, is approached by providing students with resources and learning events that examine the two discourses independently, then provides design problem where students can synthesize these discourses with their own interpretations through design.

The terms dialectic and synthesis are used in the context of the Hegelian dialectic1 where the opposing concepts are the posteriori acting as “thesis” and the priori acting as “anti-thesis.” As is generally understood of the Hegelian dialectic, the resulting dialog forms the synthesis, and this synthesis is the concrete expression of the value of both the thesis and the anti-thesis. “Dialog” should be contrasted here from “debate” where one of the opposing views is attempting to “win.” Rather, the resulting synthesis is, hopefully, greater than the sum of the two opposing views.

The standard text used, which represents the established posteriori thesis, was David Kopec’s 2006 text, Environmental Psychology for Design. Kopec’s work, which use was retained, represents an objective approach to human factors as this quote from his introduction explains:

Understanding how architectural and landscape design affect people’s fears and subsequent behaviors can help planners and designers to create more comfortable spaces that will ensure the occupants’ physical and psychological safety. (Kopec, XV)

To facilitate the proposition of viewing this course through an additional lens of subjective knowing, two new resources were selected. They are Clark and Brody’s 2009 anthology, Design Studies: A Reader, and a 2009 film directed by Astrid Taylor, Examined Life: Philosophy is in the Street. Both bring new perspectives to design from the subjective traditions of philosophy and critical literary theory. Clark reveals the subjectivity of design in her introduction where she discusses the book’s section on design theory:

The Theorizing section then brings design into larger theoretical arenas, such as aesthetics and ethics, and claims that design needs to be understood as part of a larger dialogue about beauty, politics, and interpersonal and intercultural communication. (Clark, 3)

It is important to note that Clark’s belief that design should improve the human condition, “design is about assistance…” (Clark, 1) is consistent with the goals of design expressed by Kopec. The shared goal for design (and design education) is a better built environment.

COURSE STRUCTURE – POSTERIORI VERSUS PRIORI
The course was structured into three modules. Each module represented an expansion of human interaction from “the individual” to “the group” and culminating with “the society.” Weeks were structured so that on Mondays environmental psychology issues were presented in lecture (corresponding to assigned readings from Ko-
pec), a section of the Taylor film was view, and a direct-
ed conversation was lead by the instructor. On Wednes-
days, students made presentations based on reading
assignments from Clark and Brody that were followed
by student lead discussions. Although the class met only
on Mondays and Wednesdays, additional blog and wiki
site assignments were continuous throughout the week.
Modules conclude with a one week design problem. For
a detailed schedule of the course see table 1.

The contrasting dialog is best exemplified between blog
and wiki. In the blog, students were to define Kopec’s
environmental psychology design theories and discuss
an observation of them in “action.” In contrast, in the
wiki assignments, student collaborated on discussion of
reading assignments from Clark and Brody. For a de-
tailed explanation of each individual learning event see
table 2.

Statements made by students that examine the poste-
riori can be exemplified by this example from a student
blog:

Operant conditioning is often a term associated with
psychology but it is also important in terms of design
because it allows us to understand why certain people
act differently in regards to the environment that they
are placed into. Whether we were raised by our parents,
grandparents or some other extension of a family, we
were taught what was expected of us by others by being
reinforced in the process. Clear examples can be seen
when a family enters a church. The church is essentially
a time to worship and not for joking around so parents
will scold their children if they are laughing during the
service. However, this behavior is perfectly acceptable if
they are at the park or at an amusement park. In regards
to design, the way we design a space can influence how
someone behaves in the space. If the space fashioned
resembles a church or has the stark white walls are is
similar to a hospital, people may act as they would if the
building was actually a church or a hospital—simply be-
cause they were taught the acceptable behavior in those
situations.

A discussion of a priori approach to understanding de-
sign solutions is discussed in this selection from a stu-
dent’s wiki discussion of the excerpt from Judith Attfield’s
article “FORM/FEMALE FOLLOWS FUNCTION/MALE:
Feminist Critiques of Design” in Clark and Brody:

If man is “the measure of all things” it puts women in
the “other” category. This relates back to the class dis-
cussion about universal design and designing for the
“other”. Because women are classified as the others
this leads to the idea that women can not measure up to
man. Women in relation to ability, are the disabled party
that need to be accommodated. That being said, society
today is looking at people as a whole more, rather than
one particular gender more than the other. People in
general come in a wide range of sizes. Whether a short
or tall person is a male or female does not need to be
factored in.

DESIGN CHARETTE - SYNTHESIS
Bringing these epistemologically competitive discourses
into the class through separate learning events required
learning events that inspired synthesis. And although
there were certain synergies between some events, a
clear set of dialectics appears in lecture versus film, pre-
sentation versus discussion, and certainly blog versus
wiki. The desired synthesis, though, was clear in the re-
sults of the assigned design charettes.

Design charettes punctuated the learning modules. The
initial Charette focused on the creation of an object for
individuals. Individuals were assigned with random qual-
ities such as height, weight, gender, personality, minority
status, and ability issues. In the example shown in figure
1, a student combines the data provided and inspiration
from architects Thomas Mayne and Frank Lloyd Wright
to create a plastic object that deals with posteriori con-
cepts of personal territory and priori issues of individual
peace.

The second charette brought student together into
groups of three, and assigned each to create a work
place or home for their sets of individuals. The example
portion of a project shown in figure 2 shows the applica-
tion of posteriori design theories such as visual control,
architectural hierarchy and visual balance synthesized
with priori sentiments of human equality and concerns
related to Foucault’s panopticon.

For their third and final charette, students were arranged
into larger groups and given the 2010 ASID Student De-
With no other instruction beyond completing the competi-
tion requirements and basing the result demographically
on their larger assembled group of individuals, students
produced designs with programs and execution of their own making. In presentation shown in figure 3, students explain their synthesis of globalization, brutalism, place identity, way finding, and architectural delineation in the creation of a memorial for the living victims September 11th attacks in New York. It is intended to be a place to of healing for people who may feel like “damaged goods.”

CONCLUSION
This course attempts to examine design and the human experience of design (human factors) through the dialogue of subjective and objective way of knowing. By permitting a dialogue, rather than engaging in debate, are able to enact informed designs based on their choice of theoretical stimulus. Students have the opportunity to synthesize a design that is not the defense of a position in a debate, rather a more meaningful improvement of the built world.

ENDNOTE:

# Table 1: Course Schedule

**ILLINOIS STATE UNIVERSITY**  
**FCS 347 Human Factors in Interior Environments**  
2 Semester Hours

## COURSE SCHEDULE

<table>
<thead>
<tr>
<th>Module</th>
<th>Week</th>
<th>Course Intro</th>
<th>&quot;Testrun&quot;</th>
<th>Film: Current Event Selection</th>
<th>Lecture</th>
<th>Discussion</th>
<th>Wiki‌try</th>
<th>Blog</th>
<th>Charette One</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>INTRO</strong></td>
<td>1</td>
<td>Course Intro</td>
<td>&quot;Testrun&quot;</td>
<td>Film: Nussbaum</td>
<td>Lecture</td>
<td>Discussion</td>
<td>Wiki‌try</td>
<td>Wiki‌try</td>
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<td>Ability</td>
<td>1 Hockenberry</td>
<td>Lecture</td>
<td>Discussion</td>
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<td><strong>MODULE ONE</strong></td>
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<td>Measure</td>
<td>2 Panero</td>
<td>Lecture</td>
<td>Discussion</td>
<td>Wiki‌try</td>
<td>Wiki‌try</td>
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<td>3 Dreyfus</td>
<td>Lecture</td>
<td>Discussion</td>
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<td>4 Attfield</td>
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<td>Discussion</td>
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<td>Lecture</td>
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<td><strong>MODULE TWO</strong></td>
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<td>Sub Culture</td>
<td>7 Hebdige</td>
<td>Lecture</td>
<td>Discussion</td>
<td>Wiki‌try</td>
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<td>8 Foucault</td>
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<td>Discussion</td>
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<td>9</td>
<td>Home Culture</td>
<td>9 Johnston</td>
<td>Lecture</td>
<td>Discussion</td>
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<td>Lecture</td>
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<td>Charette One</td>
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<td>Discussion</td>
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<td><strong>MODULE THREE</strong></td>
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<td>Lecture</td>
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<td>Cyber Space</td>
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<td>Discussion</td>
<td>Charette Intro</td>
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<td>Charette Three</td>
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<td>Discussion</td>
<td>Charette Intro</td>
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</tbody>
</table>

EXAM AS SCHEDULED
Table 2: Learning Events and Outcomes

<table>
<thead>
<tr>
<th>Learning Event</th>
<th>Purpose of Event</th>
<th>Student Learning Outcome</th>
<th>Student Learning Process</th>
<th>Measure of learning</th>
</tr>
</thead>
<tbody>
<tr>
<td>Short Film</td>
<td>See an outside perspective</td>
<td>Students defines points of confusion</td>
<td>Take Notes with 3 reflections of confusion</td>
<td>Have three “note cards” stating their confusion</td>
</tr>
<tr>
<td>Lecture</td>
<td>To thread different perspective on the topic together</td>
<td>Student finds varied examples of clarification</td>
<td>Take notes – bullet pointing their confusions with clarifications.</td>
<td>Expanded note cards clarify issues</td>
</tr>
<tr>
<td>Teacher lead discussion</td>
<td>Synthesize Concepts and have a viewpoint</td>
<td>Answers to instructor posed questions</td>
<td>Participate in discussion and take notes</td>
<td>Student has question answers and an outline of a “three point essay.”</td>
</tr>
<tr>
<td>Blog</td>
<td>Identify and define Environmental Psychology Theories</td>
<td>A definition of each environmental theory</td>
<td>Students post a definition to the blog</td>
<td>Blog responses define terms and give examples</td>
</tr>
<tr>
<td>Student Presentation</td>
<td>Student understands specific viewpoint on a theoretical topic</td>
<td>A presentation that explains the theorist, defines the theory, reveals theoretical perspective and concludes with a personal view</td>
<td>Student makes presentation</td>
<td>Presentation represents an understanding of concepts</td>
</tr>
<tr>
<td>Student lead discussion</td>
<td>Student identifies and Challenges specific issues related to a theoretical topic</td>
<td>With an ability to abstract issues from opinion and see important points</td>
<td>Student leads discussion</td>
<td>Discussion is active and student has final issue based questions</td>
</tr>
<tr>
<td>Topic Wiki</td>
<td>Students work together to define answers to issues questions of a theoretical</td>
<td>An understanding of personal and peer view point on issues</td>
<td>Student participates frequently in their assigned wiki</td>
<td>Completed wiki with answers to discussion questions</td>
</tr>
<tr>
<td>Take Home Exam</td>
<td>understanding of Environmental Psychology theories</td>
<td>Students summarize their understanding of Environmental Psychology theories</td>
<td>Student completes take home exam</td>
<td>Student has responses to 6 questions that define an environmental psychology theory</td>
</tr>
<tr>
<td>Final Essay</td>
<td>Students write a three point essay that discussed a specific theoretical topic with a variety of views and concludes with their own opinion</td>
<td>An understanding of varied viewpoints and a personal viewpoint</td>
<td>Student Completes Exam</td>
<td>Student demonstrates in essay for three perspectives on a specific theory and can identify their own personal view</td>
</tr>
<tr>
<td>Charette</td>
<td>Students respond to a design problem with a specific theoretical perspective</td>
<td>Student has an 11x17 presentation board</td>
<td>Student completes Design Problem</td>
<td>Student’s design demonstrates a specific theoretical design viewpoint in a design project.</td>
</tr>
</tbody>
</table>
Figure 1: Charette: Object for an Individual

Figure 2: Charette: Home for a Group
REFERENCES

(Chicago Manual of Style)


Developing a Speaking Guide for Interior Design

MICHELLE C. ROSE
The University of Southern Mississippi

NARRATIVE

The typical instructions for a student project in interior design consist of a project description detailing the type of space, existing site conditions, design parameters, and a time limit in which to complete the project. Likewise, the typical instructions for a student paper in interior design will explicitly describe the content expectations, writing style, formatting constraints, and a time limit in which to complete the paper. However, when describing the speaking component of an interior design project or paper, the typical instructions for a student consist of a simple statement of an oral presentation requirement, and possibly, the statement will include a time limit. This casual approach to oral presentation in interior design education is quite often accepted, and thus overlooks a valuable teaching opportunity due to the assumption that the students will be able to intuitively present their work.

Communication is essential in interior design. Interior designers communicate information through construction documents, pictorial drawings, rendering techniques, and written words. The graphic layouts of presentation boards communicate effectively about the project concept and intent. Students are taught to perform a variety of graphic skills. Students are expected to write well, use proper language and technical terms, and hand letter with great skill and accuracy. Graphic communication is an essential component of the interior design education. However, oral communication within interior design curriculum is often fulfilled with a limited number of basic and generalized university communication courses.

According to Richard Emanuel (2005, p. 153), “communication skills … are essential to personal, academic, and professional success”. Not only do good communication skills boost self confidence, the Department of Labor describes communication skills as one of the single most important components for jobs of the future. Good oral communication skills enhance a person’s ability to conceptualize, research, develop relationships, express ideas effectively, and work in a team. In fact, the ability to successfully articulate concepts verbally has been referred to as the art form of a good leader. Yet, the evidence shows that most students are not getting the communication skills needed to compete in today’s job market. (Emanuel, 2005)

Students seldom know how to properly present all aspects of an interior design project. In the typical course scenario, the student focuses his or her time on producing the project deliverables, with very little consideration of the presentation until the last moments. Because students are provided very little in the way of speaking guidelines, confusion often develops due to questions or concerns about the content, delivery, attire, and other restraints. More often than not, the confusion evolves to panic, anxiety, and/or disdain. As a result, faculty members spend a great deal of time answering repetitive questions concerning speaking content and attempting to calm the spirits of frightened students anticipating the dreaded project presentation. Additionally, the student presentations are quite frequently inconsistent, lacking in organization, and rudimentary in nature.

METHODOLOGY

In order to fully understand the issue and to further develop course resources and teaching pedagogy, the help of two recently developed university resources were sought. The first resource was the Office of Quality Enhancement’s seminar on oral and written competencies.
The second resource was the services and supplements from the university’s Speaking Center.

The Office of Quality Enhancement is a recent initiative developed due to the Southern Association of Colleges and Schools (SACS) Commission on Colleges Principles of Accreditation Core Requirement 2.12 that requires each institution to implement an acceptable Quality Enhancement Plan (QEP) that “includes an institutional process for identifying key issues emerging from institutional assessment and focuses on learning outcomes and/or the environment supporting student learning and accomplishing the mission of the institution” (Southern Association of Colleges and Schools, Commission on Colleges, 2010, p. 19). Learning outcomes in all areas of communication were established by the Office of Quality Enhancement, including ten (10) student learning outcomes in oral communication (see Figure 1). Additionally, a ten (10) week seminar, titled “Finding a Voice: Improving Oral and Written Competencies”, was developed to introduce and educate faculty participants on writing and speaking evaluation techniques, as well as available student resources (The University of Southern Mississippi, Quality Enhancement Plan, 2006). During the seminar, several tools for the enhancement of speaking competencies were developed. The first tool was a Speaking Guide for Interior Design (see Figure 2) that illustrates the context in which interior design students utilize speaking assignments and describes a variety of interior design presentation types. The second tool was a Speaking Evaluation Rubric (see Figure 3), outlining grading criteria and providing qualitative descriptions of each grade level for each component. Additionally, resources were provided in the form of general prepared handouts from former participants and workshop instructors that could be integrated into course materials.

In addition to providing a seminar, the Office of Quality Enhancement developed interventions to enhance the oral and written competencies of students across the curriculum. One of the interventions is the newly developed Speaking Center. Available to all university students, faculty, and staff, the Speaking Center provides assistance for the development of speaking components in coursework, research presentations, and/or any other speaking activity. Resources provided by the Speaking Center include, but are not limited to, introductory tours for students, class speaking presentations, one-on-one skill development, video critique rooms, and handout supplements. The extensive assortment of prepared handouts includes topics such as self evaluation guides, peer evaluation guides, basic speaking outline guides, and speaking tips. (The University of Southern Mississippi, Quality Enhancement Plan, 2006)

APPLICATION

In order to implement the newly developed speaking guidelines into the curriculum, a project was added to the end of a semester, separating the presentation portion of a semester long project, and allowing students proper time to develop a purposeful presentation development. The course project, previously divided into two (2) projects, was comprised of Project One (1), consisting of a concept board and preliminary project proposal, and Project Two (2), a final comprehensive project presentation book and verbal presentation. The project presentation book portion was separated from the verbal presentation portion in order to clearly define the distinct differences between the written presentation book format and the accompanying slide show format for the verbal presentation portion. The separation of the project verbal presentation portion of Project Two (2) into a Project Three (3) allowed students time to focus solely on the presentation aspects, rather than continuing to work on the interior design of the project.

Project Three (3) instructions (see Figure 4) outline each component for successful completion of the speaking requirement, including instructions pertaining to visual aids. Prior completion of the project deliverables in Project Two (2) allows students dedicated time to work through supplemental assignments designed to complete the steps of developing the presentation and enhance student speaking abilities. Speaking assignments (see Figure 5) include a preliminary outline, self evaluation, peer evaluation, and a scheduled, video recorded visit to the university’s Speaking Center.

RESULTS

Students spent more time preparing for the speaking component and reported that they felt more confident due to preparedness. Overall student understanding of the speaking requirements increased, as demonstrated in higher aggregate project speaking scores. Individual results included increased abilities in the areas of verbal content, organization, language, context, vocal delivery, non-verbal delivery, and audio-visual presentations aids. Additionally, students communicated an overall
decreased speaking anxiety after completing the structured speaking assignments.

**FUTURE IMPLICATIONS**
Currently, the comparison of interior design student scores on public speaking anxiety are being evaluated utilizing the results from a pre-PRPSA (Personal Report of Public Speaking Anxiety) and a post-PRPSA data collection instrument. The pre-PRPSA and post-PRPSA data collection is currently implemented as an initiative to all University of Southern Mississippi Capstone courses, as required by the QEP (The University of Southern Mississippi, Quality Enhancement Plan, 2006). Similarly to the prior Project 3 and assignments, specific project directions and a series of assignments for oral communication have been furthered developed and implemented into the Capstone course. Furthermore, future studies of both qualitative and quantitative methods could ascertain ancillary methods for enhancement of speaking skills, reduction of speaking anxiety, and possibly, define essential components for inclusion into the interior design curriculum.

**REFERENCES (APA)**
### Student Learning Outcomes in Oral Communication

**Content**: Students will demonstrate the ability to develop and orally deliver content in which the central idea/purpose is clearly stated, the content is accurate and relevant, and credible support is provided.

**Organization**: Students will demonstrate the ability to organize and deliver presentations with an identifiable structure.

**Language**: Students will demonstrate the ability to deliver oral presentations that are free of serious errors in grammar, pronunciation, and word usage.

**Adaptation to Audience and Context**: Students will demonstrate the ability to adapt content and style to the audience and context within set time parameters.

**Vocal Delivery**: Students will be able to deliver presentations in which the rate, volume, and tone facilitate audience comprehension.

**Nonverbal Delivery**: Students will be able to deliver presentations in which eye contact, posture, attire, gestures, movement and facial expression enhance the presentation.

**Communication Apprehension**: Students will achieve reduced levels of communication apprehension.

**Audio-Visual Aids**: When using audio-visual aids, students will demonstrate the ability to develop and use audio-visual aids that are free of serious errors, legible, and used to enhance the presentation.

**PowerPoint Presentation**: When using PowerPoint, students will demonstrate the ability to use PowerPoint presentations that reflect a logical sequence, include an appropriate number of slides and graphics, and incorporate transitions and other stylistic effects that are used appropriately and to enhance the presentation.

**Overall**: Students will demonstrate overall proficiency in oral communication.

*Figure 1.* Student learning outcomes in oral communication identified by the University of Southern Mississippi Office of Quality Enhancement (The University of Southern Mississippi, Quality Enhancement Plan, 2006, p. 21).
Speaking in the discipline of interior design can vary dramatically depending on the context or objective. Topics of speaking may include project proposals and/or presentations, conceptual ideas for designs, informational presentations for products and/or processes, and intellectual discussions of theories, standards, and design-related law. Presentations can be formal or informal, as well as vary in length.

Speaking situations can range from very formal to very informal. Interior design students and professionals have to be able to discuss design concepts that are very abstract in nature, without particular reference to any design solution, in order to convey the thought process and design intent for the aesthetics of a project. For example, color could be described as warm or bright, but not as a specific color name. Project proposals and/or presentations, although somewhat conceptual, will often include very technical discussions of product specifications, design standards, and/or federal or state regulations and codes. Careful outlining of speaking content can help organize technical information and eliminate confusion.

The typical audience for interior design speaking can also vary dramatically. Audience for the interior design student is most often the professor of a course. However, accreditation requires some formal presentations to clientele, or persons from other disciplines. For the design professional, the typical audience can vary from a layperson to other interior designers, in both formal and informal settings. In speaking to a layperson, the individual(s) may or may not have prior knowledge of interior design practices or terminology. Therefore, speaking components may be more explanatory in nature, with an emphasis on accurate language and definition of technical terminology. Speaking opportunities with other professionals tend to be concise and direct, with embellishments reserved for technical information or applications of interest.

Interior design speaking can be compared to other disciplines within the university. In most situations, the student or professional is ultimately selling ideas or information, whether literally or figuratively. However, clear instructions for approach, organization, and content, even in general terms, is easily adapted and a necessary component for effective speaking within interior design or any other discipline.
**Figure 3: Speaking Evaluation Rubric**

For each category, multiply the noted weight value times the appropriate grade (1-4).

<table>
<thead>
<tr>
<th>Grade</th>
<th>Distinguished</th>
<th>Proficient</th>
<th>Marginal</th>
<th>Minimal</th>
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<tbody>
<tr>
<td>Weight</td>
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<td>3</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td><strong>Content</strong></td>
<td>Central idea/purpose is vividly stated; content is accurate, thorough, and directly on point; strong support is provided for each assertion.</td>
<td>Central idea/purpose is clearly stated; content is accurate and relevant; credible support is provided for each assertion.</td>
<td>Central idea/purpose is stated; content is accurate but not always relevant; support is offered but inadequate for some assertions.</td>
<td>Central idea/purpose is not stated; content is erroneous or irrelevant; support for assertions is largely absent.</td>
</tr>
<tr>
<td><strong>Organization</strong></td>
<td>Identifiable structure is presented in a purposeful, interesting, and effective sequence and remains focused.</td>
<td>Identifiable structure is present but inconsistently executed with few statements out of place.</td>
<td>Identifiable structure is present but inconsistently executed, may contain several statements out of place and occasionally deviate from topic.</td>
<td>Little or no structure present. Presentation is confusing to the audience; no logical sequence of ideas; frequently off topic.</td>
</tr>
<tr>
<td><strong>Language</strong></td>
<td>Presentation is free of errors in grammar and pronunciation; word choice aids clarity and vividness.</td>
<td>Presentation is free of serious errors in grammar, pronunciation, and/or word usage.</td>
<td>Isolated errors in grammar, pronunciation, and/or word choice reduce clarity and credibility.</td>
<td>Grammar, pronunciation, and/or word choice are severely deficient.</td>
</tr>
<tr>
<td><strong>Adaptation to Audience &amp; Context</strong></td>
<td>Content and/or style are consistently appropriate and targeted to audience and context. Presentation makes full, effective use of time and stays within time parameters.</td>
<td>Content and/or style are consistently appropriate to the audience, and/or context. Presentation meets set time parameters.</td>
<td>Content and/or style are occasionally inappropriate to the audience and/or context. Presentation falls slightly outside set time parameters.</td>
<td>Content and/or style are frequently inappropriate to the audience and/or context. Presentation falls well outside set time parameters.</td>
</tr>
<tr>
<td><strong>Vocal Delivery</strong></td>
<td>Vocal delivery is varied and dynamic. Speech rate, volume, and tone enhance listener interest and understanding.</td>
<td>Vocal delivery is clear and distinct. Rate, volume, and tone facilitate audience comprehension.</td>
<td>Vocal delivery is audible. Rate, volume, or speech disruptions only occasionally distract from audience comprehension.</td>
<td>Vocal delivery is too soft to hear, too fast to understand and/or long, unintended silences and speech disruptions (repetitions; filled pauses, e.g., &quot;um&quot;) frequently distract audience.</td>
</tr>
<tr>
<td><strong>Nonverbal Delivery</strong></td>
<td>Most or all of the following apply: Eye contact, posture, attire, gestures, movement or facial expressions enhance the presentation.</td>
<td>Some but not all of the following apply: Eye contact, posture, attire, gestures, movement or facial expressions enhance the presentation.</td>
<td>Eye contact, posture, attire, gestures, movement, and facial expressions neither enhance nor hinder effectiveness significantly.</td>
<td>Eye contact, posture, attire, gestures, movement, and/or facial expressions are inappropriate and significantly distracting.</td>
</tr>
</tbody>
</table>
Figure 4: Project Description

Project 3: Musical Studio – The Project Presentation

### Points
### % of Final Grade
Due: [Date]

**Project Presentation Content**
Each presentation will discuss the following components:
- The Client
- Concept / Inspiration Music
- Translation of music to interior materials and furnishings
- Organization and special features of the space

**Presentation Criteria**
Each presentation should last approximately 6-8 minutes, and allow 2-4 minutes for questions.
Make sure to format material toward a mixed audience of laypersons, teachers, and/or professionals, and provide concise and exact language.

**Presentation Materials**
Each student will create a PowerPoint presentation that is visually cohesive with the Concept and Project Proposal Boards (Project 1) and the Project Book (Project 2). Quality of illustrations, graphs, charts, and overall professionalism of the presentation materials will be evaluated.
Materials should be visually coordinated and easy to read/follow and include the following project components:
- Concept Statement
- Inspiration Music (Playing in Background)
- Concept Board
- Floor Plan
- Individual Room Floor Plans
- Perspective Views
- FF&E
- Notations of Special Features
- Video Walkthrough of Revit Model

**Creating the PowerPoint**
Create a folder on your computer titled “ID ### Your Name”. Place all project files into the folder, including the concept music and video walkthrough. Make a copy of the Project Book PowerPoint file. Modify the PowerPoint presentation to be suitable for class presentation with music and walkthrough video (see below for example storyboard). Remove table of contents, schedules, or other unnecessary items. Make sure to insert the music and video walkthrough into the PowerPoint directly from the “ID ###Your Name” folder. Then copy the entire folder to the CD/DVD.

**Presentation Attire & Preparation**
Please dress professional and make sure all presentation materials work properly on the provided presentation equipment!
Project 3: Musical Studio – Assignments

Assignment P1: Preliminary Presentation Outline
#pts.
Due: [Date]
Develop an outline of the presentation using the Basic Outline Format guide sheet and the Citing Sources guide sheet. Note each presentation material needed for each component of the outline. Submit a copy of the completed outline.

Assignment P2: First Delivery / Self Evaluation
#pts.
Due: [Date]
After completing the first draft of the presentation outline, use the General Tips guide sheet and the Delivery guide sheet to enhance the presentation. Then use the Self Evaluation guide sheet to check the organization and content. Submit a copy of the Self Evaluation.

Assignment P3: Second Delivery / Peer Evaluation
#pts.
Due: [Date]
After completing the second draft of the presentation outline, present the project to a peer. Have the peer use the Speaking Evaluation Rubric and the Presentation Critique to properly evaluate the presentation and the content of the project presentation. Submit a copy of both evaluation forms.

Assignment P4: Speaking Center
#pts.
Due: [Date]
After completing the third draft of the presentation outline, meet with a consultant at the Speaking Center to further review and develop the content/delivery. Have a completed participation form sent to the instructor and a link to the video. Make an appointment as soon as possible to assure availability!
Internationa[ling learning: Reflections on a faculty-led sojourn abroad

TINA SARAWGI / TOMMY LAMBETH
The University of North Carolina at Greensboro

NARRATIVE

INTRODUCTION
This paper reflects on a faculty-led study abroad program to India administered by the authors and its impact on student learning. Today most colleges and universities have a renewed emphasis on globalization with programs that help students explore cultures, life experiences, and worldviews different from their own (Association of American Colleges and Universities, 2007). Council for Interior Design Accreditation stipulates that entry-level interior designers should have a global view and weigh design decisions within the parameters of ecological, socio-economic, and cultural contexts (CIDA, 2009). Amongst the study abroad offerings, short faculty-led programs have been rapidly gaining popularity as they appeal to students not wanting to spend an entire semester abroad due to financial or personal reasons. Mckeown (2009, p.8) found in his research, that intense cultural experiences even during a short study abroad program, can result in significant cognitive change and growth in the participants. However, the U.S. Department of Education states that most programs are Euro-centric in nature (U.S. Department of Education, 2005) recommending the need for schools to offer more non-western experiences in an increasingly global world. Cross-cultural experiences are gaining attention more than ever for designers as innovative opportunities emerge in non-western countries unthinkable a few years ago (Cheek, 2011).

ARCHITECTURAL SOJOURN IN INDIA
The authors at the Department of Interior Architecture at the University of North Carolina at Greensboro offered a faculty-led, two week study abroad program to India. Eight undergraduate interior architecture students and three adult participants enrolled in the semester-long course, the sojourn taking place during the spring break and the following week.

The course objective was to impart a critical awareness and understanding of various architectural styles and periods in India, to assess how architecture transforms a society and vice-versa, and to examine ways in which the existing technology and political landscape of a certain period influenced its architectural expression.

THEORETICAL FRAMEWORK
McCarthy’s 4Mat system with Nussbaumer’s modifications reflects the theoretical framework of the course moving through the four stages of experiential education — experiencing, reflecting, thinking and acting (Nussbaumer, 2001). This system imposes hemisphericity by including both right-brain and left-brain mode activities as shown in Figure 1. The study-abroad trip by its very nature allows the participants to go through the entire cycle, thus broadening students’ skills in areas outside their comfort zone, unlike a usual college education class which oscillates only between quadrants 2 and 3 (McCarthy, 1987).

The four phases of the learning process derived from the 4Mat system are as follows:

1 Quadrant One: Integrating Experience with ‘Self’

Pre-trip preparation and architectural sojourn in India (right mode)

The students were introduced to select topics on Indian architecture and culture at class meetings before departure. During the sojourn, the group toured significant architectural sites located within and around major cities of New Delhi, Agra, Jaipur
and Jodhpur in India (See Figure 2). Cultural experiences such as Indian classical and folk music, folk dance, and puppet performances were interspersed with tours of hand block printing, carpet weaving, and *Pietra dura* factory. The trip culminated in a meeting with students and faculty in a design school, and a design firm in New Delhi. This first step of the learning process was immersion; the purpose was to make the students “enter into an experience, to engage them, and integrate personal meaning with the experience” (McCarthy, 1987).

**Analyze and discuss the experience (left mode)**

The students were asked to step outside their immediate experience and reflect on it, sharing their perceptions.

2 Quadrant Two: Concept Formulation

**Share the trip experience with others (right mode)**

The students maintained sketchbooks, journals and blogs to observe, record and reflect during the trip (See Figure 3). After returning back to the United States, they shared it with each other in a group discussion.

**Select and research a topic on Indian architecture (left mode)**

Following the above stage, the students selected, explored and analyzed a research project on a chosen topic on Indian design and architecture. The topics ranged from fort to temple architecture, from Hindu and Islamic to contemporary architecture in India.

3 Quadrant Three: Practice and Personalization

**Synthesize research (left mode)**

At this stage of the project, the students synthesized their sojourn experience and the newly learned concepts from their research project.

**Design and install an exhibit on sojourn in India (right mode)**

The students began to add something of themselves and personalize the material through the design of an audio-visual exhibit (See Figure 4). During this exhibit, the students also raised funds to sponsor educational materials for underprivileged children in India.

4 Quadrant Four: Integrating Application and Experience

**Reflect on the course experience (left mode)**

This step focused on processing and analyzing the previous stages of the learning process.

**Share and discuss with classmates (right mode)**

Finally, the students shared their observations and discussed their learning with their classmates ascending to a higher level of understanding of Indian architecture and culture.

**OBSERVATIONS**

The experience of students in the study abroad program to India transitioned from an ‘international’ to an ‘internal experience’, as outlined by Warner and Kirby (2010). In the first stage, the students made sense of what was around them as discussed in the first quadrant. A typical reflection during this phase related primarily to the immediate experience during the trip.

In the next stage, the students developed relationships between prior knowledge and experience. This was evident in quadrant two during the reflective assignment where the students discussed a change in their perception of the United States in light of their experience and its impact on their future goals.

“It’s made me realize how well we have it in the United States and how many amenities our government provides us with. I’ve also come to appreciate the federal laws that are put in place in regards to public cleanliness.”

“The strong connections between families, neighbors, and neighborhoods in India provide a true social network. My generation is made up of pseudo communities reliant on Facebook. Facebook fails
because virtual connections to other people are based on how one decides to portray him/herself."

“I also would like to design for a cause and to help the environment more than just to design something that looks neat.”

“It made me look forward to studying abroad even more.”

The final stage is when students were transformed by the experience, and exhibited a new behavior and understanding. This was exemplified through the fund raising efforts by the students during the semester-end exhibit in the department discussed in quadrant three. The students raised funds to sponsor educational materials for children in an entire village in India. The funds were donated to a non-profit organization that works to provide quality education to underprivileged children in India. This outcome reinforces the results of the National Survey of Student Engagement (2007), which found that students are more likely to engage in purposeful activities upon returning to their home campus after a study abroad trip.

RECOMMENDATIONS
Because the study abroad course was offered for the first time by the program director, adjustments were made to the course throughout the semester in response to the participants’ feedback. Course strategies that proved to be successful are:

Developing a framework of reference prior to the experience: The lectures on Indian architecture before departure proved to be helpful to the students during the sojourn.

Providing opportunities for independent learning: Time was allocated during the sojourn for students to be able to spend time to observe and sketch. The students appreciated this opportunity as it allowed them to slow down and take notice.

Integrating reflective processes into the study abroad program: The use of journals, blogs and reflective essays during the trip helped the students process the overwhelming amount of environmental stimulation and information they were subjected to in India.

Develop a meaningful exercise on return to home campus: The exhibit coupled with fund raising efforts for the children in India proved to be an engaging activity for the students keeping their enthusiasm levels high even after returning back from India.

CONCLUSION
The learning outcomes in this course could not have been achieved through the sojourn in India alone. Orientation session, lectures on culture and architecture of India prior to departure, reflection sessions during and after the trip, research project and design of the exhibit — all these collectively led to meaningful experiences both for the students and faculty. Thus short-term study abroad programs, when offered as a semester-long educational experience, can lead to significant learning opportunities. It is worth noting that three-fourths of the students from this course either joined the effort in the department to design and build a school for children in a rural village in Ghana or went on to study abroad for an entire semester. Thus, the learning experience from this course led to the next experience at a ‘higher’ level of concrete experience (Kolb, 2000). The course demonstrates internalization of learning which would be of relevance to instructors who want to conduct similar short-term study abroad trips.
Figure 1: Experiential learning model for the study abroad program based on McCarthy’s 4Mat system

Figure 2: Select photos from travel to India
Figure 3: Select sketches from student journals

Figure 4: Mega posters showing student research projects in the exhibit. Each student was asked to select a topic of interest based on Indian architecture and design.
REFERENCES APA STYLE


Community-Academe Partnership: Drawing upon Extension-Outreach for Service Learning

JIHYUN SONG / SUSAN ERICKSON
Iowa State University

NARRATIVE

PURPOSE:
Addressing the mission of higher education—teaching, research, outreach—can be a daunting task. In studios, instructors prepare students to explore design concepts and criteria linking research and design to real facility problems (Song, 2010). Studies show students grow through real world application (Belk, 2010; Lee, Medvedev, & Smith, 2010). This fact deepens reasons for service learning—an outreach intent. Integrating theory and research to site specific issues allow application of theory with practice performance and service perspective (Peter, McHugh and Sendall, 2006; Ward & Wolf-Wendel, 2000; Zollinger, Guerin, & Hadjiyanni, 2009). Many stakeholders take part in the interrelated process (Sterling, 2007): students, faculty, community, institutional partners, community organizations, practitioners, designers and clients. Such partnerships integrate contribution in the roles of teaching, research, and service (Ward & Wolf-Wendel, 2000). Given various dimensions and relationships, how do educators institute service-learning processes to facilitate successful outcomes? How do students achieve interconnected learning among academe, practice and community components?

This paper explores a teaching strategy that builds service-learning into existing interior curriculum. Understanding the structure, learning outcomes, and various perspectives are essential to service teaching/learning in a studio setting. A previous framework (Zollinger, Guerin, & Hadjiyanni, 2009) was adopted to develop a problem-based model in the existing course content. An actual client offered a community need that fit a graduating seniors’ studio. Project scope, timeline, students’ knowledge and skill sets for achieving the project objectives were criteria.

TEACHING METHOD/APPROACH:
Four partners were represented: teaching faculty, an outreach coordinator, students, and community partner, e.g. the Sioux City Public Museum. An outreach program—PLaCE—staffed a coordinator with special knowledge of principles of service-learning and community engagement, facilitating the project. A benefit of this added partner meant that project recruitment, match with studio professor, negotiation of fees, and contract preparation were completed by program staff, leaving the studio professor to concentrate on pedagogy and studio structure.

In such projects, collaborative learning is a major challenge leading to final implementation of student design. Objectives include: (1) to recognize what service-learning contributes to a client’s design solution, (2) to collaborate and communicate effectively with clients and/or other professionals involved, (3) to link scholarly expertise to community work, (4) to translate design knowledge into solutions that are real, not hypothetical, and (5) to provide design solutions that are meaningful to the community partner.

THE PROJECT/PROCESS:
The project required students to develop conceptual design solutions for the Sioux City Museum gift shop located in 607 4th Street, Sioux City, Iowa. This involved tripling the square footage from its existing site. Due to the economic down turns, the new gift shop design had been removed from the project scope of initial architectural and exhibit design during phase one of construction and exterior renovations. For this project, the museum director oversaw collaboration with the architect and exhibit designer. The museum’s development coordinator assisted identifying vendors. Central to all was creat-
ing a dynamic, engaging new facility that complements state-of-the-art museum experience.

The focus of the senior-level studio is to advance competency involving interior design problems dealing with varied building type, substantial complexity and project specific technical information. In order to provide assistance to the client–community partner, superb communication is essential. Design students visited the site and interviewed stakeholders to determine their needs for the project space. Pre-design research involved a site analysis and meeting and discussion with the client, as well as review of literature. The class gained background on the organization’s history and mission; project goals and limitations concerning clients’ needs related to museum shops; the shops role as source of revenue to support on-going operations; the enhancement a shop provides to exhibits and additional learning experiences; and to showcase unique products that may not be available in other stores.

From the very beginning, the project allowed student’s active engagement through the regular correspondences and follow-ups with the client. Client contact played a vital role as it gave students depth into real design problems, understanding needs of clients and successful business practices. Because the gift shop shares space with the orientation of visitors to the museum, the new design has a prominent role in the operations of the overall facility. Existing conditions challenged student to explore multiple design concepts and solutions through giving a blank slate except for permanent walls and adjoining front desk area.

Students worked as individual or teams of two to complete pre-design phase of research, data collection and analysis, and phases of schematic design and design development to explore creative design solutions to propose. Students refined and expanded their knowledge on the store planning focusing on the functionality, sensory experience, flexibility, traffic patterns, and brand identity based on the understanding of research and potential users and visitors to the new museum shop. Final presentation offered students engagement with faculty, an outreach coordinator, and community partner, giving them opportunity to carefully address various feedback to inform their solution. Student projects demonstrated a variety of issues reflective of the complexity of the project type, providing them a context and content for individual learning and intellectual refinement. At the end of the semester, documentation of student design projects with a total number of 15 designs were submitted to the client, and several designs were incorporated into the final.

RESULTS:
The connection between the academe and community service gave the studio a different perspective, opening up new horizons for students in terms of innovative and functional designs based on users needs. This undoubtedly made the studio project very interactive and realistic.

Faculty reflection occurred throughout the project and overall learning outcomes at the end. A structured interview was conducted with a community client to find out how the expectations were met and what were the most significant impacts of the project. One of the most valuable parts of the project was described by the community partner as:

“….having the dialogue about the space and our needs and that kind of thing helped us focus on what we wanted maybe more so than if we just sat in a room and tried to come up with (design ideas) on our own.”

Students were able to help the community stakeholders talk about their design needs in productive ways and discover guidelines for the design project. Student input can be valuable for community outreach projects, as students bring a fresh viewpoint to the design problem and can often provide creative solutions that would not be otherwise considered by community members.

Good communication was also important between the university and the community stakeholder group. Post-project follow-up revealed that the community group thought it would have been helpful to have more clear expectations from the outset of the project.

“(It would have been helpful to know) what exactly you would need from us. I guess we weren’t quite prepared for that, and, there were some things along the way, that it seemed like there was a very short time frame for us to get that information, so I guess that’s the one thing I wish we had a little more time to get that information...”
It is difficult to anticipate all informational needs when beginning a project. One of the lessons learned from this experience is to work to determine what the students’ information needs will be in the early stages of the project.

**IMPORTANCE OF THE TOPIC:**
Outcomes document students appreciate their own work and see their profession beyond current educational positions. Ultimately, a synergy develops among students, faculty, clients, and the university extension program-at-large. Exploration of depth of issues and making designs work emerge. It benefits advanced design students in building competency; while it may be integrated into other levels to foster active participation and diverse experience.

Community partners indicated one of the greatest benefits of the project was receiving a multitude of design ideas. Students worked individually and in groups to provide approximately ten different design concepts for the Museum. Museum staff then worked to combine the best ideas into their final design.

“And, the nice thing was that because we had ten multiple choices, I was able to take elements from each and merge those together to create what I thought would be best for making the most functional and user-friendly store we could.”

Providing multiple concepts to the community partner was a valuable contribution for the university students to provide to this community organization. They provided ideas that never would have been considered by the Museum staff. The museum staffs were also aware of their contribution to the students’ learning experience. They received satisfaction from this part of the project.

“(My favorite part was) meeting the students and getting that interaction, and seeing that this project was something that would help the students with their career --having this practical experience-- to be able to show that they had (worked on something) that wasn’t just something from the classroom, that this was something real-world.”

The museum staff indicated their appreciation of the students’ design work but they also recognized their part in the students’ educational experience. It is important to honor the contributions of all partners in the process of university outreach experiences—university, community stakeholders, and students.

Reflection on learning suggests future models of integration in other course content. While we know some benefits, other questions to ask are: (1) what aspects of the project require students to push themselves beyond their own comfort zone? (2) How did the community partner implement the design selected?
PROJECT 2: SIoux City MUSEUM GIFT SHOP PROJECT  
(Problem Based Service-Learning Project)

**PROJECT GOAL:**

This project is to provide a service-learning experience in which students, faculty and community can learn and develop through active participation in the local community. Through the design-learning experience, you will work with community members to understand a particular community problem or need. You or your team will work as “design consultants” for a “client”. It is presumed that your design knowledge would make recommendations to the community or to develop a future solution.

- To emphasize reflective practice and mutual learning
- To recognize service-learning experience contributes design solutions to community clients
- To collaborate and communicate effectively with clients and/or other professionals involved in service-learning project
- To link scholarly expertise to community work
- To translate design knowledge into solutions for a real-life design problem

**PROJECT SCENARIO:**

The new downtown museum facility will encompass approximately 55,000 square feet of floor space, with about 10,000 square feet of two-story space as an atrium in the southwest corner of the building. The demolition and shell renovations that began in early September 2009 will create a dramatic façade with a glass exterior through which artifacts and activities can be seen from outside. Interior and plaza renovations began in early 2010. Developing a regional attraction from a former department store during these tough economic times has provided several challenges. To reduce costs, the gift shop design was taken out of the scope of the exhibit design and architectural teams. However, the new Museum Store will need to complement the state-of-the-art museum experience being developed. Because the gift shop shares space with the orientation point where visitors are greeted, it will have a prominent role in the operations of the overall facility. The new gift shop will have more than triple the square footage from its current site, occupying 900 square feet with an additional 100 square feet for a storage/work area. The souvenirs and educational materials sold represent a vital revenue stream for the Museum’s continued operations. The overall goal is to create an attractive retail environment for the anticipated 80,000 annual visitors to the new Museum location.

**DESIGN CHALLENGE:**

The broad vision is to cast off the Sioux City Public Museum’s image as a static house museum and instead create a dynamic, engaging new facility that will WOW visitors and is worthy of Siouxsland’s significant historical place at the
Figure 2: Student Project Example: final presentation
REFERENCES (APA STYLE)


An Integrated Approach to Teaching Light: Bridging Studio and Systems

JUDY THEODORSON
Washington State University

NARRATIVE

Light is elemental to interior design. As a substance, light fills space, rendering it visible. As a concept, lighting extends a message while offering an experience. As a function, lighting provides for necessary visual activities. Transcending disciplinary boundaries while assuming multiple roles, the study of light is an essential component of the interior design curriculum. Design education is distinctive in that it requires knowledge assimilation from a variety of perspectives with application to complex and unique design problems. It thus follows that students will benefit from an integrative pedagogical approach to teaching light; one that provides opportunities for the student to develop personal and disciplinary constructs. This paper presents a conceptual model for bridging an interior design studio and a lighting course. The model is grounded in cognitive flexibility learning theory: experiential perspectives and multiple representations provide a framework for advanced knowledge acquisition (1992, Spiro et al). The overarching goal is to facilitate cognitive flexibility around the complex issues that emerge at intersections of light, lighting, and design.

REVIEW OF THE LITERATURE

The prevailing model for teaching lighting is to segregate it as a supportive subject course. The field of lighting design is wide-ranging, complicated by technical terms and specialized disciplinary knowledge. Teaching methods tend towards a linear model of information delivery: discrete facts, theories and practices set a foundation for later application in design studio, the nucleus of design education. Active learning opportunities are limited. This type of subject course provides a necessary structure for transmitting fundamental concepts, however, there isn’t often a curricular path that leads to deeper understanding of the subject and application to unique design problems.

Design educators have identified this as a gap in design education, forwarding a variety of proposals to better integrate the study of light into the overall curriculum. Millet and Loveland (1997) suggest that opportunities for learning “lighting design” (as opposed to “lighting science”) be offered in multiple learning venues throughout design education. Fontein (1997) and Polma (2009) introduce methods of design inquiry in lighting technology courses. Brown (2004) emphasizes the importance of studying the three dimensional aspects of light and space through design problems. Theodorson (2006) suggests that abstract light projects for the beginning design student will foster an emotional and visual relationship with light. Stannard (1997) developed an advanced design problem that forces light to act as a generator of form and space. The common thread in these approaches is the notion that expanded perspectives around light emerge by engaging nonlinear methods that criss-cross the realms of design and technology.

Lighting designer and educator Howard Branston emphasizes the importance of active observation of our built environment, noting that most of his lighting students had “never first learned to see” (2008, p.33). Vision is the primary means in which humans experience their surrounds. However, it is this educator’s experience that design students tend to have little retrievable information around light’s physical behaviors, impacts, qualities, or intensities. The problem isn’t that students don’t value light. Rather, the problem seems to be rooted in the lack of activities and guidance that build literacy and recall around light. Branston argues that the “process of learning to see” is the “simplest defining characteristic of lighting” (p.10) and suggests that disciplined obser-
vations of light will build “a databank of real knowledge which can serve in any capacity as we design our lives” (p. 11).

Design education promotes constructivist learning, the idea that knowledge is attained through a spiral model: concrete experiences followed by reflective observation, formation of abstract concepts, and active experimentation in new situations (1984, Kolb). Cognitive flexibility theory expands on constructivist learning theory by recognizing that complex, ill-structured knowledge domains require “the ability to adaptively re-assemble diverse elements of knowledge to fit the particular needs of a given understanding or problem-solving situation” (1990, Spiro & Jehng, p. 169). Design fits the definition of an ill-structured knowledge domain, per Spiro, et al. (1995, p.92):

1 the problem requires simultaneous interactive involvement of wide application conceptual structures, and

2 patterns of conceptual incidence and interaction vary substantially across cases of the same type.

In such fields, there students armed with basic knowledge may err in their approaches to complex problems, for instance, there may be oversimplification of the problem or over-reliance on fixed protocols or a single basis for representation. (Spiro, et al, 1988). Cognitive flexibility involves the “selective use of knowledge to adaptively fit the needs of understanding and decision making in a particular situation; the potential for maximally adaptive knowledge assembly depends on having as full a representation of complexity to draw upon as possible” (1988, p.5).

**TEACHING METHOD**

This teaching model was facilitated by circumstances that permitted a single professor to simultaneously teach the junior level interior design studio and the interior building systems lecture course. Theories of place provided theoretical underpinnings for the studio; additionally, it was expected the design problems would engage environmental systems with a focus on lighting. The building systems course was delivered in typical lecture fashion. The two courses stood independently, without shared assignments. In course planning, the author set a pedagogical goal to create cognitive intersections around physical, experiential and functional aspects of light and design. To bridge the two courses, the idea of conceptual scaffolding emerged, representing a creative platform for hands-on learning experiences. This scaffolding supports discovery through tools: tools of observation (the eye), tools of recording (the camera, the mind), tools of measurement (meters, the eye, the mind), and tools of representation (modeling). According to cognitive flexibility theory, it is necessary to provide multiple representations of the subject matter, and to determine how the knowledge applies to unique situations. By adaptively engaging, re-assembling, and testing knowledge, one develops the ability to navigate complex knowledge domains.

To illustrate application of the method, three examples are provided. (Refer to fig. 1 for a map of the entire term.)

**Example 1: The Magic of Light [observation, recording]**

In the systems course, the subject of light was introduced with a lecture celebrating the visual and experiential “magic” that light can create. Concurrently, in studio, the students developed a three dimensional abstract model informed by a piece of modern art. The model design review provided a venue for the professor to “illuminated” the models with desk lamps, demonstrating the light’s visual impact in altering the appearance of form and in the rendering of materials. In a subsequent model photography session, the professor led each student in experimenting with different light sources, noting variability in directionality, intensity, and color. (fig. 2) The process continued until the student demonstrated the ability to discern differences amongst the light sources and make suggestions for effective model photography. This project sharpened students visual skills and put forth the idea that light is a material of design.

**Example 2: A Light Moment [representation, observation, recording]**

Students were directed to start the design for an artist’s retreat by first building a spatial model that explored a luminous experience in the near environment. The intent was to promote experiential knowledge of the interrelatedness of light, material, and space while reflecting on the power of light in place making. Building on the
abstract model project, the students were instructed to work directly with light and materials in an exploratory fashion. This project revealed inherent difficulties in achieving desired spatial lighting impacts but underscored the mutually dependent relationship between light, space, and experience of place (fig. 3).

Example 3: Field Studies of Third Places [observation, measurement, recording]

In pre-design research for the second studio project, students carried out field studies of third place environments, utilizing light meters to create maps of the luminous environment from which human behaviors could be studied. The meters provided immediate quantitative feedback, helping students to develop a sense of illumination intensities and distribution. Additionally, the project reinforced theory and research introduced in the lecture course.

**REFLECTIONS**

Throughout the term, the students were exposed to multiple representations and perspectives of light, lighting, and design, with meaningful opportunities to observe, record, measure, and experiment with light. Student feedback suggested most had newfound appreciation for the complex nature of light and the role light plays in design. This author observed that many students were actively "learning to see," using the "tools" to inform personal constructs. The studio projects demonstrated the students considered multiple, contextual aspects of light with integration into design thinking and processes. Did cognitive flexibility and advance knowledge acquisition occur? This is difficult to assess due to the intangible nature of the knowledge domains and methods of evaluation. The author submits that a path has been identified for the students to continue to engage and adaptively reassemble knowledge around light and to effectively integrate the knowledge into a variety of design problems. A follow-up teaching opportunity will occur in the students’ final studio; at that time, further assessment will determine if this approach has lasting value.

![Fig. 1: cognitive scaffolding map](attachment:image)
Fig. 2: example 1

substance: quality and color of light source, directionality, interactions of material + light
aesthetics: visual contrast, hierarchy, balance

Fig. 3: example 2

studio: “light moment”
substance: interaction of light + material + space
experience: emotive qualities related to light impacts
REFERENCES (APA)


Transforming Healthcare Through Interior Design Education

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NARRATIVE

INTRODUCTION/PURPOSE

The healthcare specialty of interior design requires unique knowledge. Interior design education should provide significant experiences for student learning about healthcare design. Today, healthcare facilities are challenged with attaining diverse goals while satisfying expectations and requirements from distinct and sometimes disparate entities. Students should explore and respond to these challenges in the educational context. The learning process should enable students to gain insight into: the diverse and evolving expectations of stakeholders; the healthcare public policy in our contemporary society; code regulations, health conditions, work conditions, medical professions, and healthcare services; medical technologies and equipment; and best practices for delivery of care. (Kobus, 2008)

Teams of researchers, physicians, hospital administrators, and nursing staff are increasingly joining interior designers and architects while seeking evidence-based design solutions for improved experiences and outcomes. The study of healthcare should lead students to understanding how healthcare experiences affect and are affected by human behavior. Focused study about healthcare can provide useful insights and enable design responses that submit to the physical, psychological, and behavioral experiences among facility occupants, e.g., patients, families, staff, and visitors in healthcare spaces. Exposing students to the depth of the study increases their capacity to respond to design challenges and improve healthcare experiences in their future careers. (Nussbaumer, 2010)

METHODOLOGY/FRAMEWORK

Undergraduate students enrolled in the Capstone interior design studio during the senior year. The semester-long course sought to guide students individually and collaboratively toward significant healthcare design experiences. Limitations for the course conceded that research as well as design application would be necessary to attain goals for the course. The course began with an overview of current trends in healthcare. It was assumed students were minimally aware of the actual healthcare context and its influence on healthcare design professionals, today. The overview supplied students with a snapshot of challenges healthcare management face. Exposure into the true breadth of stakeholders prompted a shift in student assumptions. Key data revealed evidence of healthcare pressures on staff, and it reminded the student of escalating technological practices in medical care. Environmental trends and aspects of the built environment reviewed how the interior design of a facility could contribute to outcomes in the healthcare setting.

The first assignment dispersed 100 healthcare related terms among the students. Definitions for the terms were researched and shared collaboratively among the group. Later, students were tested to assure the discipline specific terminology was committed to personal memory. The terms proved to supply an understanding of the most significant contemporary issues in healthcare design. As research for the upcoming project began, students were more alert to the presence of terminology related to these topics such as: acuity adaptable rooms, bay, ceiling lift, copper/silver ion, family zone, high-tech/high-touch, headwall, modalities, single-handed rooms, and Never-Events.

The professor secured plans for a 100,000 square foot community hospital constructed in 1987 from a local ar-
This plan served as the course project, requiring renovation. The professor delivered a detailed lecture complete with design planning, codes research, and illustrative examples of intensive care units. The lecture paralleled the assigned course text, *Design for critical care: An evidence-based approach*, by Hamilton and Shepley. (2010)

Students were assigned one department or aspect of the hospital that required focused study and delivery of a presentation to the class over the next six weeks. As a result, students benefited from collaborative sharing of the information about multiple departments and significant aspects of a healthcare context such as infection control and wayfinding. (Malkin, 2008) Each student presentation required illustrations, reference to applicable codes, and current best practices about the research topic. Students discussed their findings via Power Point presentation, programming matrix, and topic specific client needs list. Following each presentation, students were able to revisit the findings through a shared file system on the campus server.

Continuing with collaborative learning, students were required to interview a healthcare provider. A detailed questionnaire formulated universal questions, though variances were allowed when beneficial during the interview. Transcripts of the interviews were shared in the networked system for all classmates to access. Students were allowed to independently choose a city for the project, gathering information about the demographics, local culture and history, and social persona of the regional area in order to inform an emerging design concept. The students developed design solutions to the assigned hospital, individually, after having benefitted from the collaborative work of all class members and the professor. (Figure 1)

**RESULTS:**

The resulting design featured detailed solutions for five departments. Renovated intensive care units were required of all students portraying the delivery of care model that is family- and patient-centered. (Figure 4) The remaining four areas included the department that had been personally researched by each student plus any three additional departments of their choosing. (Figure 2, Figure 3) While focus on five departments or aspects was intended to assist students in managing the scope of the large-scale project, submissions revealed more ambitious renovations.

The evidence-based project solution revealed new spatial plans, elevations, perspectives, furnishings and finishes FFE, reflected ceiling plans, custom casework drawings, and data/power plans. In these, the students resolved needs through a staff-centered approach to design. (Figure 5) Application of healthcare codes proved to inform students about the delivery of care environment in ways they had not previously considered. (AIA, 2006) Students compiled binders that contained volumes of research, reprints of all class member topical studies, individual design process work, and publication of the final project solution. Students in the course section were highly competitive due in part to the high-level challenge in the assignment.

**FEEDBACK:**

Final presentations were evaluated in multiple venues. Oral presentations were observed by outside evaluators who practice healthcare design. One student was successful in a bid to present her study of infection control during an undergraduate research fair on the university campus. The student received an impressive accolade as one of the top five poster presentations among all entries. Final submissions were juried during local and national design competitions. Online posting of the submissions were shared with practitioner healthcare designers and members of the American Academy of Healthcare Interior Designers (AAHID). The professor collected valuable feedback from the practitioners.

**CONCLUSION:**

Thoughtful evidence-based facility design can aid patients, staff and families during the healthcare experience. Interior design solutions can increase patient engagement and satisfaction with the overall quality of care, while mutually attaining goals of healthcare management. Interior design students will value a study of complexities in the science and art of healthcare environments that result in design. It is possible to transform healthcare experiences through interior design education.
Figure 1: Senior students enrolled in the capstone course prepared renovated space plans for a community hospital built in 1987. The student identified a uniquely defining concept from regional geography and demographic aspects in order to inform the design response. Illustration by student, Tammy Trylko.

Figure 2: Current best practices for patient room design resulted in specialized features meant to reduce staff errors and enhance infection control. Incorporation of a family zone has been shown to positively impact patient outcomes. Illustration by student, Tammy Trylko.
Figure 3: A welcoming and efficient solution resulted from student exploration into current trends in emergency room design. Illustration by student Tammy Trylko.

Figure 4: Specialized Intensive Care Unit requirements were researched by the student in order to prepare a design solution that was patient-, staff- and family-centered. Illustration by student Tammy Trylko.
REFERENCES (APA)


Figure 5: Consideration for a staff-centered design was a guiding aspect in the student solution. Illustration by student Tammy Trylko.
Teaching Advanced Interior Design Presentation: 3-D Imaging and Gaming Software

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NARRATIVE

PURPOSE
Integrating clients in the decision making of space layout and material selection is integral to the collaborative relationship between designer and client. Advanced project presentations can bridge the design and its application by user participation during the presentation process, thus enhancing collaboration and fostering a better understanding of space and material application. Technology and visual presentation skills explored in this paper include: 1. three dimensional depths of design solutions by creating true 3-D images of the space and 2. participatory client interaction in the presentation using the concept of “computer gaming” (Figures 1 – 3). Students learn through this advanced presentation approach that consistent integration and participation of client and user in the design process will increase the success of the design outcome. Clients and users can evaluate the “fit” of a design and understand art and science of the design approach much faster than in traditional presentation styles.

FRAMEWORK
In 1982 the computer was Time Magazine’s “Machine of the Year”. Beginning to move into millions of households all over the world, it was praised for its potential to “ultimately raise production and therefore living standards” as well as “improve the quality of… children’s’ education” (Friedrich). The same year, Autodesk released AutoCAD for the personal computer. Two years later in 1984, Wavefront Technologies released the first commercially available 3D software (Carlson).

Although AutoCAD was first developed solely as a two-dimensional drafting tool, three-dimensional capability came soon after. Already the late eighties, 3D modeling was being used for everything from structural integrity tests to interior renderings. Current generation video games also have a unique set of tools to enhance workflow with specialized static mesh, texture, material, animation, and lighting browsers (Unreal Engine).

The architecture firm HKS is a leader developing interactive building models. When designing the new Dallas Cowboy’s stadium, they facilitated communication with the project’s owner, through the export of their Revit model into the Unreal 3 Gaming Engine (Gaudiosi). The synergy between design and game software can advance the ability to use the walkthroughs as a major design and revision tool having the client involved in the interaction or a “life like” experience. Switching between plans and sections could give the illusion of a well-conceived entry sequence, but until a three dimensional walkthrough is made there isn’t a true feel of the space. In a game engine it would be possible to produce it in real time at full resolution, with the freedom to explore the model from all angles without reloading or reworking walkthrough paths.

Students in an interior design studio were challenged to use a presentation method for their final design solution that considered animated slides, movie sequences and/or the use of advanced software to create three dimensional scenes such as they are used in 3-D movies or to create interactive presentations using gaming software. Presentations had a limit of 20 minutes and had to include the artistic background and ideation process that lead to final design decisions as well as an evaluation of the feasibility of their solutions.
Figure 1: Modeling screen shot implementing gaming software in the presentation.

Figure 2: 3-D Illusion Bar; 3-D viewing requires red-blue glasses as used in Movie theaters.

Figure 3: 3-D Illusion Restaurant 3-D viewing requires red-blue glasses as used in movie theaters.
REFERENCES (APA)


Teaching Interior Design Related Theories: Development of Engaging, Framework-Based Handbooks for Educators + Students

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NARRATIVE

INTRODUCTION
Theories are guidelines and organizing frameworks that provide understanding and a language to connect knowledge and ideas to the practice of design (Eidson, 1986). They explain relationships between the environment, behavior and design instead of simply describing it (Hassell, 1993). Rather than developing design solutions through intuition and personal preferences, theory and theoretical research encourage students toward a purposeful, conscious act of solution generation (Eidson, 1986). Unfortunately, many students view theory as confusing, unnecessary and irrelevant. How theory is introduced to design students may impact their perception of its usefulness and application to client problems in practice.

PURPOSE
The purpose of this project was to develop engaging materials for teaching design-related theories to lower level, undergraduate students. The goal was to illustrate how a theory can 1) be offered in engaging yet challenging applications and 2) contain diverse knowledge for the student to apply in practice. Experiential exercises were developed specifically with three goals in mind: 1) provide repeated exposure to interior design related theories 2) encourage everyday use of theoretical language and 3) expose students to the relevance and context of learning theory as it relates to real-life, practical applications. Both the development process and the handbooks will be shared in this presentation.

HANDBOOKS
Both a student and a teacher handbook were developed to educate and reinforce foundational understanding of three, interior design related theories: color, proxemics (Hall, 1966) and territoriality. These three theories were selected due to their application in everyday life; thus offering context and relevance to the student. Through the handbooks, students are exposed to each theory through the process of 1) clear conceptualization of the subject matter, 2) motivating experiences and 3) a lesson plan that systematically moved them through Kolb’s learning quadrants via a variety of left and right brain activities. See Figure 1.

The handbook is presented in three sections: 1) a basic history and summary of each theory is offered, 2) experiential exercises are outlined, and 3) worksheets are given. Each section of the handbook progressively offers less information about the identified theory to encourage a gradual shift of research responsibility to the student. The teacher’s edition also includes lesson plans, discussion questions to guide student interaction, evaluation/assessment suggestions, handouts related to each theory, answer sheets and supply lists. See Figure 5 for sample pages. An accompanying compact disk contains the electronic version of the handbook along with lecture materials, game (experiential) files, templates and references.

Model + Framework used for Experiential Exercises in Handbook

Nussbaumer’s interior design teaching model (2001), based on Kolb’s four quadrants of his Experiential Learning Cycle (Kolb, 1984) was used in the development of active, experiential exercises. See Figure 2. Nussbaumer’s model (2001) offered a step-by-step process to expose students to theory through 1) concrete experiences (e.g. observations during site visit), 2) reflective observations (e.g. discussion), 3) abstract conceptualizations (e.g. visual aid development from site visit),
and 4) active experimentations (e.g. altering; analysis of application; identification of resulting discrepancies). These steps were translated into specific theory-related exercises and were repeated multiple times during the students’ process of learning and application of each theory. Exercises purposely and sequentially included 1) real life application (See RLA acronym on Figures 3 and 4), 2) reinforcement of theoretical language (RTL), 3) repeated exposure to content (REC) that engaged both sides of the brain, and 4) analysis, synthesis, or critical thinking (ACS). These steps alternately appealed to the right and left brain of the student.

In addition to using Nussbaumer’s (2001) interior design teaching model, it was also important to develop the theory-related exercises to support different learning styles and different student age groups (e.g. millennial students as well as non-traditional students).

Example of Teaching Process: Proxemics

Following is an example of the steps the teacher may take when using the developed handbook. Proxemics is selected for this discussion.

This section of the student handbook begins with a summary and brief history of the theory of proxemics, definitions, and graphics defining and illustrating Hall’s four personal distance zones, and three types of spaces as supported by Altman. In addition, definitions about the eight nonverbal communication factors related to personal space, and additional resources (e.g. websites, articles, and books) were included.

The experiential exercises move the student through Nussbaumer’s model in a progressive order. First, a pre-class proxemics exercise would be assigned. As a concrete experience, this assignment invites the student to choose an environment that is comfortable, safe, and public. This space is to be located where the student can observe people for approximately thirty minutes and write down their observations to be presented in the next class period.

The second part of this handbook section requests the students to share some of their interesting observations of the chosen public space. This reflective observation engages the student by using an experiential learning style to connect “real” life with the academic information discussed. Sharing observations with fellow students is also a social and stimulating process.

The third part of the handbook moves the students from a personal discussion into the review of proxemics found in the supplemental booklet. As Nussbaumer’s model points out, including both left and right brain exercises enhances student retention of information. Discussion and review is more right brain; while reading and writing from provided information is more left brain.

Fourth, following a short review period the class participates in a game of Jeopardy. The class will divide into teams. The teacher must decide what level of knowledge sharing will take place during this exercise (e.g. should students use their booklets). The intent of the game is not only to provide a fun, engaging venue for learning but also address students’ desire to learn through diverse, experiential, technological, social, and engaging exercises. This type of game enhances repeated exposure to theory, its language, and the theory’s relevance to real-life experiences.

Fifth, after the game is finished, there is a homework assignment which encourages the students to engage in an active experimentation to use their knowledge of the theory in critical thinking applications. The assignment requires the students to revisit their chosen public space to make a new set of observations using the knowledge and language of the proxemics theory.

Sixth, each student compares and analyzes their observations, noting the difference from their first experience in a journal or on an assignment sheet. Each student is then asked to create a chart, using Hall’s diagram as an example to represent their individual observations and measurements.

Lastly, in the following class period -- the last in this unit -- the students share their observations and charts with the class. This step affords the teacher an opportunity to assess the student’s use of theory “language.” It also offers students the opportunity to increase their comfort level in discussing theoretical principles among peers with repeated exposure to theoretical content through discussing each peer’s set of observations.

The teacher handbook includes the student handbook information plus a lesson plan, exercise instruction
sheets, the Jeopardy game instructions with questions and answers, and class discussion questions. Exercises, worksheets, and the Excel program file to play the Jeopardy game are included on the CD, as well as the components described in the booklets.

**SUMMARY**

By utilizing the aforementioned learning/teaching models, a new framework resulted that illustrates an unexpectedly, systematic way of teaching theory that may enhance student learning. Intentionally moving students through the process, via left and right brain activities, strengthens both delivery and understanding.

Although theories may be somewhat difficult to teach and/or learn, they are important to the field of interior design and to the interior design student for several reasons. Theories are used as guidelines and organizing frameworks (Loustau, 1988) which provide a solid foundation of growth. Having a solid foundation through learning design theories provides an understanding of the language which connects knowledge and ideas to the practice of design (Eidson, 1986). The skills necessary for understanding theoretical research such as asking pertinent questions, handling complex problem solving, analyzing solutions, and conducting competent research are the same skills which aid the student in changing their design solutions from something merely developed through intuition and feelings to a purposeful, conscious act of solution generation (Eidson, 1986). Students with these kinds of theoretically-based skills and knowledge can positively impact the practice and the field of interior design as a whole.
Figure 1. Kolb’s Experiential Learning Cycle

Figure 2. Nussbaumer’s Teaching Model (2001)
Figure 3. Method of Teaching Color Theory Integrated with Nussbaumer’s Teaching Model

**FIG. 3 Nussbaumer’s Model & Color Theory Components**

Content and Supplements included: Summary of Theory, Theorist Summary, Definitions of Harmonies and Color Connotations, PowerPoint Presentation, Handouts for Color wheel, Object Wheel, & identifying Harmonies Worksheet, College Instructions, Discussion Questions, References, Suggested Readings, Lesson Plan, and Supply list

**LEFT BRAIN**

1. Warm-up exercise: Building a Color Wheel (exposure)
   - CONCRETE EXPERIENCE
   - Today’s Student's characteristics which are addressed:
     - Experiential learning, Engaging, Hands-on Exposure

2. Review of the Booklet Information
   - Reflective Observation
   - Quick, Diverse, Flexible Knowledge
   - Immediate Feedback Active learning
   - Repetition

3. Identifying “Harmonies” Exercise
   - Reflective Observation
   - Immediate Feedback, Active learning
   - Repetition

**ABSTRACT CONCEPTUALIZATION**

4. Scavenger hunt Exercise: (physically or via internet) “Bad” & “Good” Interior color combinations. Synthesis Discussion
   - Abstract Conceptualization
   - Relevance, Environmental Reinforcement
   - Affect on Human beings Social - Collaboration, Critical Thinking
   - Active Learning immediate Feedback, Challenging Analysis

5. Quick Model (team assignment). Use supplied materials to physically represent a color’s understood association.
   - Abstract Conceptualization
   - Technology, Fun, Engaging Reinforced Exposure
   - Direct, Constructive, Immediate Repetition

6. Present Models Analytical Discussion
   - Active Experimentation
   - How the activity meets the GOALS OF PROJECT: Reinforce Theoretical Language (RTL). Repetitive Exposure to Content (REC). Real-Life Application (RLA), Analysis, Synthesis, or Critical thinking (ACS)

7. HOMEWORK: Use template provided and fill the object wheel with chosen images for classroom, hallway display. Reinforce knowledge.
   - REC

8. Quick Follow up Discussion Questions, Assess Presentation of color wheel object solutions
   - Concrete Experience
   - CONCRETE EXPERIENCE

**RIGHT BRAIN**

- RTL REC

- RTL RLA REC

- RLA ACS

- ACS REC

- ACS RTL

- RTL RLA REC

- ACS RTL RLA REC
Figure 4 Method of Teaching Theory of Proxemics Integrated with Nussbaumer’s Teaching Model
Figure 5. Sample Pages from Proxemics Section of Student Handbook
REFERENCES (APA)


Improving Concept Statements in the Interior Design Junior Studio Course

JUN ZOU / VINCENT CELLUCCI / TL RITCHIE / PHILIP TEBBUTT
Louisiana State University

NARRATIVE

INTRODUCTION
The Interior Design Program at Louisiana State University demonstrates its commitment to instructing and emphasizing communication skills in their curriculum with its partnership with the Communication across the Curriculum Program (CxC). The majority of Interior Design courses are certified as Communication-Intensive in two modes out of four (i.e., written, spoken, visual, and technological) of communication in evaluating their students’ mastery of course concepts and design projects. Interior Design professors and a CxC Studio Coordinator work with students to teach, critique, and improve student communication capabilities for design related writing genres—a major one of these is the design concept statement. This work is being done at various stages throughout the curriculum—staggered and weighted with a capstone. The pedagogical exercise described in this paper pertains to work done at junior level studio courses. The goal of this paper is to evidence that our assistance in improving our students’ concept statements directly diffuses into their entire project, enhancing total quality.

PROBLEM
There is a difference between a student starting to write a concept statement, the guidance and expectations in instructing this genre, and the function of the finalized concept statement. Our instructional obligation is that we want to acknowledge the word search writing demands in anticipation that student concept statement are a result of students’ refinement of many written concept explanations as opposed to an elaboration on a small amount of writing. One method we use to enable our students’ written responses to design is we ask them to begin writing their concept statements immediately after being informed of their project and throughout the process of researching it. Although they have yet to select a solid concept, this generative stage gets some of their initial ideas and intentions on paper. One flaw to this technique is many of the students allow their peers access to their concept statements for reference so similar, “generic” concept statements abound. Other problems we observed in the student concept statements include:

• the failure to originate proper design concepts
• ambiguity of the proposed concept
• improper emphasis
• substituting the concept with preliminary design solutions without design philosophy or rationale
• words not utilized (i.e., fail to cohere to concept and project)
• lack of holistic perspective, and
• lack of concept consistency throughout the design process.

STRATEGY
The remainder of this narrative presents teaching strategies and techniques we have found effective at getting students to connect and represent their unique concept and designs. These additions to our writing instruction further alleviate the above mentioned problems.

The most fundamental strategy we adopted was to define the expected components and enforce them as standard to making a concept statement function. The enforcement of this model utilizes a variety of instruc-
tional techniques elaborated upon below. To adequately support such a strict agenda, we extend the scheduled concept statement period from 2 weeks to 3, allowing students to receive sufficient instructions and feedback from both the faculty and the CxC coordinator, a writer and teacher, who after working with LSU Interior Design students for two years developed this component structure.

Concept statements must include the following three components: (1) **thing** (project/function), (2) **thought** (thesis, claim, and concept), and (3) **signature** (unique design). Students do not need to follow this sequential order but it is best to begin instruction in the preceding chronology. The first component to a design concept statement serves as a brief introduction to the project and its function (thing). We teach this is not the spot to cover any lengthy amount of researched materials or historical precedents; details of that information should be included in project introductions or site history texts. This is not to forbid the inclusion of important aspects of research, but always in service of the student’s concept. What need to be succinctly covered are the name, location, use, and user groups. Naming is the first act of ownership and an important mental step in student designs moving from requirements to realizations. The function of the design is probably the most important part of this component because if the use is not connected to the next essential component, the concept, that should be a fluorescent neon sign in the night to students and teachers alike that their project is not sound.

The actual concept (thought) in the project comprises the second component of the statement. The concept is the most significant portion of the statement and should be the focus, and its presence is informed by all other material contained in the statement. The second component positions the concept, the essential idea and emotion, in the foreground. This is the designer’s opportunity to define their project for their viewers. The words selected result in what the viewer retains after reading and observing visuals, and teachers want the design students’ pre-determined associations to be written in service of increasing the clarity, understanding, and accomplishment of the project. It also links these ideas to the project and users. This is a tricky maneuver but the function of the whole statement feeds viewers the ideas the designer wants them to walk away with. Every word throughout the entire concept statement supports the concept and the more support the concept has, the stronger the concept. During this portion of instruction we suggest a variety of selection processes for effective words and challenge our students to make the writing more engaging, memorable, and informative. Moreover we challenge the students to use these statements and their concepts to drive the whole design process.

One instance of a selection process for effective words is that we triangle ‘tonal’ words, most often adjectives but also anything with a connotation or image. We then examine the words’ associations and if they are complementing each other. Often times there will be a blaring contradiction and the students begin to realize it is necessary to build relationships between words. A second example of language instruction we use is teaching students to differentiate between abstract and empirical language; our students’ job in writing these statements is to marry the abstract (thought) to the concrete (physical project), which leads us to the third component.

The third component in our model is what we have labeled **signature**. Signature effectively labels this requirement because it is a small, visual gesture, yet written. This third component is not to impede upon territory expounded upon in statements of design philosophy or theory, but there should be some representation of the design’s unique identity. The students must convey what they actually designed, not their intentions or assignment instructions. It does not mean simply list design features particular to the project; rather it must verbally represent the visual, unique design decisions and implementations of the designer or team and like everything else, connect them to the concept. We teach our students that we should be able to anonymously match written statements to pin ups.

When teaching with the three component model, we use a checklist structure to identify and numerate the three components. This is a logical visual way to point out voids in their written concept statements. Blanks next to their checklist or floating numbers that do not display the function of the sentences contained in the statements allow students to determine what is missing. When they can complete their checklists, they determine the utility of the sentences and their success conveying their concepts.
RESULT
The above exercise pertains to work accomplished in two sections of junior studio classes in the Spring semester of 2010. Each student completed a survey for self-reflection, and an assessment form for faculty reviews and peer-reviews were employed to verify the strengthened statement development improved the writing and that the concepts diffused into the entire project to enhance total quality. Copies of the assessment and survey form were distributed at the end of the semester to junior studio students and to two professionals, not involved in this research. In total we collected 16 valid responses to the survey, and 34 valid responses to the assessment. Copies of forms are attached as Appendix A (form 1 and form 2), and three samples of pre- and post- CxC concept statements compose Appendix B.

The survey indicates that the post-CxC concept statement consistently improves the pre-CxC version in all of the three performance metrics by a large margin (18.8%, 20.0%, and 19.0%). Also, the effectiveness of the enhanced concept statement to the final design was positively evaluated (3.9, 4.0, 3.9 and 4.1 in a 5-point scale; 4 stands for strong). As the preliminary results are encouraging, we will continue implementing and surveying the concept statement enhancement program, and expect positive outcome results proved by stronger statistical evidence in the future.

Appendix A Form 1: Assess Concept Statement writing and its design solution

<table>
<thead>
<tr>
<th>ID 3753 Interior Design Studio III: Assess Concept Statement writing and its design solution</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spring 2010</td>
</tr>
<tr>
<td>For each category (total there are 8 categories) grade as: only put number in the accordingly cell</td>
</tr>
<tr>
<td>1 unacceptable 2 weak 3 clear/fine 4 strong 5 excellent</td>
</tr>
</tbody>
</table>

| Assess both old and modified concept statement includes: | Assess modified concept and how it guides the final design solution |
| Origin of concept research generated | Compared with the old concept, the modified concept statement includes: |
| Design elements and principles described | Applied design elements and principles reveal design solutions |
| State and understand design problem | Define and hypothesize design solutions |
| Present and evidence design solutions | Overall modified concept statement guides the design |

<table>
<thead>
<tr>
<th>Student 1</th>
<th>Student 2</th>
<th>Student 3</th>
<th>Student 4</th>
<th>Student 5</th>
<th>Student 6</th>
<th>Student 7</th>
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Student 12

Student 32
ID 3753 Interior Design Studio III: Survey questions
Spring 2010

Student number: ____________________ Student name: ___________________________

Survey Questions and answers:

1. What is your overall thinking about the design project?

2. What are the most significant improvements you have gained through working on this project?

3. Did you gain more understandings and/or skills on local/regional styles/culture?

4. Are you feeling more comfortable on integrating culture into design? Do you feel comfortable to work in metric system after finish the project?

5. How do you like to work on a project that involves a totally different culture?

6. Do you think your concept statement was improved in writing after receiving help from CXC office (Vincent)?

7. How do you think the importance of developing the design concept statement?

8. How do you think your modified concept statement helped your final design?

9. What did you learn about sustainability issues and concepts in a certain cultural framework?

10. Was the daylight analysis during the process of studio project informed you for the final design solution? How and explain.

11. Have you encountered anything particularly difficult or challenging during the design process?

12. Which part of the design process needs to be strengthened to achieve the overall goal?

13. How do you feel about working on a real project instead of an imaginary one? Does the practicality of the real project help you in a certain way?

14. Any other suggestions or comments?
Appendix B: Examples of student concept statements of pre- and post-CxC

Student 1 – pre-CxC:
In keeping with traditional Chinese building practices, both the Courtyard style, welcome entrance and the Gable wall style, guest building use Feng Shui as a means of organizing spatial relationships in the Mei-Shan Cultural and Ecological Park. My two spaces incorporate imagery, materials and principles of nature as well as a large amount of open space to encourage positive and free flowing energy. The study of basic relationships between humans, nature and environment guide these two designs. Through furniture placement and creating a space, conscious of an individual’s placement within a given area, Feng Shui offers visitors to the ecological park a chance to experience the ancient Chinese practice.

Student 1 – post-CxC:
The Courtyard style, main entrance and Gable Wall style, hotel at Meishan Cultural and Ecological Center vary in building style, but are brought together by sharing design aesthetics inspired by nature and a Taoist way of life. As Taoism emphasizes balance, harmony, meditation and sincere thought outside of self; the conceptual forces guiding this design are simplicity, modesty and nature (a unifying domain of existence that is often underappreciated or unnoticed.) Both buildings draw the viewer to the surrounding nature scenery. Neutral color choices and natural materials invoke a peaceful state of mind for the individual to focus on the world around them, outside of the self.

In the Main entrance building a traditional Chinese Li pond wraps several different paths of travel. It acts as a reminder of the variety of possible paths to follow literally and metaphysically. The walls facing the courtyard are glass for a consistent view of the landscaped courtyard. Simple, natural color choices encourage calmness and depth beyond superficial or instant stimulation.

The Fenghuo Gable Wall style hotel offers family, double, single and handicapped accessible rooms separated onto two floors. Rooms on the north façade contain balconies and broad glass windows to provide access to the natural surrounding landscape. Cocoon like beds enshroud occupants of the typical double or single room on the second floor. On the first floor below, traditional, handcrafted, Chinese, wooden furniture links Meishan culture with objects inspired and created from nature.

Student 2 – pre-CxC:
To design a courtyard where community members and visitors can enjoy a day of relaxation while still learning about the Chinese culture; through the use of food, art work, music, and using the Chinese Courtyard as a key design element to create walkways that open onto a central courtyard which will create an open layout that blends with the surrounding outdoors to bring in the inside outside.

REFERENCES (CHICAGO)

Embracing Globalization in Junior Interior Design

JUN ZOU / PHILLIP TEBBUTT
Louisiana State University

NARRATIVE

INTRODUCTION
Globalization has spread from economic, social and cultural domains to art and design. Implementing Interior design (ID) education to actively engage globalization is critical to the global competitiveness of US ID profession, which mandates new curriculum development. This mandate is reflected in the 2009 CIDA Professional Standards as cited below,

“Global Context for Design” – Students understand: Globalization and the implications of conducting the practice of design within a world market. How design needs may vary for different socio-economic populations.

This paper presents an educational effort at integrating globalization into the existing ID curriculum in our program. A series of junior ID studio courses have been developed to support a design and education environment that incorporates culture-dense contents, remote collaborative design teams, and live projects. In the rest of the paper, we will elaborate in detail on pedagogical considerations, arrangements, techniques as well as experience gained from this course model.

SETUP AND CONSIDERATIONS
Since 2008, the Department of Interior Design at Louisiana State University and the Interior Design program at Hunan University have collaborated in a series of education efforts to strengthen the globalization aspects in both curricula. After months of detailed discussion and planning between the two faculties, the collaboration was formally launched in Fall 2008 with the following general consistencies:

- Continuity: collaboration platform should be founded on recurring courses to ensure continuity
- Live Projects: live projects are preferred over hypothetical ones to emphasize practicality
- Interactions: interactions between two education systems are effective in culture exchange and are mutually beneficial
- Holistic approach: the collaboration should not be confined in any specific focus, for instance, culture. The program could and should adopt different themes for different semesters so as to stay current on latest design issues

At LSU, the junior studio course was chosen as the collaboration platform; and a comparable junior level core course was selected at Hunan University. Such a choice was made based on the following three main considerations: 1) Using a core course for this exercise demonstrates strong institutional commitment to the globalization issue; 2) Students at this level have already gained adequate skills and maturity to appreciate and explore the globalization aspect of design; and 3) The globalization aspect corresponds to the our existing curriculum agenda set for the junior year: outreach and community service.

The initial project for the Fall 2008 (Figure 1) semester concentrated on the Meishan Cultural and Ecological Park design project. This is a live project focusing on the preservation of an important, local, cultural form in Hunan and on environmental friendly design. As a comprehensive project that integrates planning, architecture, landscaping and interior design, the Meishan project offers a broad range of design opportunities for
educational programs to join. In fact, we have adopted the Meishan project for two semesters. For the semester of Fall 2008, the course project placed emphasis on the cultural aspect of design, in which, students had the opportunity to develop interior design for buildings of hanging-foot, gable-wall, and courtyard styles. In Spring 2010 (figure 2), the course project focused on sustainability issues. Among other things, Ecotect software was adopted for daylight analysis. In 2009, we selected two projects from the heart of Cajun country. One is an antique furniture store renovation project in Opelousas (figure 3), Louisiana, and the other site selection emerged from the main street revitalization project of Franklin (figure 4), LA. The choice of all four projects exhibits our preference for live projects, and for projects with strong cultural flavor and desire for sustainability. It is worth noting that the involved two regions, Hunan and Louisiana, share a lot of characteristics in common – hot and humid climate, agriculture-based economics and remarkable cultural and historical significance. These similarities make our collaboration particularly interesting.

When pursuing the Meishan project, our students were required to research topics that were largely unknown to them and to cope with unfamiliar situations that might occur in any international project. It was anticipated that some barriers to arise from this setting, for instance, the language barrier. With on-site guidance from the bilingual instructor and the support from abundant information available either online or in the libraries, the experience of students to overcome the language barrier has been exciting and surprisingly positive. As a specific note, online translators, such as Google translator have turned out to be reasonably useful in assisting our students to gain preliminary understanding of online materials written in Chinese.

Healthy doses of “culture shock” were anticipated and carefully regulated. By demanding cultural elements to be integrated in the design, we created valuable opportunities for the class to explore the depth of ancient Chinese minds. By also emphasizing sustainability issues, we exposed students to the possibility of connecting their freshly gained knowledge on ancient Chinese thinking with modern sustainability concepts. Establishing a connection of this kind not only helps the students to gain appreciation for ancient intellectual achievements, but also inspires them to re-think modern scientific principles with a historical perspective.

One of the unexpected barriers occurred in the first semester was the conversion between the imperial and metric units systems. Soon after this issue was recognized, a short lecture and an exercise were added to the course schedule to address the issue. By the end of the semester, students were able to convert back and forth between the two unit systems comfortably.

remotE coLlaboration
Our studio classes were structured to enable remote collaboration. Most significantly, Internet and other communication tools were extensively utilized to research, share, present, and develop design ideas. Since our first collaborations, we have been utilizing blogs as a required communication tool for both students and instructors. During the semester, the whole design process was divided into four phases: research, conceptual design, schematic design and final design. While all students were encouraged to share and disseminate their research and designs at any point time, they were required to post their work by the end of each design.
phase to receive critiques from professors at both institutions. Such an open environment fosters learning, information sharing, teamwork and healthy competition among peers within and between the two institutions. In this way, the instructor acted more as a facilitator than information giver, which to our opinion helps stimulate students’ creativity.

**INTERACTIONS BETWEEN DIFFERENT EDUCATION SYSTEMS**

An additional beneficial feature derived from the collaboration is the unique opportunity for students and instructors alike to be exposed to two different education systems. Throughout the class, we constantly observed and experienced different emphases from the two systems. For instance, the Chinese system stresses more on final design results, whereas the American system put more weight on the design process. Chinese students would generally put more efforts on color rendering, whereas the American counterparts are generally more natural in verbal communications. Having students from both systems working on the same projects helps both sides to learn from each other. The comments between students and critics by professors from the two sides profoundly influenced students design behavior and result, at the same time, helped professors and programs to critically rethink of their own evaluation criteria so as to make them more open to globalize perspectives.

**SUMMARY**

The educational collaboration between Louisiana State University and Hunan University by their junior ID courses has been implemented for four semesters and has been well received by involved students, professors, and institutions, as well as communities that have been served. It has successfully accomplished the primary goals of fostering students to develop global perspectives, kept students interested, and provided first-hand experience for educators and researchers to systematically compare and contrast the two educational systems as professors and programs continually design the quality of ID education for the future.
Figure 2: US student worked on Meishan project, using sustainability concept within cultural framework as drive for the whole design, spring 2010

Figure 3: Chinese student worked on Opelousas Main Street project, create contrast and unity interior space, spring 2009
REFERENCES (APA)

SCHOLARSHIP
Evidence of Transformative Learning in Interior Design

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Kansas State University

NARRATIVE

INTRODUCTION

This paper describes the results of a study that sought to understand the transformative learning experiences of upper-division interior design students in an elective course on sustainability and interior design using analysis of writing assignments submitted by students in the fall semester of 2008. The three-credit hour course used reading, writing, and discussion to help students develop an understanding of sustainability from historical, technological, and cultural points of view. One of the expectations was that each student would develop a personal ethical position on issues related to sustainability that would influence his or her future as an interior designer.

Transformative learning theory (TLT) explores the processes by which the worldviews of individuals, groups, and organizations are changed as a result of life experiences. TLT is focused on how we make meaning and “how we learn to negotiate and act on our own purposes, values, feelings, and meanings, rather than those uncritically assimilated from others to gain greater control of our lives as socially responsible, clear thinking, decision makers” (Mezirow & Associates, 2000, p.8). It is expected that these new or transformed perspectives or world views will be more complex than previously held ones and they will acknowledge a pluralistic view of reality.

According to TLT, the driving purpose or central goal of the human mind is to make meaning out of experience. TLT also recognizes that all meaning is embedded in the context of how we know it (Mezirow & Associates, 2000). TLT is intended as a “comprehensive, idealized, and universal model consisting of the generic structures, elements, and processes of adult learning. Cultures and situations determine which of these structures, elements and processes will be acted upon and whose voice will be heard,” (Mezirow, 1994, p.222).

While theorists and practitioners (Brookfield, 2000; Cranton, 1994) agree that transformative learning is not a neat, linear process, ten key phases have been delineated. They are listed in Figure 1.

With respect to a planetary perspective, transformative learning theory “recognizes the interconnectedness among universe, planet, natural environment, human community, and personal world. Most significant is recognizing the individual not just from a social-political dimension but also from an ecological and planetary one” (Taylor, 2008, p. 9-10). A growing body of literature gives support for use of TLT as an appropriate vehicle for researching and facilitating perspective transformation related to environmental sustainability (Lange, 2004; Moore, 2005; O’Sullivan & Taylor, 2004; Sims & Sinclair, 2008). This indicates that transformative learning theory is an appropriate guiding framework for inquiry into the effects of this course on students’ perspectives.

Critical reflection is a key aspect of transformative learning (Brookfield, 1987, 1995). Acknowledging that definitions of reflection are often vague and problematic, Hatton and Smith (1995) reviewed the literature on reflection and strategies designed to facilitate the development of reflective skills. Out of this work, they developed criteria for recognizing evidence for different types of reflective writing. While this work was developed out of teacher education, it has been used in past research related to interior design and sustainability in higher education settings (Gulwadi, 2009).
**METHODOLOGY**

Student anticipation and reflection writings from this course were analyzed using the frameworks of transformative learning theory (Mezirow, 1990) and critical reflection (Hatton & Smith, 1995). The writing samples (397 papers from 17 students) were coded for TLT stages (See Figure 1) and Hatton and Smith's typology. Hatton and Smith’s (1995) typology begins with a descriptive (or non-reflective) level and moves through increasingly complex stages. (See Figure 2 for a chart that describes these four stages.) This typology was chosen to illuminate how students wrote about their reactions to class readings and discussions. In addition to examining general questions about the cohort’s transformative learning experiences, the research sought to answer the following questions:

1. What discussions facilitated critical questioning around student assumptions about design and sustainability?

2. Were students able to envision a positive future?

3. Did students develop an understanding of their impact on environmental and societal problems?

4. Did students’ sense of self in a global context change?

**RESULTS**

**Impacts of Course Readings and Discussions**

The transformative learning process elicits a range of emotions and feelings, which were demonstrated in the participants’ writings. Often class readings elicited strong responses among participants, such as empowered or encouraged and anxious or frightened. (See Figure 3 for a table showing the results for each of six selected readings.) Student writings reflected reactions to class discussion, as well as readings. Figure 4 shows coding for Mezirow’s critical assessment of assumptions by reflection and anticipation writing pairs. As the figure shows, a higher percentage of students’ writings were coded for critical assessment in module one and three than in module two. The highest percentage of students evidencing critical assessment occurred in week three of module one (70%). During this week, students read and discussed *The Philosophy of Sustainable Design*, (2004) by McLennan and *Women in Green: Voices of Sustainable Design*, (2007) by Gould and Hosey.

**Envisioning a positive future**

One hundred percent of students made reference to a variant of the word optimism in their writing, with 47 separate entries containing a variant of the word. Fifty-three percent of students referred to feelings of empowerment in 19 separate entries. Seventy percent of students had statements indicating they felt that they could impact the future in a positive way.

**Understanding their impact on environmental and societal problems**

Seventy percent of students (12/17) had statements coded that directly discussed the impact of themselves as designers on the world’s environmental and societal problems. Within these statements there were 31 instances of students discussing their roles as designers in 39 separate writing assignments. These statements were related to leadership roles that students expected themselves to play in their future careers or had already begun playing.

These roles included educating peers and the general public; helping to shape or redefine social values, particularly redefining the American Dream; designing sustainable products and processes, acting as problem solvers; improving the quality of life for humans; helping society move toward change; reinventing the world; and taking responsibility for the past and future impacts of designers on the global environment.

The top three stages with the highest percentage of coded writing samples are self exploration, critical assessment of assumptions, and exploration of options. Of the 397 writing examples evaluated, 46.5 percent contained material coded for self-examination. In these examples, participants reflected on their lives and actions as individuals within the context of a society whose values they questioned. Many examples coded for the self-exploration stage are written from the perspective of exploring how “we” as a society have failed and what “we” should be doing to fix it.

Overall, 23.6 percent of the writing examples contained material coded for critical assessment of assumptions.
In this stage, participants are questioning social and cultural assumptions related to economics, progress, consumerism, beauty and other values that a culture’s members often take for granted.

Of the total writing examples evaluated, 45.3 percent contained material coded for exploration of options. At this stage, participants discussed the role of the interior design field in sustainability and their potential roles in their chosen field.

**Sense of Self in a Global Context**

Forty-nine percent of all writing samples contained one or more uses of the words humanity, global, globalization, or world. Some students’ writings demonstrated an awareness of the impacts of design in a global context.

**Analysis Using Hatton and Smith’s Four Operational Aspects of Reflection**

The majority of samples were coded into two aspects, Descriptive Reflection (69.7% of anticipation and 68.6% of reflection) and Dialogic Reflection (26.5% of anticipation and 24.9% of reflection). There was no significant difference in reflection levels between the anticipation and reflection papers.

When the analysis compares students’ reflection levels in the three separate course modules, the data indicate: 1) the percentage of pure descriptive samples decreased as these students progressed through the course and 2) the second module of the course, which addressed technology and sustainable design, had a higher level of dialogic reflection than the other modules.

In the final reflective paper, there were a higher percentage of samples coded in the Dialogic Reflection aspect than in earlier reflective papers. (See Figure 5.) This reflection paper was produced for the week after students were asked to answer the following questions in 90-second in-class “speeches”.

**Given your current state of knowledge of sustainability and interior design, briefly describe the greatest accomplishment you envision as a result of your future professional work.**

**DISCUSSION**

Transformative learning theory (TLT) provided insights into the impact of this course on students’ perspective transformation. Although there is additional analysis that could be done, the analysis provided information that can be used to revise this course for future offerings. For example, several of the assigned readings that were selected for analysis did elicit strong reactions and they should be retained. If an awareness of self in a global context is a goal of this course, the readings and discussions need to be improved to bring about this result. Based on this analysis, Module 2 was the least helpful in promoting TLT, however this may be because the content (sustainability and technology) was not new to these students. And based on the findings of this study, providing direction for at least a few of the reflective writing assignments may be appropriate to enhancing student consideration and/or expression of TLT.
10. Reintegration
9. Building Competence
8. Provisional Trying of new roles
7. Acquisition of Knowledge and Skills
6. Planning a course of action
5. Exploration of Options
4. Recognition of Shared Experience/Process
3. Critical Assessment of Assumptions
2. Self-exploration
1. Disorienting Dilemma

<table>
<thead>
<tr>
<th>Percentage of Writing Samples Coded for Each Stage</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.5  2.7  1.5  17.3  4.2  45.3  6  23.6  46.5</td>
</tr>
</tbody>
</table>

Figure 1: Percentage of writing samples codes for each of Mezirow’s (1991) stages of transformative learning.

<table>
<thead>
<tr>
<th>Descriptive (non-reflective)</th>
<th>Descriptive reflection</th>
<th>Dialogic reflection</th>
<th>Critical reflection</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Rote reporting of facts</td>
<td>1. Limited justification</td>
<td>1. “Stepping back” from events and actions</td>
<td>1. Awareness of multiple perspectives, historical, and socio-political contexts</td>
</tr>
<tr>
<td>2. Simplistic descriptions of events and literature</td>
<td>2. Consideration of alternative viewpoints</td>
<td>2. Different levels of discourse with self, events, and actions</td>
<td>2. Logical interpretation of events and actions based on theory and practice</td>
</tr>
<tr>
<td>3. No discussions beyond descriptions</td>
<td>3. Reflection based on personal perspectives or rationales</td>
<td>3. Use of judgments and possible alternatives for explaining and hypothesizing</td>
<td>3. Argument evaluation of personal and external factors and perspectives</td>
</tr>
<tr>
<td>4. Recognition of multiple factors</td>
<td>4. Recognition of multiple factors</td>
<td>4. Reflection is analytical or integrative, linking different factors and perspectives</td>
<td></td>
</tr>
</tbody>
</table>

Figure 2: Four Operational Aspects of Reflection from Hatton and Smith as indicated in Gulwadi (2009).

<table>
<thead>
<tr>
<th>Reading</th>
<th>Associations/reactions</th>
<th>Coded for Critical assessment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lowenthal, Stewarding the Future</td>
<td>Curious to explore</td>
<td>Yes</td>
</tr>
<tr>
<td></td>
<td>Depressing</td>
<td></td>
</tr>
<tr>
<td>Papenek, The Green Imperative</td>
<td>Encouraged</td>
<td>Yes</td>
</tr>
<tr>
<td></td>
<td>Anxious</td>
<td></td>
</tr>
<tr>
<td>Gould &amp; Hosey, Women in Green: Voices of Sustainable Design</td>
<td>Empowered</td>
<td>Yes</td>
</tr>
<tr>
<td></td>
<td>Refreshed</td>
<td></td>
</tr>
<tr>
<td>McLennan, Philosophy of Sustainable Design</td>
<td>Made me think</td>
<td>Yes</td>
</tr>
<tr>
<td>Costanza, Visions of alternative (unpredictable) futures and their use in policy analysis</td>
<td>Disillusioned</td>
<td>Yes</td>
</tr>
<tr>
<td></td>
<td>Frightened</td>
<td></td>
</tr>
<tr>
<td>Seymour, Optimistic Futurism</td>
<td>Inspired</td>
<td>Yes</td>
</tr>
<tr>
<td></td>
<td>Empowered</td>
<td></td>
</tr>
</tbody>
</table>

Figure 3: Above is a selected list of class readings and the corresponding words students used in reflecting on them. Each of these readings also were discussed in entries coded for Mezirow’s Critical Assessment of Assumptions stage.
Figure 4: Analysis of the number of samples from 17 students based on pairs of anticipation and reflection papers that displayed Mezirow’s Critical Assessment of Assumption stage.

Figure 5: Comparison of final reflective papers to the total reflective papers for the semester showing the increase in dialogic reflection.
REFERENCES (APA)


An Inter-Disciplinary Framework for Store Design and Its Implications in Student Design Analysis and Development

KYUHO AHN
University of Oregon

NARRATIVE

PURPOSE
Since Kotler (1974) suggested that the physical store environment, ‘atmospherics,’ induces shopping behaviors, many empirical studies have supported the notion of positive store-environment/consumer-behavior relationships. However, the findings have been difficult to implement in store design practice because of the lack of a holistic view. Design contexts are much more complex in nature, whereas empirical studies tend to focus solely on one-on-one or limited relationships. Particularly in commercial design application, stakeholders, including designers, retailers, and store managers, seek highly creative outcomes, yet decision making should be based on strong rationales. Often creativity is also isolated from the world of logic and empirical sciences because of its nature of non-replicability. Filling these gaps is necessary in store design practice.

Ahn and Akkurt (2005) suggest an interdisciplinary framework (A2S model) that conceptualizes a holistic view of relationships between store taxonomy and emotional experience affecting shopping behaviors. Benefits of the A2S model are several. First, the model provides designers a tool for analyzing an existing environment and its functions in a systematic manner. Second, it enables designers to identify a prioritized taxonomy and design criteria useful for design idea generation. Third, it can be used as a decision making tool that is useful for all stakeholders because of its integrated aspect of three disciplines: marketing, environmental psychology, and aesthetics. Finally, the model can be used for design guidelines because it does not impair creativity in design development.

Ahn (2008) demonstrates applicability of the A2S model by applying it in his design process. He also suggests its implications for student projects. Therefore, the goal of this research is to apply the A2S model in students’ design processes and to measure students’ perceptions of usability of the framework.

GROUND THEORIES
Three grounded theories are integrated into the A2S model. Each theory conceptualizes relationships between sensory stimuli and induced feelings in one of the following disciplines: marketing, environmental psychology, or aesthetics. Each theory also provides an important foundation to complement the other theories to make the model useful in design practice.

Stimuli-Organism-Response (S-O-R) Theory (Donnovan & Rossiter, 1982)

S-O-R is a common theory in marketing for determining interrelationships between store environment and induced consumer behaviors. It has been validated by many business researchers and provides the backbone of the A2S model. It conceptualizes that consumer behaviors (time spent in a store, shopping enjoyment, exploration of a store, and willingness to spend more money) can be determined by the interaction of two emotional dimensions, ‘pleasure’ and ‘arousal,’ that are induced by store stimuli known as ‘Atmospherics.’ Pleasure in this model is an induced feeling of joy, happiness, and satisfaction, whereas arousal is an induced feeling of excitement and alertness determined by information load (complexity, novelty). In a pleasant environment, approach behavior is maximized when the arousal level is high (i.e., a complex and unfamiliar environment); in a neutral environment, a moderate level of arousal maximizes approach behavior. However, determination
on what induces pleasure and a neutral environment is not clear, and an understanding of relationships between stimuli and induced feelings is lacking. The A2S framework clarifies this by adapting Berlyne’s arousal concept.

**Aesthetics Theory (Berlyne, 1971)**

This theory provides clarifications on the relationship between ‘pleasure and arousal.’ It is particularly important because it, along with Kaplan & Kaplan’s preference theory (1982), provides methods on how to control store stimuli for an optimum level of preference. According to this theory, an optimum level of beauty, known as ‘hedonic value,’ is a result of a moderate level of ‘arousal’ that can be achieved by combinations of two sets of control devices, arousal-increasing devices (novelty, complexity, conflict, instability, and ambiguity) and arousal-moderating devices (familiarity, predictability, similarity, dominance, and grouping). It can describe how two extreme artworks (i.e., Minimalist paintings vs. Expressionist paintings) can achieve the same level of arousal. This allows the A2S model to be practical without impairing creativity.

**Preference Theory (Kaplan & Kaplan, 1982)**

This theory provides the A2S model with a key concept of design intentions that are vital for store design applications and decision making processes among stakeholders. According to the theory, people perceive information based on pre-established knowledge, and the optimum level of preference is provoked by the combination of two informational factors, sense factors (coherence and legibility) and motivational factors (complexity and mystery).

Unfortunately, none of the three grounded theories provides an environmental taxonomy in relation to each of the other theories. Therefore, the A2S model suggests a taxonomy in relation to the integrated model.

**A2S Model**

The A2S model (see Figure 1) suggests that consumers’ approach behaviors (liking, excitement, exploration, desire to stay, and attractiveness) can be determined by emotional mood induced by the interaction of two distinctive in-store emotional experiences, *pleasure* and *arousal*. The optimum level of preference can be induced by achieving a moderate level of arousal under the condition of pleasure that is defined as an emotional state of a consumer’s physiological and psychological comfort. Pleasure is a precondition of establishing approach behavior. The quality of pleasure is bipolar and its stimuli are unnoticeable unless they exceed a certain level. Store stimuli that affect pleasure are *ambient factors* and *spatial factors*. Ambient factors are sensory stimuli including ambient lighting, sound, temperature, and olfactory. Spatial factors are functional elements that allow customers to continue or complete shopping tasks in a comfortable and safe manner. Both ambient and spatial factors may not be noticeable until discomfort is elicited.

Arousal is perceived as sensory experiences, and the perceived and accumulated arousal level can be different by individual, culture, and surrounding environment. The arousal level is strongly associated with shopping intentions and the consumer’s expectations. Therefore, this concept encourages designers to define intended audiences and their expectations. A targeted moderate arousal level determined by a designer or stakeholders can be controlled by two groups of arousal control devices, arousal-increasing devices (complexity, novelty, ambiguity) and moderating devices (coherence, familiarity, legibility). The uses of the proposed devices depend on the designer, which allows maximum creativity. The store stimuli that directly affect arousal level are determined as ‘sensory factors,’ which are divided into two groups, long-term factors and short-term factors, and are based on tolerance level. Long-term factors include architectural elements, colors, materials, people, goods, and accent lighting and are mainly associated with visual elements. Short-term factors consist of ambient lighting, temperature, sound, and odor and are associated with ambient factors. Because ambient factors can elicit non-pleasure if they exceed certain levels, designers must be careful when using short-term factors as attention creation media.

**PROCESS**

In the current study, the A2S model was introduced to students in an interior design seminar for two academic years. A total of 18 students (9 students in each year) participated. The students were asked to analyze existing local or national brand stores (see Table 1) based on the model and to apply the model in their design devel-
developments (see Table 2). For implications of design development, the first year participants (Group A) applied the model to propose a series of window display ideas for a local charity store as a design charrette. The second year participants (Group B) were asked to self critique their studio projects using the model. At the end of each term, an exit survey was conducted to investigate students’ experiences regarding the A2S model’s implications; a 5-point Likert scale was used for responses. A total of 17 students (1st year: n=8, 2nd year: n=9) participated in the survey.

RESULTS
The survey (see Table 3) found that the A2S model provides a tool that enables a student to analyze an existing store environment in a systematic manner and helps the student explain his/her design. Students felt that the model provides a tool to analyze an existing store environment systematically (4.41, n=17). It was interesting to note that with the overall positive experience, Group A students, who actually implemented the model in their design process, felt it was more useful in design development (3.88) than did Group B students (3.44). The results also support Ahn’s (2008) finding that the A2S model does not impair students’ creativity (4.24, n=17), while it does provide a systematic tool for design analysis and development. Some suggestions were made by students to improve the model, such as clearer definitions of some taxonomy applied to both pleasure and arousal, a clearer distinction between “pleasure” and “arousal,” etc. Implementation of the A2S model into an actual studio project is suggested to validate the model further.

REFERENCES (APA)
Figure 1. A2S Model (Integrated Framework of Atmospherics)

**Ambient factors**
- Ambient Lighting
- Temperature
- Sound
- Odor

**Spatial factors**
- Anthropometrics
- Allocation of Functional Facilities (food, restroom)
- Territoriality (security)

**Sensory factors**

- **Long-term factors**
  - Architectural Elements
  - Color
  - Materials
  - People
  - Goods
  - Accent Lighting

- **Short-term factors**
  - Ambient Lighting
  - Temperature
  - Sound
  - Odor

**AROUSAL**
- Arousal Control Devices
  - Increasing devices
    - Complexity
    - Novelty
    - Ambiguity
  - Moderating devices
    - Coherence
    - Familiarity
    - Legibility

**PLEASURE**
- Comfort
- Relaxation
- Physiological Desire

**MOOD**
- Patron Intention

**APPROACH**
- Liking
- Excitement
- Exploration
- Desire to Stay
- Attractiveness
<table>
<thead>
<tr>
<th>A2S Model</th>
<th>Group A Sample (Grocery Store)</th>
<th>Group B Sample (Sporting Goods Store)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Pleasure:</strong> Comfort, Relaxation, Physiological Desire</td>
<td>Ambient lighting: warm appearance enhanced through yellow walls; Comfortable temperature range. Stimulating music, but store noise overwhelms the music. Good separation of scents (i.e., Deli vs. Produce)</td>
<td>Local characteristics, daylight, good color rendering; temperature – over heated under the lights; music too loud to affect comfort level.</td>
</tr>
<tr>
<td>Ambient Factors</td>
<td>Ambient Lighting; Temperature; Sound; Odor</td>
<td>Good anthropometric support throughout the store; separation of employee restroom from restroom upstairs; good back of the house allocation; good visual and physical accessibility. Good way finding; no service counter, but enough places to ask; scaled down ceiling/lighting for comfort feeling.</td>
</tr>
<tr>
<td>Spatial Factors</td>
<td>Good size of store fixtures; resilient and comfortable store materials for long stay; good central location of cash wrap; good privacy for bathroom and fitting room; good sense of security with open floor plan. Good visibility of staff.</td>
<td></td>
</tr>
<tr>
<td><strong>Arousal</strong></td>
<td>Architectural Elements: Good landmark and focal points achieved by ceiling elements; use of different material to create contrast; use of glass in seating area to create connectivity to the outside.</td>
<td>Architectural Elements: Usage of display shelves and racks to define separation of space and circulation. Dropdown ceiling and floor details for directional movement.</td>
</tr>
<tr>
<td>Sensory Long-term Factors</td>
<td>Strong visual merchandising in produce and flower display area; different color of terrazzo in the first floor as a tool for arousal to highlight certain corners. Use of different tones of green color to create coherence.</td>
<td>Overall complexity of space is low in architectural elements, but perceived complexity and arousal is high due to graphics, color, and various elements standing in space.</td>
</tr>
<tr>
<td></td>
<td>Overall warm light to accentuate the daylight; dim light over bakery to create contrast; special decorative lighting to create residential feeling in seating area. Different dress color for each department.</td>
<td>Sound: The first thing that happens when you walk into the store is that you are greeted with a display wall of history and loud music. Upbeat hip hop music immediately sets the tone and atmosphere of the space. This stimulus creates an initial high arousal. Lighting: By pointing the light source at the graphics on the wall, more arousal is created in the space. All the shoes and clothing displayed along the walls are also lit. This generates high arousal by creating contrast and complexity between the display walls and surrounding walls.</td>
</tr>
<tr>
<td>Sensory Short-term Factors</td>
<td>Strong scent next to takeaway food; audible sound in entrance areas, wine area (lower ceiling), and restroom (lower background noise). Colder wine area to imitate cellar image; perceived fresh smell in produce area due to lower temperature.</td>
<td>Complexity in the space elevates the arousal. Asymmetry creates complexity and arousal in the space. Novelty is created by the new product lines. Legibility and hierarchy are created in the space from the colors and graphics set up.</td>
</tr>
<tr>
<td></td>
<td>Moderating devices - Coherence; Familiarity; Legibility</td>
<td></td>
</tr>
</tbody>
</table>
Table 2. A2S Model Implications in Design Development

<table>
<thead>
<tr>
<th>A2S Model</th>
<th>Group A Sample (Design Charrette)</th>
<th>Group B Sample 1 (Project Evaluation)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Pleasure: Comfort, Relaxation, Physiological Desire</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ambient Factors</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fall Display</td>
<td>A2S Model Implications Fall</td>
<td></td>
</tr>
<tr>
<td>Ambient Lighting; Temperature; Sound; Odor</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Spatial Factors</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Human Factors; Allocation of Functional Facilities; Territoriality (Security)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Arousal</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sensory Long-term Factors</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Winter Display</td>
<td>A2S Model Implications Winter</td>
<td></td>
</tr>
<tr>
<td>Ambient Lighting; Temperature; Sound; Odor</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sensory Short-term Factors</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Increasing devices - Complexity; Novelty; Ambiguity</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Arousal Control</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Moderating devices - Coherence; Familiarity; Legibility</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Spatial Factors</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fall</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Focus on novelty/surprise -- elements in a typical “living room” scene created from unexpected objects.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Continuity in the use of fall colors (reds, yellows, oranges, browns) throughout the design.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Familiarity of the design as a whole (typical living room set-up) acts as a moderator.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Utilizing the most abundant and popular merchandise elements within the display allows the consumer to relate the display to the available merchandise.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Comfort and familiarity in the use of books plays on the association of Fall and reading.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Less control over elements of comfort -- ambient sounds, smells, temperature, etc.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Winter</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Focus on novelty/surprise -- elements in a winter landscape created from unexpected objects.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Continuity in the use of winter colors (blues, whites, grays) throughout the design.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Familiarity of the design as a whole and individual objects act as moderators.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Utilizing the most abundant and popular merchandise elements within the display allows the consumer to relate the display to the available merchandise.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Comfort and familiarity in the use of kitchenware plays on their association with winter (i.e., celebrations and entertaining).</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Less control over elements of comfort -- ambient sounds, smells, temperature, etc.</td>
<td></td>
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<td></td>
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</tr>
<tr>
<td><strong>Landmarks</strong>: Some of these factors may be related to the specific user and his/her characteristics; however, in general these are the tools used to increase/m moderate arousal.</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Complexity/Relative Novelty</strong>: the nest image and graphic are repeated in many different dimensions, scales, materials, and volumes, thus creating complexity and novelty.</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Legibility/Familiarity</strong>: the hierarchy of the structure creates legibility. Familiarity is created because the image relates strongly to the name of the restaurant, “Nest.” Recognition of the diagonal pattern creates familiarity. The composition of the shelving creates coherence.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### Table 3. Results of Survey on Student Experiences of A2S Model

<table>
<thead>
<tr>
<th>1= Strongly disagree</th>
<th>5= Strongly agree</th>
<th>Useful for design analysis/evaluation</th>
<th>Useful for design development</th>
<th>Likelihood of using A2S Model</th>
<th>The model helped me be more creative</th>
<th>The model did not impair my creativity</th>
<th>The model helped me to analyze a space systematically</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean (n=17)</td>
<td></td>
<td>3.97</td>
<td>3.65</td>
<td>3.53</td>
<td>3.44</td>
<td>4.24</td>
<td>4.41</td>
</tr>
<tr>
<td>Group A (n=8)</td>
<td></td>
<td>4.00</td>
<td>3.88</td>
<td>3.50</td>
<td>3.88</td>
<td>4.44</td>
<td>4.13</td>
</tr>
<tr>
<td>Group B (n=9)</td>
<td></td>
<td>3.94</td>
<td>3.44</td>
<td>3.56</td>
<td>3.06</td>
<td>4.06</td>
<td>4.67</td>
</tr>
</tbody>
</table>
Developing contemporary designs from antiquity: A multidisciplinary, multicultural design immersion

LORI A. ANTHONY / DAVID E. GOLDBERG
Chatham University / Penn State University

NARRATIVE

For centuries architects have participated in a “Grand Tour” of Europe to round their classical education. They believed an embodied experience of antiquity to be integral to the education of architecture. In 2010 a study abroad experience continued this tradition with an immersive study of Italian and Greek ancient, classical, renaissance, and baroque architecture. Students visited the Italian cities of Florence, Rome, Sorrento, Capri, Brindisi, and the Greek cities of Patras, Delphi and Athens in ten days. Following their travels, students participated in a multi-disciplinary design charrette where they developed contemporary designs from their reflections of antiquity. The purpose of this paper is to describe and illustrate a multi-disciplinary collaboration with students from fourteen different majors completing a three-day design charrette.

This course was initially designed as a short-term study abroad course to Italy and Greece for a small group of 15-20 interior and landscape architecture students. The university encourages undergraduate (sophomore, junior and senior) and graduate students to study abroad and as such, each course offered through the study abroad program must be available to all students in the university. Interest in this course was overwhelming and enrollment swelled to 41 students. The high number of enrollee requests transformed the student composition from solely interior and landscape students to include students from fourteen different disciplines including: psychology (1 undergraduate student), biology (2 undergraduate students), elementary education (3 undergraduate students), creative writing (1 undergraduate student), English (1 undergraduate student), visual arts (2 undergraduate students), arts management (3 undergraduate students), interior architecture (14 undergraduate students and 3 graduate students), landscape architecture (5 graduate students), professional communication (1 undergraduate student), cultural studies (1 undergraduate student), social work (1 undergraduate student), art history (2 undergraduate students) and theater/art history (1 undergraduate student).

The challenge became integrating the students’ diverse interests while maintaining the initial design intent of the course. With 41 students, faculty re-evaluated the course objectives and proposed new student outcomes. To that end, the following are the objectives and student learning outcomes that were developed:

COURSE OBJECTIVES

- Students apply knowledge learned from the classroom and the trip to a design project
- Students understand the Italian and Greek influence on modern landscape and interiors
- Students work collaboratively as an integrated multi-disciplinary team
- Students explore the “meaning of place” through sketching
- Students apply “placemaking” to a design project
- Students communicate their ideas through rapid visualization

STUDENT LEARNING OUTCOMES

Analytical Thinking

Students will be able to formulate aesthetic and functional judgments of Italian projects.
Problem Solving

Students will be able to synthesize the design process and political motivation behind Italian design as it relates to architecture and landscape.

Processes

In addition to concepts and information, students will be able to understand processes of design and culture within a historical environment as they relate to the theoretical constructs of a design.

Written Communication

Students will be able to articulate through the written word their opinions and experiences.

Students will be able to graphically communicate details and forms through continual entries in their sketchbooks.

TEAM COMPOSITION

The 1967 Study of Education for Environmental Design, otherwise known as the Princeton Report emphasized the need for building bridges between architecture and non-design disciplines (Boyer & Mitgang, 1996). The design professions support collaboration and seldom work in isolation yet design students rarely have the opportunity to work with others outside their respective disciplines. Almost thirty years after the Princeton Report, students and faculty are still “disconnected and isolated from other disciplines” (Boyer & Mittgang, 1996, p.8). They do not collaborate outside the major and hence there is a lack of appreciation and understanding of how design disciplines, including architecture, interior design and landscape architecture are integrated (Aldington, 1996; Dean, 1997; Moonan, 1998).

Each discipline (interior design, landscape architecture and architecture) values the importance of teamwork and recognizes that developing the skills needed to work in multi-disciplinary teams must begin with design education. Design programs seek ways to integrate collaboration into the curriculum as is mandated by their respective accreditation standards. The Council for Interior Design Accreditation (CIDA) requires interior design students to “engage in multi-disciplinary collaborations and consensus building” (Standard 5 Collaboration) (p.II-16). The Landscape Architectural Accreditation Board (LAAB) mandates that the curriculum provide “…educational context enriched by other disciplines, including but not limited to: liberal and fine arts, natural sciences and social sciences…” (Standard 3 Professional Curriculum) (p. 10). According to The National Architectural Accrediting Board (NAAB) Conditions for Accreditation (2009), student learning aspirations must demonstrate the “ability to work in collaboration with others and multidisciplinary teams to successfully complete design projects.” (Part II 1.1 Realm C) (NAAB, 2009, p.24).

Both the CIDA and NAAB standards reference multi-disciplinary experiences yet what defines a multi-disciplinary team? Newell and Green (1982) describe multi-disciplinary teams as those where members make separate contributions to a given problem. For our travel immersion and design charrette, faculty considered several ideas around team composition including separating design and non-design students and developing parallel yet different objectives and student learning outcomes. After careful consideration, however, faculty believed it was an opportunity to explore a multi-disciplinary approach and believed that all students should contribute – recognizing that each student offered a unique perspective. The nature of the multi-disciplinary team structure for this project called for each student to make distinct contributions (based on discipline) to the travel immersion and design charrette. Students worked independently in gathering information during the travel experience then contributed to the team concept based on their assigned design inquiries. Faculty assigned students to various teams to ensure the distribution of those with design knowledge. Graduate students were team leaders and at least one or two undergraduate interior design students were placed on each team (see Figure 1 for team composition).

In forming the multi-disciplinary teams for this experience, faculty utilized the model employed by The Moderns, a New York City creative agency. This firm’s Idea Circle, comprised of designers, engineers, scientists, business people, psychological/spiritual leaders, health specialists and marketers challenges individuals to think of themselves as “solutionists” and “work collectively to solve problems holistically…” (www.themoderns.com). They recognize that designers may not have experience or expertise in all areas related to a project and they rely on multi-disciplinary teams to develop a cohesive de-
sign solution. This model demonstrated to our students the real-world application of multi-disciplinary teams and challenged them to contribute equally to the design process.

**PRE-CHARRETTE ACTIVITIES**
Undergraduate students were required to take a pre-course (20th and 21st Century Architecture) to provide context for the trip. Several pre-trip meetings included team building exercises and a sketching/watercoloring workshop. These meetings enabled students to get to know one another and strategize for how to work together. Before leaving the states, each student selected a Design Inquiry. These inquiries were developed to assist students (both design and non-design majors) in collecting information abroad that would later inform the design for the charrette. These inquiries included:

- circulation
- signage
- lighting
- furnishings
- materials
- programming

While abroad, students photographed, sketched and noted applications of their assigned inquiry.

**CHARRETTE**
Upon returning home from Italy and Greece, student teams participated in a three-day design charrette. They were charged with designing a conceptual gateway to our city’s Cultural District. This involved developing a concept of how the space functioned, identifying programmatic elements, integrating design inspirations from their “Grand Tour” and deciding how to incorporate the design inquiries.

Each design team employed different strategies for working together. Team members identified individual strengths (drawing, writing, technology, graphics etc.) and delegated responsibilities. Most teams separated into smaller groups and came together at the end of each day. It was evident that students with backgrounds in design took the lead in directing the teams and while some engaged non-design students more than others, evidence of the design inquiries was apparent in all of the design solutions. Working together as teams they developed their design graphics and on the final day of the charrette, they presented their projects to faculty and students.

Each design solution presented a unique concept that was inspired by the students’ experiences in Italy and Greece. Photographs and sketches were referenced frequently throughout the three-day design process and many were incorporated into the design presentation. This format of sharing and communicating information transcended student differences and provided unity in that students could reference their personal database of knowledge and contribute significantly to the design concept.

Eight teams created unique, thoughtful and creative design solutions for the cultural gateway (see Figure 2 for examples of design solutions). The final presentation provided the opportunity for students to observe how a shared experience (the travel immersion) can be interpreted in vastly different ways when teams are comprised of members from unrelated disciplines. Each student was a “solutionist” and contributed to the success of the project. This multidisciplinary experience provided the opportunity for design students to appreciate and value input from those outside the disciplines while non-design students came to understand the complexities of the design process.
Team One
- *Interior Architecture
- Visual Arts
- Arts Management
- Elementary Education
- Interior Architecture

Team Two
- *Interior Architecture
- Art History
- Interior Architecture
- Creative Writing

Team Three
- *Interior Architecture
- Interior Architecture
- Interior Architecture
- Elementary Education
- Biology
- Arts Management

Team Four
- *Landscape Architecture
- Social Work
- Interior Architecture
- Interior Architecture
- Elementary Education

Team Five
- *Landscape Architecture
- Visual Arts
- Interior Architecture
- Professional Communication
- Interior Architecture
- Cultural Studies

Team Six
- *Landscape Architecture
- Biology
- Interior Architecture
- Interior Architecture
- Arts Management

Team Seven
- *Landscape Architecture
- English
- Interior Architecture
- Interior Architecture
- Theater/Art History

Team Eight
- *Landscape Architecture
- Interior Architecture
- Art History
- Interior Architecture
- Psychology

Figure 1. Team composition and distribution of disciplines.

Note: * Denotes Project Manager / Team Leader
Team One

Team Two

Team Three

Figure 2: Design Solutions
REFERENCES (APA)


An Instructional Design for Building Information Modeling (BIM) and Revit in Interior Design Curriculum

ABIMBOLA O. ASOJO
University of Oklahoma/Interior Design

NARRATIVE

INTRODUCTION
Current trends in integrated project design and delivery methods demand the development of new software competencies in Interior Design pedagogy. The 2009 Council for Interior Design Accreditation (CIDA) Standard 5 now requires that “entry-level Interior Designers engage in multi-disciplinary collaborations and consensus building... Students have awareness of:

a) team work structures and dynamics.

b) the nature and value of integrated design practices” (p.14).

Building Information Modeling (BIM) and Revit software facilitate collaboration among the built environment professions. This paper discusses an instructional design approach of introducing Building Information Modeling (BIM) and Revit into Interior Design curriculum using three pedagogical examples. Anderson’s ACT-R theory is utilized to guide students through the learning process. ACT-R theory focuses on three stages of skill acquisition: cognitive, associative, and autonomous stages. These three stages present implications for teaching Interior Design students about Building Information Modeling (BIM) and Revit.

LITERATURE REVIEW
American Institute of Architects (2007) notes “new modes of project design and delivery have created an opportunity for professionals and educators alike to reassess the dynamics of practice and education... This integrated approach, enabled by integrated design tools, is resulting in enhanced communication, more comprehensive and coordinated documents, and improved collaborative teams.” These integrated design practices imply new models in design education and Interior Design programs must prepare students for future roles in integrated practices. One of the major challenges facing Interior Design educators currently is how to teach the collaborative tools and software such as BIM and Revit necessary to prepare students for integrated practice. This presentation discusses how Anderson’s ACT-R theory is utilized to guide students’ learning of BIM and Revit in Interior design studio.

ACT-R (Adaptive Control of Thought—Rational) was developed by John Robert Anderson at Carnegie Mellon University. The basic premise is that cognitive tasks humans perform consist of a series of separate actions and procedures. ACT-R’s main assumption is that knowledge can be classified as declarative and procedural. Declarative knowledge is factual knowledge i.e. knowledge of facts or how things are, while procedural knowledge is how to perform cognitive tasks. Anderson (1995) notes “procedural knowledge is represented as productions or condition-action systems”. For example, the hypothesis is, if certain conditions apply, then perform certain action (Anderson, 1995).

According to Anderson, procedural knowledge is acquired in three stages of skill development: cognitive, associative, and autonomous. The first stage, the cognitive stage represents the phase in which “subjects develop a declarative encoding of the skill; that is; they commit to memory a set of facts relevant to the skill” (Anderson, p. 273). The second stage, the associative stage results out of repeated practice. As a result of which performance becomes smoother and more rapid. This stage fosters practice which leads to proceduralization. As the procedure becomes more automated through practice, automaticity emerges in the autonomous stage.
PROCESS
Anderson’s ACT-R general implications for teaching procedures are the following:

- Students must develop an accurate and elaborate declarative representation of the desired procedure (actions) and conditions under which it should be used;

- Teaching can be accomplished using the expository or discovery methods. The expository method is teacher-centered instruction, while the discovery method occurs via discovery;

- Feedback is an important component, because it fosters proceduralization; and,

- Continued practice leads to automatization (Anderson, 1995).

Applying these strategies to teach BIM and Revit, students are first taught accurate and elaborate declarative principles of BIM and Revit, in order to help them understand the interface. Learning is achieved through expository and discovery methods. Expository methods are teacher centered instruction to help students develop declarative knowledge and discovery methods allow students to learn through discovery. Constant feedback is given during the learning process to correct any disequilibrium students may have. Eventually, students achieve automaticity due to continued practice.

Some examples of concepts covered to help students develop an accurate and elaborate representation of BIM and Revit are parametric objects, parametric relationships, bidirectional associativity, embedded relationships, Revit families, model categories, annotation categories, modeling basics, modifying elements, presentation graphics, construction documentation, etc. Parametric objects are “smart objects” that can change in size, material, and graphic look but are constantly the same object (Demchak, Dzambazova, and Krygiel, 2009). Bidirectional associativity works in such a way that embedded relationships are created between different objects in a model, so that as things are created and attached, the other objects connected to it also adapts and changes (Asojo and Pober, 2009).

Families are groups of elements with common sets of properties called parameters. There are three kinds of families in Revit; system families, loadable families and in-place families. System families are basic building component such as walls, floors, roofs, ceilings, etc. They are predefined elements which cannot be loaded from an external file. Loadable families are components such as windows, doors, casework, furniture, etc. In place families are unique elements specific to the current project. Model categories are all of the physical objects found in a building, while annotation categories are all of the symbols, texts and other 2D data used to describe the model.

All the aforementioned information are developed using the expository method which involves teacher-centered instruction using interactive presentation formats and hands-on exercises to help students learn declarative knowledge. Next, using the discovery method allows students to learn through discovery. In studio modeling of the bus stop, retail store lighting project, and Tulsa Vision project help students practice the concepts learned on their own design projects. Feedback is given during all distinct phases of problem solving their projects. This feedback helps to correct any disequilibrium students may have. Disequilibrium is a state of misconception or misinformation. Finally, students achieve automaticity by becoming more autonomous through continued practice with the software. The accompany chart (Table 1) summarizes the application of ACT-R theory to teaching BIM and Revit to Interior Design students.

CASE STUDIES
The following three case studies, a London bus stop project, a store retail project, and the Tulsa Vision project illustrate experiences from Interior design studio using Revit. In the projects, students develop their design ideas and produce presentation drawings using Revit.

Case Study 1: London Bus Stop

After using expository methodologies through several hands on in class demonstrations focused at helping students develop declarative knowledge about Revit in a basic design studio, students are assigned a four-week design studio projects to design a bus stop in London using shape grammar principles. Students begin by creating basic geometric shapes. Next, they develop rules between the shapes using design elements and princi-
ples. Next, they develop abstract model and select one to be transformed to their bus stop design. Revit is used to present their design solutions (Figure 1 and 2).

**Case Study 2: Retail Project**

In a five-week store retail design project, students design the lighting and the display space for a contemporary brand name store in a metropolitan airport. After using expository methodologies to help students develop declarative knowledge about using Revit in developing lighting plans and presentations, students use Revit and 3D Max to develop their final presentations (Figure 3).

**Case Study 3: Tulsa Vision Project**

In the Tulsa Vision project, an Interior Design student and a graduate Architecture student collaborated on a project in Tulsa. The Interior Design student was one of the seniors enrolled in the author’s fourth year Capstone studio. The author supervised the graduate student in fall 2008 and helped identify the opportunity to collaborate with an Interior Design student. The resulting project was the Tulsa Vision project. The goal was to design a complex to create community connections through the design of amenities within walking proximity of an urban setting to attract people back to urban settings and reduce dependency on vehicular transportation. The design utilized new urbanism principles of finding amenities within ones walking distant, as well as, sustainable design principles. The first part of the spring semester was spent finalizing the programmatic proposals, conceptual ideas, and developing declarative knowledge of Revit. Next, they developed their schematic designs and final design presentations and construction drawings in Revit (Figures 4, 5 and 6).

**CONCLUSION**

Overall, the projects presented illustrate Revit’s unique interface while combined with Anderson’s ACT-R theory three stages of skill acquisition (cognitive, associative, and autonomous stages) can fosters the ability to design volumetrically, model spaces, and simulate photorealistic rendering in design studio. Through pedagogical examples like this, Interior Design educators can integrate BIM and Revit fundamentals in Interior Design curriculum, thus promoting software that facilitate integrated design practices in academia. Future direction of this research by the author, will aim at studying the application of this instructional technique to a semester long course solely focused on BIM and Revit.
Figure 2: Bus Stop Project from Freshman Basic Design Studio by Paige Fruits
Figure 3: Store Lighting Design project by Lindsay Rule

Figure 4: Tulsa Vision project by Clarence Boyd and Laura Booth
Table 1: Anderson ACT-R General Implications for Teaching BIM Philosophy and Revit

<table>
<thead>
<tr>
<th>Task</th>
<th>Process</th>
</tr>
</thead>
<tbody>
<tr>
<td>Develop accurate and elaborate declarative representation of BIM</td>
<td>Begin with fundamental premise that “Building information modeling is about the management of information throughout the entire lifecycle of a design process, from early conceptual design through construction administration, and even into facilities management” (p. 1) (Demchak, Dzambazova, and Krygiel, 2009)</td>
</tr>
<tr>
<td>– Examples of concepts covered to help students develop an accurate and elaborate representation of BIM and Revit are the following:</td>
<td></td>
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<tr>
<td>– Parametric Objects and Parametric Relationships;</td>
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<tr>
<td>– Bidirectional Associativity;</td>
<td></td>
</tr>
<tr>
<td>– Embedded Relationships;</td>
<td></td>
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<tr>
<td>– User Defined Rules;</td>
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<tr>
<td>– Model Categories;</td>
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<tr>
<td>– Annotation Categories;</td>
<td></td>
</tr>
<tr>
<td>– Subcategories;</td>
<td></td>
</tr>
<tr>
<td>– Families in Revit – System families, Standard Families, and in Place Families;</td>
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</tr>
<tr>
<td>– Modeling Basics- Levels and grids, Basic walls, Floors, Roofs, Ceiling, Doors and Windows;</td>
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</tr>
<tr>
<td>– Modifying Elements;</td>
<td></td>
</tr>
<tr>
<td>– Color-Coded Drawings;</td>
<td></td>
</tr>
<tr>
<td>– Presentation Graphics;</td>
<td></td>
</tr>
<tr>
<td>– Construction documentation; and;</td>
<td></td>
</tr>
<tr>
<td>– Sharing Files.</td>
<td></td>
</tr>
<tr>
<td>Expository Methods (Teacher centered instruction)</td>
<td>Using the expository methods involves teacher centered instruction to help students develop declarative knowledge. The above listed topics are presented in PowerPoint and interactive presentation lecture format and hands on demonstration to students.</td>
</tr>
<tr>
<td>Discovery Methods</td>
<td>The discovery method allows students to learn through discovery. In studio modeling of Bus Stop and Retail Store lighting help students practice the concepts learned on their own design projects.</td>
</tr>
<tr>
<td>Feedback Component</td>
<td>Feedback is an important component, because it fosters proceduralization. Any misconceptions and disequilibrium is fixed with feedback and constant critiques and pin ups.</td>
</tr>
<tr>
<td>Automatization</td>
<td>Continued practice leads to automatization and this will be evident in upper levels in the curriculum in the complexity developed in the quality of the student work.</td>
</tr>
</tbody>
</table>

Source: Asojo and Pober (2009).
REFERENCES


A Case Study Analysis of The Influence of Site as a Generative Design Strategy for Interior Design Education

DAVID BROTHERS / PETER GREENBERG
New Jersey Institute of Technology / Wentworth Institute of Technology

NARRATIVE

PREMISE
It is generally accepted that interior design student projects should be supported by a substantive research phase prior to actual studio design work to avoid gratuitous and presumptive solutions. A significant question facing studio instructors however, is determining how much, and exactly what kinds of research students should undertake to adequately prepare them for design. In the case of projects where locality and setting are significant features, the challenge becomes one of engaging the students in a conversation of issues that seem far removed from what interior designers might typically consider.

This paper presents a case study of an interiors project for a new university in Egypt as an example for how students might broadly consider site issues as a design strategy for developing the spatial and physical character of an interior design project. Interior design students are often educated with a limited understanding of site that rarely extends beyond the physical description and documentation of a project's building. When asked to consider both local and global perspectives in their designs, the student's appreciation of these influences can often remain superficial and decorative.

Contrary to the belief that 'site' concerns fall exclusively in the purview of urban planners, architects, and landscape designers, it is argued that interior designers have an equal responsibility to understand the essential implications of wider geographical, economic, climatic, and historical contexts. Our use of the term 'site' is therefore not limited to the geographic and climatic characteristics of place; it broadly considers the availability of material resources, the manufacturing capabilities of local industry, the qualitative skill of local labor and artisanry, and the historic and cultural context of the region.

CASE STUDY
Between 2001 and 2007, while working in the office of Robert Luchetti Associates, the authors collaborated with an international team of planners, designers, architects, and engineers to design a new campus for the American University in Cairo [AUC], a liberal arts college founded in 1919. The AUC had outgrown its seven-acre central Cairo campus and was expanding to a 270-acre empty plot in the Sahara desert about half an hour’s drive from downtown Cairo (Fig. 1). Robert Luchetti Associates, an architecture/interiors firm in Cambridge Massachusetts, had been retained to design a comprehensive interiors strategy for the entire campus including an FF&E package for the 5500 rooms and spaces and a program of custom-designed locally manufactured furniture.

Located on a large tabula rasa track of land in the Sahara desert, the project site posed many provocative questions about an approach to interior design that was based on an idea of authenticity (Benedikt, 1987). The spatial character of Cairo is complex and contradictory: it has a rich and extensive history but it is also a thriving modern metropolis (Raymond, 2000). The challenge for the design team was to respond to the client’s charge to “draw themes from Egypt’s past, recognize the present, and anticipate the future that combines contemporary ideas with Egypt’s history” without resorting to sentimental or superficially themed spaces (El Sharkawy & Fabian, 2004). A contrasting challenge was to resist the positivist temptation to impose universal solutions that might work anywhere (Holod, 1983).

The effect that the legacy of a place has on its site has been widely examined on an urban and architectural...
Some have explored the inherent qualities of site, writing that the “purpose of building…is…to make a site become a place, that is, to uncover the meanings potentially present in the given environment” (Norberg-Schulz, 1976). Others have developed Norberg-Schulz’s recollection of the ancient notion of genius loci, explaining it as “the way in which places function socially, ecologically and aesthetically” (Thompson, 2003). Our hypothesis was that we could embrace the importance of genius loci for the interiors as being based on patterns of use rather than superficial aesthetic differences (Jive’n & Larkham, 2003).

One significant mandate for the design had been to leverage the size of the AUC project to support local economic growth by integrating local craftsmen and vendors in the production and supply of products (El Sharkawy & Fabian, 2004). As part of the site research, team members made multiple visits to metropolitan Cairo to assess the capabilities of Egyptian craft and industry. Artisanry, manufacturing expertise, and the degree to which material resources were procured locally became the principle criteria that guided the selection of companies and craftsmen to provide components for the design (Fig. 2).

Sustainability studies established design principles based on local climatic conditions of the project’s site and its local ecosystem (El Sharkawy & Fabian, 2004). While sustainable criteria affected the material choices for the interiors, these were balanced with their appropriateness for performing in the hot, dry, climate. Porcelain pavers, for example, were used for flooring throughout the interior not merely because they were locally available but because their thermal properties as a capacitor served to mitigate the adverse effects of the persistent desert sun.

Let us consider the design of the classroom as an example of what we designed for the interiors at the AUC. The design needed to be fundamentally responsive to the programmatic needs of a flexible interactive modern classroom. Planning needed to support the university’s system of instruction and the specific ways that students, faculty, and staff interact. The classroom was not a thematic stage-set but a site of higher learning.

The overall form of the classroom was based on direct observations of similarly scaled rooms in palaces and madrasas across Cairo (Fig. 3). These traditional rooms were studied to discern their underlying spatial and material principles: high ceilings that had developed from a response to climate and a datum, usually a cantilevered trim that circled the room about halfway up. Different material solutions generally covered the tops and bottom zones of these rooms to designate different uses. In the design of the classroom, we delineated a datum with an indirect light fixture that corresponded to the highest point a teacher could reach. This zone was intended for the display of teaching materials: projections, blackboards, printed notices. Sliding panels accommodate blackboards, tackable surfaces, projection screens and lighting (Fig. 4).

Our research into site issues helped us to avoid default-position designs that are based on distant sourcing and obvious presumptive solutions. A primary design goal for the interiors had been to maintain the tall room heights to facilitate natural air convection and to maintain a sense of spaciousness. We rejected a suspended ceiling system - that was neither manufactured locally nor did it express the spatial effect we were looking for - yet we were very aware of the need to address acoustical issues to optimize speech intelligibility across the room. Suspended ceilings say: “cheap and pragmatic and anywhere” while we were looking for “cost-effective and appropriate to this place.” The solution: panels covered with local textiles atop acoustically absorptive material were placed in the upper zones of the four walls above the datum (Fig. 5).

The design of the classroom furniture was also based on extensive research into local manufacturing capabilities and material expertise. Local economic conditions created a different relationship between material and labor costs than we see in the West. We designed the chair system to be based on available steel components, tubes and bars, that could be simply assembled with different shell materials: formed plywood, textiles, and hand-woven rattan.

Admittedly, the AUC project is an exceptional case study in terms of the extent and scope of research undertaken. Not every interior design student project will have site issues as provocative as the AUC’s presented. It offers,
however, a professional application of research methods and theory that can be practically implemented in the design process for even the most normative design exercises for studio (Martin & Guerrin, 2005). Whether influenced by global or local contexts, we are proposing that research into site issues, as we have defined them in this case study, should be routinely integrated into the design methodology of any studio project. As illustrated from the design for the classrooms, three tactical research methods were employed that have an analogous application for the studio environment.

To the extent that it is possible, student research should include opportunities to engage in direct observational investigation to supplement factual forms of data gathering and analysis. Empirical evidence can often provide richer insights of behavior and place than can be captured from quantifiable attributes of site (Heimsath, 1977). Secondly, meaningful inquiry into the nature of space-making should begin with a careful investigation of relevant design precedents. Understanding historical context in terms of spatial principles and material qualities may provide the most direct link to the full complexities of a site. Lastly, in the effort to resist the homogenization of design forms and solutions across cultures, students must beware of appropriating solutions from one context to another. They must learn to embrace research findings that may lead to unconventional design solutions that are appropriate to the specificities of site.

The increased prevalence of international design practices suggests that many interior design graduates will find themselves working on projects in faraway lands in unfamiliar places. Their success may well depend on the degree to which they understand the essential importance of site as an integral factor for interior design.
Figure 1: The American University in Cairo SITE
Figure 2: Research into Artisanry and Manufacturing

- Turning Wood
- Extruding Aluminum
- Traditional Weaving
- Manufacturing Porcelain Tile
- Blowing Glass
Figure 3: Research into Spatial Principles and Material Character
Figure 4: The AUC Classroom

The New AUC Classroom

The Old AUC Classroom
Figure 5: The AUC Classroom
REFERENCES (MLA)


A “digital process book” learning tool for the design studio: Concept and development

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NARRATIVE

INTRODUCTION

The purpose of this study is to introduce a new learning tool to the interior design studio, namely, a “digital process book.” Paper-based process books are not new to the studio. A process book includes representations of the activities that occur and artifacts that are constructed as a student completes a design project. It allows the instructor, jurors, and others, to see the processes a student goes through to complete a project. It is also intended to assist students as a tool in the learning and design process. Schenk (2007) similarly describes this process work in the graphic design context as “job bags,” where this material, for the most part, provides the “drawn record” of the design process. However, paper-based process books are mostly a linear compilation of the design process that provides little of the scaffolding that a novice designer needs. The goal of this project is to take the existing strengths and capabilities of the computer and other digital technology, and merge them with the positive qualities of the paper-based process work, while also incorporating an underlying structure that is grounded in educational psychology theory.

The main impetus of this project is to answer the following questions: Can a digital teaching and learning tool be developed for design studio classrooms that would: 1) complement and augment design thinking and the design process, 2) provide an intuitive, adaptable, and dynamic environment within which design processes could be structured for students, and 3) offer a framework for both students and faculty to communicate ideas effectively? In this paper, we present the conceptual basis and design of the digital process book.

LITERATURE REVIEW

Recently, many new technologies have been developed in content management, e.g., collaborative content management, user generated content, and learning management systems. Many of these technologies can be used effectively for educational purposes. Learning Management Systems (LMS) are web-based systems that allow instructors and/or students to share materials, submit and return assignments, and communicate online (White & Larusson, 2010). While these course management systems can be effective in work-flow management, document distribution and collaboration, inter-institutional communications (Johnson & Tang, 2005), the structure of these systems are not conducive to the design process and the studio environment.

FRAMEWORK

The motivation for this work stems from the belief that by incorporating our understanding of the processes of design with the capabilities of computer technologies, we can augment students’ cognitive processes and give them the expert structure and tools to solve the complex problems that design entails. To begin the discussion of the digital process book (DPB) we first address the characteristics of, and improvements to the existing process book. Instructors acknowledge that even paper-based process books hold several important teaching and learning purposes to the studio experience, including:

1) A demonstration of the importance of a formal approach to design; a celebration of the process as an important way of defining design, not just design as an end product,

2) A means of regulating and holding students accountable for their design ideas and decisions; an authentica-
tion of the designer's claim to a particular approach to solving the problem,

3) A genealogy; the real time serial documentation of design activities; helps students see where they have been and to see where they are going; a very clear evidence of the progress of the project,

4) A medium to let instructors know how the student thinks, how they develop, build upon, and refine the ideas, and

5) A student's internal communication,

6) A medium that provides a talking point for faculty and discussions on what steps have been fruitful or not,

7) A medium for students to store ideas; to hold good ideas in reserve until their goodness emerges; quite often the role and fit of an idea does not become evident until it is paired up with other ideas (brunner, 2008)

These are laudable standards, but they are many times not fully met. A digital learning technology is capable of improving upon the paper-based process book, as well as introducing other valuable functions for the novice designer. Thus, the DPB serves all of these purposes, but extends and improves them with the assistance and convenience of a dynamic, intuitive web based interface.

Other motivations for developing the DPB include: encouraging and supporting evidenced-based design, reinforcing the process of design through scaffolding expert practices, providing a direct way to expose students to excellent "worked examples," providing a medium that offers students examples of various design methods (brunner, 2008), and introducing a structure that encourages reflection upon their design activities.

RESULTS
The digital process book will be a dynamic, assistive, interactive web-based environment that allows continuous design process flow. This learning tool is a blend of many things: 1) a secure cloud-like environment to store, organize files, 2) a project management software, for calendars, timelines, milestones, 3) sketchbook, to assemble a student's analysis, synthesis, and evaluation activities, 4) a learning portfolio, so the output can be readily accessible to current professors and future employers, 5) a communication interface, for self-reflection for the student, and for student-instructor communication, 6) a database to compile, organize, categorize, and sort, 7) a scaffold for student learning/designing, or an expert structure for novice design students and 8) an artifact of a student's design process. The main page and major navigation buttons, in conceptual form, are shown in Figure 1.

Designed to be reminiscent of paper based process books in form, the DPB maintains familiar process book structure by generating 'pages' on which a wide variety of objects and functions are capable of being placed and grouped by the user. Figure 2 shows an ideation page, highlighting a sketch drawing with several linked pieces of information including a comment element, an associated PDF file, and a student evaluation indicator of the drawing. The core of the DPB is structured around pre-existing structures following the seven primary design phases (Problem Identification, Programming, Theory & Concept Development, Design Development, Design Documentation, Construction/Installation, and Evaluation), as well as an unlimited number of additional user created pages allows for the infinite expansion of ideas and output.

The DPB allows users to sort and add a nearly infinite amount of information in ways best fitted to the user's particular mental model of their process. The DPB allows users to add files, make personal notes/lists, and public notes which can be included in final page output for teachers and employers. The system also allows users to drag-and-drop content among pages, creating customized visual arrangements for workflow and output with files, graphics (including but not limited to: user-scanned images and sketches, papers for reference, and audio files), and quickly overview the progress of their process books. If desired, students may also generate project blogs, allowing discussion and participation with other students and faculty.

CONCLUDING REMARKS
In many classrooms of the 21st century, learning management systems or other digital technology systems have become standard tools for both students and instructors. However, the design studio has its own set of challenges and pedagogies that set them apart from the typical university classroom. Therefore, in this project
we propose a customized, dynamic, digital environment that transforms the paper-based process book into an internet-based, interactive sketchbook and file management system.

The digital process book has a number of implications for faculty and students. Students will have more efficient organization of process and design materials, easier access to more effectively organized notes, sketches, and idea generation tools. They can view and modify their projects 24 hours a day, accessible from their mobile devices through the development of an iPhone application. Faculty and future employers will have a transparent view of student process, allowing them to visualize the student’s design thinking processes. It acts as a portfolio of the process, where the student’s design thinking is the focus, instead of a finished design solution. In short, the digital process book is a celebration of the design process, and has the potential to transform design studio pedagogy for the 21st century.

Figure 1: Main page and navigation buttons
REFERENCE LIST (APA)


The Bothy Bomb: Creativity, the CAT, and Interior Design

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NARRATIVE

The purpose of this study was three-fold: to test the dependability of the Consensual Assessment Technique (CAT) on 2nd and 3rd year interior design students, to verify who “appropriate observers” should be for judges’ assessment and determine whether inter-judge reliability might be used to gauge maturity levels of design thinking in undergraduate students, and finally to determine if limiting design medium would affect the creativity of student work. The judging groups that were compared were 1st year interior design students, 4th year interior design students, and interior design educators. The three distinct design mediums were hand-drafting methods, computer-aided design methods, and a “control” group utilizing both methods freely. The results indicate that the CAT is an appropriate assessment tool for interior design students when assessed by appropriate judges. Further, the judges’ assessment utilizing various levels of design knowledge does indeed show a clear suggestion of development in design thinking, but does not imply that students should be used as judges for future CAT experiments. Limiting design medium does not conclusively indicate how student work might be affected; however conjectures and ideas for future research are offered in this area.

In 1983, Teresa Amabile proposed the following definition of creativity: “A product or response is creative to the extent that appropriate observers independently agree it is creative.”¹ Amabile defines appropriate observers as “those familiar with the domain in which the product was created or the response articulated.”² With the right appropriate observers, the technique appears to be surprisingly accurate. Judges scores are calculated for overall inter-judge reliability with an acceptable score being greater than .70. Since its first publication, Amabile and numerous other researchers have utilized the CAT to investigate creativity in many different fields and domains. With nearly thirty years of use, the CAT has come to be recognized as a viable way of assessing creativity.

The first step in the study was to develop an appropriate design assignment for the student subjects. This posed several problems that were not addressed in any of the previous texts I have read regarding the CAT. Namely, interior design is a very complex discipline and in order for the judges to be able to compare the projects equally, the project needed to be adequately controlled. At the same time, I did not want to control the project to such an extent that creativity was compromised or limited in any way. I determined the problem would be a “bomb project”, a short and intensive design project, and decided to have students design a bothy in the Scottish Highlands. A bothy is essentially a simple dwelling consisting of four walls, a roof, a fireplace, and (maybe) some rudimentary furniture. Bothies are remote with no electricity or running water.

Once I had determined the problem, the next step was to develop the Judges’ Assessment scorecard. Amabile describes that her reasoning behind having the work assessed along multiple dimensions is that in this manner, judges might more easily identify something as creative.

² Amabile, 33.
as opposed to something they simply found aesthetically pleasing. I chose to assess the work in eleven dimensions:

- Creativity
- Novel Use of Materials
- Novel Idea
- Overall Aesthetic Appeal
- Technical Goodness
- Organization
- Constructability
- Expression
- Process Evident
- Complexity
- Sophistication
- Detail

Each of the dimensions was assessed on a scale of 1 to 6, with 1 being a low score and 6 being high.

The main purpose of having 1st and 4th year design students assess the work in addition to design educators was my interest in determining if maturity in design thinking could be measured by comparing inter-judge reliability, and to determine if design students would suffice as reliable judges for future experiments. The judges included five 1st year students, five 4th year students, and four design educators with various years of experience in academia. Inter-judge reliability was determined as Cronbach’s coefficient alpha through the reliability procedure in SPSS (Statistical Package for the Social Sciences). The results certainly support Amabile’s conclusion that appropriate judges are those with significant and mature knowledge in the field. However, the results also seem to indicate that inter-judge reliability is an effective way to judge design-thinking maturity. If we look at the inter-judge reliability for creativity alone, it is easy to recognize the difference in the judges’ scores: 1st year design students .08, 4th year design students .60, and design educators .78. The low reliability of the 1st year design students in most dimensions indicates that the students were in much disagreement across the board. Though not entirely reliable, the results of the 4th year design students show a marked increase in agreement. I believe this represents the anticipated growth in design thinking that should be expected of students as they mature in a discipline. However, it does not seem prudent to utilize interior design students in assessments for future experiments, as it is indicative that they will not be reliable. The results of all assessment dimensions for the three groups of judges are summarized in Table 1.

Due to the high reliability of the educators judging assessments, it can be assumed that the CAT is an acceptable way of judging student works in interior design.

The final investigation in this experiment dealt with understanding the consequence of the increased emphasis of design technology in industry and education. The test subjects were broke into three groups consisting of three teams each: Group 1, Group 2, and Group 3. The test subjects were paired up (one 2nd year and one 3rd year student in each team) to create a total of nine teams. They were labeled as Team 1A, 1B, 1C, 2A, 2B, etc. The independent variable under study was the use of design tools; therefore this was the only part of the problem that differed between groups. Group 1 was instructed that they could only use hand-drafting methods. Group 3 was instructed that they could only use computer programs to reach their solutions. Group 2 was a control group that was allowed to use both tools freely as they saw fit. The teams were expected to work independently and had eight hours in which to complete the project.

I used the design educators’ assessments to investigate this part of the experiment, as they were the only judges with acceptable inter-judge reliability scores. The results on whether technology is affecting creativity or any other dimension of the students’ work were inconclusive. For example, if we look at the average score given to an individual team on a particular dimension, i.e. creativity, we see that there is a relatively strong team in each of the three groups. The same can be said in each of

3 Amabile, 42.
4 Amabile, 61.
the other dimensions. The average scores of the top three teams in each category are summarized in Table 2, excluding Constructability and Sophistication, which did not receive reliable scores. This seems to indicate that strong students and good design solutions are not compromised when faced with limited tools. Looking at the creativity scores alone (Table 3), we can see that both Groups 1 and 2 had a range of scores and Group 3 scored generally high. This might indicate that the computer programs assisted in the student’s creativity, but it could also indicate that the teams in Group 3 were simply made up of particularly creative students who might have excelled in any of the mediums.

I went a step further and averaged the results in each dimension for each group (see Table 4). In this instance, Group 3 emerges as the clear leader in every dimension, by quite a margin. I had personally hypothesized that this group would struggle the most, being unable to even pick up a pencil, and that the control group (Group

<table>
<thead>
<tr>
<th>Dimension</th>
<th>1st Year Judges</th>
<th>4th Year Judges</th>
<th>Design Educators</th>
</tr>
</thead>
<tbody>
<tr>
<td>Creativity</td>
<td>.08</td>
<td>.59</td>
<td>.78</td>
</tr>
<tr>
<td>Novel Use of Materials</td>
<td>.75</td>
<td>.72</td>
<td>.85</td>
</tr>
<tr>
<td>Novel Idea</td>
<td>.30</td>
<td>.40</td>
<td>.72</td>
</tr>
<tr>
<td>Overall Aesthetic Appeal</td>
<td>.63</td>
<td>.30</td>
<td>.72</td>
</tr>
<tr>
<td>Technical Goodness</td>
<td>.69</td>
<td>.85</td>
<td>.88</td>
</tr>
<tr>
<td>Organization</td>
<td>.70</td>
<td>.73</td>
<td>.73</td>
</tr>
<tr>
<td>Constructability</td>
<td>.64</td>
<td>.48</td>
<td>.49</td>
</tr>
<tr>
<td>Expression</td>
<td>.35</td>
<td>.45</td>
<td>.74</td>
</tr>
<tr>
<td>Process Evident</td>
<td>.61</td>
<td>.46</td>
<td>.83</td>
</tr>
<tr>
<td>Complexity</td>
<td>.56</td>
<td>.69</td>
<td>.83</td>
</tr>
<tr>
<td>Sophistication</td>
<td>.36</td>
<td>.60</td>
<td>.66</td>
</tr>
<tr>
<td>Detail</td>
<td>.59</td>
<td>.75</td>
<td>.83</td>
</tr>
</tbody>
</table>
would have the strongest work. This result could possibly allude to this generation’s comfortable relationship with computers and support the idea that hand craft is less taught or emphasized in current design education. At any rate, I believe it certainly implies that the subject should be explored further.

The results of this experiment provide an excellent base for further exploration. I believe it would be beneficial to run the experiment multiple times with the same group of students, allowing the teams to change and the students to work in each of the groups. This would help to neutralize the possibility of particularly strong students causing one group to excel more than others, and would also provide a broader understanding of the importance of tools. In addition, it would be interesting to see if there would be a difference in scores in teams of young students and teams of mature students. This might shed light on the hypothesis that the strong computer scores were primarily generational.

Table 2. Top Three Averaged Teams and Scores in Each Dimension

<table>
<thead>
<tr>
<th>Dimension</th>
<th>Team 1</th>
<th>Score</th>
<th>Team 2</th>
<th>Score</th>
<th>Team 3</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Creativity</td>
<td>2B</td>
<td>5.25</td>
<td>3C/3A/1C</td>
<td>5.00</td>
<td>3B</td>
<td>4.25</td>
</tr>
<tr>
<td>Novel Use of Materials</td>
<td>3C/3A</td>
<td>5.00</td>
<td>2B</td>
<td>4.75</td>
<td>1C</td>
<td>4.50</td>
</tr>
<tr>
<td>Novel Idea</td>
<td>3A</td>
<td>5.50</td>
<td>3C/2B</td>
<td>5.00</td>
<td>1C</td>
<td>4.25</td>
</tr>
<tr>
<td>Overall Aesthetic Appeal</td>
<td>3C</td>
<td>5.25</td>
<td>1C</td>
<td>5.00</td>
<td>2C</td>
<td>4.50</td>
</tr>
<tr>
<td>Technical Goodness</td>
<td>1C</td>
<td>5.50</td>
<td>3C/3A</td>
<td>5.00</td>
<td>2C</td>
<td>4.25</td>
</tr>
<tr>
<td>Organization</td>
<td>3C</td>
<td>5.50</td>
<td>1C</td>
<td>5.25</td>
<td>3B/3A</td>
<td>4.75</td>
</tr>
<tr>
<td>Expression</td>
<td>1C</td>
<td>5.50</td>
<td>3A</td>
<td>5.25</td>
<td>3C</td>
<td>5.00</td>
</tr>
<tr>
<td>Process Evident</td>
<td>3A</td>
<td>6.00</td>
<td>3C</td>
<td>4.50</td>
<td>2C/1A</td>
<td>4.00</td>
</tr>
<tr>
<td>Complexity</td>
<td>3A</td>
<td>6.00</td>
<td>2B</td>
<td>4.75</td>
<td>3C</td>
<td>4.25</td>
</tr>
<tr>
<td>Detail</td>
<td>3C/3A</td>
<td>4.75</td>
<td>1C</td>
<td>4.50</td>
<td>2B</td>
<td>3.50</td>
</tr>
</tbody>
</table>

Table 3. Averaged Team Scores in Creativity

<table>
<thead>
<tr>
<th>Team</th>
<th>1A</th>
<th>1B</th>
<th>1C</th>
<th>2A</th>
<th>2B</th>
<th>2C</th>
<th>3A</th>
<th>3B</th>
<th>3C</th>
</tr>
</thead>
<tbody>
<tr>
<td>Score</td>
<td>3.00</td>
<td>3.75</td>
<td>5.00</td>
<td>3.00</td>
<td>5.25</td>
<td>4.00</td>
<td>5.00</td>
<td>4.25</td>
<td>5.00</td>
</tr>
</tbody>
</table>
Table 4. Averaged Group Scores in Each Dimension (Top Score Highlighted)

<table>
<thead>
<tr>
<th>Dimension</th>
<th>Group 1</th>
<th>Group 2</th>
<th>Group 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Creativity</td>
<td>3.92</td>
<td>4.08</td>
<td>4.75</td>
</tr>
<tr>
<td>Novel Use of Materials</td>
<td>3.42</td>
<td>3.75</td>
<td>4.08</td>
</tr>
<tr>
<td>Novel Idea</td>
<td>3.50</td>
<td>4.00</td>
<td>4.50</td>
</tr>
<tr>
<td>Overall Aesthetic Appeal</td>
<td>3.75</td>
<td>3.83</td>
<td>4.50</td>
</tr>
<tr>
<td>Technical Goodness</td>
<td>4.00</td>
<td>3.33</td>
<td>4.67</td>
</tr>
<tr>
<td>Organization</td>
<td>4.00</td>
<td>3.58</td>
<td>5.00</td>
</tr>
<tr>
<td>Expression</td>
<td>4.17</td>
<td>4.08</td>
<td>4.67</td>
</tr>
<tr>
<td>Process Evident</td>
<td>3.75</td>
<td>3.17</td>
<td>4.50</td>
</tr>
<tr>
<td>Complexity</td>
<td>3.67</td>
<td>3.58</td>
<td>4.42</td>
</tr>
<tr>
<td>Detail</td>
<td>3.50</td>
<td>2.75</td>
<td>4.17</td>
</tr>
</tbody>
</table>

REFERENCES (CHICAGO)


An architect and his principles: A comparison of AWN Pugin’s written words with his design for St. Augustine’s Church, Ramsgate, England

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NARRATIVE

INTRODUCTION

Augustus Welby Northmore Pugin (1812-1852) was an architect and interior designer who designed and renovated churches, convents, monasteries, schools and homes across England and Ireland during the first half of the 19th century. He was also a published writer. Several of his books were written on the subject of architectural principles and included his ideas regarding aesthetics, morals and religious philosophies. One of his primary concerns was the role that function played in the design of interior spaces; particularly ecclesiastical interiors. This presentation will look at Pugin’s major principles and theories and compare his published ideas with his design for St. Augustine’s Church, a small parish church on the southeast coast of England. Comparing his words with his design work will answer the following questions: Is there evidence that he followed his own principles? If so, how is that evidence manifested in the design? The answers can help us better understand the workings of the creative mind and the organic process of designing. St. Augustine’s was chosen as the focus of this study because not only did Pugin design the church but built it on his own property using his own funds.

LITERATURE REVIEW

Literature on Pugin and his design work abounds and some discussion of his architectural principles and theories exists¹ (Hill, 2007; Bright, 1979) but information is sparse that connects his written principles with his buildings or interiors.² It is also interesting to note that little scholarly research has been conducted with St. Augustine’s as the focus, although several authors describe it in their work.³ St. Augustine’s (begun in 1846) is significant because Pugin designed and built it on property he owned next to his family home The Grange, using his own funds. Rosemary Hill deems St. Augustine's Pugin's "model church, his great statement of true principles."⁴

Pugin’s life as a designer leading up to his work on St. Augustine’s was a diverse one. Briefly, in his teens, he designed furniture and decorative objects for King George’s court at Windsor Castle. Later he designed theater sets. His father was a well-known architectural draftsman and drafting teacher and as a boy Pugin accompanied him and his students as they created measured drawings of Gothic architecture in Europe and around England. Pugin developed a deep interest in the Gothic design style and began theorizing about the relationship between architecture and morality. His theories and design principles revolved around his conversion to Catholicism in his early twenties. In essence, he believed that the growing interest in Classicism in England during the late Georgian period of his youth, was a sign


⁴ Hill, 422.
of the moral decay of contemporary society. He equated Classicism with paganism; the style being rooted in Ancient Greek and Roman cultural ideals.

One of his most recognizable design achievements is his work on the Houses of Parliament with Charles Barry. But it is through his writing that he first became a notable figure. Pugin was zealous in his attacks against Classicism in his first book Contrasts, initially published in 1836, in which he compared side-by-side etchings of a variety of built structures in both Classical and Gothic styles. His point was to show, pictorially, the difference between what he deemed the noble style characteristics of the Gothic and the ‘debased’ ones of the Classical. Later books, True Principles, Present State and An Apology carried a similar message.

METHOD

Using three of Pugin’s written works on architectural and design principles and theories thirteen major design principles were extrapolated to examine for this presentation. Two principles appear in his seminal book Contrasts, two in True Principles and nine are discussed at length in An Apology. Evidence of his principles was gathered on site using field notes, photography and a modified artifact analysis approach.

DISCUSSION

With complete oversight of the project it is not too surprising to learn that Pugin followed his own published architectural ‘rules’ closely at St. Augustine’s. In every case the written principles were made manifest in his design for the church. Although modifications have been made to the church over time extant written and visual evidence shows that Pugin’s original design adhered to each of the thirteen principles (Table 1).

Architectural principles outlined in Contrasts reference the need for form to follow function. Pugin states that the “great test of Architectural beauty is the fitness of the design to the purpose for which it is intended . . .” He also declares that a Catholic church must have traditional features, such as arches, screens and niches. Those features must also be organized according to a traditional form in order for them to fulfill their various roles in sacred rituals. For example, chapels should be designed for private prayer and penance, sacristies should be created to hold the sacred vessels and a font is required for conducting the sacrament of baptism.

Pugin designed St. Augustine’s using a traditional floor plan which forms a modified Latin cross; nave and chancel run roughly west to east and are separate spaces delineated by the crossing, an open space created by massive piers supporting the unfinished spire. The nave and chancel spaces are further separated by an open archway and a low step. A south aisle becomes the Lady Chapel at the eastern end and contains the baptismal font at the western end. The ‘arms’ of the cross are formed by the Pugin chantry to the south and the confessinals and an enclosed spiral stairway directly opposite the crossing to the north. Christian symbols decorate the exterior and interior of the church. On the exterior crosses sit atop the east and west ends of the roofline that delineates the chancel and nave, there is also a cross form at the point of the roof on the gable end of the Pugin chantry. Pugin’s steeply pitched roofs and stained glass windows within pointed arches containing stone tracery are also symbolic of Western church design.

In True Principles Pugin calls for simplicity of design; architecture that is free of features which are “not necessary for convenience, construction, or propriety. . .” [Pugin’s italics.] The second principle to come from this book claims that “all ornament should consist of enrichment of the essential construction of the building.” [Pugin’s italics.] The two principles can be discussed together as they are complementary thoughts. Pugin used primarily stone and wood to construct the church. The construction materials are used to their best advantage aesthetically. The exterior walls are made up of rows of ‘knapped’ flint and the cut stones glisten like pieces of

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5 The fourth book, Present State, published in 1843, was originally written as two articles for the Dublin Review. An Apology, also published in 1843, contains similar principles and theories but was written in a much more systematic, list-like format. Because the principles are far more discernable in An Apology the book Present State is not referenced in this presentation.

6 For clarity, Pugin’s architectural principles have been paraphrased and shortened in Table 1.


8 A.W.N. Pugin, The True Principles of Pointed or Christian Architecture. (London: John Weale, ed. 1841), B.

9 Ibid.
black glass. Quoins, made of contrasting stone block, support every corner created by a change in plane. Brick was also used and is seen near the ceiling of the southwestern porch. On the interior St. Augustine’s reveals its details rather slowly. Statuary in the nave and crossing are all carved from a light-colored stone with similar qualities to the sandstone that lines the walls therefore appearing quite subtle. The wooden screens in the Lady Chapel and Pugin chantry appear dark in the lowly-lit space. It is not until these features are examined more closely that one can see the intricate nature of the carvings.

The design principles written about in An Apology are quite simply a list of the various features to be incorporated in church building. The principles in this book carry forward the principles from his other books and become somewhat repetitive. Pugin again stresses the importance of the physical (or traditional) arrangement of the church, bell towers, baptismal fonts, pulpits, chancel screens, altars, and the use of sacred symbols and imagery. He also advocates for the removal of chairs flanking the communion table. In each case his principles are borne out in his design for St. Augustine’s.

Although some modifications have been made to the interior of the church; the chancel screen has been moved, the original altar destroyed and choir stalls added to the chancel area, Pugin’s creative and Gothic-inspired concept for the structure remains intact.

**CONCLUSION**
Exploring the design process of contemporary designers or historical figures like Pugin helps us to better understand the creative mind at work and the products of the creative, organic process of designing. Most individuals would assume that the designer/writer designs according to his or her own published ‘rules.’ However, often patrons and/or clients intervene, and control is relinquished to those with the greater resources and the stronger voice. St. Augustine’s was investigated because Pugin built the Catholic parish church on a piece of his own property with his own money, and thus controlled the design process. In Pugin’s talented hands the design of St. Augustine’s became a physical representation of his own written descriptions of what his version of what “true” church architecture should be.
## APPENDIX

Table 1: Pugin’s Principles and Visual Evidence Found at St. Augustine’s

<table>
<thead>
<tr>
<th>Pugin’s Principles by Publication</th>
<th>Visual Evidence at St. Augustine’s</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Contrasts:</strong></td>
<td></td>
</tr>
<tr>
<td>A building’s design should reflect its purpose.</td>
<td>On the exterior: Multiple pointed-arch windows with stained glass, a truncated spire, bell tower and stone crosses at the roofline marking the nave and chancel areas are all indicators of a Western-style church building. Interior features include Christian symbols and statuary, an altar and baptismal font; each representing common Western church building practices.</td>
</tr>
<tr>
<td>A Catholic church should maintain its traditional form with a separate nave and chancel.</td>
<td>The nave and chancel are separated physically by the crossing. Entrance to the chancel from the nave is gained through a wide pointed archway and a low step.</td>
</tr>
<tr>
<td><strong>True Principles:</strong></td>
<td></td>
</tr>
<tr>
<td>There should be no design features that are not necessary for “convenience, construction, or propriety” (p. B).</td>
<td>“Convenience”–Pugin developed the floor plan according to the function of each space within the structure. Elevations were derived from the floor plan. “Construction”–Pugin used the same types of materials found in ancient church buildings; primarily stone and wood to construct the church. “Propriety”–the interior and exterior appearance of a building should relate to its function. (Similar to the first principle from Contrasts.)</td>
</tr>
<tr>
<td>All ornamentation should enrich the essential construction of the building.</td>
<td>Unpainted stone statuary adorns the interior and deeply carved tracery supports the stained glass in the windows.</td>
</tr>
<tr>
<td><strong>An Apology:</strong></td>
<td></td>
</tr>
<tr>
<td>Physical arrangement of the church should contain its ancient form with a chancel and nave.</td>
<td>Pugin used a traditional floor plan with chancel area and nave both physically and visually separated. The altar area of the chancel is located on the eastern wall.</td>
</tr>
<tr>
<td>Bell towers are required.</td>
<td>A bell tower is located on the northeastern side of the church.</td>
</tr>
<tr>
<td>Galleries are not permitted.</td>
<td>Three rows of simply carved wooden pews are the seating units for the congregation.</td>
</tr>
<tr>
<td>Baptismal fonts are “required to stand in their original position, with covers” (p. 27) and are to be locked.</td>
<td>A carved stone font with elaborately carved wooden font cover stands in the southeast corner of the south aisle.</td>
</tr>
<tr>
<td>Pulpits, placed to the side, are necessary.</td>
<td>A free-standing wooden pulpit is currently situated in the crossing between the nave and chancel. (It is unclear if this is the original pulpit. A wooden pulpit standing near the north wall in the nave is featured in a c. 1850 watercolor Pugin created of the yet unfinished space.)</td>
</tr>
<tr>
<td>Chancel screens are never to be removed in order to preserve the mystery of Catholic rituals.</td>
<td>The chancel screen was removed from its original location between the nave and chancel. It is now situated across the entrance to the Lady Chapel in the south aisle.</td>
</tr>
<tr>
<td>Stone altars are to be placed at the eastern end of the chancel.</td>
<td>Although not the original, a stone altar currently stands under a 5-light stained glass window at the east end of the chancel.</td>
</tr>
<tr>
<td>Chairs flanking the communion table should be removed.</td>
<td>No chairs currently flank the communion table.</td>
</tr>
<tr>
<td>Churches should be decorated with sacred symbols and imagery.</td>
<td>Many examples of sacred symbols and imagery are found, for example a stone statue of Mary and Child is carved into a canopied niche, Biblical figures decorate the stained glass windows and ecclesiastical objects used for religious rituals are found on the altar and in the cupboards of the north sacristy.</td>
</tr>
</tbody>
</table>
REFERENCES (TURABIAN)


Listening to Students’ Voices: Characteristics of the Ideal Design Studio Instructor

JI YOUNG CHO
Kent State University

NARRATIVE

INTRODUCTION

Design studio, as a core of interior design and architectural education, has been considered a significant topic for research. However, there is little research on students’ voices and perspectives regarding the characteristics of ideal design studio instructors.

Ochsner (2000) noted that there is a complete silence on the character of the interaction between students and faculty. He wrote, “as they [faculty] begin to teach in design studio, the assumption seems to be that they will go through a process of ‘learning by doing’ and everything will work out” (p. 194). He pointed out that many faculties begin teaching without any training or preparation regarding instruction, relying mostly on their own experience as students.

Attoe and Mugerauer (1991) also argued that studio teachers receive no training for teaching; instead, they rely on their intuition and what they learned as students in design studios.

PURPOSE

With this as background, this paper is an effort to understand characteristics of ideal studio instructors from students’ perspectives. Participants of this study were three design studio instructors with excellent reputations and 40 of their students at three different midwestern universities. The three instructors were selected, based on the recommendations of the chair/dean of each department/school, as being outstanding educators as well as recipients of teaching awards.

In any type of education, the learner’s role in acquiring and organizing information is important (Ormrod, 2004). Nevertheless, in design studio, the instructor’s role is much more important than in any other type of class (e.g., lecture or laboratory) because the primary knowledge is delivered through interaction between the instructor and the students regarding the students’ design process and outcomes. Studio courses do not heavily depend on textbooks or concrete instructions, and instructor’s creativity in leading the course is important. In addition, objective tools, such as exams or tests, cannot measure students’ learning outcomes in design studios; rather, the quality of students’ designs demonstrates learning outcomes. Therefore, the instructors’ role in guiding and leading students’ design development is highly significant in the quality of studio course.

METHOD

This research used a purposeful sampling method when selecting participants. Purposeful sampling is a method of “selecting information-rich cases strategically and purposefully” (Patton, 2002, p. 243). Three outstanding instructors were selected, based on the recommendations of the chair/dean of each department/school, as instructors who have an ability to guide students to generate high aesthetic qualities as well as those who were honored for their teaching.

There were two interviews per student: one at the middle of the semester and another at the end of the semester. The purpose was to understand students’ experience over the whole semester instead of resting on one specific event. Students were asked their experience of studio, including the following three areas: (a) the three best features of their instructor; (b) the three shortcomings of their instructor; and (c) three features of the ideal design studio instructor.
**FINDINGS AND DISCUSSION**

Ideal Design Studio Instructors for Students

Through data analysis, characteristics of ideal design studio instructors were revealed. A total of four themes emerged from the interview data analysis: (a) interpersonal attitude, (b) the way to convey knowledge, (c) strategies to guide students’ design evolution, and (d) content of knowledge (Figure 1).

*Interpersonal attitude* refers to how the instructor deals with students and what his or her personality is like. It includes whether the instructors are willing to help students and are approachable and how they show they believe in students’ abilities and encourage them. The way to convey knowledge means how the instructors communicate with students during class. It pertains to the ability to effectively deliver information. Strategies to guide students’ design evolution refers to the methods and techniques instructors use to help students develop their designs. The content of knowledge relates to the particular body of information that students expect the studio instructors to have.

Students listed the good features of their studio instructors as “available/easy to talk to,” “encouraging,” and having a nice “personality.” Students counted the instructor’s availability when they need advice and the ease with which they could talk to him or her as the best features of their instructors.

Also, students listed the attitude of not being too specific and giving freedom to students as the best features of their instructor. It appears that students prefer flexible design studio environments rather than prescriptive and overly structured environments.

Regarding strategies to guide students’ design evolution, the most common answer was giving adequate feedback and examples. Students replied that offering alternative ideas to students’ design ideas was more important than suggesting completely new ideas. They commented that new ideas confused them, whereas alternatives helped them develop rather than discard their current ideas. Students also cited their instructor’s ability to give customized feedback to each student as a good feature.

In terms of the content of knowledge, students responded that having rich knowledge and experience were good features of their instructor.

Three Least Favorite Features of the Three Instructors

In terms of the three least favorite features of their instructors, students gave diverse responses, but the common answers were talking too much, not listening enough to students, lacking consistency, and being too prescriptive.

Most students answered that their instructor’s “talking too much” and “not listening to students enough” was the least favorite aspects their instructors.

Students also listed the instructor being persistent in his/her ideas and giving similar feedback to all students (rather than customizing his comments to each individual) as least favorite features.

With respect to the way knowledge is conveyed, students most often said insufficient explanation/written description was their least favorite feature.

In terms of the content of knowledge, lack of technological knowledge was the most common response, and the instructor’s inconsistent suggestion was next.

Characteristics of Ideal Design Studio Instructor

Students most often identified giving adequate feedback and guidance as features of the ideal design studio instructor. Personality and willingness to help students, being a good listener, ability to communicate, and rich knowledge and experience were next.

First, being a good listener and being willing to talk with and encourage students were listed as the most important features of the ideal design studio instructor.

Second, the ability to provide adequate and sufficient feedback and guidance to students was also listed as characteristics of the ideal studio instructor. In addition, students wanted not just a new idea but something that connects to their original ideas. They said they wanted to be exposed to new ideas, but they also wanted to develop their own ideas rather than receiving new ideas in each meeting.
Third, students listed the ability to communicate effectively with students and to handle any type of student as two of the most important features of a design studio instructor.

Students wanted to meet someone who has a thorough knowledge of technology and architecture and architects, as well as rich experience upon which to base feedback and suggestions. The characteristics of ideal design studio instructor were summarized in Table 1.

**IMPLICATIONS AND CONCLUSION**

Students in the three studios had much in common regarding ideal instructors’ traits as well as their shortcomings.

The attributes of ideal design studio instructor found from this study has much in common with Attoe and Mugerauer’s (1991) finding. Attoe and Mugerauer found 14 traits of excellent studio teachers from teacher interviews as summarized in Table 2. There were three in common between this study and Attoe and Mugerauer’s study findings: instilling curiosity, having high expectations, and encouraging collegiality among students. However, Attoe and Mugerauer’s findings are more about general characteristics of the studio teachers and were obtained from interviews with the teachers only, rather than coming from diverse channels like observations. Thus, their study provides general traits of teachers but cannot provide insight into the specific behaviors or strategies of teachers under specific studio situations.

Moore (2001) suggested four teaching models based on two criteria (the type of knowledge transacted and the character of student-teacher interaction) as follows: the **scientist**, the **practitioner**, the **cleric**, and the **social activist**. When compared with Moore’s four pedagogical metaphors, it is apparent the three instructors in this study do not belong to only one style. The type of knowledge is expert as well as personal, and the character of the student-teacher interaction is “facilitator” yet sometimes “formal.” Overall, however, the three instructors were experts of knowledge as well as facilitators—...
Three considerations | 14 characteristics
--- | ---
The teacher as self (Aspects of the teacher’s own life contributing to good teaching) | Vitality
| Genuine and energetic
| Believe teaching is a mission
| A strong bond between teachers

Personal style | Matching teachers’ personal interest and style to the course
| Role as coach, counselor, and parent
| Instilling curiosity
| Socratic method

Course format | Use student’s interest as course content
| High expectations
| Dropping students in the middle of problems
| Encourage collegiality among students
| Hard work in preparing course
| Having high standards

Table 2: Fourteen Traits of Excellent Studio Teaching, Adapted from Attoe and Mugerauer, 1991, pp. 41-51

Listening to students’ voices is important, because unless we listen to their perspectives and experience of the studio, we leave an important participant out of the education process.

Given that beginning design studio instructors often feel they lack a reference for design studio teaching, and in many cases they depend only on their past experiences, the findings from this study may be a useful guide for their teaching practices.

REFERENCES (APA)


Understanding the Process of Aesthetic Education in Design Studios: Toward a New Framework for the Pedagogy of Aesthetics

JI YOUNG CHO
Kent State University

NARRATIVE

INTRODUCTION
This paper aims to identify the process of aesthetic education in design studios. Design studio is a significant place, where students of interior design and architecture learn the multifaceted nature of design (Bhatia, 2006; Findeli, 2001). Students’ design solutions actually occur in studio, and the essence of the studio is the discussions regarding the various aspects of their solutions. One of those design aspects is aesthetics.

However, there has been little research explaining the process of aesthetic education, including how students and instructors go through such a process, in both the interior design and architecture academies, even though aesthetics is one of the critical issues in the field (Johnson, 1997). Given that pursuing beauty is one of the roles of designers and architects, the discussion of beauty cannot be excluded from education.

BACKGROUND
Aesthetics is one of the frequently used terms in the discussion of beauty in art or architecture, but at the same time it is loosely defined and its meaning is often debated. The term aesthetics means “to perceive” (Wartenberg, p. 6); it was around 1750 when the philosopher Alexander Baumgarten redefined it to mean the study of good and bad perceptions. However, it was through Kant’s influential work Critique of Judgment that the term aesthetics came to occupy the dominant position in modern aesthetics (Townsend, 2001, p. 118).

In architecture, aesthetics is considered according to Vitruvius’ definition as one of the qualities of architecture. Vitruvius defined good architecture as fulfilling three aspects: venustas (beauty), firmitas (firmness), and utilitas (utility) (Vitruvius, 15 B.C./1999). Venustas is a Latin term that implies “a visual quality in architecture that would arouse the emotion of love” (Britannica Online Encyclopedia, 2008). In the 17th century, Sir Henry Wotton paraphrased Vitruvius’ venustas as “delight.”

It is assumed that aesthetics may not be discussed using the term itself. In the architecture field, the term aesthetics is not frequently used; instead, different terms such as balance, fitness, or affordance (Gibson, 1979) are used to imply the aesthetic quality of architecture. Thus, for this research, I proposed a working definition of aesthetics in architecture as follows: “Aesthetics is a quality of architecture—either exterior or interior—regarding conceptual, formal, and symbolic aspects that give pleasure to people from the design process to the design product.”

PURPOSE
This study explored the process of aesthetic education in design studios by using a grounded theory approach. This approach refers to “a qualitative research method that uses a systematic set of procedures to develop an inductively derived grounded theory about a phenomenon” (Strauss & Corbin, p. 23). The purposes of this study are (a) to understand the two primary groups’ (students’ and instructors’) perspectives of current aesthetic education; (b) to identify the process of aesthetic education; and (c) to provide a new framework for the pedagogy of aesthetics that can enhance educators’ and students’ understanding of the process.

METHOD
Three design studios—one interior design studio and two architecture design studios in the Midwest—were observed once a week for a whole academic semester. The reason for the regularity and duration is that...
research conducted over a long period of time, involving ongoing observations and interviews, is necessary to understand the phenomenon of aesthetic education. The three instructors and their 40 students were interviewed. Through the grounded approach, a theoretical framework for the process of aesthetic education was proposed.

**FINDINGS**

Need for More Discussion of Aesthetics

Regarding courses related to aesthetics, most instructors and students responded that design studio is their primary place of study, followed by history and design principle/visual design courses. However, they believed that any class (history, structure, material) can be the venue for learning about aesthetics depending on how the instructor teaches/approaches the course. All instructors agreed there was a lack of aesthetic discussion in studios and the overall curriculum. They believe there needs to more discussions about aesthetics in architecture/interior design education.

Aesthetics of Architecture as Visual Object Versus Experience

There was a conflict regarding whether aesthetics of architecture means to view architecture as a visual object or as a spatial experience. Whereas most instructors emphasized spatial experience, students had a tendency to consider unique exteriors and landmarks as the aesthetics of a building.

In all three studios, instructors and students did not use the term *aesthetics* heavily. Rather, they used different terms when expressing the nature of aesthetics, such as appearance/looks, beauty, emotion/impression, form/shape, goodness, organizing principle, pleasing, preference, proportion, and vocabulary/language.

Classical Aesthetics Versus Expressive Aesthetics

Students and instructors used the following phrases instead of directly using the term *aesthetics* when they expressed relevant properties: breaking symmetry, consistency/coherence, contrast, fit (affordance), focal point, meaningful, not literal, poetic, standout, holistic, and uniqueness. Most of these expressions can be divided into two main categories: (a) something that fits well and harmonizes with its context, and (b) something that is unique and a standout. These two categories correspond to the “preference-for-prototype model” and the “preference-for-difference model.” The preference-for-prototype theory (Whitfield & Slatter, 1979) explains that people prefer “the typical examples of a category, the ones that are often also very familiar and we have been exposed to repeatedly” (as cited in Hekkert, 2006, p. 167). The preference-for-difference theory explains people tend to prefer something new, unique, and unfamiliar (Martindale, 1990).

Lavie and Tractinsky (2004) suggested two aesthetic dimensions of visual perceptions: classical aesthetics and expressive aesthetics. Classical aesthetics include aspects that have been common from antiquity to the 18th century, such as order and clear design, and expressive aesthetics include designer’s creativity, originality, and an ability to break down conventions (p. 269). Based on this definition, preference-for-prototype seems to correspond to classical aesthetics, and the preference-for-difference model seems to agree with expressive aesthetics.

Regarding preferred building type, students tended to like unique and standout buildings rather than works of their instructors’ hero architects like Louis Kahn. Students preferred unique/conic buildings such as Frank Gehry’s Disney Concert Hall in Los Angeles or the Sydney Opera House more than the timeless/essential architecture of Louis Kahn’s Kimbell Art Museum that instructors described.

Clash of Aesthetics Between Instructor and Students

There was a conflict of aesthetics between instructors and students. According to their statements, students tended to be sensitive when their sense of aesthetics was discussed or considered in a negative light. Some students complained about their studio’s prescriptive environment, where they felt their instructor imposed his or her aesthetics and gave similar comments to most of the students.

Also, there was a tendency for the more experienced students in design studios to have greater aesthetic conflict with the instructor. For example, a student who has a strong preference for certain aesthetics would have a conflict with the instructor when their preferences dif-
When the instructor emphasized his or her aesthetics too strongly and imposed it on students, and a student’s aesthetic preference was different from that of the teacher, that student did not feel a strong attachment to his or her project. In contrast, students had a strong attachment to a project when the student and instructor held similar aesthetic preferences. Figure 1 shows the relationship between the degree to which an instructor emphasizes his or her aesthetics and students’ attachment to their projects.

**DISCUSSION**

Process of Aesthetics

The conflict between instructor and students regarding aesthetics can be understood as the gap of aesthetics between laypersons and professionals. Difference in aesthetic preference between architects/designers and laypersons has been studied in architecture, landscape architecture, and urban studies (Devlin & Nasar, 1989; Gifford et al., 2002). Such studies showed that architect/designer and layperson groups’ understanding of “high” and “popular” attributes is different.

The findings from this study indicate that education in studio can be understood as a process by which laypersons acculturate (or come to belong) to the professional community as designers or architects. Students understood aesthetics in the studios to be a process of acquiring visual sense, of opening their eyes to that which was not previously considered beautiful, and of acculturating to the community of designers/architects.

There are seven components that contributed to the process of aesthetic education: the epochal environment, social environment, school environment, instructors’ past education and experience, instructors’ aesthetic preference and aesthetic value, and students’ knowledge of design and understanding of aesthetics. Reviewers’ comments made a contribution as well. Figure 2 shows the relationship of various components in the process of aesthetic education.

**IMPLICATIONS AND CONCLUSION**

There are several implications for educators from this study. First, interior design/architectural design education is a process not only of learning obvious knowledge such as technology or structure, but also a process of learning to discern beauty and realize its diversity, for students to see beauty where they did not see beauty before.

Second, educators need to know that the process of aesthetic education in architectural design is the way in
which a layperson comes to belong to the professional community.

Third, educators also need to know the possibility of a clash of aesthetics between instructors and students, especially for advanced-level students. Thus, rather than seeking to impose one’s aesthetics, suggesting precedence with an explanation of principle and rationale preserves students’ right to find and develop their own aesthetics.

REFERENCES (APA)


Augmented Reality and Interior Design: a Survey of Current Trends, Potential Applications, and Implications for the Meaning of Place

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Georgia State University

NARRATIVE

Augmented reality (AR) is technology with the potential to re-shape interior space. An understanding of AR is necessary to seamlessly weave the data landscape that virtually fills our surroundings with the interior environment (Manovich, “The Poetics of Augmented Space, The Art of Our Time” 255). Overlaying contextual information on top of physical space, as occurs in AR, is nothing new to interior designers as evidenced in exhibit design, wayfinding, and information graphics, but this technology presents new challenges to the understanding of interaction and place. This narrative explores current experimentation with AR, its future and challenge with interior design, and the notion of place in mixed reality environments.

Most researchers define AR along a continuum from an entirely virtual experience -- where no reference to the physical world is available -- to true reality, with everything in between being referred to as mixed or augmented reality environments (Anders 20). This continuum allows for much interpretation of the definition of AR. One could consider the immersive quality of an IMAX film to be virtual reality, while smartphones generate AR by supplying users with additional information about their surroundings (Manovich, “The Poetics of Augmented Space” 11). AR is commonly understood as the overlay of virtual information on the physical environment of the user.

In the 1990s, tech mogul, Bill Gates, was exploring human-computer interaction in the interior environment of his personal residence by using large video screens projecting content automatically determined by the adjacent users’ preference, creating an ephemeral, altered reality experience for the user (McQuire 1). Hirokazu Kato from Hiroshima University developed an application to arrange virtual furniture in a virtual room using physical and audible commands (Irawati, Green and Billinghurst 1). This nascent technology allows design to take place on any worksurface, removing the dimensional restriction of the computer screen (3).

In a design for Caltech Industries, Peter Anders considers how both the physical and virtual space can relate to each other within the interior environment by installing mirrors that both reflect the physical space and demarcate a virtual office presence (Anders 24). Metaphorically located behind the mirrors, offsite employee offices can be visited in the virtual environment, Second Life (22). This design challenges the definition of AR, but takes into consideration how virtual and physical spaces can be combined to create a unique augmented environment.

The Augmented Environments Laboratory at Georgia Tech has developed an AR prototype, Kimura, that “integrates physical and virtual context information to create a pervasive computing environment for knowledge workers” (Voida, Maclntyre and Corso 74). This organizational system interprets daily activities of a worker and assembles associated files and information into a series of virtual montages displayed on an office’s digital whiteboard. The system is able to understand user priorities and respond accordingly by changing the graphics of the virtual montages, while still using commonly understood desktop computing interfaces.

Specifically designed for architecture, two AR projects have been developed for the design of the built environment. In 2005, using GPS location indicators, Peter Anders developed a system that would allow architectural design to occur virtually in real space in order to be
evaluated from any perspective on the site (Anders 22). This technology could help both designers and clients in the visualization and understanding of their work.

Smartphone applications, Layar and GraffitiGeo, use AR technology to overlay the physical world with user-determined virtual content such as restaurant locations, historic trivia, or transit information (Berlin). Recently, the Bushwick Augmented Reality Intervention used Layar to showcase virtual, local artwork overlaid on the physical Brooklyn neighborhood (Layar Layers). The GraffitiGeo mobile application’s AR function will display short user reviews on the actual walls of restaurants and businesses allowing users to leave messages, gain insight into establishments, and create impromptu communities (Kroeker 19). Other AR applications encourage touring cities to see virtual historic landmarks, scavenger hunts through virtual museums, or learning geometry in a classroom by manipulating forms in virtual space (Alvardo and Mauer; Braun 160; Mobile AR Quest). Mobile applications like GraffitiGeo, Layar, and others represent a change in how people are using the space around them, at the same time creating new, virtual communities linked by a common physical context.

Roberto Rengel defines place as “discrete entities separate from adjacent ones and have identifiable purpose” (Rengel 41). As placeless digital space is more frequently accessed through AR, it will become increasingly important to define place both virtually and physically with design solutions. In the past, design that incorporated digital technology favored a universally uniform aesthetic, but this should be balanced with a human, “local desire for completely belonging to one place” (McCullough 173). Neutrality in the design of virtual content within an AR platform could risk normalizing an otherwise uniquely designed physical place. Conversely, as evidenced in the previously mentioned Layar art project in Brooklyn, breaking down the separation between cyberspace and reality can potentially define a new sense of place in the physical environment.

“Technology has no doubt changed the way we interact, behave, and socialize with one another,” challenging the idea of a physically located shared experience, and ultimately questioning the boundaries of community (Ghani 69). Augmented spaces are very personalized; the data delivered to a user may be specific to that person, providing a unique experience for each user, but potentially making a meaningful and organic, shared experience more difficult to generate (Manovich, “The Poetics of Augmented Space, The Art of Our Time” 254; McCullough 184). In contrast, socially based AR technology like Layar and GraffitiGeo use the personalization of information to build communities of shared interests that are supported by a physical context. The designer can supplement the shared experience created in the physical design virtually through AR; conversely, virtual socialization can be supported in the physical space. In addition, physical boundaries in the design of the interior environment should be respected in the virtual world by embedding easily understood, conventional cues serving as “consent to take part in [the] technical environment” (McCullough 101).

Inherent within AR is the ability to see what is not physically present (Anders and Lonsing). In the built environment, this could include mechanical systems above a ceiling, hidden structural components, or virtual users of a client’s services. One design solution suggested that lighting in a building’s lobby could change depending on the number of virtual visitors that were accessing the company’s website (Anders 27). Non-physical information about the building could be embedded in physical locations, accessible through personal access points like smartphones. This information could provide wayfinding instruction to differently abled users on how to find certain functions of the building, locations of other users, adjacencies within the building, and access to operable utilities that might otherwise be difficult to control (Foster, Wenn and Harwin 13). In the case of these utilities, a virtual representation of the device could be overlaid on top of the actual control, responding to input from the user, and thus allowing someone with limited mobility or strength to control building functions (Kroeker 21). Since the technology has the potential for universal appeal to large segments of the population, its use may not be stigmatizing for differently-abled building occupants. The delivery of information to an individual user about their surroundings can be personalized, ultimately making information delivery “more subtle, more diverse, and more available” (McCullough 190).

There will be challenges with the implementation of AR into the built environment in the form of hardware (how it works) as well as conceptual (how it will be used). “Perhaps the most important issue for usefulness and possibly usability will be salience of the virtual environ-
ment – how meaningful the environment is to the user” (Wilson 1073). If AR becomes a gimmick, capitalized by advertisers, it may become mistrusted by an increasingly savvy, technologically aware population, and its effectiveness in the built environment made more difficult. Obvious hardware limitations include the inaccuracy of GPS coordinates in interior environments and cumbersome headwear for viewing AR content. The latter has already been somewhat mitigated through the use of smartphones and the development of virtual retinal display technologies that project digital images on our eyes like the AirScout by Brother (Ricker).

Conceptually, “one of the main challenges within AR environments is how to create a unified sense of place and presence” so that AR does not alienate users from the actual physical space (Braun 158). If too much focus is given to the virtual world, and the physical space merely becomes a container for cyberspace, then users may feel “that they are more present in the virtual world and not in the overall AR experience” (159). “The media will effectively rob us of our eyes, of our capacity to see for ourselves” if we don’t continue to provide stimulating built environments with unique and engaging experiences (McQuire 9).

Augmented Reality and the consideration of data in our physical space will change how we define place, how users interact with each other and the building, and how we develop the designs of the future. These designs will encompass the ephemeral and boundless nature of the datascape but must also continue to define spaces in a way that gives meaning through tactile and enriching experiences. Supplemeting the physical world with the virtual allows the designer to break free from the physical boundaries of space, consider the cyber world as it relates to the built environment, and provide accessible design that is effective and not alienating. Understanding the potential for this technology is crucial in designing a world that considers all aspects of interaction.

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A Post-Occupancy Evaluation: To What Degree Do LEED Certified Buildings Maintain Their Sustainable Integrities Over Time

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University of Florida

NARRATIVE

In 1998, the United States Green Building Council (USGBC) launched its first Leadership in Energy and Environmental Design (LEED) Pilot Project Program, better known as LEED Version 1.0. Originally intended to be a measure of sustainability, the program has since evolved into LEED Version 3.0 and now undertakes a variety of initiatives. In addition to being an evaluation system specifically devoted to building operational and maintenance issues, LEED addresses different project development procedures that exist in the urban planning market. Over ten years later, LEED now serves as a third party certification program for all building types including new and existing institutional, commercial, and residential establishments (U.S. Green Building Council [USGBC], 2008, About USGBC). Since 2005, the market for green building has steadily gained support and is predicted to represent 20-25% of non-residential construction by 2013 (USGBC, 2008, Green Building Facts). However, despite the exponential growth in annual LEED certifications, some studies suggest that the measured performance of these building’s may not be living up to expectations. For example, “the council’s own research suggests that a quarter of the new buildings that have been certified do not save as much energy as their designs predicted and that most do not track energy consumption once in use” (Navarro, 2009, p.2). Therefore, this study aimed to investigate to what degree LEED-certified buildings maintain their sustainable integrities over time.

This research focused on answering two specific questions: 1) Do the buildings in this study consume water and energy at the levels predicted during their LEED application process? 2) Do these buildings meet the Indoor Environmental Quality (IEQ) occupant satisfaction level recommended by the Center for the Built Environment (CBE) and the USGBC? A post-occupancy evaluation (POE) was thus conducted for two LEED-certified higher education buildings at a large public university in the southeastern region of the United States. In order to uniformly analyze each building, this POE focused on the performance and occupant satisfaction with three different building features: energy consumption, water consumption, and indoor environmental quality. With the help of the university’s Physical Plant Division and the Facility, Planning and Construction department, original LEED documents, metered energy, and metered water records were collected and compared to reveal current performance levels. Additionally, an adaptation of the University of California, Berkeley’s Occupant IEQ Survey (Center for the Built Environment [CBE], 2006) was created and distributed to building users through the use of an online survey tool. Finally, after analyzing the survey responses, full-time and transient occupants from each building were interviewed to better understand the user satisfaction with the building’s design, operation, and IEQ.

The results from the water and energy consumption analysis indicated that both buildings demonstrated varying levels of deviation from their predicted performance during the LEED application process (see Figures 1 - 4). Additionally, initial consumption results lead to the discovery of several computation errors within the original LEED documents. For example, analysis of Building A’s water consumption values initially indicated that actual use was 81% below the design case. However, upon further investigation it appears as though the quantity and fixture use values for transient occupants were miscalculated within the original LEED application templates. As a result of an 87% underestimation of daily occupants and an erroneous input for fixture use, both
the baseline and design case lines were skewed when compared to actual consumption rates. When these values are corrected for the baseline and predicted case, we find that Building A performs an average of 24% below the design case (see Figure 1). Similarly, initial analysis of Building B’s water consumption suggested performance was 54% below the design case. However, it was determined that a possible cause for this deviation could be due to a miscalculation of the daily building occupant quantity. As a result of a 32% overestimation, both the baseline and design case lines were skewed when compared to actual use of potable water. When this value is corrected, the results show that Building B performs an average of 28% below the design case (see Figure 2).

Analysis of Building A’s energy consumption values indicated that actual use was 51% above the design case. As previously noted, a potential cause for this deviation may be due to an underestimation of daily full-time and transient occupants. As a result, the energy demands placed on facility systems and equipment such as HVAC, lighting, electrical outlets, projectors, and computers are higher than engineers anticipated while creating the initial energy simulation model. In terms of cost this increased in energy use for Building A is the equivalent of approximately $12,744 more per year than projected (see Figure 3). Conversely, analysis of Building B’s energy consumption values indicated that actual use was 43% below the design case. As previously described, it was determined that Building B overestimated their daily full-time and transient occupants by 32%. This suggests that energy loads from facility systems and equipment are all being used less than engineers estimated. However, it should be noted that Building B’s prediction line is unique in that it falls above the baseline case. With a documented savings of 21.3% in the original LEED application, it was significant to establish how this building was performing, and the dissatisfaction with the thermal environment and maintenance. Participant responses indicated that both buildings averaged an 80% overall satisfaction rating (see Figure 5). However, only 63% of occupants provided satisfactory scores within the Thermal Comfort category; this is approximately 17% lower than the levels recommended by the USGBC. When compared to the less stringent CBE standard, which seeks for ratings above the 50th percentile, both buildings demonstrated acceptable scores in all of the IEQ categories. Subsequent interviews with building occupants were therefore focused on identifying factors that may have contributed to the deviation of water consumption, energy performance, and the dissatisfaction with the thermal environment. Currently, interviews have revealed that building occupants are rarely instructed on how to use sustainable strategies such as lighting controls, shading devices, and water saving fixtures. Additionally, regularly occupied spaces are either not provided with thermal comfort controls, such as thermostats or operable windows, or occupants are not formally informed of their locations. In some cases, occupants were all together unaware of the sustainable features in their building and were unfamiliar with the LEED rating system and the significance of a LEED-certification.

Overall, the green features in both buildings appear to be maintaining their sustainable integrities and in some instances, have exceeded the expectations of the design teams. Additionally, with the exception of thermal comfort, building users have indicated they are generally satisfied with the design and operation of each building. However, study findings still support the need for a variety of improvements including more accurate prediction tools during the LEED application process, better com-
munication of sustainable goals with building users, and more frequent assessments of building user’s satisfaction with indoor environmental factors. An improvement to the LEED system itself would be to award Optimized Energy Performance points based on the savings of energy consumption and not utility costs. This would then ensure that building performance predictions fall below that of a baseline case, regardless of a team’s purchase of RECs.

Part of a designer’s challenge when specifying sustainable materials and systems is to balance the additional 2 to 5 percent in green construction costs (USGBC, 2009, Green Building LEED Core Concepts Guide) with the presumed life-cycle cost savings from improved building performance. Therefore it is essential for a designer to thoroughly understand each strategy’s rate of success if they intend to provide a lasting service to their clients. By sharing actual performance data of LEED buildings and user responses to interior building environments, this study intends to inform the field of sustainable design and help its advocates learn from past projects.

Figure 1: Water Consumption Recalculated-Building A

Figure 2: Water Consumption Recalculated-Building B
Figure 3: Energy Consumption Calculations-Building A

Figure 4: Energy Consumption Calculations-Building B
Indoor Environmental Quality (IEQ) Response Ratings

<table>
<thead>
<tr>
<th>Building Name</th>
<th>Workspace Layout</th>
<th>Workspace Furniture</th>
<th>Thermal Comfort</th>
<th>Indoor Air Quality</th>
<th>Lighting Levels</th>
</tr>
</thead>
<tbody>
<tr>
<td>Building A</td>
<td>80.59%</td>
<td>71.30%</td>
<td>60.44%</td>
<td>83.52%</td>
<td>79.69%</td>
</tr>
<tr>
<td>Building B</td>
<td>83.49%</td>
<td>80.30%</td>
<td>65.81%</td>
<td>86.72%</td>
<td>75.88%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Building Name</th>
<th>Acoustic Quality</th>
<th>Water Efficiency</th>
<th>Cleanliness and Maintenance</th>
<th>General Feedback</th>
<th>Overall Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Building A Cont.</td>
<td>76.40%</td>
<td>77.19%</td>
<td>87.19%</td>
<td>84.94%</td>
<td>77.92%</td>
</tr>
<tr>
<td>Building B Cont.</td>
<td>86.97%</td>
<td>80.77%</td>
<td>86.38%</td>
<td>92.66%</td>
<td>82.11%</td>
</tr>
</tbody>
</table>

Figure 5: Indoor Environmental Quality (IEQ) Response Rating

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Transdisciplinary Research Teams and Aging in Place Design; The Interior Designer’s Role

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NARRATIVE

Studies on the evolution of design and building process indicate increased integration of research, design, and building practices as we move into the future (Larson, 2002). For example, university researchers and industry leaders are developing new models for housing that address the needs of homeowners who prefer to remain in their homes as they age (Hart, 2004; AARP, 2008). Innovations in housing systems connected with aging in place (AIP) seek to integrate developing technologies in housing through the incorporation of ubiquitous, persuasive computing (Essa, 2000), electronically-enhanced assistive technologies, and telecare (Barlow, J, & Venables, T., 2004).

Most research has taken a thematic approach to the house of the future, revealed by designations like: a) GatorTech Smart House; b) Intelligent House; (Honeywell); c) Georgia Tech Aware Home; d) Green House (Honeywell); etc. (Chan, M., Esteve, D., Escriba, C., & Campo, E. 2008; Venkatesh, 2001).

Massachusetts Institute of Technology (MIT) researchers believe that there is no single ‘home of the future’. Contrary to singular-model approaches, MIT has developed a holistic approach to AIP design, addressing the complexity and diversity of problems associated with updating the housing industries for AIP populations. This multidisciplinary effort is called the Open_n Prototype Initiative (OPI), (Intille, S.S, Larson, K., & Munguia Tapia, E. (2003).

OPI employs a trans-disciplinary team strategy that involves scientific, professional, community, and building industry sectors in the exploration of new housing types. OPI seeks to develop four prototype houses, deploying advanced designs, materials, systems, and fabrication strategies, to test new models for the design and fabrication of highly responsive places of living.

OPI embraces Habraken’s theory of “Open Building” (OB). The two principal aspects of OB are 1) a disentangled and layered approach to design and construction, with each layer defined by its life span and anticipated need for future alteration; and 2) design by multidisciplinary teams that get involved early in the process. Although OPI researchers have tested, evaluated and refined the outcomes of the disentangled layered approach to design, they have not yet explored or evaluated the functioning of the multidisciplinary teams that develop and build the OPI prototypes. Knowledge about how the teams work and what behaviors and strategies aid in successful team outcomes is essential to promoting successful Open Building outcomes. This study sought to explore the role and functioning of the research teams within the context of OPI.

Three models of team operations have been identified and differentiated in “team science” and health care literature: multi-disciplinary, inter-disciplinary, and trans-disciplinary (Fewell, 1983; Linder, 1983; Peterson, 1987; United Cerebral Palsy National Collaborative Infant Project, 1976; Stokols, D., Misra, S., Moser, R. P., Hall, K.L., & Taylor, B.K., 2008).

The distinctions between these modes of teamwork reside in the differences between the structure and character of interactions among team members.

Multi-disciplinary teams involve participants who work independently from each other either in a sequence, or in tandem. Each participant applies their discipline-specific perspective to the outcome (Rosenfield, P.L, 1992) and then delivers the work to the project leader. In this model, the structure of interaction fosters a view of the
project as an amalgam of different pieces rather than an integrated interactive whole.

Inter-disciplinary teams are characterized by formal channels of communication that encourage team members to share information and discuss progress and results of their work. Each specialist is responsible for the part of the project related to his or her professional discipline and the team comes together at different points to discuss the results of their individual work and to develop plans for implementing the project. Although this approach promotes communication and interaction among participants, researchers have identified problems associated with “turf protection” that often impinge upon the team process of problem solving (Rosenfield, P.L., 1992).

In Trans-disciplinary research teams there is an integrative process in which participants work jointly using a shared conceptual framework that encourages members to cross and recross, synthesize, and extend discipline-specific theories, concepts, methods, and approaches, when addressing a common research problem (Stokols, D., Misra, S., Moser, R. P., Hall, K.L., & Taylor, B.K., 2008). Trans-disciplinary teams are characterized by their view of the building process as integrated and interactive, and the focus on a hierarchy of common project goals as the most important criteria in decision making.

OPI is a complex project involving multiple stakeholders who represent diverse disciplines and numerous organizations. These people have joined forces with the objective of developing a series of prototypes for integrative, interactive housing of the future. Participants consider this process as an opportunity for mutual learning, and value the end result as a manifestation of a course of action that integrates various perspectives, multiple disciplines, and diverse knowledge (Stokols, et al., 2008). Thus OPI operates as a trans-disciplinary team and seeks to learn lessons from the development of each prototype to improve the following prototypes with the intent of designing a blueprint for aging in place developments.

METHOD
This study employed a multiple case study method to explore the inner working of the teams involved in developing the two built OPI prototypes:

Open_1 Crotched Mountain Rehabilitation Center, Greenfield, New Hampshire; a transitional home for brain surgery patients leaving the Brain Injury Center. It is a three-story 28 by 46 foot house, sited on the main campus of Crotched Mountain.

Open_2 Unity House, at Unity College, Unity, Maine: the President’s house for Unity College, in Unity, Maine. Open_2 is divided in two parts: a private living area for the president’s family and a public area for college functions. Open_2 total square footage is 1,930 Sq. ft.

The following lists the design goals for the prototypes:

- Link design and construction features directly to efficient prefabrication.
- Establish varied collection of components that can be combined to form unique structures.
- Design building structures that consist of distinct, disentangled and accessible layers that allow for both efficient assembly and for change overtime.
- Adaptability should allow home owners to add services and new technologies as they appear on the market, or seamlessly modify the house quickly with minimal disruption and waste.
- Achieve LEED Platinum Certification.
- Incorporates “green” and energy efficient designs as well as systems to monitor and measure air quality, heat, and energy efficiency.
- Build houses, from foundation up, in less than 20 days using Open-Built prefabricated components.

The study’s tactics involved on-site observations and twenty unstructured interviews with stakeholders from the teams involved in developing the prototypes. The interviewer asked team members to reflect on the unique events and contextual determinants that affected collaborative processes and building outcomes of OPI’s trans-disciplinary research initiative. The interviews were transcribed and content analysis of the transcripts coded the text and uncovered the following themes:

- Team Composition
- Participatory Goal Setting
• Organizational Structure
• Leadership Solutions
• Funding and Budget
• Priority Goal Setting

RESULTS
Analysis found that OPI’s Researchers perceived the quality of their teams’ function was contingent on several issues that either constrained or enhanced team effectiveness.

Several operational issues emerged as elements that constrained team success: 1) Ill-defined content of key goals; 2) lack of priority ranking of multiple stakeholders’ goals; 3) lack of, or weak construction of, team organizational structure; and 4) lack of a designated project leader for Open_1 and Open_2.

The following motivational factors also hindered team effectiveness: 1) uncertainties about sustained support from partners and sponsors; 2) lack of funding; and 3) decline of member participation and involvement due to lack of time, unexpected costs, or absence of strong participatory incentives.

The following traits appeared to enhance OPI’s teams’ effectiveness: 1) participatory process used to identify common goals; 2) Innate ability of certain stakeholders to assume transformational and empowering leadership roles; 3) Informal leaders’ ability to promote partnerships, teamwork, and engage member participation within their organizations; 4) exemplary management skills of project architects; 5) social cohesiveness and familiarity among team members; 6) participants’ shared egalitarian values and mutual respect throughout all stages of collaboration; 7) sustained and continued collaboration among team participants and team leaders; and 8) successful integration of knowledge from different discipline perspectives.

CONCLUSIONS
Although this analysis identified traits that contribute to team effectiveness, and areas that constrain team effectiveness, just how and why different issues and behaviors were developed or manifested are still unclear.

Results indicate the importance of goal setting. Results indicate that goals setting should be an ongoing participatory process, that goals should be thoroughly explored from a variety of viewpoints, prioritized, and revised as the project progresses and team composition evolves. Leadership was also a strong theme. Designated leadership structure should be developed and leaders should possess personal qualities that foster partnerships and commitment on the part of team members.

This study did not assess the relationship between team function and perceived success of the projects. Although a significant amount of research has focused on successful team structures in university settings of the science and medical fields, little research has identified the qualities of successful team structures in the building industry. More studies focused on this issue could generate knowledge useful for both practitioners seeking to organize trans-disciplinary team processes and educators who seek to teach students how to operate effectively in trans-disciplinary settings.

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Interpreting Ernesto Neto’s Bodily Encounters: Interior Design, Merleau-Ponty, and Reciprocity of Subjective and Objective Ways of Knowing

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NARRATIVE

INTRODUCTION
In a recent Journal of Interior Design essay, Pable calls for a renewed balance within interior design of subjective and objective ways of knowing and acting - even as interior designers “interface[s] with a public that prefers to validate objective knowledge in lieu of subjective knowledge” (p. x). A disavowal of subjective ways of knowing has resulted from interior design’s quest for public legitimacy, as exemplified in its legal professionalization and its embrace of evidence-based design. Such disavowal may have “spurred on a diminution of the ornamental” (p. xi) and “a dismissal of the decoration and surface ornamentation aspects of interior design” (p. xvii). Pable suggests that “the predominance of objective knowing that echoes through interior designers suppression of supposedly ‘irrational’ interior decoration is an area ripe for reconsideration” (p. xvi).

This presentation explores Pable’s implication that to re-embrace the subjective is to re-embrace the essential conditions of interior design – those conditions that have contributed to its unique identity among the design disciplines. It proposes that these essential conditions may be observed in the subjective artistic expressions of sculptor Ernesto Neto (b. 1964). Alleviated of expectations associated with funding, professional licensing, and objective reasoning, these works exemplify pure interior ‘atmospheres’ and celebrate “the human capacity for abstraction and imagination – key tenets of art and interior design” (Pable, p. 15). The goal of this presentation is to clarify essential subjective qualities of interior design as ideally (rather than professionally) practiced and perceived by applying interpretive methodology to interior environments situated just beyond interior design’s boundary with art.

CONTEXT
A predominant strategy applied for legitimizing interior design has been to situate it relative to architecture (Harwood, Havenhand, Martin & Kroelinger). Pable’s subjective vs. objective duality mirrors the binary oppositions such as male vs. female, structural vs. superficial, and structure vs. decoration identified by Havenhand as the boundaries separating architecture and interior design. By turning away from the subjective, the feminine, or the decorative and toward the objective, the masculine, or the structural, is interior design remaking itself in the image of architecture? If so, is it making vulnerable its uniqueness among the design disciplines?

Ironically, as interior design has focused on the objective and compared itself to architecture, advocates for a subjectivity understood through the philosophical lens of phenomenology have emerged within architecture and urbanism. Applying Maurice Merleau-Ponty’s concept of ‘incarnate subjectivity’ based upon the ‘intertwining’ of dualities such as sensible vs. sensate and object vs. subject (Flynn), architects are also exploring relationships between objectivity and subjectivity. In an introduction to a monograph on architect Steven Holl’s work, architectural theorist Alberto Perez Gomez succinctly stated that Merleau-Ponty’s goal was “precisely to non-idealize the notion of experience” and goes on to explain that “our life, this intertwining, is a network of reciprocities . . . reality is not reducible to the conventional poles of objectivity and subjectivity. [Intertwining] is a gift to a non-dualistic, embodied consciousness” (p. 9). In The Eyes of the Skin: Architecture and the Senses, Juhani Pallasmaa explores the intertwining of vision and hapticity as an extension of the dualities object vs. subject; exteriority vs. interiority; Pallasmaa proposes that “a remarkable factor in the experience of enveloping spatial-
ity, interiority, and hapticity is the deliberate suppression of sharp, focused vision" (2005, p. 13).

In a preceding essay on the subject Palasmma referred to Goethe’s concept of ‘life enhancing’ via Berenson’s late nineteenth century concept of ‘ideated sensations’ stating that, “in [Berenson’s] view the work of authentic art stimulates our ideated sensations of touch, and this stimulation is life-enhancing. Genuine architectural works, in my view, also evoke similar ideated tactile sensations which enhance our experience of ourselves” (2000, p. 78). Within the context of Berenson’s work, Palasmma has implicitly equated genuine architecture with Decoration. In his work on Italian Renaissance painting, Berenson defined two broad domains of art, Illustration and Decoration. “By Decoration I mean all those elements in a work of art which appeal directly to the senses, such as Colour and Tone; or directly stimulate ideated sensations, such as, for instance, Form and Movement” (p. 5) For Berenson, Illustration is the mental picture of an object’s appearance and “changes . . . with the contents of the mind” (p. 15). Decoration is intrinsic and unchanging. This understanding of Decoration seems quite contrary to our contemporary associations of decoration with the rapid evolution of style and the quick make-over of the superficial.

Pallasmama also shares with Berenson an understanding of the role of time within each domain of life-enhancing art or architecture. Berenson proposes that the demands of life change in time and that the objects of our desire vary accordingly. These variances, or fluctuations in the work of art can only be manifest in the illustrative, or objective image. The Decorative domain of art is “above the revolutions of fashion and taste” (p. 14). Pallasmama distinguishes between an architecture of formal ideals, “creating settings for the eye which seem to originate in a single moment of time” with an architecture that “places us in a continuum of timeless duration, the ‘womb of time’ to use an expression of Shakespeare’s from Orthello” (p. 79). While interior design has been busy comparing itself to architecture, architecture has begun entwining the decorative, the superficial, and perhaps the feminine within its own domain. Within such a context, how might interior design re-claim the subjective and re-draw its own boundaries from ‘its interior’ rather than against something ‘exterior’?

**INTERPRETIVE FRAMEWORK**

This paper outlines a theoretical approach for joining interior design’s emergent objectivity with the discipline’s traditional subjectivity. Merleau-Ponty’s work has been applied to the theoretical intertwining of the objective vs. subjective duality within architecture and will likewise be applied in this presentation to dualistic intertwinnings within interior design. The key points of Merleau-Ponty’s circumvention of the subjective-objective duality outlined in “The Primacy of Perception and Its Philosophical Consequences” will be summarized. The presentation then references Merleau-Ponty’s argument in the interpretation of selected interior environments. However, rather than focusing on interior design’s objective frontier situated along its boundary with architecture, this interpretative study instead focuses on interior design’s subjective frontier located along its boundary with art. Specifically, the interior installations of sculptor Ernesto Neto will be interpreted because they embody, to reference Berenson, minimally illustrated, Decorative spaces. Neto has described a 2007 installation titled “Mother Body Emotional Densities, for Alive Temple Time Baby Son,” as “skin,” an “organism,” and “a body - not the representation of a body” (Gulick). The referenced installation appears soft, elastic, and translucent. Its shape is bio-morphological. However, it is far from Architecture’s traditional metaphorical body comprised of bones, ligaments, and skin. Neto’s body is only skin, absent of the bones and ligaments which will eventually emerge in later work. In this work the skin alone bounds the organism. Translucent lycra is suspended and tensioned within an existing building and weighted with ‘pods’ of spices. Lygia Clark (1920-1988), who transformed the art spectator into art participant through creating opportunities for multisensory experiences in her work, is frequently cited by Neto as a significant influence in his work. In this work, and especially the ‘Nave’ series which precedes it, Neto provides a visual, tactile, and olfactory bodily interior and invites the participant into the work to see, touch, and smell the interior ‘atmosphere’ and socially interact with others. The work is both a sculpture and interior environment. Of interest in such works is how the artist anticipates and accommodates the ‘ideated sensations’ of others experiencing the work. Methods in the emerging field of experimental philosophy in which philosophical assumptions are tested empirically are referenced in the discussion of Merleau-Ponty’s discussion of the problem of one’s knowing how her or his experience is related to experience others have of the same objects.
CONCLUSION
In concluding her 2004 article, Havenhand states that interior design is at a crossroads and declares that it must decide whether it wants to become architecture or continue its distinct identity. The task of carefully answering this question is increasingly urgent as interior design and architecture embrace certain conditions of each ‘other’. At stake is disciplinary self-preservation. How should the discipline be redefined in response to external forces? How should practitioners’ activities link to society? And how should practitioners’ activities link to disciplinary traditions? Pable concludes that “interior designers must reconcile themselves as to how they know in order to clarify the professions self-identity” which requires an understanding of “our subjective history and our current, perhaps predominantly objective, persona. (p. 18). Pable is hopeful that the public will come to accept and prize this renewed identity for interior design. The aim of this exploratory paper is to contribute to the reconciliation of interior design’s current status with its most essential, or as Berenson described, ‘Decorative’ conditions and to propose that interior design best serves society not merely by balancing subjective and objective ways of knowing but perhaps more importantly by accommodating reciprocity of subjective and objective ways of experiencing life within designed interior environments.

WORKS CITED (MLA)
Design Skills vs. Personality Traits: Practitioners Perception of CIDA Interns

AMANDA GALE / MELANIE A. DUFFEY / PAULA FRANCES PEEK
Auburn University

NARRATIVE

Learning through work is a companion to learning about work. Experiential learning plays an important role in the education of interior design students. Work experiences such as internships and job shadowing are ways in which students gain professional experience while applying their academic training. These experiences create a link to the interior design profession that provides fundamental industry knowledge through the application of a student’s education in the work environment. These experiences are not only beneficial to students, but to the firms who employ them, and the universities in which they are enrolled (Cook, Parker, & Pettijohn, 2004).

REVIEW OF LITERATURE

Interior design, like architecture, engineering, and business has various areas of specializations. Practitioners in fields such as these will be required to collaborate on projects increasing the need for strong interpersonal communication. Business practices and communication skills are fundamental aspects of interior design that are often learned in the field (Blossom, Mattews, & Gibson, 2002; Tew, 1992). Internships provide students insight to the skills needed to succeed. Potential employers gain students with fresh ideas and approaches (Black, 2000), while programs gain recognition among the field of practicing professionals (Henry, Rehwaltd, & Vineyard, 2001).

In the past, entry-level skills needed by interior design students have been an area of research interest. Hernecheck, Rettig, and Sherman, (1983) surveyed 63 practitioners in architecture and interior design on the importance of competencies for entry-level designers. Practitioners were also asked to list the personality traits that would be valuable for an entry level interior designer. Oral communication skills were ranked the most critical skill desired by practitioners. Personality traits listed as desirable for entry level interior designers were collegiality, communication skills, being enthusiastic, having good work ethic, and willingness to learn. It is important to note that technology has significantly changed since this study was conducted, therefore, the desired critical skill set also might have changed. While this is a limitation, this study is a fundamental starting point to gauge practitioners’ perception of emerging interior designers.

Tew (1992) also investigated entry-level interior design skills, focusing on the influence of communication and business skills in relation to design employment. Communication skills were defined as technical writing, oral presentations, confidence, salesmanship, and client relations. The findings revealed that the majority of communication skills were learned while employed.

Henry et al. (2001) addressed how critical academic and worksite elements attributed to the success of an internship. The intern subjects were enrolled in the Information Systems Technologies (IST) program from Southern Illinois University. The study focused on evaluations, weekly reports, and the final report from both the academic and worksite related areas. Salary elements, orientation, and supervision were also included. This study found that the most critical measures of success during the internship were the students’ positive attitude and the employers’ policies.

Academic programs not only gain recognition among practitioners in the field from the intern’s performance, but they can also be used as supplemental learning opportunities. Additionally, internships can be utilized to achieve several standards (2, 4, 5, & 7) for program accreditation as stated in the 2011 Professional Standards...
of the Council for Interior Design Accreditation (CIDA) (CIDA, 2010).

The purpose of this study was to explore practitioners’ perceptions of interior design interns from a CIDA program. The study was designed to track practitioners’ perceptions of interns’ performance and to be utilized as a model to evaluate the program’s curriculum, see figure 1. With the student, practitioner, and academic institution all playing a role in the internship experience, it is important for educational units to assess the relationship (Henry et al., 2001).

**METHODOLOGY**

An open-ended survey was given to 132 practitioners who were serving as field supervisors to students during internships that were the culminating course of a Bachelor of Science degree in Interior Design. Practitioners were required to be either registered interior designers or architects. The surveys were collected over a consecutive five year span, 2006 to 2010. Practitioners were asked to list positive and negative intern attributes regarding students’ performance during their 400 hour internship. Questions were left open-ended in order to allow the practitioner to elaborate in their own words. Constant comparative analysis, generative coding, and memoing were employed in the iterative process of analyzing the qualitative data.

**FINDINGS**

Findings revealed that a majority of practitioners naturally dichotomized student attributes as either design skills or personality traits. Personality traits were more often listed as positive intern attributes, or areas where interns performed exceeding well. The top five most frequently listed positive attributes every year were personality traits. Where as, the most frequently cited negative attribute was a design skill, see table 1. Design skills were more frequently mentioned as negative intern attributes, or areas where interns needed improvement. Each year, the most frequently listed negative attribute was the need for additional work experience. The need to gain more confidence was listed three out of the five years as the second most common negative attribute.

Personality traits tended to be an area where the majority of interns excelled. When listing the interns’ positive attributes, there were 2 - 3.8 times as many personality traits than design skills listed. The most frequently listed positive attributes dealt with work ethic, collegiality, professionalism, and attitude. Possessing a positive attitude was listed in the top five positive attributes each year, and one of those years it was the most frequently listed. Professionalism, collegiality, and work ethic appeared in the top five, four out of the five years. Both collegiality and work ethic were each the most frequently listed positive attributes for two years.

Practitioners perceived interns to have at least twice the number of positive attributes as compared to negative attributes. Out of the 132 students all but two had a positive attribute listed for their intern performance. Whereas, 57 out of the 132 students did not have any negative attributes. There were an additional 10 students with only one negative attribute listed being the need for more on the job experience. Communication, however, was one area which was continually referred to as both a design skill and a personality trait. Communication skills were perceived to be a positive and negative attribute for students, but more frequently referred to as positive.

**DISCUSSION**

From the literature communication skills, positive attitude, and collegiality were listed as important attributes for emerging interior designers. Both positive attitude and collegiality can be categorized as personality traits. While, communication skills contained aspects of both personality traits and design skills. Our study consistently found that personality traits tended to be more valued by practitioners. It may be that practitioners expect students to perform more poorly when applying design skills entering their internship, and expect that further skills will be developed with additional work experience. Thus, the interns’ personality traits, such as, collegiality are perceived as more desirable in the workplace.

Oral communication was an important aspect found in our study, which coincides with the Hernecheck et al. (1983), study, validating the need to continue to include these in the curriculum. However, an area most frequently listed as a negative attribute, was the need to gain more confidence. Tew (1992) linked confidence with the need to develop communication skills. Our research suggests that confidence also coincides with the need to gain further on the job experience. Therefore, confidence can be perceived as both areas of the job experience and the development of communication skills.
This suggests the need for design related job experiences prior to and/or other than the internship to promote confidence in the intern.

CIDA standards regarding professional work experience continue to change. In 2006, CIDA required programs to have interaction with practitioners, more specifically “opportunities for design work experience,” including “internship, co-op, shadowing, or other experiences that familiarize students with the culture and environment of the professional studio and professional practice” must be achieved (CIDA, 2006, p. II-8). Yet, according to the 2011 CIDA standards, internships, are listed as a component that will add to “the curriculum, teaching methods, learning experiences, and opportunities made available to students” but are no longer required (CIDA, 2010, p. II-10). Our research demonstrates the value in the internship experience and its role in interior design education.

**CONCLUSION**

This study provides insight on student performance in areas that cannot be directly evaluated in classes, such as, personality traits. Applying the generated insights into practitioners’ needs and expectations will better prepare students for their internship experience. This study concluded that students need multiple work experiences integrated throughout the curriculum, such as job shadowing and outside reviewers. These experiences are an integral aspect of the interior design education strengthening the connection between formal education and professional practice. The findings resulting from this research will provide interior design educators with a practical approach to developing or modifying internship programs and curricula in the most beneficial manner for both the students and the practitioners.

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**Table 1: Top Attributes**

<table>
<thead>
<tr>
<th>2010 Top Attributes</th>
<th>2009 Top Attributes</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Rank</strong></td>
<td><strong>Positive Attribute</strong></td>
</tr>
<tr>
<td>1</td>
<td>Collegial</td>
</tr>
<tr>
<td>2</td>
<td>Professionalism</td>
</tr>
<tr>
<td>3</td>
<td>Initiative</td>
</tr>
<tr>
<td>4</td>
<td>Communication Skills</td>
</tr>
<tr>
<td>5</td>
<td>Attitude</td>
</tr>
<tr>
<td>6</td>
<td>Professionalism</td>
</tr>
<tr>
<td>7</td>
<td>Independent</td>
</tr>
<tr>
<td>8</td>
<td>Work Ethic</td>
</tr>
<tr>
<td>9</td>
<td>Enthusiasm</td>
</tr>
<tr>
<td>10</td>
<td>Confident</td>
</tr>
<tr>
<td>11</td>
<td>Initiative</td>
</tr>
</tbody>
</table>
### Table 1 (cont'd): Top Attributes

**2008 Top Attributes**

<table>
<thead>
<tr>
<th>Rank</th>
<th>Positive Attribute</th>
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</thead>
<tbody>
<tr>
<td>1</td>
<td>Work Ethic</td>
<td>Personality Trait</td>
<td>1</td>
<td>On the job experience</td>
<td>Design Skills</td>
</tr>
<tr>
<td>2</td>
<td>Attitude</td>
<td>Personality Traits</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Collegiality</td>
<td>Personality Traits</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Asks questions</td>
<td>Shared</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Quick to Learn</td>
<td>Shared</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Independent</td>
<td>Personality Traits</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Willingness to learn</td>
<td>Personality Traits</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Enthusiastic</td>
<td>Personality Traits</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**2007 Top Attributes**

<table>
<thead>
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<th>Rank</th>
<th>Positive Attribute</th>
<th>Category</th>
<th>Rank</th>
<th>Negative Attribute</th>
<th>Category</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Work Ethic</td>
<td>Personality Trait</td>
<td>1</td>
<td>On the job experience</td>
<td>Design Skills</td>
</tr>
<tr>
<td>2</td>
<td>Professional</td>
<td>Personality Traits</td>
<td></td>
<td>Confidence</td>
<td>Personality Traits</td>
</tr>
<tr>
<td>3</td>
<td>Attitude</td>
<td>Personality Traits</td>
<td></td>
<td>Demonstrate more initiative</td>
<td>Personality Traits</td>
</tr>
<tr>
<td>4</td>
<td>Collegiality</td>
<td>Personality Traits</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**2006 Top Attributes**

<table>
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<th>Positive Attribute</th>
<th>Category</th>
<th>Rank</th>
<th>Negative Attribute</th>
<th>Category</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Collegiality</td>
<td>Personality Trait</td>
<td>1</td>
<td>On the job experience</td>
<td>Design Skills</td>
</tr>
<tr>
<td>1</td>
<td>Initiative</td>
<td>Personality Traits</td>
<td></td>
<td>Confidence</td>
<td>Personality Traits</td>
</tr>
<tr>
<td>2</td>
<td>Professional</td>
<td>Personality Traits</td>
<td></td>
<td>Organizational</td>
<td>Personality Traits</td>
</tr>
<tr>
<td>2</td>
<td>Attitude</td>
<td>Personality Traits</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Willingness to learn</td>
<td>Personality Traits</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Quick to learn</td>
<td>Shared</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Computer skills, CAD</td>
<td>Design Skills</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Figure 1: Evaluation Model
REFERENCES (APA)


Experiential Interiors: Hearing Space

TAMIE GLASS
The University of Texas at Austin

NARRATIVE

INTRODUCTION
Besides providing shelter from the elements, the built environment has the ability to inspire, to heal, and to restore. Spaces that engage users' senses can improve and enhance their conditions and shape their moods and emotional state. This paper is the first in a series of essays. Each of them explores and examines existing buildings, interior spaces, installations, and exhibits based on one of the traditional five senses of sight, hearing, touch, smell, and taste, as originally classified by Aristotle. Previous studies of sensory design by Juhani Pallasmaa and Joy Monice Malnar have explored theoretical and philosophical backgrounds and concepts; and although critical to understanding the context of this complex subject, they reveal little about their actual real-world application in the realm of contemporary architecture and design.

Architect Peter Zumthor discusses the sound of a space in his book Atmospheres. He compares interiors to large instruments that collect, amplify, and transmit sound. This paper explores the sense of hearing and examines how designers have used sound as an integral design element to create evocative spaces that extend beyond function and visual appeal to engage the senses. By analyzing case studies of built work, the paper illustrates that a relationship between today's built environment and a deeper understanding of human nature does exist. The examples reinforce the fundamental premise of environmental psychology that the spaces we occupy and our experiences within can impact our lives by enhancing our emotions, inciting our imagination, and shaping our behaviors.

CASE STUDIES
The three constructed examples described here utilize sound in an interior environment in a way that experientially engages the user. The sound in these specific instances can be categorized in general as being incidental, interactive, or orchestrated. Together, they provide a set of strategies for heightening the sensory connection that exists between sound, physical space, and end user.

Incidental sounds, much as they may occur in nature, simply happen in an unplanned or subordinate way in conjunction with designed spaces and objects. Interactive sound, on the other hand, is dependent on the user, one acting upon or with the other, forming a close relationship with one another. Lastly, orchestrated sound is organized, planned, and otherwise manipulated for maximum effect. Each of these types of sound, even incidental sound, can be used in a conscious way to enhance the experiential qualities of a designed environment as the following case studies show.

Incidental Sound - The Pavilion of Hearing
This pavilion is one of three designed by Swiss-based architects Gigon and Guyer and exhibition designer Lars Müller, with the other two being dedicated to the actions of “seeing” and “asking” respectively. The new museum structure and the smaller pavilions are located in a natural setting making up the grounds of the Museum and Park Kalkriese at Osnabrück, Germany. The designers’ winning competition entry was realized in 2002 on this site to commemorate the Battle of the Teutoburg Forest, otherwise known as the Varus Battle, which took place here more than 2,000 years ago when German tribes destroyed three Roman legions led by Publius Quinctilius Varus.
The distinguishing feature of the Corten steel cube-shaped structure is a giant steel "ear trumpet" that was invented by Blelb, an interdisciplinary team specializing in projects that require advanced knowledge in both design and the natural sciences. It can be seen from a distance as one approaches the pavilion through the brushy terrain, protruding from the structure like a turn-of-the-century phonograph.

The one room structure is approached via a ramp and through a heavy door, which leads into a dark space lit only by natural light from clerestory glazing on a single side. The end of the trumpet pierces through the heavily insulated wood-clad interior with an opening large enough for a person to place their head inside. Grasping the end, the user can rotate the listening device to capture sounds from any direction, but with no visual connection. A first person account states, "I have a clear … notion of a large world outside of the pavilion, I can hear it very well, but at the same time it's not my world." The visitor goes on to state how the act of listening is stimulated, especially concerning the sounds of people who "seem to gain more importance in the total spectrum of sound" (van Kreij 62-3). The modern day incidental sounds are amplified in the ears of the listener, recalling how the legionnaire of another time must have panned the area in an attempt to notice any sound that would have indicated danger was near.

**Interactive Sound - UVA Sound Lounge**

Designed by architects Joel Sanders and Karen Van Lengen, the "Sound Lounge" is a recent budget-oriented renovation of a 2,000 square foot student lounge at the University of Virginia's Campbell Hall, originally built in 1970. Sanders, an associate professor at Yale University, is known for his research into the relationship between design and the senses; while Van Lengen, the former dean of the UVA School of Architecture, is interested particularly in sound and communication within the public realm that may influence our democratic culture.

Their collaboration yielded a series of what they call "sound showers" which take the shape of two suspended cones installed between the mezzanine and lower level of the lobby. Clad in velvet on the interior and satin on the exterior, the three-dimensional forms contain Hologonic speakers that focus the direction of the sound thereby containing it within a communal listening area. Each Audio Spotlight is demarcated by soft seating and a corresponding color-coded carpet that indicates the three to twelve feet range of the system. Small groups of users can have a shared audio experience by tapping into the closed-circuit channels and selecting from a wide range of offerings or plugging in their own playlist. A third micro-media climate is created by an elliptical canopy that conceals not just speakers, but also a projector to incorporate video.

"With the rise of the iPod, there's been a death of public space in that everyone's in their own bubble," Sanders notes. 'Instead of bemoaning the loss, we looked at how to integrate new media to promote social interaction in a collegiate setting' (Block). In this instance, the new insertions into the interior space are using interactive sound to promote dialogue and communication between users, seeking to use technology to bring people together rather than isolating them.

**Orchestrated Sound - The Liquidrom**

Located in an unsuspecting urban area of Berlin, the Liquidrom is a spa experience within the larger event center of the Tempodrom building, designed by German architecture firm Gerkan, Marg and Partner and completed in 2002. Acting as a public square, the iconic 120-foot high concrete tent-like structure of the larger complex is home to indoor and outdoor music and sporting events, but at its core is a circular pool, which boasts a more intimate experience. Housed within the context of a contemporary wellness spa, the 40-foot diameter internalized saltwater basin is characterized by a bold architectural vaulted ceiling with a domed concrete shell featuring a central oculus.

The dark and dramatic space requires a moment of adjustment upon entry. After leaving belongings near the door, the user enters the water via steps, and the pool is revealed from behind a solid stone-clad wall. Musical sounds are muffled and out of tune, adding to the otherworld feeling of the space. Moving lights cast shadows on the fair-faced concrete walls and reflect off the water's surface. The body-temperature water has a 3% salt content, which is optimum to induce a weightless sensation. Bathers float on their backs effortlessly while positioning themselves with foam supports to have their heads partially submerged, so that ears are underwater and eyes are looking upward at the slow moving color
changing light projections. Once in position, the magical moment occurs when it is apparent that the indistinct sounds above water are clear and in sync underwater. Up to 50 people can enjoy a concert supplied by a permanently installed, computer-driven multimedia system, which coordinates the deployment of sound, light and video above as well as below the water’s surface. This concept of “Liquid Sound” was conceived and further developed by media artist Micky Remann. The sense of deep relaxation occurs in a relatively short period of time inducing feelings of “inner harmony”, “happiness” and “well-being” and is thought to offer “promising therapeutic potential” (“Liquid Light”). As one guest stated, “I’m normally restless and get bored easily, but I found myself floating there and losing track of time” (Benda).

CONCLUSION
Evoking our imagination of the past, promoting connections between users, and inducing relaxation characterize the use of sound in the presented case studies. As a sampling, these built projects illustrate how designers have incorporated sensory enhancing aspects related to hearing to further engage users, encouraging them to listen as an integral way of experiencing an interior space. Whether the resulting sound is incidental, interactive, or orchestrated; it can lead to spaces that are not just seen but also heard.

REFERENCES (MLA)


The Effect of Acoustics, Privacy Conditions, and Workstation Type on Employee Satisfaction and Work Performance in a Sustainable Building

DENISE A. GUERIN / HYE-YOUNG KIM / JONEE KULMAN BRIGHAM / SEON-MI CHOI / ANGELITA SCOTT
University of Minnesota

NARRATIVE

This study investigated employees’ satisfaction and their perceived work performance related to the sustainable design of a facility (e.g., site, building, and interior environment) and a range of indoor environmental quality (IEQ) criteria. Further, employees’ satisfaction and perceived work performance related to acoustics and privacy conditions in their workstations was explored.

RATIONALE

Employees’ costs are closely associated with economic benefits of businesses. Improved work environments can lead to employees’ increased satisfaction level and decreased turnover rate, which, in turn, results in reduced costs for recruiting and training of new employees (Bonda & Sosnowchik, 2007). There is evidence that indoor environment features, such as temperature, electric lighting, daylighting, indoor air quality, and controllability, influence employees’ satisfaction and their work performance (Fischer, Tarquinio, & Vischer, 2004; Heerwagen & Zagreus, 2005; Lee & Guerin, 2009). Previous research showed that improved indoor environmental quality (IEQ) of sustainable office buildings can increase employees’ satisfaction with their work environments and enhance their work performance (Abbaszadeh, Zagreus, Lehrer, & Huizenga, 2006; Clements-Croome & Baizhan, 2000). However, other researches indicated that although employees worked in sustainable buildings, they showed lower or negative satisfaction levels related to some IEQ criteria, such as thermal comfort, acoustic conditions, and visual privacy (Lee & Kim, 2008; Paul & Taylor, 2008). A lack of privacy can increase employees’ dissatisfaction levels and, as a result, can affect their work performance (Vischer, 2008).

Employees’ level of satisfaction and their perceived work performance related to IEQ criteria can be influenced by different workstation types, such as cubicles in open-plan offices and enclosed private offices. Specifically, in open-plan offices, workstation area’s type and condition is associated with employees’ satisfaction with acoustics and privacy (Veitch et al., 2003). For example, workstations with low partitions can increase access to daylight and views, however, related acoustics and privacy problems have been found, which lead to employees’ negative satisfaction levels and decreased work performance (Field, 2008; Newsham, 2005). However, there is little research on the relationships between the change of employees’ workstation types and their satisfaction and work performance in relation to IEQ criteria.

The findings of this study are presented here, providing researchers with comparative data and designers with guidance for future building environments.

METHOD

A self-administered, on-line, post-occupancy evaluation (POE) was conducted to accomplish the purpose of this study. The POE questionnaire was developed by the Center for Sustainable Building Research at the University of Minnesota and previously tested for reliability, validity, clarity, language, accuracy, and bias.

The questionnaire was then submitted to employees of a Midwest office building that had achieved a high level of LEED® certification. Employees were asked questions about their workstation types (i.e., enclosed private office and cubicles with partitions) and demographics. Employees were also asked to respond to questions about their satisfaction and work performance in a prior non-sustainable building as well as the current sustainable building. They rated their level of satisfaction and
perceived work performance in relation to the overall facility and IEQ criteria, such as thermal comfort, electric lighting and daylighting, indoor air quality (IAQ), view conditions, personal control, furnishings, acoustics, and privacy conditions, as differentiated by prior and current workstation type.

To measure employees’ satisfaction and work performance, a 7-point Likert-type scale was used. For satisfaction, 1 was “very dissatisfied” and 7 was “very satisfied”; and for occupants’ perception of their work performance affected by work environment, 1 was “hinders work performance” and 7 was “enhances work performance.”

Employees were notified via email that with a consent form, they were allowed to complete the questionnaire during business time within given eight working days. Employees who completed it received a small incentive. This process and questionnaire had received an exemption from the University of Minnesota Institutional Review Board.

SAMPLE DESCRIPTION
Among all 258 employees, a total of 221 completed the questionnaire: the response rate was 85.7%, which is considered a powerful response rate. As shown in Table 1, 203 employees had worked in the prior building. Respondents’ ages ranged from 19 to 74 with 35.3% of the respondents 35 and 44 years old. With respect to gender, 56.9% were male and 43.1% were female. The majority of respondents (77.8%) had worked in cubicles with partitions; 21.3% had enclosed private offices. About 90% of the employees were working more than 31 hours per week and spent more than 50% of time in their workstations. [Table 1]

LIMITATIONS
One limitation is that data related to employees’ perceptions of their work performance was self-report, not actual measurement of their records. Another limitation is that data related to satisfaction with privacy conditions is tied to other IEQ criteria, such as furnishings, adjustability, and finishes.

FINDINGS AND DISCUSSION
Table 2 shows the employees’ satisfaction and work performance results related to the overall facility and IEQ criteria. When using a 7-point scale, mean responses above the middle are generally accepted as positive: for satisfaction, above 4 means “satisfied,” and for work performance, it means “enhances work performance.” Employees were satisfied with the overall facility and every IEQ criteria. Their responses demonstrated that the facility and most IEQ criteria enhanced their work performance. However, the mean responses for effect of acoustics (M=3.57, SD=1.87) and privacy conditions (M=3.22, SD=1.86) on employees’ perceived work performance were below 4.0 which can be interpreted as somewhat “hinders work performance.” [Table 2]

Additional findings (see Table 3) indicated that these two IEQ criteria, acoustics and privacy conditions, were main issues to employees in cubicles with partitions compared to employees in enclosed private offices. As shown in Table 3, employees in private offices showed positive mean responses (above 4.0) about their satisfaction and perceived work performance related to all acoustic and privacy conditions. However, employees in cubicles with partitions perceived that overall acoustic conditions (M=3.09, SD=1.69) and privacy conditions (M=2.66, SD=1.50) somewhat hindered their work performance. Interestingly, although employees in cubicles were satisfied with overall acoustic conditions (M=4.19, SD=1.73), they showed a dissatisfaction level with the background noise (M=3.33, SD=1.69) and sound privacy (M=1.96, SD=1.28) of their workstations. Employees in cubicles were also dissatisfied with visual privacy condition of their workstations (M=3.11, SD=1.63). [Table 3]

Even though employees in cubicles with partitions showed greater dissatisfaction with acoustics and privacy conditions than those in enclosed private offices, they still showed positive satisfaction level with the overall facility (M=5.16, SD=1.40) and perceived that the overall facility enhanced their work performance (M=4.80, SD=1.43), as shown Table 4. [Table 4]

Interestingly, paired-sample t-test showed that there were significant mean differences in satisfaction and perceived work performance related to acoustics and privacy conditions between employees in cubicles with partitions in a current sustainable building whether or not they came from a private workstation type in a prior non-sustainable buildings, whereas there were no significant mean differences in satisfaction and work performance in relation to overall facility and other IEQ criteria (see Table 5). Employees who moved from enclosed private
office to cubicles with partitions showed dissatisfaction level with acoustic conditions. Further, there was a significant mean difference when compared to employees who had always worked in cubicles with partitions and showed satisfaction with acoustic conditions ($t(118)=-2.68, p<.01$). Regardless of whether or not employees changed workstation type, both groups who moved into cubicles perceived negative effect of acoustic and privacy conditions on their work performance (under 4.0). Employees who changed their workstation type gave more negative responses about the effect of acoustics ($t(119)=-3.93, p<.001$) and privacy conditions ($t(118)=-3.03, p<.01$) on their work performance, showing significant mean differences in these two IEQ criteria compared to employees who were always in cubicles. [Table 5]

**SUMMARY AND CONCLUSIONS**

Although employees were satisfied with the overall facility and all IEQ criteria, they tended to show negative responses about the effect of acoustic and privacy conditions on their work performance. Specifically, employees in cubicles with partitions showed negative responses to background noise, sound privacy, and visual privacy as well as to perceived work performance affected by overall acoustics and privacy conditions, compared to employees in enclosed private offices. Employees in cubicles in the current building showed more negative responses to satisfaction and work performance related to acoustic and privacy conditions when they moved from their private office in the prior building.

This study continued to test the POE instrument that was developed to reflect specific sustainable design guidelines. A master question bank will be disclosed and results of this continued development will also be available. The findings of this study can serve as a baseline for future studies to investigate the nature of the acoustic and privacy issues and for future facilities to collect more detailed information on how to improve the open office environment for their employees’ increased satisfaction and enhanced work performance.

### Table 1. Sample Description (N=221)

<table>
<thead>
<tr>
<th>Variable</th>
<th>Measure</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Did you work at the previous facility in Elk River?</td>
<td>Yes</td>
<td>203</td>
<td>91.9</td>
</tr>
<tr>
<td></td>
<td>No</td>
<td>18</td>
<td>8.1</td>
</tr>
<tr>
<td>Gender</td>
<td>Male</td>
<td>124</td>
<td>56.9</td>
</tr>
<tr>
<td></td>
<td>Female</td>
<td>94</td>
<td>43.1</td>
</tr>
<tr>
<td>Age</td>
<td>18-24</td>
<td>1</td>
<td>0.5</td>
</tr>
<tr>
<td></td>
<td>25-34</td>
<td>47</td>
<td>21.5</td>
</tr>
<tr>
<td></td>
<td>35-44</td>
<td>76</td>
<td>34.7</td>
</tr>
<tr>
<td></td>
<td>45-54</td>
<td>68</td>
<td>31.1</td>
</tr>
<tr>
<td></td>
<td>55-64</td>
<td>24</td>
<td>11.0</td>
</tr>
<tr>
<td></td>
<td>65-74</td>
<td>3</td>
<td>1.4</td>
</tr>
<tr>
<td>Employment Duration</td>
<td>Less than 1 year</td>
<td>8</td>
<td>3.6</td>
</tr>
<tr>
<td>in the Maple Grove Building</td>
<td>1-2 years</td>
<td>213</td>
<td>96.4</td>
</tr>
<tr>
<td>Workstation Type</td>
<td>Enclosed office, private</td>
<td>47</td>
<td>21.3</td>
</tr>
<tr>
<td></td>
<td>Enclosed office, shared</td>
<td>2</td>
<td>0.9</td>
</tr>
<tr>
<td></td>
<td>with other people</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Cubicle with partitions</td>
<td>172</td>
<td>77.8</td>
</tr>
<tr>
<td></td>
<td>Desk in open office</td>
<td>0</td>
<td>0.0</td>
</tr>
<tr>
<td></td>
<td>with no partitions</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Working hours per week</td>
<td>Less than 20</td>
<td>2</td>
<td>0.9</td>
</tr>
<tr>
<td></td>
<td>20-30</td>
<td>21</td>
<td>9.5</td>
</tr>
<tr>
<td></td>
<td>31-40</td>
<td>98</td>
<td>44.3</td>
</tr>
<tr>
<td></td>
<td>More than 40</td>
<td>100</td>
<td>45.2</td>
</tr>
<tr>
<td>Percentage of time spent in a workstation</td>
<td>Less than 25%</td>
<td>1</td>
<td>0.5</td>
</tr>
<tr>
<td></td>
<td>25-50%</td>
<td>21</td>
<td>9.5</td>
</tr>
<tr>
<td></td>
<td>51-75%</td>
<td>91</td>
<td>41.2</td>
</tr>
<tr>
<td></td>
<td>More than 75%</td>
<td>108</td>
<td>48.9</td>
</tr>
</tbody>
</table>
Table 2. Satisfaction and Effect on Work Performance Related to Overall Facility and IEQ Criteria

<table>
<thead>
<tr>
<th>Variables</th>
<th>Mean</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Satisfaction</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Overall satisfaction with the facility (site, building, and interior environment)</td>
<td>5.30</td>
<td>1.38</td>
</tr>
<tr>
<td>Thermal comfort</td>
<td>4.22</td>
<td>1.88</td>
</tr>
<tr>
<td>Acoustics</td>
<td>4.51</td>
<td>1.78</td>
</tr>
<tr>
<td>Indoor air quality (IAQ)</td>
<td>5.46</td>
<td>1.31</td>
</tr>
<tr>
<td>Lighting, daylighting, and view conditions</td>
<td>4.98</td>
<td>1.57</td>
</tr>
<tr>
<td>Personal control</td>
<td>4.14</td>
<td>1.69</td>
</tr>
<tr>
<td>Furnishing, adjustability, finishes, and privacy</td>
<td>4.55</td>
<td>1.67</td>
</tr>
<tr>
<td><strong>Effect on Work Performance</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Overall effect of the facility (site, building, and interior environment)</td>
<td>5.00</td>
<td>1.45</td>
</tr>
<tr>
<td>Thermal comfort</td>
<td>4.15</td>
<td>1.71</td>
</tr>
<tr>
<td>Indoor air quality (IAQ)</td>
<td>5.37</td>
<td>1.27</td>
</tr>
<tr>
<td>Electric lighting</td>
<td>4.79</td>
<td>1.48</td>
</tr>
<tr>
<td>Daylighting</td>
<td>4.95</td>
<td>1.73</td>
</tr>
<tr>
<td>View conditions</td>
<td>4.90</td>
<td>1.57</td>
</tr>
<tr>
<td>Furnishings</td>
<td>4.96</td>
<td>1.48</td>
</tr>
<tr>
<td><strong>Acoustics</strong></td>
<td>3.57</td>
<td>1.87</td>
</tr>
<tr>
<td><strong>Privacy conditions</strong></td>
<td>3.22</td>
<td>1.86</td>
</tr>
</tbody>
</table>

Table 3. Satisfaction and Effect on Work Performance Related to Acoustics and Privacy Conditions in Cubicles with Partitions and Enclosed Private Office

<table>
<thead>
<tr>
<th>Variables</th>
<th>Cubicles</th>
<th>Private Office</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean (SD)</td>
<td>Mean (SD)</td>
</tr>
<tr>
<td><strong>Acoustics</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Overall satisfaction with acoustics</td>
<td>4.19 (1.73)</td>
<td>5.61 (1.48)</td>
</tr>
<tr>
<td>Overall effect of acoustics on work performance</td>
<td>3.09 (1.69)</td>
<td>5.23 (1.42)</td>
</tr>
<tr>
<td>Satisfaction with the ability to understand desired sound in the workstation</td>
<td>4.49 (1.38)</td>
<td>5.87 (1.12)</td>
</tr>
<tr>
<td><strong>Satisfaction with the background noise</strong></td>
<td>3.33 (1.69)</td>
<td>5.38 (1.61)</td>
</tr>
<tr>
<td><strong>Satisfaction with the sound privacy</strong></td>
<td>1.96 (1.28)</td>
<td>5.34 (1.82)</td>
</tr>
<tr>
<td><strong>Privacy conditions</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Satisfaction with visual privacy</td>
<td>3.11 (1.63)</td>
<td>4.87 (1.74)</td>
</tr>
<tr>
<td>Overall effect of privacy conditions on work performance</td>
<td>2.66 (1.50)</td>
<td>5.15 (1.63)</td>
</tr>
</tbody>
</table>
Table 4. Satisfaction and Effect on Work Performance Related to the overall facility differentiated by Cubicles with Partitions and Enclosed Private Office

<table>
<thead>
<tr>
<th>Variables</th>
<th>Cubicles</th>
<th>Private Office</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean (SD)</td>
<td>Mean (SD)</td>
<td></td>
</tr>
<tr>
<td>Overall satisfaction with the facility</td>
<td>5.16 (1.40)</td>
<td>5.80 (1.21)</td>
</tr>
<tr>
<td>Overall effect on the facility on work performance</td>
<td>4.80 (1.43)</td>
<td>5.67 (1.29)</td>
</tr>
</tbody>
</table>

Table 5. Satisfaction and Effect on Work Performance Related to the overall facility and IEQ Criteria by Workstation Type Change from a Prior Non-sustainable Building to a Current Sustainable Building

<table>
<thead>
<tr>
<th>Variables</th>
<th>Mean (SD)</th>
<th>t</th>
<th>df</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Private to Cubicle (N=74)</td>
<td>Cubicle to Cubicle (N=47)</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Satisfaction</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Overall satisfaction with the facility</td>
<td>4.76 (1.58)</td>
<td>5.21 (1.23)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Thermal comfort</td>
<td>4.07 (1.96)</td>
<td>3.62 (1.81)</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Acoustics</strong></td>
<td><strong>3.62 (1.71)</strong></td>
<td><strong>4.47 (1.68)</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Indoor air quality (IAQ)</td>
<td>5.32 (1.35)</td>
<td>5.13 (1.36)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lighting, daylighting, and view condition</td>
<td>4.52 (1.53)</td>
<td>4.72 (1.81)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Personal control</td>
<td>3.90 (1.62)</td>
<td>3.74 (1.78)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Furnishing, adjustability, finishes, and privacy</td>
<td>3.84 (1.62)</td>
<td>4.28 (1.50)</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Performance</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Overall effect of the facility on work performance</td>
<td>4.45 (1.57)</td>
<td>4.89 (1.36)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Thermal comfort</td>
<td>4.26 (1.76)</td>
<td>3.72 (1.70)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Indoor air quality (IAQ)</td>
<td>5.24 (1.38)</td>
<td>5.17 (1.13)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Electric lighting</td>
<td>4.55 (1.51)</td>
<td>4.68 (1.64)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Daylighting</td>
<td>4.70 (1.73)</td>
<td>4.74 (2.10)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>View conditions</td>
<td>4.41 (1.60)</td>
<td>4.66 (1.82)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Furnishings</td>
<td>4.35 (1.55)</td>
<td>4.79 (1.41)</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Acoustics</strong></td>
<td><strong>2.28 (1.26)</strong></td>
<td><strong>3.38 (1.82)</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Privacy conditions</td>
<td><strong>2.11 (1.16)</strong></td>
<td><strong>2.87 (1.60)</strong></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*p<.05, **p<.01, ***p<.001*
REFERENCES (APA)


The Interior Design Profession’s Body of Knowledge and Its Relationship to People’s Health, Safety, and Welfare

DENISE A. GUERIN / CAREN S. MARTIN
University of Minnesota

NARRATIVE

The purpose of this study was to update the interior design profession’s body of knowledge (BOK) and document its relationship to health, safety, and welfare (HSW). The growth of interior designers’ specialized knowledge illustrates the need to develop and maintain the profession’s abstract knowledge, also known as its BOK. Additionally, interior design practitioners’ responsibility to protect the public’s HSW is becoming regulated by legal jurisdictions throughout Canada and the United States. It is essential to document the link between the BOK and HSW to provide interior design practitioners and educators with knowledge of how their work improves people’s quality of life. The following five specific goals were completed to accomplish this purpose:

Goal 1: Provide an empirical basis for a profession’s BOK, relate the importance of a BOK to professions, and document and assess interior design’s professionalization journey;

Goal 2: Compare 2010 interior design regulations to 2005 regulations and discuss the comparison as it relates to how interior design is defined and titled;

Goal 3: Define and describe HSW as related to interior design practice;

Goal 4: Update the interior design profession’s BOK; and

Goal 5: Document and analyze the contribution of the interior design profession’s BOK to HSW within the context of interior design practice.

Goals 1 and 2 are not within the scope of this presentation. Preliminary results from Goals 3, 4, and 5 will be discussed in this presentation.

METHOD

First, Goal 3 was accomplished via a series of literature reviews to develop new definitions of health, safety, and welfare, independently, as they relate to interior design practice. Goal 4 was accomplished by using content analysis of three source documents from the Council of Interior Design Accreditation (2008) and the National Council for Interior Design Qualification (2008, 2009). Goal 5 was accomplished by the surveying of NCIDQ certificate holders (N=10,040, 17% return rate) to determine their perceptions of the contribution each knowledge area (KA) in the BOK makes to health, safety, and welfare, independently.

FINDINGS

The preliminary findings from Goals 3 – 5 discussed next. Goal 3: The preliminary definitions of health, safety, and welfare follow:

Health: Interior designers create interior environments to support people’s soundness of body and mind; to protect their physical, mental, and social well-being; and to prevent disease, injury, illness, or pain that could be caused by occupancy of interior environments.

Safety: Interior designers create interior environments to protect people against actual or perceived danger; and avoidance of risk from crime, accidents, or physical hazards; and to prevent injury, loss, or death that could be caused by occupancy of interior environments.

Welfare: Interior designers create interior environments to support people’s physical, psychological, social, and
spiritual well-being; and assist with or contribute to their financial or economic management, success, and responsibility.

Goal 4: The categories of the 2010 BOK is shown in Table 1 and will be discussed. There are six BOK categories, which contain 7 – 16 Knowledge Areas (KAs). KAs are the specialized knowledge that interior designers need to practice. Further discussion of the KAs will occur in the presentation.

Goal 5: The results of the survey of interior design practitioners will be discussed. Practitioners rated each KA to HSW (independently) on a scale of “1” (no contribution) to “7” (extensive contribution). Descriptive and inferential analyses were completed on the relationship between each KA and health, safety, and welfare. Type of practice, number of years in practice, and location were also analyzed. Table 2 shows the overall contribution level of each BOK category to HSW.

The presentation will show the contributions of all categories and KAs to health, safety, and welfare. The importance of KA contributions to HSW indicates two overarching findings:

- Interior designers are prepared to protect people’s HSW and, in fact, prevent people from being harmed; and
- Interior design practice should be regulated so that people know when they are receiving interior design services from a practitioner who understands and applies the interior design profession’s BOK.

RELEVANCE TO INTERIOR DESIGN

This study informs the interior design profession where its jurisdictional boundaries are, regardless of their fluidity. It defines what the interior design profession’s abstract knowledge is in a way that cannot be disputed. This abstract knowledge is the way the public and all stakeholders identify the valued added by a responsible interior designer who is qualified by education, experience, examination, and regulation to prevent them from coming to harm in spaces where they live their lives.
Table 1. Categories with Number of KAs per Category.

<table>
<thead>
<tr>
<th>Category</th>
<th>Number of KAs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Communication</td>
<td>7 KAs</td>
</tr>
<tr>
<td>Design Theory and Process</td>
<td>16 KAs</td>
</tr>
<tr>
<td>Human Environment Needs: Research and Application</td>
<td>10 KAs</td>
</tr>
<tr>
<td>Interior Construction, Codes, and Regulations</td>
<td>10 KAs</td>
</tr>
<tr>
<td>Products and Materials: Evaluation, Installation, Specifications, Inspection</td>
<td>8 KAs</td>
</tr>
<tr>
<td>Professional Practice: Principles, Methods, and Tools</td>
<td>14 KAs</td>
</tr>
</tbody>
</table>

Table 2. Contributions of Interior Design BOK Categories to HSW.

<table>
<thead>
<tr>
<th>Category</th>
<th>Health</th>
<th>Safety</th>
<th>Welfare</th>
<th>Grand Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean SD</td>
<td>5.85</td>
<td>5.38</td>
<td>5.84</td>
<td>5.69</td>
</tr>
<tr>
<td>Mean SD</td>
<td>1.28</td>
<td>1.45</td>
<td>1.21</td>
<td>1.31</td>
</tr>
<tr>
<td>Mean SD</td>
<td>5.52</td>
<td>5.92</td>
<td>5.42</td>
<td>5.62</td>
</tr>
<tr>
<td>Mean SD</td>
<td>1.49</td>
<td>1.37</td>
<td>1.47</td>
<td>1.44</td>
</tr>
<tr>
<td>Mean SD</td>
<td>5.59</td>
<td>5.79</td>
<td>5.32</td>
<td>5.57</td>
</tr>
<tr>
<td>Mean SD</td>
<td>1.47</td>
<td>1.34</td>
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</tr>
<tr>
<td>Mean SD</td>
<td>4.85</td>
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<td>4.80</td>
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<td>Mean SD</td>
<td>1.36</td>
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</tr>
<tr>
<td>Mean SD</td>
<td>4.32</td>
<td>4.44</td>
<td>5.22</td>
<td>4.66</td>
</tr>
<tr>
<td>Mean SD</td>
<td>1.87</td>
<td>1.91</td>
<td>1.68</td>
<td>1.82</td>
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<td>Mean SD</td>
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<td>Mean SD</td>
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<td>1.54</td>
</tr>
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</tr>
<tr>
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<td>1.03</td>
<td>1.08</td>
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</tr>
<tr>
<td>Mean SD</td>
<td>5.00</td>
<td>4.98</td>
<td>5.29</td>
<td>5.09</td>
</tr>
<tr>
<td>Mean SD</td>
<td>1.05</td>
<td>1.03</td>
<td>1.08</td>
<td>1.05</td>
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</tbody>
</table>
REFERENCES (APA)


Colors for Older Adults: What Do They See and What Do They Prefer?

ASHA HEGDE
Texas State University—San Marcos

NARRATIVE

Due to opacification of lens in the aging eye, color perception is affected for the elderly (Torrington & Tregenza, 2007; Boyce, 2003; Pitts, 1982). Age-related changes in vision typically start at 40 years of age, and accelerate after the age of 60 years (Weale, 1992). This is an important concern for designers dealing with elderly because color perception is crucial for both aesthetic and visibility reasons (IESNA, 2007). It is estimated that there will be approximately 71 million Americans over age 65 by the year 2030 (Merck, 2004). In order to provide safe and pleasing environments for this growing population of elderly Americans, it is important for interior design professionals and students to understand how the seniors perceive color.

Color research regarding color preferences (Crozier, 1999; Guilford & Smith, 1959; Henson & Lansford, 1970) indicate that people in general prefer the color blue and are averse to color yellow. Dittmar’s (2001) color preference research of the elderly reveals that with advancing age the preferences of color blue decreased while the colors red and green increased. Hegde and Woodson (1999) studied the effects of light and color (red, green, yellow, and purple-blue) on measures of visual contrast (clarity) in young adults and found that the yellow resulted in the poorest visual contrast, while green was evaluated as having the best visual contrast.

In general, the literature indicates that the older eye, due to the aging lens, has problems with the color blue (short wavelength) and perceives colors as less vivid. However, research on color regarding the aging eye has primarily dealt with one dimension of color, the color itself with no reference to its properties of saturation and/or value. Also, research on visual contrast/clarity has been studied primarily on younger individuals. Since questions regarding visual clarity and color preference for the elderly relative to saturation have not been adequately addressed thus far, this study examines which levels of saturation of red, green, blue, and purple provide the best sense of visual contrast and which saturation color do the elderly like.

METHOD

Sixty elderly subjects (65-90 years) participated in two experimental studies that examined patterned color for visual clarity and color preference. The purpose was to study how the aging eye perceives four colors (red, green, blue and purple), of different saturation (high, medium, low), under 2 light sources (3000K warm white fluorescent and 4,100K cool white fluorescent). The 2 objectives of the study were to assess the seniors’ overall color preference as well as their opinion on what colors provide the best visual clarity.

Color pallets were created digitally using the Munsell notations (see Table 1) and were placed in a portable lighting booth—Judge II, for assessment. In both experiments two questions were asked of the seniors: 1. Of the color pallets shown which do you like the most? 2. Of the color pallets shown which pattern looks the clearest to you?

In experiment 1, subjects viewed patterned color pallets of the same color presented in three saturations (high, medium, low) simultaneously and first selected the color pallet that provided them the best visual clarity. Then they were asked to make their choice for the color pallet that they liked the best. For example: When testing for color ‘Red’, red high, red medium and red low saturation were presented simultaneously. This step was done four
times in total, once for each of the test colors—red, blue, green and purple.

In experiment 2, subjects viewed 4 different colored samples—red, blue, green and purple—with same patterns and same saturation simultaneously under either a warm white or cool white fluorescent light condition and made their selection for best color and best pattern clarity. For example: When testing for ‘High Saturation’ all 4 high saturation colors such as high red, high blue, high green and high purple were presented simultaneously. This step was done three times for each of the saturation levels (high, medium, low).

Subjects were administered only one lighting condition (either warm white or cool white) to eliminate fatigue. Each subject took approximately 40 to 45 minutes to complete the experiment.

RESULTS AND IMPORTANCE

In experiment 1, across each of the hues the elderly rated the highest saturation as providing the best clarity. Specifically, for hues of red, blue and purple over 95% of the elderly rated the colors at the highest saturation as providing the ‘best pattern clarity’ compared to low saturation. The color blue and purple in the low saturation received 0% for providing good visual clarity (See Table 2).

With regard to which patterned color elderly liked best, across hues of red, green, blue and purple the elderly again liked (over 68%) the brightest saturation patterned colors as their favorite (See Table 2).

In experiment 2, when colors were presented in high saturation, 38.3% rated the blue patterned color as providing the best clarity followed by green (26.7%), red (18.3%) and purple (16.7%). In low saturation, 71.7% elderly rated purple as providing the best clarity followed by red (26.7%) and green (1.7%). No respondents (0%) selected the color blue in low saturation (See Table 3).

With regard to which patterned color they liked best, in highest saturation, blue was rated by 38.3% as their most liked, followed by green (23.3%), purple (20.0% and red (18.3%). In low saturation, 66.7% elderly rated purple as the color they liked best followed by red (20.0%). While green and blue was rated as the most liked by 6.7% of the elderly (See Table 3).

T-tests was conducted to test whether there was a significant difference in clarity ratings for each saturation level between the 2 light sources. No significant differences were revealed between the 2 light sources.

However, for color pattern like, t-test did reveal that there was a significant difference in color pattern like for the color blue and green between the 2 light sources. Elders choose the color blue more favorably under the cool white light (M=2.96, SD=0.20) than they did under the warm white light (M=2.54, SD=0.60) conditions; t(58)=3.17, p=.001). In color green the elders choose it more favorably under the cool white light (M=2.96, SD=0.20) than they did under the warm white light (M=2.51, SD=0.50) conditions; t(58)=-3.97, p=.001).

Overall, the results indicated that when elders are presented with high-saturation colors they chose blue as providing the best visual contrast. This finding is consistent with previous research that has found blue to be the most favored color by the general population (Crozier, 1999). However, visual contrast ratings by older adults when rating colors at lower saturation indicated that the elderly subjects rated blue as the least preferred for visual contrast. Based on the knowledge that the aging eye has problems discriminating colors in the short wavelengths such as blue, the results are in line with the aging eye research. However, the current study suggests that the older eye has visual difficulties with the color blue at low saturation and not high saturation. Purple received the most favorable rating at the lowest saturation, followed by red. Typically, purple is considered a short-wavelength color. However, it must be noted that the color purple selected for this study (10P) has a strong red influence, which might provide some explanation as to why the elderly chose it as providing the best contrast.

Most previous color preference research has focused on individual colors with no reference to saturation and also color contrast research has been done on young subjects. It is clear from the findings of this research that the use of low saturation colors should be avoided. Persons in charge of selecting colors should be aware that elders do not see low saturation colors in the same way younger people do. Elders tend to see low saturation colors as grey which creates the sense that the interior environments are drab and dull. However, if low saturation colors are warranted purples with red tones that
are much more visible to the older eye must be specified. Results also indicated that the elders prefer the color blue and green under the cool white better than the warm white. Thus in the specification of light it is best to specify a cooler color temperature light (4,100K) when the colors blue and green are used for the older population. Practitioners can consider the results of this study and make informed decisions about appropriate color specifications for elderly clients to create interior environments that are safe, nurturing and aesthetically pleasing.

Table 1
*Munsell Notations for Pattern Color Pallets*

<table>
<thead>
<tr>
<th>Saturation Based Color</th>
<th>Low</th>
<th>Medium</th>
<th>High</th>
</tr>
</thead>
<tbody>
<tr>
<td>Red</td>
<td>5R 5/4</td>
<td>5R 5/8</td>
<td>5R 5/12</td>
</tr>
<tr>
<td>Blue</td>
<td>5B 7/2</td>
<td>5B 7/6</td>
<td>5B 7/10</td>
</tr>
<tr>
<td>Green</td>
<td>5G 6/2</td>
<td>5G 6/6</td>
<td>5G 6/10</td>
</tr>
<tr>
<td>Purple</td>
<td>10P 5/4</td>
<td>10P 5/8</td>
<td>10P 5/12</td>
</tr>
</tbody>
</table>

Table 2
*Pattern Clarity and Pattern Like for Four Colors in Three Saturations (n=60)*

<table>
<thead>
<tr>
<th>Color</th>
<th>Saturation</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Low</td>
</tr>
<tr>
<td>Red</td>
<td>1.7</td>
</tr>
<tr>
<td>Green</td>
<td>1.7</td>
</tr>
<tr>
<td>Blue</td>
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</tr>
<tr>
<td>Purple</td>
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</table>

<table>
<thead>
<tr>
<th>Color</th>
<th>Pattern Like %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Red</td>
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</tr>
<tr>
<td>Green</td>
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<tr>
<td>Blue</td>
<td>3.3</td>
</tr>
<tr>
<td>Purple</td>
<td>3.4</td>
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</tbody>
</table>
Table 3
*Pattern Clarity and Pattern Like for Saturation Based Colors (n=60)*

<table>
<thead>
<tr>
<th>Saturation</th>
<th>Color</th>
<th>Pattern Clarity %</th>
<th>Pattern Like %</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Red</td>
<td>Green</td>
<td>Blue</td>
</tr>
<tr>
<td>High</td>
<td>18.3</td>
<td>26.7</td>
<td>38.3</td>
</tr>
<tr>
<td>Medium</td>
<td>13.3</td>
<td>33.3</td>
<td>31.7</td>
</tr>
<tr>
<td>Low</td>
<td>26.7</td>
<td>1.7</td>
<td>0.0</td>
</tr>
</tbody>
</table>

REFERENCES (APA)


An Emerging Curriculum Content and Program Structures; the Context of Interior Design Programs and Pedagogical Structures

HANK HILDEBRANDT
University of Cincinnati

NARRATIVE

AT ISSUE:
The Interior Design profession has undergone a series of significant transitions over the last half of the twentieth century. In the last several decades, the recognition of professional licensure in over half the states as well as a maturing and improving accreditation process, increasing numbers up to 170 CIDA (Council of Interior Design Accreditation) accredited programs, has significantly altered the profession. The professional stature of interior design has been elevated and established as an integral part of the commercial design package of professional design services. These gains in professional acceptance, by the greater professional community, have been particularly significant and now require a further understanding of the structure that is responsible for educating professional graduates.

In the past, and even today, interior design education has been criticized for not producing technically competent and built design knowledgeable graduates. Professional stature requires an accessible curricula profile for continued evaluation to calibrate and balance educational content with the realities of professional services. Therefore, it is implied there exists a standardized database and organizational method to assess and compare educational experiences through course content and program profiles beyond the baseline of accreditation standards.

Sparked by interest from the 1996 publishing of Boyer and Mitgang's *Building Community*, roundtables and symposiums have been triggered in both architecture and interior design. In IIDA's *The Study of Interior Design* (1999), and the 2001 publication *Curriculum Discourse Exchange* interior design educational structures were addressed as a strategic dialogue between the academy and practice. These initiatives paralleled the annual publication *Almanac of Architecture and Design* ranking programs of interior design, architecture, industrial, and landscape design. This *Almanac* is similar in popularity to the annual collegiate ranking by *US News and World Report*. Unlike the Association of Collegiate Schools of Architecture (ACSA) publication *Guide to Architecture Schools*, there is no comprehensive neutral survey of interior design programs addressing curricula content within a quantifiable database and descriptive program summary. This synthesis is an outline of accredited programs as a group and not focused on specific characteristics of program content qualities and distinguishing features.

PURPOSE:
The purpose of this paper is to present a research study in tracking curriculum profiles and analyzing curriculum contents of accredited and non-accredited interior design programs. The objective is to look at individual programs as singular curriculum assemblages with particular pedagogical structures within unique institutional settings.

- Programs have been reviewed by institution context and curriculum according to several broad groupings with the aim of assembling information to construct a detailed program profile cataloging the following:
  - Provide a referencing guide and summary of different accredited and non-accredited interior design programs
  - Provide a standard curriculum content comparison template to compare curriculum and course content between programs based upon credit hours, hours
per class, student instructor ratios, and classify programs according to degree paths and structured program adjacencies as well as other criteria, (such as institutional factors of location and student and faculty demographics, etc.)

- Establish a systematic data-gathering template for periodic data updating and data renewal

This research builds on other earlier work and is essential in establishing a database for documenting program structures and institutional context. Furthermore, this information will also provide a mechanism for future and ongoing data collection to establish both a historical profile base and provide pedagogical templates to note trends and changes in demographics as well as institutional conditions.

**PROCESS AND METHODOLOGY:**
The process of gathering data and program information has been to use various online sources and downloads, direct request, and published online information from the program’s institution. Program listings were drawn from using IDEC membership affiliations (around 370 +), CIDA accredited programs, currently 170, and the National Schools of Art and Design (NSAD) accrediting body, of which many interior design programs are also accredited. The Association of Independent Colleges of Art and Design (AICAD) and a web site of “Interior Design Schools (.org) have been used to gather program profiles and descriptions.

While this may allow for much overlap, it also guarantees a broad range of academic formats and optional programs which structure the interior design education sequences. Information gathered from programs and institutions have been framed into two areas: 1) curricula content dealing with courses and class alignments areas of focus - Core: History, Theory, Studio, Drawing Communication Skills, Digital Communication Skills, Building Technologies, Environmental Technologies, Professional Practice, and University offerings (often termed ‘General Education’); and 2) academic qualifiers dealing with institutional factors of location (campus setting, institutional type, program admission settings), demographics (information of students / faculty ratios, student composites, and faculty composites), and program content (program type, contact hours, course subject areas, curricula contents, and outside academics programs).

A standard template matrix was developed for gathering information from each program to establish curriculum profiles and context background. In the semester vs. quarter differences, a standard semester conversion of 1 semester credit vs. 1.5 quarter credit conversation has been applied. The CIDA generalized summaries: the ‘Academic unit housing program count’ and the ‘Academic unit housing by institutional type,’ provided a beginning point (referenced in the CIDA web site) for a preliminary category program matrix. Outlined and developed further, the program matrix will illustrate course content concentrations and organize group programs into similar pedagogical typologies.

The program description and curriculum matrix templates were developed through utilizing the CIDA program summaries as a general guide and then viewing each programs online web site for application. In order to strengthen analysis methodology and further verify curricula core subject categories, the NAAB (National Architectural Accreditation Board) Standards were utilized to compare issues and content topical headings. In describing program criteria and adding to the growing set of topical categories additional references such as AICAD and “Interior Design Schools website” were incorporated. A list of qualifiers was assembled to fix a standard boilerplate template in which to describe and compare each programs qualities and characteristics.

Two broad qualifier areas emerged to organize this template format: Curriculum qualifiers looking at content of course alignments, and Academic qualifiers based on factors unique to each institution. A graphic matrix and narrative format is then used to illustrate each program’s curriculum sequence and course content alignment within a neutral datum. This allows a non-competitive program-to-program comparison stressing the individual characteristics unique to each institution. The resulting profile describes each program within a unified format and further builds upon the understanding of each interior design program.

**SUMMARY AND CONCLUSIONS**
This is an ongoing study and data gathering process. Over 120 programs have been downloaded for review in the past several years. We have estimated that there are close to 400 interior design programs of higher learning within North America. These programs operate at various scales and engage in the academic process.
at various levels. CIDA has listed 170 (as of Fall 2010) accredited programs many of which have chosen not to seek accreditation or are unable fulfill the 16 Standards of CIDA.

Our matrix and program analysis methodology is continually being refined and reapplied. This systematic approach is critical in maintaining a constantly up-to-date referencing procedure. Program and curricula downloads have given quick access for up dating and cross-referencing lists for viewing. Institutions re-calibrate and restructure periodically which emphasize the importance of revising data on several cycling’s to reveal trends and build a historical reference. This first phase of gathering and constructing a database of interior design programs and their profiles will be completed this year with online access.

Our sampling to date has revealed important patterns and differences. The major observations are as follows:

- Institutional structuring and housing of interior design / interior architecture programs are varied and have changed within the last two decades.

- Different program titles may not have different curriculum structures

- At the curriculum level in course offerings, variations in technical and resource investment may vary greatly by program.

- Institutional settings influence curricula and delivery. Urban settings differ from isolated rural campuses while spatial considerations, ‘Hot desks,’ affect ratios and commitment to class size.

- Programs have been consistently female dominated from preliminary surveys and have remained so within most programs (this is still under review and can not be fully verified).

Our studies have been a vehicle to illustrate curriculum content and administrative data within standardized comparison and assessment. The curriculum matrix of class content and academic qualifiers, map a profile description that can delineate a distinctive neutral view of a program’s qualities and provide a methodology for continued analysis and review.

Because professional registration is not required in all states, and the title ‘Interior Designer’ can be used without regulation in many areas, education can vary greatly from person to person. Skill sets for interior services are therefore varied and unstandardized affecting the quality of work on a case-by-case basis. This makes the value of our study important; we need to understand the drivers of the person making program inquiry – are they potential students wanting to enroll, professionals looking to employ graduates, or are they research partners from the industry? This study is designed to be an informative resource to serve numerous audiences.
REFERENCES (MLA)


Council for Interior Design Survey Summary – Program Data. (web site).


Appendix


Flexible, Efficient, and Democratic: Classroom Design in Postwar America

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University of Florida

Scholarship on America’s modern interior focuses largely on residential, commercial, furniture, and other aspects of postwar design. However, in the decades that followed the Second World War, tens of thousands of public educational facilities (kindergarten through twelfth grade) were constructed in response to, among other things, the dramatic rise in school enrollment that followed the baby boom and population migration to the suburbs. Classrooms and other school spaces from the period were transformed as the education and design communities promoted the advantages of modern design.

An on-going content analysis of literature from this period, including, but not limited to, educational and architectural special publications and journals, such as Schoolhouse (produced by the Joint School Research Project), American School and University and Architectural Record, and popular print media, such as Time magazine, has revealed at least five concepts that helped shape the post-World War II learning environment: flexibility, adaptability, efficiency, technology, and democracy. This paper explores the concepts that informed the design of public school interiors during the postwar era and, through a case study analysis, examines how these concepts, particularly a focus on democratic ideals, informed the design of one of the nation’s first open-plan schools, Englewood Elementary (1959) in Sarasota, Florida.

CONCEPTS

A 1953 Time magazine article titled “The Keynote is Freedom,” reported on new developments in the design of America’s public educational facilities:

In the past three years, the nation has put up nearly 14,000 schools...Both academically and architecturally, the keynote of the new U.S. school is freedom. In some ways, the building of a new school is nothing more than a process of elimination. The whole idea is to eliminate as many blocks and barriers as possible. Air must flow and light flood in; the building must be capable of shrinking or growing according to the tides of population, and it must be made for use at all hours of the day.

The article goes on to address the issue of lowering cost by “cutting down on stairways, waste space, and such traditional gimcracks as Greek columns, Georgian domes and Gothic towers. But, most of all, the new school must eliminate restrictions on the pupil.”

Highlighting ten exemplary schools from the across the country, the article presented many of the concepts that would shape school design throughout the 1950s, 1960s, and beyond. The literature seems to indicate that many educators, school planners, and designers from the period extolled the virtues of modernist design principles including plans that were easily expanded or adapted to meet future growth and changes and flexible spaces that were more conducive to current teaching methods. As explained by writer and architectural critic Walter McQuade in a 1958 publication titled Schoolhouse, “Rooms should not be traps, especially schoolrooms. They need not be. They can enclose without imprisoning—and if they succeed in this, they usually contain livelier classes, better learners.” He goes on to further describe the new paradigm for postwar learning spaces:

Classrooms today, like living rooms, have the freedom of movable furniture, but there are other freedoms too: lightly-framed, movable walls; freedom of view; and most of all, freedom of use for new teaching techniques. Some diverse approaches in-
clude: (1) a split level classroom; (2) a classroom where moving outdoors is easy, not a big trek; (4) a corridor wide and pleasant enough to take overflow from a classroom; (5) a more formal lecture room, but a wide one, with good visibility; (3) a convenient lab classroom; (6) a classroom landscaped by virtue of its clear wall.7

Advances in school design were made possible largely by the creation of new building materials and technologies, many of which were made possible by research and production that occurred during World War II. In the New School (1957), author Alfred Roth posits: “The architectural form is the creative expression of purpose, material and construction. New materials allow for new construction and new construction for new space conception.”8 Industrially fabricated materials and building components also helped keep costs low and shorten construction schedules. A consideration of utmost importance to communities faced with, in some instances, doubling or tripling classroom space quickly and cheaply.

These modernist design ideals were—in the context of the Cold War and growing concerns over the global spread of Communism—aligned with notions of America’s democratic freedoms and egalitarian aspirations.9 As proposed by William W. Caudill, one of the leading educational planners of the day:

The American people...have come of age with their own ideology of equalitarian democracy and their own culture based on science, technology, and industry. This kind of architecture [modern architecture] is an honest expression of that culture at its best. Finally, this approach insists that there is no “modern style” as such. Each new building ideally is the product of specific solutions to individual problems peculiar to that building particular environs, site, function, budget, and designer.10

Completed in 1959, Englewood Elementary School in Sarasota, Florida embodies the postwar era concepts of flexibility, adaptability, efficiency, technology, and, especially, democracy.

With Englewood Elementary, form followed pedagogy to create an unconventional environment focused on individual learning. The master plan and first-phase classroom wing (1959) were designed to accommodate a grade-less curriculum with teams of teachers that allowed each pupil to advance at their own pace. To facilitate team teaching and individual learning, “nests” of four classrooms, utilizing the new technology of movable partitions, could expand from 750 to 1,000 to 2,000 square feet to accommodate both large and small teaching groups.11 Storage and furnishings were on casters to facilitate the creation of small work settings and activity areas. Contiguous to the classrooms, a covered patio and play area allowed activities to shift outdoors.

Englewood Elementary was one of six new buildings and additions that made up the Sarasota Public School Program (1954 to 1960), a building campaign led by Philip Hanson Hiss, then chairman of the Sarasota Country Board of Public Instruction. Under Hiss’s leadership, the Board engaged inexperienced architects associated with what would later be defined as the “Sarasota School of Architecture,” to use industrial materials and technologies and modernist approaches to planning and space-making to create places he believed would reinforce American democracy.12 As proposed by Hiss:

We still express lip service to the democratic ideal of individualism, yet the trend toward mass conformity becomes greater every day. There already are far too many factors contributing to mass conformity in our civilization without making assemblyline [sic] education one of them...each community has the right, indeed the responsibility, to do what is best for its own children, and to maintain its own individuality.13

Whether explicitly stated, as with Englewood Elementary and the other facilities of the Sarasota Public School Program, or implied, as with the Time magazine “The Keynote is Freedom” article, notions of individuality and democratic values, perhaps more than any other concept defined the physical environment of America’s postwar public education.
END NOTES (CHICAGO)


3 Special period publications on post-World War II school design are also part of the literature review, such as Walter McQuade, Schoolhouse: What to do when your Neighborhood needs a School (New York: Simon and Schuster, 1958).

4 “The Keynote is Freedom,” Time, September 7, 1953, 68.

5 Ibid.


7 Ibid, 213.


13 Florida Architect, April 1959
Designed to “Work”: Exploring an Emerging Place-type in Long-term Care

MIGETTE L. KAUP
Kansas State University

NARRATIVE

INTRODUCTION / STATEMENT OF THE PROBLEM:
Nursing homes in America are experiencing increased social pressures to change the way they deliver housing and medical services. Most recently, the regulatory oversight from Centers for Medicaid and Medicare (CMS) issued new interpretive guidelines that are intended to increase the attention for quality of life dimensions for residents while still protecting the standards for quality of care (CMS, 2009). These changes have implications for the daily “work,” yet role expectations of nursing home staff are still both occupationally and legally defined (Siegel, Young, Mitchell & Shannon, 2008; Zhang & Grabowski, 2004, p. 13). This ultimately determines how jobs are perceived, how work is completed, and how skilled care settings are designed.

In response to these pressures, an increasing number of facilities are moving toward the adoption of a social model of care often referred to as “Culture Change.” Many facilities are investing in remodeling and new construction, testing new organizational models; adopting some of the principles from the Culture Change mantra while still holding onto their previous institutional frameworks. Initial evaluations on early models of Culture Change demonstrate that the built environment impacts workflow and the organizational structure (Kane, Lum, Cutler, Degenholtz, & Yu, 2007, p. 832; Rabig et al., 2006, p. 354; Pekkarinen, Sinervo Perala & Elovinio, 2004, p. 638). The implications for the setting, specifically the interior environment and the spatial composition of the household, are beginning to be addressed as an important factor in supporting new behavioral patterns and role expectations (Kane, 2003; Pekkarinen, Sinervo, Perala, and Elovinio, 2004; Rantz, et al., 2004; Arling, et al., 2007). There is, however, limited literature that articulates the ideal characteristics and components in a culture change facility (e.g. Grant & Norton, 2003; Shields & Norton, 2006). And, few resources are available that provide descriptions of the multiple variations of how these models are actually being implemented to blend new organizational designs with new environmental solutions.

METHODS:
To explore the complexities of this issue, three long-term care facilities were selected for review and analysis. These facilities had undergone either remodeling or new construction and are currently being promoted as “culture change” organizations. A case study method was applied based on recognized processes in qualitative research (Creswell, 1994). For each case study, mixed-method strategies were employed that included, ethnographic tactics of participant observation and open-ended staff interviews, structured interviews with administrative personnel, an archival search and schematic articulation of the setting (to document architectural layout) as well as photo-documentation of the composition of the interior features, spaces, and equipment that are integral in four targeted work routines.

Three primary research questions were explored:

1. How are (long-term care) households defined; spatially and organizationally?

2. How does the physical environment of the household relate to the larger environmental milieu of the organization?
3. How do organizations structure staff teams to deliver the roles\(^1\) of meals, laundry, charting, and medication distribution within their household unit(s)?

Data for this project was collected primarily while on site during an intensive two and a half (2½) day visit. Field notes were recorded and then coded to a specific target activity. Digital photos were sorted and labeled. These collected “evidences” were used to correlate between the stated work practices and the work settings provided. The case study approach allowed for collection of multiple sources of evidence in an actual situation or context. A mixed-method approach allowed for triangulation in data analysis. Through this process, patterns have been allowed to emerge from the collective analysis of the data\(^2\).

THE CASE STUDIES - FINDINGS

Relating the Household to the Larger Milieu:

The sites selected for this project were facilities what have successfully implemented re-structured organizational design based on a social model of care within the regulatory policies of institutional environments for frail elders. A description of the larger organizational milieu is provided in the following brief narrative for each of the site.

Site 1 is a 204 bed skilled nursing, not-for-profit county home. This facility provides long-term care as well as short-term rehabilitation therapy services. There is a central administrative structure that oversees the general operation of the entire facility. The building is organized architecturally as 5 neighborhoods with each neighborhood comprising of three households (See Image 1). The staffing structure is based primarily on the neighborhood, then the household. Therefore for the purposes of this investigation, the household was studied from a “neighborhood” context.

Site 2 is a not-for-profit CCRC Methodist affiliation organization that provides a continuum of long-term care and housing services. There are 80 skilled care beds that focus on long-term stay, and another 28 beds that focus on short-term rehabilitation therapy services. Other housing and service options on the campus include 70 units of assisted living, and 140 unit of independent living. There is a central administrative structure that oversees the general operation of the entire facility. The houses in skilled care (for long-term care) are organized architecturally as two neighborhoods with each neighborhood comprising four households (See Image 2). The staffing is based primarily on the neighborhood, then the household. Therefore for the purposes of this investigation, the household was studied from a “neighborhood” context.

Site 3 is a not-for-profit CCRC that has its origins in a multi-denominational church affiliation. The campus provides a continuum of long-term care and housing services. There are 119 skilled care beds that focus on long-term stay, and another 13 beds that focus on short-term rehabilitation therapy services. Other housing and service options on the campus include 38 units of assisted living, and 103 units of independent living. There is a central administrative structure that oversees the general operation of the entire facility. The households in skilled care are organized architecturally as individual households, with a “sister” household that is typically adjacent; there are a total of six households. The staffing is based primarily on the household, then on the sister HH. Therefore for the purposes of this investigation, the household was studied as an individual household context (no data was collected on the “sister” household upstairs) (See Image 3).

Spatial & Organizational Composition: An analysis of the spatial composition of each of the households reveals some common patterns. First, the overall scale of the household is much smaller than a traditional nursing home setting. Table 1 outlines the implications of total area that is dedicated to each of the households and a grouping of households which may form a neighborhood unit (NU). The approximate areas that must be covered by staff to deliver care within the household are typically 50-60% less than the area that would be covered in a 60 bed nursing facility.

There were also similarities in the types of rooms that are designed into these settings. All individual households had a “functional” kitchen space, and designated

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\(^1\) These roles were selected because they are activities that are highly regulated in both state and federal statutes for skilled nursing homes. Therefore, they would occur and can be observed in either a traditional medical model nursing home or a social model Culture Change home.

\(^2\) For the purposes of this brief narrative, the analysis will focus on the routine of meal service only.
living and dining area that were not shared with other parts of the building. Sites 1 and 3 have a designated bathing room for the household; Site 2 has a bathing room positioned to be shared by adjoining households.

Organizationally, each of the sites was composed of a designated team to the household, and the role of the dedicated staff was easily associated with the physical boundary identified as “the house” (or household). In addition, there was a greater degree of cross-over in the role definitions for many of the daily routines. This was especially evident for Certified Nurse Aides (CNAs) who were responsible for multiple activities (See Table 2). This approach represents a dramatically different organizational model to traditional institutional settings where CNAs may be assigned to cover broad area, float between wings on any given day, and yet, have very limited role definitions. This implicates how staffing is assigned for services that support the households and what roles they assume.

Organizational Design, Environmental Design & Role Definition: Within the three sites, there are also patterns that emerge based on the spatial arrangement of the setting, the specific interior features, as well as organizational structures that implicate how staffing is assigned to the households and what roles they assume. For example, Site 3 is a standalone facility, detached from a central building. Its interior design provides the necessary fixtures and equipment in a functional kitchen that allow for the household team to be more “self-contained.” As demonstrated in Table 2, there are fewer “primary responsibility” tasks that fall to support staff outside of the household. In Site 1 and 2, the kitchens are functional but lack necessary components that would permit a full-meal preparation. These households have continued dependence on a main kitchen and their core staff for meal service.

CONCLUSION:
The focus of this study was to begin to investigate long-term care settings that are organized under the concept of a “household” and document their organizational and environmental components. The goal is to advance the knowledge of the role of interior design in culture change households as well as linking these aspects to the larger realm of healthcare facility planning. It is evident that the nature of the work in long-term care is undergoing dramatic changes. Environments designed for these services must now rapidly evolve to respond to these needs. Developing new understanding of the variations of household models would be of great value to long-term care providers and design professionals as we continue to strive to plan and design supportive environments for the appropriate types of care and services for older adults who reside and are cared for in these settings.
Figure 2: Floor Plan Layout of Site 2

Figure 3: Floor Plan Layout of Site 3

Figure 4: Summary Table comparing HH Scale to Resident Occupancy & Staffing Levels
**Figure 5: Staff Roles for HHs Sites 1-3**
REFERENCES (APA)


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Rethinking the Role of the Built Environment in Long Term Care: Results from the Culture Change and Household Model Survey

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Kansas State University / University of Wisconsin-Milwaukee

NARRATIVE

STATEMENT OF THE PROBLEM
Nursing homes are an iconic place type, a symbol of the care practices for older adults in America, which often regard aging as a disease. Accordingly, nursing homes have developed a negative stereotype and few people wish to live in one (Mattimore et al., 1997). With an anticipated increase in the demand for long term care, it is expected that 46% of persons over 65 will spend time in institutionalized care settings (Spillman & Lubitz, 2002). The nursing home’s highest priority has been efficiency, too often at the expense of social needs and desires. Today, leaders in long-term care are prioritizing quality of life in nursing homes by becoming more “person-centered” through an approach coined as “Culture Change” (e.g. Pioneer Network, n.d.)

Culture Change (CC) clearly strives to move away from a traditional medical based model, but the direction, path, scope and goal of this movement varies greatly from one care community to the next. Although Culture Change efforts are beginning to influence policy, benchmarking and measurement strategies related to outcomes, the challenge is that highly individualized approaches make it difficult to inform policies, practices and evidence-based design standards. Many posit that a radical change in the physical environment is also necessary to bring about this shift and new household models are being devised which emulate common familial configurations rather than institutions (e.g. Kane, 2003; Sheilds & Norton, 2006). The household model is often heralded in the Culture Change literature as the environmental model that has the potential to actualize the deepest degree of transformation. For those considering implementation of Culture Change within their own residential long term care setting, this information is paramount as environments are expensive to alter and can reinforce or restrain care practices.

METHODS
To address this need, the Culture Change and Household Model (CCHM) Survey was designed to explore the desirability and feasibility of key practices commonly associated Culture Change. Unlike single-administered surveys, however, a three part iterative survey process using a Delphi technique was employed to foster a discussion among nursing home stakeholders engaged in the Culture Change movement. The Delphi process is hallmarked by multiple waves of input utilizing a multidisciplinary panel (See Figure 1). The goal is to come to consensus on a topic or around a set of issues. The survey structure disassembled Culture Change and the Household Model into distinct components and themes for participants to assess. Components for the first wave of the survey were derived from a broad review of the Culture Change literature which included scholarly and trade publications, white papers, conference presentations, as well as published resources on the World Wide Web (e.g. Kane, Lum, Cutler, Degneholtz & Ui, 2007; Rabig, Thomas, Kane, Cutler, & McAlilly, 2006; Rahman & Schnelle, 2008). The terms Culture Change and Household were operationalized based on these materials and defined as indicated as follows:

Culture Change: Culture change attempts to alter the focus of long term care settings utilizing a variety of strategies, model and practices. The primary goals of this survey are to discover what is most important to the Culture Change journey, understand outcomes and obstacles, and learn assessment strategies which cut across these varies models and practices. This inclusive perspective will benefit all organizations regardless of their available resources or the stage an organization
has reached in the Culture Change process. Therefore, this survey takes a broad approach and is intended to inform those making changes to the organization, operation as well as the environment.

**Household Model:** In addition, specific questions are asked about the household model, which has become one strategy within the Culture Change movement that would benefit from further clarification. While multiple variations exist, the household model is based upon creating small care settings for fewer people which is patterned upon the familiar domestic residence. Those moving toward this model or operating this model will benefit from a multi-disciplinary input as well.

The initial CChm survey was generated by looking at a wide array of resources that practitioners might consult while launching or implementing Culture Change. These were mined for the various assertions of nursing home stakeholders who have suggested particular criteria to achieve Culture Change. These assertions were separated into 63 individual components which were grouped into five key domains; four Culture Change Categories and One Household Model Category (see Figure 2).

**SAMPLE:**

The Culture Change and the Household Model participants were identified using a variation of the snowball sampling technique drawn from the literature. A non-random purposive population of participants was selected on the basis of their unique perspective to contribute to the diversity of the panel. An initial sample of 438 participants was comprised of researchers, providers, policy-makers, regulators, consultants and designers. Providers included independent organizations that identified themselves with Culture Change Leadership or Culture Change Agents as well as those representing a range of long-term care models or approaches to culture change including Green House®; Pioneer Network, Eden ®; Small House, Planetree; Person First; and Wellspring. Electronic surveys were distributed 398 valid email addresses. One hundred seventy-two (172) survey participants responded in Wave 1, lending to a response rate of 43.2% (See Figure 3). One hundred thirty-three (133) surveys were completed, 39 were in progress. Thirty-nine (39) states across the US were represented by these respondents.

**RESULTS**

Participants in wave 1 were asked to rate the desirability (importance) and feasibility (ease of implementation) of the 63 components related a five-point scale. When all 63 CC components were ranked by desirability, five out of the top 10 components were environmental. Table 1 illustrates the overall responses for these ranking among respondent types for these components. The environmental components focused on stimulation (e.g. personalization, access to day lighting and controlling the acoustical environment) were rated as most desirable. In the HH component ranking, the environmental features that were rated highest reflected the importance of autonomy and control afforded to the elders who live there and their household team. These HH components corresponded to several components also ranked as highly desirable in the CC category.

Descriptive and inferential statistics were used to determine the degree of variability and consensus between group’s responses to the desirability and feasibility of the top rated environmental components. Table 2 shows the targeted environmental variables, the sample by respondent type, mean rating scores, and standard deviations by question and respondent groups. A one-way ANOVA was used to test for differences in ranking desirability and feasibility among four different participant groups; policy regulator, provider, researcher, and designer/consultant (vendors were eliminated due to a low n=2). Ratings did not differ significantly for the groups except for the feasibility to personalize resident room, $F(3, 117) = 3.58$, $p = .016$. Post-Hoc tests (Tamhane) indicated significant differences ($p < .05$) between the design consultant group in comparison with the provider group and researcher group. Results of this analysis suggest little variability and a high level of consensus among respondents for environmental items ranked at the top of the list.

**DISCUSSION**

Although the role of the environment is emphasized to varying degrees within the literature, the prominence of environmental components among the 63 ranked suggests that respondents consider the environment to be a significant Culture Change ingredient. While the ANOVA indicated a high degree of consensus among

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1 Results for this paper are only being discussed for the first wave.
participants as they rated individual components, their desirability, however, often exceeded their feasibility (See Tables 1 & 2). This was most evident in those components that impact spatial design. For example, the components “The majority of resident rooms should be single occupancy” and “Shared rooms don’t require one person to walk through another person’s space” were rated highly desirable, but the mean feasibility scores were lower with the standard deviation (SD) indicating greater divergence among responses. This variability among responses could be attributed to respondent’s familiarity with or estimate of the cost and practicality of operating within different environments. This information is paramount to the future planning and design of long-term care settings.

**CONCLUSIONS**

The initial analysis of Wave 1 data demonstrates the perceived importance of environmental variables in the role of changing the culture of nursing home care. The consensus demonstrated amongst respondent groups about which environmental components are most desirable is important information for practicing designers who will play an increasingly important role in assisting long-term care facilities with the implementation of features that support social models of care. It is also critical to understand that there are perceptions that some of the most desirable features are not highly feasible as this will present challenges in planning and design. There are features of the interior environment that have the potential to support changing organizational models, as well as policy and practices in long term care. It will be crucial to consider the inter-relationship of these components and assess the setting holistically. Further study is also needed to consider how these attributes will also relate to the necessary regulatory compliances to protect the health, safety and welfare of residents, staff and visitors to these environments.
Table 1: Top 10 Ranked Culture Change and Household Components

Figure 3: Survey Participants by Respondent Group
<table>
<thead>
<tr>
<th>Question</th>
<th>Desirability</th>
<th>Feasibility</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>n</td>
<td>Mean</td>
</tr>
<tr>
<td>Residents should be encouraged to personalize their own rooms however they choose (furniture, accessories, photos, paint).</td>
<td>25</td>
<td>4.92</td>
</tr>
<tr>
<td>Outdoor areas should be visible and accessible to residents</td>
<td>25</td>
<td>4.84</td>
</tr>
<tr>
<td>Audible call alarms and overhead paging systems should be replaced by silent communication systems.</td>
<td>25</td>
<td>4.72</td>
</tr>
<tr>
<td>Shared rooms do not require one person to walk through another person’s personal space to access the door, window, or toilet.</td>
<td>25</td>
<td>4.63</td>
</tr>
<tr>
<td>The majority of resident rooms should be single occupancy</td>
<td>25</td>
<td>4.63</td>
</tr>
<tr>
<td>Residents who live in a household should be encouraged to personalize shared spaces</td>
<td>24</td>
<td>4.79</td>
</tr>
<tr>
<td>Each household should have a living room for the primary use of those who live and work in the household.</td>
<td>24</td>
<td>4.67</td>
</tr>
<tr>
<td>Each household should contain a fully functional kitchen or kitchenette (includes a stove, sink and refrigerator)</td>
<td>24</td>
<td>4.63</td>
</tr>
<tr>
<td>Each household should have a dedicated accessible outdoor space.</td>
<td>24</td>
<td>4.17</td>
</tr>
<tr>
<td>A household should eliminate or limit the length of corridors.</td>
<td>24</td>
<td>4.54</td>
</tr>
</tbody>
</table>

Table 2: Top Ranking Environmental Components
REFERENCES (APA)


Korean’s Establishment of Color Meaning in Healthcare Facilities: A Qualitative Study with Global Implications

JAIN KWON / DENISE A. GUERIN
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NARRATIVE

Color planning in today’s healthcare environments is challenging due to the diverse users who attach different meanings to environmental colors based on their cultures, ethnicities, backgrounds, and life-experiences. Research shows that there is a relationship between people’s emotional responses to environments and their meaning of the color(s) used. Certain colors can be stressors to some people, and those same colors can be positive distracters to others (Hay et al., 1994). Without careful color research, it might be assumed that certain colors evoke universal meanings in people within healthcare environments (Young, 2007). With the increasing number of cultures that are represented by healthcare users, and the acknowledgement that color meaning can alleviate or increase stress, it is important to define how healthcare users establish meaning of color in healthcare facilities.

PURPOSE

This exploratory phenomenological study investigated the significance of culture in people’s establishment of color meaning in healthcare environments. Using symbolic interaction theory, the study determined what role ‘the self’ and sociocultural influences play in making meaning of color and how they affect each other in a person’s establishment of meaning of color in healthcare settings.

FRAMEWORK

This study was based on Blumer’s framework of symbolic interaction. Blumer determined symbolic interaction as a communicative process that involves five components: the self, the act, social interaction, objects, and joint action (1969; 2004). Symbolic interaction presupposes: the self is a process, not a structure; society consists of individuals who have selves; individual action is not a release of a process of self-interaction but a construction that takes place inside social action; joint action consists of aligning individual actions through a process of individuals interpreting, defining, and taking into account one another’s actions (Blumer, 1969; 2004). Based on Blumer’s discussion of symbolic interaction, a model of contributors to meaning establishment was proposed (see Figure 1).

In the context of this study, self-indication and self-determination that compose the internal interaction of ‘the self’ are defined and applied to the subject: 1) self-indication in a healthcare environment is an individual’s feelings about herself/himself in her/his past experiences; 2) self-determination refers to an individual’s memories of healthcare settings in relation to her/his self-indication.

RESEARCH QUESTION & METHOD

The research question of this study is: What is the relationship between meaning of color in healthcare settings and influences of self- and social interactions for Korean healthcare users?

This study presupposed that color in healthcare environments is memorable and important to the users. A research model (see Table 1) was developed referring to the theoretical constructs of symbolic interaction—the self, objects, social interaction, and joint action. The study focused on the Korean that is one of the fastest growing populations in the United States. The research method included a semi-structured interview strategy. The participants were a convenience sample: twenty five subjects—13 females and 12 males—were interviewed, restricted to Korean-first-language speakers ranging in age from 25 to 39. Prior to each interview, a color deficiency test was conducted to determine the subject’s
eligibility for the in-depth interview. To avoid potential bias, current patients and healthcare employees were excluded.

Data were collected through Korean subjects’ responses to semi-structured interview questions. The focus of the interviews was on the subjects’ lived experiences and social interactions related to their perceptions and interpretations of color in healthcare environments. A color palette instrument (see Table 2) was used for part of each interview to determine whether cultural symbolism influences Koreans’ assignment of color meaning. Five color palettes were developed based on the Korean interior color combinations proposed by Shin and Park (1999). Color combinations derived from the findings of the study and used in the color palettes are natural, heuk-baek (black-white), byuk-nok (blue tint-green tint), jeok-cheong (red-blue), and cheong-ja (blue-red violet). These, except the natural color combination, are either primary-primary or primary-secondary color combinations of the Korean traditional color system.

Each subject was asked to describe his/her past visit to a particular healthcare facility that he/she best remembered, talk about other experiences related to colors, and explain her/his responses to the color palette instruments. No exemplary word specifically describing color conditions was given because, as Park and Guerin (2002) noted, the given descriptor words may force researchers’ opinions on the subjects and limit their responses.

Recorded interview data were transcribed and analyzed by the researcher and using a computer analysis program, QSR NVivo 8 Korean version, because limitations exist both in using computer software in analysis and in narrative analysis by one researcher. QSR NVivo 8 was used particularly to categorize relevant contents presented in the participants’ responses. The contents of responses to interview questions were analyzed to determine the shared themes among the responses. The themes were interpreted by the researcher, and peer review was conducted to assess the validity of the interpretation.

FINDINGS
The meaning of healthcare color appeared as qualitative themes that seemed to be criteria of healthcare quality in the subjects’ expectation. The themes were categorized as care/warmness, stability, vitality, hygiene status, comfort from familiarity, professionalism, and users’ characteristics. Subjects tended to establish comprehensive concepts of overall color palettes rather than choose descriptive words of individual colors. Associations to color palettes and concepts of healthcare color that the subjects established were based on their experiences and cultural backgrounds.

Subjects indicated themselves mostly based on their own health condition and relationship with the person whom they accompanied in their healthcare visits. The subjects tended to better remember the colors of healthcare settings when they were well-patient visitors. In ill-patient visits, they tended to be more self-conscious than sensitive to the surroundings. The subjects also seemed to better remember the interior settings of healthcare environments in the following order: lighting conditions, interior structures, overall color impressions, and the detail colors.

In subjects’ responses, healthcare color was determined as an abstract, physical, and social object based on their past experiences and the present circumstances:

- Healthcare color as an abstract object is a source of an individual’s interpretation of associations and reflects concepts of care, stability, and vitality;
- healthcare color as a physical object that is a visual stimulus in a physical setting represents a concept of hygiene status;
- professionalism, comfort from familiarity, and users’ characteristics are concepts of color as a social object in a situation that involves other individual(s).

In the findings, ‘cleanness’ and ‘comfort’ often seemed to be interpreted as concepts opposite from each other in the public’s consideration of colors. ‘Healing’ did not independently appear to be a concept of healthcare color: healthcare color appeared to be related to the concept of vitality rather than healing that the subjects often referred to a commercial trend.

In the subjects’ consideration, general color associations seemed to reflect self-interaction and social interaction; symbolic interaction tended to based on social interaction. In other words, the subjects’ general associations
to the color palettes were mostly based on their personal experiences; symbolic associations were based on what the subjects had informed.

Social interaction seemed to have more influence than self-interaction on the subjects' meaning establishment of healthcare color. The concepts in self-interaction such as stability, vitality, and care/warmness were more personal and varied than those in social interaction such as comfort, hygiene, characteristics of users, and professionalism (see Figure 2).

Overall, Koreans seemed to establish meaning of healthcare color based more on social interaction that mostly reflects the present cultural features, social roles, and social values.

**CONCLUSION**

The findings of this study reiterated that color in healthcare environments can be a positive distraction or a stressor depending on the individual's experience and/or status. People may construct meaning of healthcare environments through color-in-context and establishment of comprehensive concepts of healthcare color in the sociocultural context. In addition, people's symbolic associations of color reflects cultural factors such as norms, values, social structure, and social roles.

Further research can be conducted using various cultural groups and considering that color meaning in certain environmental settings may be more related to cultural factors and/or concepts on which people value, than color symbolism in the cultural traditions. The qualitative criteria found in this study can be applied to define variables for quantitative healthcare color research. The research model can be used as a reference for future research to investigate meaning of color people establish in various types of interior settings such as residential, commercial, institutional, and office environments. Although it has been known that people perceive color before shape (Wright, 1998), findings of this study showed that people may remember the interior layout more than the colors in healthcare settings. It seems to imply that people may perceive interiors of healthcare facilities differently from other types of interior settings. The findings of this study can be used to inform interior designers' decisions about color palette selection to reduce stress from fear, anxiety, or discomfort and to promote welfare of diverse healthcare users.
Figure 1: Contributors to Meaning Establishment

Figure 2: Concepts of Healthcare Color in the Meaning Establishment
<table>
<thead>
<tr>
<th>Theoretical Construct</th>
<th>Contributors to Meaning Establishment</th>
<th>Theoretical Definition (TD)</th>
<th>Interview Questions (IQ)</th>
</tr>
</thead>
</table>
| The Self (S)           | Self-interaction (SEI)               | Self-indication = an individual's feelings about herself/himself in a past experience | IQ1.1. Let’s talk about the healthcare facility that you visited in the past and best remember the color. What type of healthcare was it?  
* Probing Qs: Who was the patient (e.g., I, child, parent, friend, etc.); was it a well-patient visit (i.e., annual check-up) or ill-patient visit? |
|                        |                                      | Self-determination = an individual’s memories of a healthcare setting in relation to her/his feelings about herself/himself | IQ1.2. How did you feel physically and emotionally?  
IQ1.4. You remember nothing about the color. Why? Are there any healthcare facilities that you have visited and remember the color? What feelings do you remember having when you think about the color? What was/were the color(s)? |
|                        |                                      |                            | IQ1.5. If you were hospitalized, which color palette do you think would be emotionally healing and what would be stressful? Why? |
| Objects (O)            | Self-interaction (SEI) & Object (O) | Abstract Object = color as a source of an individual’s interpretation of his/her feelings and associations  
Physical Object = color as a visual stimulus in a physical setting  
Social Object = color as an object in a situation that includes other individuals | IQ1.3. What space/room do you best remember? (e.g., reception area, waiting room, doctor’s office, etc.) How long did you stay there? Please describe your experience in the space/room.  
* Probing Qs: Where did you sit or stand? How much do you remember of the color? What do you remember about it? Was there anything else the color of which caught your attention? (e.g., magazines, TV shows, clothes, signage, etc.)  
** If the interviewee remembers nothing, ask IQ1.4. |
|                        |                                      |                            | IQ1.6. What personal experiences or memories do you have associated with the colors that you just described or any other colors? Are there any links between the color(s) and healthcare? |

Table 1: Research Model
<table>
<thead>
<tr>
<th>Social Interaction (SSI)</th>
<th>[Symbolic] Social Interaction (SSI)</th>
<th>Symbolic Interaction (SSI) = an individual’s determination or adjustment of color meanings based on other people’s responses</th>
</tr>
</thead>
<tbody>
<tr>
<td>IQ2.1. If you were hospitalized, which color palette do you think would be emotionally healing and what would be stressful? Why?</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Social Interaction (SSI)</th>
<th>Operational concepts: communication — verbal language, gesture, &amp; facial expression</th>
</tr>
</thead>
<tbody>
<tr>
<td>IQ1.6. What do you remember about colors of healthcare facilities you have seen in any media? What media? What type of facility?</td>
<td></td>
</tr>
<tr>
<td>* Probing Qs: Have you talked to other people about the interior color of the healthcare facility or heard/read other people’s opinions — including TV shows, magazines, etc. — about the color? Did you feel different about the interior color after that?</td>
<td></td>
</tr>
<tr>
<td>IQ1.7. Does color in healthcare environments matter to you? Are there specific colors you prefer to see in healthcare facilities? Is there any reason for your preference? Where do you think this preference comes from?</td>
<td></td>
</tr>
<tr>
<td>IQ1.8. If you grew up learning that certain colors were appropriate for certain spaces (e.g., bedrooms, classrooms, etc.), please describe.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Joint Action (JA)</th>
<th>[Symbolic] Social Interaction (SSI) within a Culture</th>
</tr>
</thead>
<tbody>
<tr>
<td>IQ2.2. In this photo, what do the colors in the whole room remind you of? What specific part makes you remember? Is there any reason that you think that way? Please describe if any of these colors symbolize anything to you.</td>
<td></td>
</tr>
<tr>
<td>Joint Action (JA) = color meaning influenced by traditional or present culture, or social structure, social roles, or values</td>
<td></td>
</tr>
<tr>
<td>IQ2.2. In this photo, what do the colors in the whole room remind you of? What specific part makes you remember? Is there any reason that you think that way? Please describe if any of these colors symbolize anything to you.</td>
<td></td>
</tr>
</tbody>
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Table 1 (cont’d): Research Model
<table>
<thead>
<tr>
<th>Color Combinations</th>
<th>Names of Color Combinations</th>
<th>Munsell Values</th>
<th>Color Palettes</th>
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<tr>
<td><img src="image" alt="Natural" /></td>
<td>natural</td>
<td>2.5Y 9/1</td>
<td><img src="image" alt="Palette" /></td>
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<td></td>
<td></td>
<td>N9.5</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>2.5 YR 3/1</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>5Y 7.5/5.5</td>
<td></td>
</tr>
<tr>
<td><img src="image" alt="Heuk-baek" /></td>
<td>Heuk-baek (black-white)</td>
<td>N1.5</td>
<td><img src="image" alt="Palette" /></td>
</tr>
<tr>
<td></td>
<td></td>
<td>N9.5</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>N2.5</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>N4</td>
<td></td>
</tr>
<tr>
<td><img src="image" alt="Hwang-byuk" /></td>
<td>Hwang-byuk (yellow tint-blue tint)</td>
<td>5Y 7.5/5.5</td>
<td><img src="image" alt="Palette" /></td>
</tr>
<tr>
<td></td>
<td></td>
<td>2.5Y 9/1</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>2.5PB 5/10</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>7.5BG 5/2</td>
<td></td>
</tr>
<tr>
<td><img src="image" alt="Jeok-cheong" /></td>
<td>Jeok-cheong (red-blue)</td>
<td>5R 4/12</td>
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<tr>
<td></td>
<td></td>
<td>5PB 3/12</td>
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<td></td>
<td></td>
<td>5PB 2/6</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>5PB 1.5/3</td>
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</tr>
<tr>
<td><img src="image" alt="Cheong-ja" /></td>
<td>Cheong-ja (blue-violet)</td>
<td>6.8PB 3.3/9.2</td>
<td><img src="image" alt="Palette" /></td>
</tr>
<tr>
<td></td>
<td></td>
<td>7.5RP 3/6</td>
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</tr>
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</tr>
<tr>
<td></td>
<td></td>
<td>7.5RP 7/8</td>
<td></td>
</tr>
</tbody>
</table>

Table 2: Color Palette Instrument
REFERENCES (APA)


Identification of the Holistic Design Approach in the Eastern Aesthetics

JAIN KWON / YOUNG-GULL KWON
Savannah College of Art and Design / Seoul National University

NARRATIVE

Eastern aesthetics have integrated elements of natural environments into human-made environments. Such respect for nature in relation to humans' lives comes from Eastern philosophy and penetrates their aesthetics and design traditions. However, the consideration of nature-human relationship presented in Eastern aesthetic principles has often been overlooked in design education.

The disconnection between nature and culture in several contemporary design theories has been discussed (Stairs, 1997) and described as “the dominant secular world-picture of Western culture” (Marx, 1994). Researchers have recognized the controversy of the assumption that Western design principles and standards should fit into foreign cultures and design projects (Ham & Guerin, 2004). Further, researchers stress that interior designers need to be culturally sensitive to these design challenges (Guerin & Mason, 1993).

This interpretive-historical study investigated the holistic design approach presented in the Eastern aesthetic tradition. North-East Asian cultures and their holistic approaches that involve the interrelationships among nature, human, and designed environments were explored.

PURPOSE & RESEARCH QUESTION

The purpose of this study is to identify the foundation of Eastern design principles and provide a context for design educators, practitioners, and students to understand them. This study focused specifically on North-East Asian cultures which include Chinese, Japanese, and Korean traditions. The analysis of this study particularly included the Eastern concepts that are commonly referred by contemporary designers.

The research question was: How are the philosophical principles reflected in the context of the designed-environments in aesthetic traditions of North-East Asian culture?

FRAMEWORK & RESEARCH METHOD

The theoretical framework of this study was based on the origin of Eastern philosophy, holistic reference to heaven, earth, and human. Although such a framework might seem unfamiliar or unclear in the standards of the Western theories, the concept of the term “theory” in the Eastern traditions is often equivalent to the philosophical principles.

The philosophical backgrounds of Eastern aesthetics and philosophical concepts presented in traditional designed environments were scrutinized. Specifically, the study discussed 1) influences of Buddhism, Confucianism, and Taoism on the North-East Asian aesthetics, 2) the reciprocal relationship between natural and designed environments, and 3) the applications of Yin-Yang, Feng-Shui, and Zen principles in the designed environments.

Data collected for analysis were literature of Eastern philosophy, building plans found in historical and contemporary records, and photos taken by the researchers. Data were analyzed in a typological approach to and comparison among Chinese, Japanese, and Korean built-environments. In the following, examples of the philosophical principles reflected and the typological patterns shared in the built-environments are presented.

INFLUENCES OF BUDDHISM, CONFUCIANISM, AND TAOISM

In North-East Asian cultures, the philosophical backgrounds of the aesthetics originated from Buddhism,
Confucianism, and Taoism. The shared concept in these philosophical traditions is respects for wholeness with complete harmony. Although these traditions approach wholeness in various forms of presentation, the shared idea is that humans and nature are part of the perfect order of the universe and therefore, human-made environments should be embraced in the harmony (see Figure 1). While Buddhism focuses on wholeness of the cosmos, Confucianism seeks harmony more in human-human relationship, and Taoism views wholeness in harmony of nature and humans.

The concept of wholeness is most comprehensively presented in the doctrines of Yin-Yang\(^1\) that is part of Taoism. Feng-Shui\(^2\) can be considered as a sub-concept of Yin-Yang and focuses on harmony achieved in the relationship between natural and built environments. Zen\(^3\) is one of the Buddhist traditions which seeks wisdom through experience/practice in silence only with the sounds of nature.

**Yin-Yang and Feng-Shui in Eastern Aesthetics**

‘Yin-Yang and Five Elements’ is one complete concept that is considered as the origin of Eastern philosophy and shared in North-East Asian cultures. It consists of two fundamental parts, Yin-Yang and Five Elements that are deeply entwined (Kwon, 2006). Yin-Yang explains wholeness of the cosmos, and Five Elements--fire, water, wood, metal, earth--are the components of the perfect cosmos. Without understanding such a relationship between these fundamental concepts, the applications to design may be fragmental.

Feng-Shui evolved from the doctrines of ‘Yin-Yang and Five Elements’ and directly applied to environmental design in North-East Asia. In architectural applications, Feng-Shui is about locating and originating human-built settings in the ideal natural context. The term Feng-Shui is a shortened form of a word that means ‘confining wind and obtaining water’ (Park, 1987). In a broader sense, such a principle determines how to posit a town or a building complex. The examples are: a town that has a mountain embracing it from behind and a river running in the front; a building (complex) that is surrounded by higher land behind and has an open view in the front. To reflect Yin-Yang harmony, buildings located on a land with Yin characteristics have Yang elements such as rising eaves (see Figure 2), rocks, and particular types of sculptures; buildings on a Yang land have lower profile of eaves that are Yin objects (Figure 3).

In building design for example, many traditional building complexes in North-East Asia hide the inner space with layers of walls and doors beyond the entrance. To reach the inner space, visitors have to walk through the extended pathway or several layers of ‘buffering’ space (see Figure 4). Such characteristics are also found in contemporary architecture, i.e., Garden of Fine Art, Kyoto, Japan. The concept behind the visual presentation is that having these protective elements can prevent good Chi flowing out and ominous spirits coming into the complex. As such, the Feng-Shui principle considers all components of an environmental setting such as the location, forms, occupants, and detail elements to achieve the wholeness that is the harmony of Yin and Yang.

**Zen in Eastern Aesthetics**

Regrettably, these days Zen is often misunderstood and seemingly famous for the visual style rather than the philosophy, especially in design disciplines. So called “Zen style” that shows similarity to minimalism is due to the religious belief of Zen Buddhism in non-possession. While the principles of Yin-Yang appear more in China and Korea, Zen principles seem to be dominant in Japanese culture due to its religious tradition.

As aforementioned, Zen is seeking wisdom in experience or practice. For example, the conceptual essence of the Japanese Rock Garden is not in the appearance but in the experience monks of the temple had while grooming the gravel (see Figure 5). Therefore in its contemporary application, designers need to understand the importance of ‘experience’ besides the minimalists forms and colors.

**SUMMARY & IMPLICATIONS**

In summary, Yin-Yang and Five Elements is the fundamental concept of the Eastern philosophy and aesthetics, and Feng-shui is its applicable form to environmental settings. Detail components of built environments
may reflect characteristics of the Five Elements, fire, water, wood, metal, and earth. Zen is one of the Buddhist traditions that seeks wisdom and has its belief in non-possession. Therefore, its presentation in built-environments shows control and prohibits flamboyance. Since Confucianism considers the relationship among humans, the structure of a society or a group is often presented in built-environments to reflect the principles of Confucianism.

In contemporary design practice, the application of Eastern cultures often appears as fashionable trends or mere add-ons creating pseudo-Eastern settings. Without the context that reflects belief and philosophy of the Eastern cultures, the visual presentation is only superficial and fragmental.

In interior design education, students tend to increasingly adopt Eastern features in their design projects. However, interior design curricula have not adequately explained Eastern design principles; educators often lack information that may be provided to students who are interested in adopting Eastern concepts in their design projects. The result is that an adoption of Eastern concepts becomes fragmental, causes students’ confusion, and propagates further misconceptions.

Therefore, it is important to introduce culturally-oriented design principles to design educators, practitioners, and students so that they can better understand the “missing pieces” of philosophical and aesthetic backgrounds of design principles in a regional context. Providing the philosophical foundations of culturally-oriented design can highlight and enhance the ongoing commitment to cultural diversity in design education, practice, and research. The findings of this study can benefit design students, educators, and practitioners by preparing them to pursue design practice with insightful understanding of Eastern aesthetic cultures.

Moreover, sustainability that considers and respects the natural mechanism has been one of the most highlighted phenomena in today’s world. In such a phenomenon, designers and the public have presented their rising interests in the Eastern aesthetic traditions. In such regards, it is valuable to discuss the potential contributions of such aesthetic principles to design disciplines. In the future, further research will be conducted including other regions of Asia to establish a comprehensive body of knowledge.

Figure 1. Buseok-sa, Yeongju, Korea
Figure 2. Yang-type Eaves, The Humble Administrator's Garden, Suzhou, China

Figure 3. Yin-type Eaves, Dosan-Seowon, Andong, Korea
Figure 4. Seongyo-jang, Gangneung, Korea

Figure 5. Rock Garden, Ryoan-ji, Kyoto, Japan
REFERENCES (APA)


Demand-Controlled Ventilation (DCV) and Its Implications for Interior Design

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NARRATIVE

As interests in environmentally responsible building design increase, various building related technologies have been developed and increasingly used in recent years to improve energy efficiency and reduce energy use. When a building’s energy performance is more effective, it emits less greenhouse gases that are generated from energy production (United States Green Building Council, 2009). Therefore, it is critical for interior design practitioners and educators to understand emerging technologies for environmentally responsible interior design and explore its implications. Demand Controlled Ventilation (DCV) is a ventilation method that controls the intake of the outdoor air supply based on occupancy indicators such as time schedule, the actual number of occupants, or the number of occupants counted using occupancy sensors (Mui & Chen, 2006). The CO₂ based DCV is a recent technological development of DCV that permits the resetting of the outdoor air intake flow to depend on the indoor CO₂ concentration level controlling ventilation based on actual demand to save energy (Murphy & Bradley, 2008). Even though CO₂ itself is not harmful, high levels of CO₂ concentrations in indoor environments displace oxygen in the air and can cause oxygen deficiency for breathing. The most important aspect of CO₂ in DCV is that it is a good indicator of occupancy in indoor spaces (American Society of Heating, Refrigerating, and Air-Conditioning Engineers, 2007b). Therefore, this method is most effective in environments such as lecture halls, ball rooms, conference rooms, auditoriums, and theaters where the occupancy is intermittent and is often well below the maximum design occupancy because most HVAC designs for outdoor air delivery are based on the peak occupancy.

While CO₂-based DCV is an effective practice that saves energy for environmentally responsible building design and maintenance, it should be carefully implemented to maintain indoor air quality. The American Society of Heating, Refrigerating, and Air-Conditioning Engineers (ASHRAE) Standard 62.1-2007 specifies minimum ventilation rates and other measures to provide indoor air quality that minimizes adverse health effects for human occupants (American Society of Heating, Refrigerating, and Air-Conditioning Engineers, 2007a). ASHRAE also provides a users’ manual that describes the CO₂-based DCV implementation methods in detail as they are increasingly used in practice for energy saving. The Leadership in Energy and Environmental Design (LEED) certification system includes Indoor Environmental Quality (IEQ) as one of its criteria and suggests that the CO₂-based DCV can be used for outdoor air delivery monitoring, which is one of the credits in IEQ (United States Green Building Council, 2009).

This study is to examine the current practices of CO₂-based DCV, to review previous studies and explore various issues of the practice, and to conduct a case study of CO₂-based DCV. Based on the literature review and the case study, this project suggests implications for interior design practitioners and educators. The examination of CO₂-based DCV includes types of CO₂ sensors, sensor location layout design, types of interfaces with the building system, and requirements based on industry standards such as ASHRAE 62.1-2007 and environmentally responsible design standards such as LEED. The review of previous studies focuses on Indoor Air Quality (IAQ) and technical issues of CO₂-based DCV. A case study was conducted in a Midwest university in the U.S. The school’s facilities management implemented CO₂-based DCV in classrooms and auditoriums to provide the desired air quality and save energy for the last ten years.
The number of buildings that implement DCV has grown to 43 locations. A large lecture hall building was chosen for the perceived air quality survey. The same survey was conducted in another large lecture hall building and in small classrooms with traditional ventilation methods to compare the data. The data was analyzed with ANOVA using SPSS 17. There were 305 responses in total that were used for the data analysis including 101 responses from the building with CO₂-based DCV. The survey questionnaire examined satisfaction with temperature, humidity, and air quality (stuffy, stale, clean, or odorous air), perceived interference of uncomfortable temperature, humidity, and air quality to learning, perception with crowdedness, and demographic information.

There were three classroom types compared: a large classroom with DCV, a large classroom with traditional ventilation, and a small classroom with traditional ventilation. Correlational analysis revealed that there were significant relationships between satisfaction with temperature and classroom types. Subjects in a classroom with DCV showed higher satisfaction with temperature compared to subjects in traditional classrooms. Significant correlations existed in perceived interference of temperature for classroom activities and classroom types as well. Subjects in a classroom with DCV perceived less interferences of temperature to their classroom activities. Satisfaction with temperature and perceived interference of temperature were correlated. In addition, satisfaction with temperature is correlated with satisfaction with humidity and satisfaction with air quality. Results demonstrated no significant differences between a classroom with DCV and classrooms with traditional ventilation methods in satisfactions with air quality and perceived interferences of air quality for classroom activities. Although women reported lower satisfaction with temperature and higher perceived interference of temperature to their classroom activities, statistical analysis showed no significant difference between genders. There was no significant difference across gender in satisfactions with air quality and perceived interference of air quality. However, it was interesting to note that there was a significant difference in satisfaction with temperature between different classroom types.

Results showed that DCV does not impact occupants’ satisfaction with air quality negatively as they showed no significant differences in satisfaction with air quality and humidity. Rather, occupants were more satisfied with temperature in classrooms with DCV compared to other classroom types. It is interpreted that DCV controls air flow more variably compared to other ventilation methods and therefore it controls the temperature better in response to the change. Results indicate that occupants are more sensitive to the temperature compared to the humidity and air quality. When interior designers work with mechanical engineers to consider this DCV method for sustainable design purposes, it will be important to consider occupants’ satisfactions and perceptions, and DCV is beneficial not only for energy savings but also for offering comfortable environments for occupants. This study demonstrates that DCV works well in the classroom environment. The sensor location in this classroom was on the wall. There are several possible locations for CO₂ sensors such as walls or return ducts. Currently, ASHRAE recommends placing CO₂ sensors equally apart from the wall and floor for more accurate measurement. However, it is not practical to place sensors as recommended and in practice, more sensors are located on the wall or return conduct. When interior designers design and place CO₂ sensors, it is important to consider activities in the room and other equipments’ locations because CO₂ sensors are very sensitive in detection. In other words, when the sensor is located near people or CO₂ emissions from equipments, it detects CO₂ more highly than the average CO₂ level in the room, and it does not accurately report the average CO₂ level. Another consideration in CO₂ sensor placement for DCV is the number of CO₂ sensors in the room. As DCV is implemented in larger spaces, one CO₂ sensor cannot measure the overall CO₂ level in a room. ASHRAE standards and LEED guidelines suggest installing multiple sensors for more accurate detection of CO₂ levels. As an alternative, CO₂ sensors can be located in the return duct where air in the room flows into. However, the accuracy is debatable because leakages of air in the return air duct can represent a lower CO₂ level than actual CO₂ level in the room. Currently, wireless sensor systems are available in the market to feed the average CO₂ level from multiple locations in a room in order to control the ventilation more effectively.

In conclusion, interior designers understand user needs, activities, and equipment locations for space and, therefore, early involvement of interior designers in the project programming and project phases will be important in successful CO₂-based DCV for more effective DCV. To achieve this, interior designers should be aware of this
innovative ventilation system when working with other professionals in building design and constructing environmentally responsible interior design.

REFERENCES (APA)


The Healthcare Servicescapes: Customer Perceptions, Satisfactions, and Behaviors

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NARRATIVE

Bitner (1992) coined the term, “servicescape” to take the first step in developing a conceptual framework that integrates multiple disciplines and to study the impact of the physical environment of service organizations on consumers and employees. Since then, many studies from various disciplines examined the topic of servicescapes theoretically and empirically. While other service industries such as hospitality and retail have valued the role of the physical environment on customer satisfaction and retention and put in effort to provide a physical environment that exceeds the customer’s expectations, it was only recently that the healthcare industry recognized that the servicescape is an important resource which can impact customers (Fottler, Ford, Roberts, Ford, & Spears, 2000). The recent interests and efforts to improve healthcare facility users’ experiences led to implementations of design research that have studied diverse user groups to explore the role of the environment in the healing process (Delvin & Arnelli, 2003).

The healthcare industry has gone through constant expansion since the 1960s. For the last twenty years though, its transformation has focused more on internal reconstruction rather than building new facilities or additions with the exception of the outpatient healthcare facilities (Verderber & Fine, 2000). The percentage of ambulatory healthcare service establishments in the U.S. reached 87.3 in 2008 (Bureau of Statistics in the U.S. Department of Labor, 2010). Despite the trend of growth in the outpatient healthcare facilities, there is still very little research that has been done for the service design of outpatient healthcare facilities. Topics in healthcare servicescapes have revolved around employee responses or inpatient healthcare facilities rather than patients and their families. To create a servicescape that can satisfy customers’ needs for comfort, convenience, safety, security, privacy, and support, healthcare designers need to understand which servicescape features impact customer satisfaction and behavior and how.

This study focused on outpatient healthcare servicescapes and developed a conceptual framework that delineates the relationship between servicescape features and customer responses. Previous studies and literature from multiple disciplines such as architectural design, marketing, and environmental psychology were examined to identify a comprehensive set of servicescape features in outpatient healthcare and customer responses including perception, emotions, satisfaction, and behaviors.

The conceptual framework for this study rests upon the premise that patients’ perceptions with servicescapes affect their satisfaction with servicescapes and perceptions with quality care, and that they will eventually lead to approach or avoidance behaviors such as willingness to recommend and willingness to return to the healthcare provider. The moderating effect of patients’ physical and emotional statuses was assumed as well in this relationship because patients’ physical and emotional statuses can lessen or intensify the impact. See Figure 1. Although Bitner (1992) suggested the conceptual framework that demonstrates the relationship between servicescapes and consumer behaviors and Hutton and Richardson (1995) further developed the framework for healthcare servicescapes, there is very scant evidence from empirical studies that tested this relationship. Newman (2007) examined the effect of spaciousness and wayfinding easiness on approach or avoidance behaviors in airport terminal shopping centers. Arneill and Delvin (2002) tested the quality of care in different waiting room designs and found that there are significant dif-
ferences in perceived quality of care between waiting rooms that are warm in appearance, nicely furnished, light, and containing artwork and waiting rooms that are cold in appearance, poorly furnished, dark, and containing no artwork or low quality reproductions. Another study that examined the waiting area's physical conditions and consumer responses compared two waiting areas before and after the relocation (Leather et al., 2003). Responses from the new waiting area indicated more positive environmental appraisals, improved moods, altered physiological states, and higher satisfaction. Design features that consumers compared included ten items such as general layout, color schemes, floor coverings, and furniture. Becker et al.'s (2008) comparative study examined the waiting area and the exam room. Physical environmental factors compared pleasantness, privacy, and crowdedness. Responses to physical environmental factors were explored in relation to responses to quality of care, interactions with staff members, and overall experiences with the visit. Otani et al. (2010) analyzed a comprehensive patient satisfaction data set of an inpatient healthcare facility which included one attribute of a physical environmental aspect to examine its impact on perceived quality of care, willingness to recommend, and willingness to return.

This study's conceptual framework suggests ambulatory healthcare servicescape features that affect patient satisfaction, perception, and behavior. The service design approach that focuses on patient experiences led to a list of servicescape features that include not only ambient conditions but also the serviceability of servicescapes, which may affect patients' experiences. To test the conceptual framework of this study, an exploratory case study was conducted for a university health clinic facility to examine how customers' perceptions of servicescape features impact their perceptions with quality of care, satisfaction with healthcare providers, and willingness to recommend the facility and return to the facility. The observation study and interviews with 25 visitors were conducted. In addition, the questionnaire survey was implemented, and 126 responses were analyzed. The conceptual framework of healthcare servicescapes was tested with correlations and multiple regressions to investigate any causal relationship between factors.

Results show that consumers' perceptions with servicescapes have significant relationships with perceptions with quality of care. The findings of this study will provide the information about healthcare building users' needs that can benefit designers' effort for the patient-centered healthcare. Results from the field survey have revealed that wayfinding in this facility was not easy for patients, especially for first time visitors who were not familiar with the facility. In addition, the layout of the waiting area seemed to create an inconvenient and uncomfortable environment for the purpose of waiting because it was located in the middle of two entrances. Results from structured interviews supported the findings from the field survey. Participants reported that wayfinding was not easy to access the facility and find ways inside of the building. The waiting area's layout was mentioned by participants as uncomfortable because they felt they were too exposed to the traffic between the back entrance and the reception area. The layout of chairs in the waiting area made participants uneasy because they were forced to face each other. Participants also reported that communication with staff such as the staff members calling them in to the clinical area was not convenient due to the layout of the waiting area design. It was hard for patients to see where the staff would come out to call them. This result supports a previous study (Stern et al., 2003) in that patients and family members want healthcare facilities to facilitate communication with staff.

Most servicescape items showed correlational relations with satisfaction with facility, perceived quality of care, and approach behaviors. This means that when patients' perceptions with physical conditions and serviceability of ambulatory healthcare are higher, they feel more satisfied with the facility, perceive quality of care more highly, and are more willing to return to and recommend the healthcare. These effects of servicescape on patient perceptions with satisfaction, quality of care, and approach behaviors have been suggested in previous studies (Otani et al., 2000; Arneill & Delvin, 2002; Leather et al., 2003; Newman, 2007) and this study supports the evidence.

In statistical analysis, this study has two categories of factors: ambient conditions factor and serviceability factor. Results indicated that perceptions with facility led to satisfaction with facility as both ambient conditions factor and serviceability factor affected patients' satisfaction with facility. In addition, findings from this study suggest that serviceability factors are more significant and powerful to influence patients' perceptions with quality of care and willingness to return to and recommend the
healthcare provider compared to ambient condition factors. Thus, this study suggests for future studies in ambulatory facility servicescapes to include serviceability items such as cleanliness of servicescape, convenient wayfinding, convenient layout design, and facilitations to communication with staff and protection of privacy. Although there are studies that examined one or two serviceability factors such as wayfinding (Newman, 2007), cleanliness (Otani et al., 2000), and layout (Leather et al., 2003), it will be important to approach patients’ perceptions with servicescapes more holistically, as it is practiced in service design research.

Figure 1. Conceptual Framework
REFERENCES (APA)


An Analysis of the Authorship and Impacts of the JID, 1975 - 2010

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NARRATIVE

There is continued confusion in interior design scholarship regarding the difference between professionalization and disciplinarity and the terms profession and discipline are often used as if they are interchangeable. Interest in the nature of interior design as a discipline has generally formed only a part of the discourse of professionalization, as a way of achieving a trait necessary to consideration as a profession.

The mere fact that departments of interior design exist at institutions of higher learning is not enough to establish interior design as being a valid discipline. Becker noted that disciplinary recognition occurs "in part...by the existence of a relevant department; but it does not follow that every department represents a discipline" (Becker, 1989, p. 19). It is also necessary to examine the nature of the scholarly activities, in order to make visible the structures that form the discipline and is a necessary part of routine reflexive inquiry in any discipline. The question then becomes how and where do we look.

The primary source for the dissemination of interior design research continues to be the Journal of Interior Design (JID). The JID has been examined previously (see: Eckman, Clemons, & Oliver, 2001) as an indicator of the status of scholarship within the discipline and the mechanisms for dissemination of disciplinary research contributions. For this reason, the author analyzed the content and context of articles published in the JID since its inception in 1975. Journal impact factor analysis is a traditional way of reviewing a journal’s influence (Coleman, 2007). The impact factor is a quantitative measure determined by calculating the average number of citations received per paper included in the journal’s issues for the previous two years. This formula is not watertight however and significant error has been noted when attempts are made to calculate the impact of specialized journals where a number of intervening factors must be considered in order to create a picture of disciplinary impact. Prior to developing an alternative bibliometric, an in depth examination of the various characteristics of the articles in the JID was undertaken.

A total of 340 original articles (rather than book reviews, perspective pieces, or award recognitions) from the journal were selected for in-depth analysis based upon their classification in the journal as original articles. A database of the 5,106 works cited in each article was created. These references, excluding unpublished documents, such as theses and dissertations or email communications; and popular press sources, such as Newsweek, The New York Times, or Better Homes and Gardens, were examined to clarify the composition of core literature reviewed or produced by disciplinary scholars.

There were a large number of sources that were unique to particular articles or that were repeated twice. It was more unusual to discover sources repeated multiple times by different contributors to the JID. The references most commonly repeated were for articles previously published in the JID and rarely for external sources. Of the external sources referenced repeatedly, many were methods books, which is to be expected. The most frequently cited non-methods, external reference works were:


Cooper, C. (1974). The house as symbol of self. In Lang, J., Burnette, C., Moleski, W. Vachon, D. (), Designing...
for human behavior (pp. 130–146) Stroudsberg, PA: Dowden, Hutchinson and Ross.


However even the most oft repeated reference (8 citations) still only constitutes .17% of all of the citations. Given the multi-disciplinarity of design disciplines and the variety of backgrounds and research interests among design scholars, it should come as no surprise that the resources and theories utilized in their scholarship are equally varied. The analysis of cited works also uncovered a significant growth in the number of citations per article over time. During the first years of publication, articles commonly cited three or fewer sources with the average number per article rising to 32 in the last five years of publication.

Of the 340 articles, 199 (59%) were contributed by single authors, 98 (29%) by two authors, 30 by three authors (8.5%), and 13 (3.5%) by four or more authors. Of concern to the validity of the JID as a representative source of design scholarship was the discovery that less than 8% of JID contributors have been responsible for only 19% of the articles included in the publication.

In addition, 61.7% of articles published in the JID are never mentioned again either in the JID or elsewhere. In fact, less than 2% of the articles published are ever cited outside of the JID and of those six articles, three are self-citations. If we were to calculate the journal impact factor based on the internal citations of the JID (in other words citations by authors whose work is also appearing in the JID), we see a significant increase in the impact measure. The journal impact factor rating system is further problematized when considering that there is a relatively low number of competing journals and that the time for submission and review is extended, meaning that articles that cite previously published articles, may not be in print until after the two year time period established by the use of the traditional formula.

However, given that there are many years from which there have been no cited articles, using that ratings system would mean that the JID has an impact factor of 0. The question then becomes: are there alternative characteristics that demonstrate impact which are not being considered in traditional ratings calculations? In order to answer this question, it will be important to determine the composition of the JID’s readership. If a significant portion of the JID’s readership is comprised of practitioners, then the low number of external journal citations is understandable as few practitioners write articles for scholarly journals in which such a citation would appear. If the primary readership of the JID consists of scholars, however, we must look further in order to understand the low citation count.

Given the consistent agreement by scholars and practitioners that interior design is multi-disciplinary by nature, and given the confirmation of that breadth as seen in the variety of citation sources in the history of the JID, it is interesting to note that the interest of interior design scholars in the work of others does not appear to be a two-way street. Is this because interior design scholarship has not sufficiently clarified its possibilities for contribution to academic discourse? What is the perception of potential usefulness of articles published in the JID by scholars from other areas of study?
A vital component of disciplinary advancement is an accurate understanding of the current state. The author hopes that the findings from these studies will engender discussion, generates awareness of further connections, and suggest avenues for application.

REFERENCES (APA)


How do we do that? Instructing and assessing design thinking in interior design studio

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NARRATIVE

Teaching a recent fourth-year interior design studio (Studio A), faculty mentorship, and feedback from the professional community prompted a study to consider how to improve both the teaching and the learning of design thinking processes in interior design studio. The students in Studio A produced interesting, visually compelling, and functional designs, but could not individually explain how they did what they did. When their design process stalled, they were frequently unable to see alternative approaches to their problem or implement new design processes. The students in Studio A had learned how to design, but were not necessarily aware of what they knew. They were learned, but not educated. How can studio teaching improve to strengthen student learning and awareness of design thinking processes? How do we explain what we know and how it affects what we do?

Interior design education has value as an integrative merging of thinking skills (e.g., design thinking, critical thinking), informational knowledge (e.g., building codes, drafting), and intellectual context (e.g., design history, human psychology). This disciplinary knowledge is easily disregarded by media portrayals and misinformed public opinion (Marshall-Baker, 2005). In the current economic and political climate, we must be clear about what we do and how we do it (e.g., design thinking, design process) when explaining interior design to students, academic peers, and people outside the discipline (Amit, 2011; Carpenter II, 2008 & 2007). As educators, we must continue to improve how we teach this disciplinary knowledge. This presentation reports SoTL research developed to improve instruction specific to design thinking process. The research suggests that design thinking instruction can improve student awareness of their design processes.

LITERATURE

Only a handful of SoTL articles have been published about interior design studio specifically. These studies can be contextualized with SOTL research on design studios from similar fields (e.g., architecture, landscape architecture). While several SOTL articles discussed different approaches to preparing design problems (Fernando, 2006; Klassen, 2003; Ozturk & Turkkan, 2006), student information gathering and processing (Akalin & Sezal, 2009; Bilda & Demirkan, 2003; Kvan & Yunyan, 2005; Sachs, 1999), and methods of instructor-student feedback (Al-Qawasmi, 2006; Bender & Vredevoogd, 2006) with the goal of improving studio, few SOTL research projects aim specifically at improving students’ design processes in studio. Bose et al. (2006), from landscape architecture, documented curricular and instructional changes to build students’ ability to independently make design decisions. In combination with de la Harpe et al. (2009), these studies provided the framework to address design thinking processes in subsequent studios.

RESEARCH DESIGN

The research is the result of three circumstances. In Fall 2009, the lead author was simultaneously teaching an interior design studio and participating in a teaching practicum class taught by the second author. Within a mentor relationship, SoTL provides a critical and self-reflective method to examine how a class was taught and what the students learned. The fortuitous alignment of these two stimulants culminated in a preliminary SoTL assessment of Studio A: students had learned design thinking skills, but were not conscious of how they did what they did. The third stimulant was comments re-
layed from the school’s professional advisors about how students represented themselves to prospective employers. The students chose to depict flashy graphic and computer skills in their application portfolios, but did not represent their design and critical thinking skills with process work or descriptions of design development. Reflective consideration of these conditions resulted in the implementation of a study during a subsequent fourth-year interior design studio (Studio B).

The approach to Studio B reconsidered studio outcomes, instruction, and assessment methods to re-emphasize design thinking processes and skills. The primary change focused on revised assessment criteria. Research has shown that studio assessment emphases (e.g., design thinking, technical skills, communication) vary by type of design education (de la Harpe et al., 2009). For example, art education places highest priority on process; architecture and interior design emphasize product. The Studio A circumstances suggested a need for greater emphasis on design thinking process. Review of the Studio A assessment criteria revealed the cumulative weighted grading for all assignments placed almost twice as much value on product and graphics as it did on how the design developed. In response, Studio B assessment criteria were reapportioned to reflect a broader balance of disciplinary knowledge while emphasizing design thinking process.

Changes to the Studio B assessment criteria were matched with instruction modification. The assessment criteria were explicitly explained to the students. Design thinking ideas (Cross, 1997; Rowe, 1987; Blanco, 1985) were made available to students in a distilled, graphic format. Instructor interaction with students included discussion not only about the design, but also how students had developed their designs. Finally, students were required to maintain a design process record for approximately 30 days during the studio. The design process record, stored as sequential PowerPoint slides, was co-analyzed in an end-of-term discussion between each student and the instructor.

The impact of the changes to teaching and learning was documented using: (1) an online student survey, (2) reflective instructor notations, and (3) post-studio review of the student work by the instructor and peers.

CONCLUSIONS

Analysis of teaching and learning in Studio B developed from four sources. First, reflective self-critique of the studio suggested two related ideas: the students were primarily familiar with a single type of design process based upon analogy, but the students were eager, if apprehensive, to learn alternative design processes. Although most students reviewed the summarized design thinking information, they continued to struggle in implementing new design processes. Introducing alternative design processes to individual students based upon their interest and demonstrated thinking was time-consuming and limited any one student’s exposure. More explicit and group instruction regarding design processes may alleviate these issues in future studios. Review of the final studio work, including final design graphics and process records, suggested that most students are engaged in typical components of design thinking processes (e.g., re-representation, abstracted communication). Approximately two-thirds retroactively identified design processes when analyzing their design process records. In most cases, these components were difficult to recognize in the moment of their initial action, but became clear through the sequential examination of the process slides.

The second analysis source was the baseline and post-studio student survey. Participation in the online survey was voluntary, anonymous, and required student self-initiation. Nine (60%) students completed the baseline survey; eight (53%) students completed the post-studio survey. The survey responses highlight four ideas: (1) students entering Studio B were typically “somewhat” confident or better in their individual design abilities and processes, (2) post-Studio B students recognized improvement in their abilities to work with potential design solutions to improve the outcomes and to resolve conflicts within solutions, (3) post-Studio B students claimed increased confidence in their abilities to solve “mildly challenging” and “difficult” design problems, but (4) post-Studio B students were unsure how their design

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1 The weighted assessment criteria for Studio B were: design process (35%), hard skills (e.g., critical and technical thinking) (25%), soft skills (e.g., communication) (25%), and design product (15%).

2 The student survey used a modified version of the Student Assessment of their Learning Gains (SALG).
process related to non-studio classes and were uncomfortable with their ability to reconcile the types of information necessary for professional practice.

The third source for analysis was student reactions to the course. In general, students in Studio B were initially concerned by the unfamiliar assessment criteria that made them responsible for their thinking and decisions rather than a final product. As the idea clicked with individual students over the term, five students specifically communicated how they appreciated being challenged to express their ideas rather than simply produce work. Most of these comments were made in reference to specific improvements the student made to her/his design that they could attribute to process. In addition, three students verbalized ongoing concerns about Studio B. These comments focused on assessment criteria and continued discomfort with the abstract nature of the studio expectations (i.e., process rather than product).

Finally, the work produced by the students showed clear communication of their design thinking processes. With limited exceptions, students were able to graphically and verbally explain how they thought about the design, how and why their design took its form, and what actions worked best for them in resolving design challenges (e.g., building codes, space planning). Peer review of the studio work included comments about the sophistication of the student presentations and clear identification of points of design thinking (e.g., creative leaps, re-representation). When challenged to explain their work more completely, the students were able to maintain a high level of graphic clarity while efficiently communicating more information about their design.

**DISCUSSION**

The small number of students in Studio B and the single repetition of the research protocol limit the preliminary results. However, two ideas emerge from the research to date. First, students recognized the value of explaining what they did and adapted to the assessment criteria emphasizing design process. Second, while the students acknowledged the value of design thinking process, they are less certain about the transferability of these skills to non-studio situations.

As design thinking instruction improves, interior design education builds both pedagogical and disciplinary knowledge. Effective teaching of design thinking processes demonstrates one way interior design can build cross-disciplinary relationships with other academic fields (i.e., business and management, engineering, allied design disciplines). Better understanding of what we know improves our advocacy for the discipline.
REFERENCES (APA)


The power of environmental personal control: Testing interior design’s potential to improve mental wellbeing in the homeless

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NARRATIVE

BACKGROUND

Psychology studies identify that crowded residential conditions can negatively affect psychological health (Lepore, Evans & Schneider, 1991). Crowded physical environments have been shown to disrupt complex task performance (Paulus, Annis, Seta, Schkade & Matthews, 1976) and negatively affect frustration tolerance (Sherrod & Cohen, 1979). Generally speaking, crowding disrupts the normally socially supportive relationships that exist within groups of cohabitating people, and generally results in various forms of social withdrawal (Lepore, Merritt, Kawasaki, & Mancuso, 1990).

Crowded living conditions can alter family activities and perceptions of each other. Unwanted contact may increase interpersonal hostility and decrease positive frames of mind amongst family members (Chapin, 1951). Crowding can result in specific stressful events:

• individuals will perceive the actions of others more personally and having been done intentionally;

• they will be more inclined to defend themselves against attempts to thwart the important activities they’re engaged in; and,

• strain and even violence can be expected (Stokols, 1976).

While residential crowding is not prevalent in the United States, it is a growing concern for homeless families who must reside in transitional shelters. Shelter family bedrooms are often quite cramped by western standards. A typical shelter space plan offers a family of four a 9’ x 12’ room equipped with two bunk beds, a space that families often occupy for six to twelve months. Further, shelters are often high-control environments where schedules, privacy and even lighting are controlled by staff (See figure 1). The specific nature of families in homeless shelters (often single mothers with children) can bring further difficulties to spatial crowding. For example, the lack of an ‘authoritarian father figure’ can create problems, as this figure normally determines disputed claims for space and role performances (Smith, 1971). Also, the mixing of different families within a single 10’ by 12’ four-person bedroom can bring further stress. Sherrod & Cohen explain that “when high density involves the close presence of strangers, the environment is not only restricting but also unpredictable—a possible source of irritation or surprise—and thus potentially uncontrollable” (1979, p. 217).

Families constitute the fastest growing demographic of the homeless, and those families requesting shelter grew by 23% between 2007 and 2009 to 170,000 (Luo, 2010). Homelessness in the United States has increased in the wake of the 2007 economic crisis. For example, in a 2009 Mayor’s organization study 83% of 25 reporting cities indicated that homelessness was on the rise. Amongst these cities, economic factors, high unemployment and the lack of affordable housing were among the leading reasons (U.S. Conference of Mayors, 2008; National Coalition for the Homeless, 2009). The effect of the increase in numbers of homeless individuals can mean less persons are served by available shelter facilities. In San Francisco, the reported numbers of families turned away from shelters increased from 12 to 60 per month (U.S. Conference of Mayors, 2008).

Besides being uncomfortable, it is likely that crowding and lack of personal control in transitional homeless shelters may contribute to feelings of helplessness,
which in turn affect one’s mental capacity to secure permanent housing and employment. Thus, low-control environments may be an enabler to preexisting feelings of “I can’t control these outcomes and it’s not my fault”, which keeps homeless persons in a state of despair (Burn, 1992).

Researchers suggest that cost-efficient architectural features that might assist with this situation, introducing a measure of self-control and self-efficacy back to residents. For example, curtains that provide privacy are one suggested idea (Friedman, 2000; Burn, 1992). Thus, it is possible that an environment with personal control features might support one’s self-efficacy. For the homelessness, this internal control might assist them in fundamental action, such as finding a permanent place to live and work.

Questions and Study Method

This study explored the effects of adding personal environmental controls to shelter bedrooms with regard to perceptions of crowding and helplessness. Among the study’s questions:

• Does the presence of local environmental control features lessen sense of crowding?

• Does the presence of local environmental control features alter a parents’ sense of locus of control (their ability to control outcomes)?

A series of control features was selected and installed within an existing shelter family bedroom providing its residents with personal control over light, ventilation, storage and other elements (see Table 1; Figures 2, 3). The project used a case study methodology to comparatively capture the rich context of two families’ lived experiences with and without the features (Yin, 1994). Case study was appropriate given that the study’s goal was to generate preliminary hypothesis that later replicated testing could confirm. Perceptions were gathered of a mother with two children living in an unaltered room for 12 weeks. A family of similar makeup was observed in an unaltered room for six weeks and then in the altered room for six weeks. Data gathering included quantitative questionnaire on measures of helplessness and control, in-depth interview with residents and case managers, and repeated photography of the bedrooms.

CONCLUSIONS

Perceptions of crowding. Data analysis suggested that the parent who experienced the unaltered, then the altered room felt less crowded upon moving to the altered room. Both quantitative and interview data recorded marked differences in the two parents’ perceptions of crowding concerning the altered and unaltered bedrooms. When asked to identify the degree of crowding in the altered bedroom after living in it for one week, the parent described it as “very spacious, and organized with things put in their place”. This response appears to tie control of visual clutter to perceptions of spaciousness, not entirely surprising given the focal impact that significant quantities of possessions can have on this small room. In contrast, the parent in the unaltered bedroom described the effect of possessions without expanded storage capability in the room: “We are crowded. I’m constantly looking for somewhere to stuff something. The clothing thing is really killing me. It’s piled up here, it’s piled up there, the drawers are jam packed.” She further stated,

“…I’m comfortable in the room and adjusted to being in the space. But…it’s starting to get more claustrophobic. It’s getting worse. The more time you spend in it, the more you feel like the walls are closing in, it feels stuffy. You notice every little thing after you look around in there, and it’s like ‘oh, I gotta get out’. That’s why I go outside, you’ve gotta get out of it.”

Both parents also favorably remarked on the altered room’s dutch door and its ability to visually expand the bedroom’s space into the hallway (see figure 4). Both quantitative and qualitative measures suggested that the altered room appeared to offer a reduced sense of crowding in the altered room, even though actual square footage was not changed.

Sense of control. The participants were examined for their perceived sense of control over their circumstances, relevant here because psychology researchers suggest that shelter high-control environments can stifle one’s sense of personal control (or ‘locus of control’), and that physical environments might act to counteract this issue. If a person has internal control, they believe reinforcement depends on their own behavior, which represents a healthy attitude. If they are external control-oriented, they believe reinforcement is contingent on luck, chance or others (1984, p. 210). One’s locus of control is there-
fore important, as it can in turn affect how motivated one is to correct or change things in life.

The Internal Control Index (ICI) test is based on measures of cognitive processing, autonomy, resistance to influence attempts, delay of gratification and self-confidence (Duttweiler, 1984). This test was administered as a pre and post measure to both parent participants at the beginning and end of the observation period over eleven weeks. The parent in the altered room experienced an increase of 10% in sense of internal control over the course of the study, whereas the parent in the unaltered room improved by 2%. The ICI quantitative measure finding was corroborated through participant interview. For example, a relationship was revealed between the altered room’s lockable bedroom door and her enhanced ability to control her situation:

…I didn’t spend much time in [the unaltered bedroom] because I just didn’t feel as comfortable in there as I do in this one. In this one, you know, when you have one of them days when I don’t want to be bothered or I just want to relax, and I feel like I can do that in this room, and it’s just the simple point of the door being able to lock. And so I can just lock myself in and relax, read a book or watch a movie while the kids are at school to get my ‘me’ time.

Further study can add verification to these preliminary results. However, initial findings of this applied study suggest that psychological constructs of control, crowding and their potential links to architectural features is plausible, and offer a potential means by which the homeless might be better assisted to recovery.

Figure 1: Transitional homeless shelter bedroom spaces are typically spatially cramped and overfilled with residents’ possessions. Additionally, they are often high-control spaces where bed check requirements prohibit door locks and residents’ schedules are controlled to one degree or another.
Figure 2: The altered bedroom after installation. Seating cubes, dutch door, and expanded shelving personal control features are shown. Total cost of the alterations was approximately $8500.

Figure 3: The altered bedroom after installation. One of the bunk beds is shown with the cubicle-style draperies pulled and the personal reading light on. Clock radios with earbuds and personal fans are also present.
<table>
<thead>
<tr>
<th>Number</th>
<th>Primary reason for inclusion</th>
<th>Alteration</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Control (of privacy)</td>
<td>Bedroom entrance door: change out to lockable lockset with master (staff) and child (resident) keys</td>
</tr>
<tr>
<td>2</td>
<td>Control (of possessions)</td>
<td>Increase storage in the room, including hanging clothes storage, dresser units, wall shelves, bedside table and wall hooks</td>
</tr>
<tr>
<td>3</td>
<td>Control (of possessions)</td>
<td>Create double-lock system for medications storage in room</td>
</tr>
<tr>
<td>4</td>
<td>Control</td>
<td>Lighting/fan/headboard system</td>
</tr>
<tr>
<td>5</td>
<td>Control</td>
<td>(4) laptop desks</td>
</tr>
<tr>
<td>6</td>
<td>Control</td>
<td>(4) alarm clock/radios with headphones</td>
</tr>
<tr>
<td>7</td>
<td>Control</td>
<td>Magnetized wall paint on both bed side walls. Marker boards on these walls by each bed.</td>
</tr>
<tr>
<td>8</td>
<td>Control</td>
<td>Cubicle-style curtains for (4) beds with tiebacks</td>
</tr>
<tr>
<td>9</td>
<td>Control</td>
<td>Dutch-style main door with horizontal shelf surface</td>
</tr>
<tr>
<td>10</td>
<td>Control (of possessions)</td>
<td>Television with DVD player, rabbit ears. 19” screen.</td>
</tr>
<tr>
<td>11</td>
<td>Control</td>
<td>Floor area rug(s)</td>
</tr>
<tr>
<td>12</td>
<td>Control</td>
<td>(4) wall-attached bed bolster cushions</td>
</tr>
<tr>
<td>13</td>
<td>Control</td>
<td>Blackout roller shade window treatment</td>
</tr>
<tr>
<td>14</td>
<td>Control</td>
<td>Full length mirror</td>
</tr>
<tr>
<td>15</td>
<td>Control</td>
<td>Family-customizable door signage</td>
</tr>
<tr>
<td>16</td>
<td>Control</td>
<td>Seating cubes (2)</td>
</tr>
<tr>
<td>17</td>
<td>Control</td>
<td>(4) bed elasticized covers (place over blankets and sheets for day use)</td>
</tr>
<tr>
<td>18</td>
<td>Control</td>
<td>Marker board surface on door</td>
</tr>
</tbody>
</table>

Table 1: Environmental features added or changed within the altered room.
REFERENCES (APA)


Narrative

Purpose:
There are currently limited opportunities available to introduce the collaborative professional practices of the built environment professions to students in their final years of high school. Many programs that are available are often focused towards only one of these professions and are sometimes quite costly. This program offers a one week intensive interdisciplinary collaborative study opportunity for thirty upcoming high school juniors and seniors, focused in the professions and sustainable practices of interior design, architecture, construction science, landscape architecture and regional and city planning. Fully funded this past summer and the next two consecutive summers, the program also provides an opportunity for underprivileged and underrepresented students to learn about these professions while living and studying on a college campus.

Several goals directed the focus for the development of this program. One of the primary objectives of this program includes introducing not only each profession, but also providing and experience wherein the student could understand the process for how all these professions interact and work together to solve built environment problems. Changing the student’s misconceptions about the professions and stimulating their interest toward future studies in one of the disciplines is also crucial. Educating the students about sustainability, as well as sustainable design and building practices is an essential component to the overall curriculum of the program. The program is also focused toward exciting the students about these professions and the ideas surrounding sustainability so that they will take the things they learn home and share them within their communities.

Literature Review:
It is extremely important that students not only get information to help them in preparing for college, but that they also engage in learning activities that are beneficial in exposing them potential areas of study and career paths, and that they enroll in programs that prepare them to succeed in postsecondary institutions (Gullat & Jan, 2003). There are not only individual teachers, but also entire school districts all over the country that understand the potential of built environment education and are creating partnerships with architectural educators and practitioners to expose their student to these disciplines and professions. Too often students who enter college and feel they are prepared to enter into one of these disciplines find their perceptions of the careers are inaccurate (Carson & Sullivan, 1999). “It is important to accurately portray the profession to our youth, clients and consumers,” (Clemmons, 2007, p. 39). Cooperation and support is needed from the connected design disciplines and professional organizations to help move built environment education into the forefront of our educational systems (Portillo & Rey-Barreau, 1995).

Methodology:
During the course of this program, students develop sustainable design solutions for a community center. This design problem has multiple components including functionality, feasibility, and sustainability. Various methods are presented and utilized to solve problems for the for this project including precedent and site studies, programming, square footage analysis, sketching, computer aided drafting and modeling, model building, specification of equipment, finishes and furniture, cost estimating, scheduling, and presentation techniques. Group activities are used to help solve problems, replicating what is expected of a professional in these diverse yet interdependent fields of study. The solutions to the
design problems were developed as the students went through the design programming and design development processes for this project allowing them to be creative while also being analytical. As they developed their design solutions, the students were also learning how to utilize the various graphic communication techniques architects and designers use to communicate their ideas through diagrams, drawings and models. The students worked on these types of drawings throughout the process of developing their designs and also produced final presentation drawings and models to communicate their design solutions to their faculty and parents at the closing reception.

The students had to spend a considerable amount of time doing square footage calculations and analysis during the programming phase of their projects. In the activities with the construction management fields the students had to do calculations for quantity surveys and estimates and when forecasting schedules. The end of program surveys indicated that 64% of the students expressed that there was more math involved in developing the design and construction problem solutions they were developing than they thought there would be when the camp started.

The students were also provided the opportunity to interact with numerous practitioners from these fields. They talked to them about their professions and showed them some of the projects they had completed and some they were currently working on. This interaction provided an opportunity to present a rich view of professions in which the students can utilize their skills, talents and interests, exposed the students to teaching strategies that go beyond the normal classroom experience, and gave the students the opportunity to observe the real life application of what they were learning. The various fieldtrips that the students took throughout the week gave them the opportunity to be exposed to several professionals from each of the fields and to also observe the fields in action. The tours of the completed and in-construction facilities, combined with the information about how and why certain design solutions were reached and how they were executed provided excellent learning experiences. The students expressed in their exit surveys that these field trips helped them make connections between what they were learning in the classroom and their real world applications.

Throughout the week, as they worked on developing their design solutions, the students were required to make presentations to the entire group and to small groups of faculty and students from the college. Both positive and negative feedback came from these critiques which pushed and challenged the students to work harder and explore new ideas. Although it was difficult for some of the students to receive some negative feedback every now and then, the College of Architecture students that were helping explained how negative criticism can help turn a subpar project into an amazing one. The dialogue that occurred with the students interactions with the different people from the college and profession helped to distinguish and shape the students level of critical thinking and continued development and progress.

**FINDINGS:**
Surveys are utilized to assess the preliminary awareness, assimilation of knowledge and the extent to which the knowledge was disseminated about the disciplines. Evaluations are also used to evaluate expectations and gauge the success of the pedagogical processes utilized throughout the program in order to identify strengths and weaknesses for future improvements. Current outcomes have shown that the participants have a renewed interest in the study of math and science, an elevated awareness of the importance of communication and problem solving skills, and a significant increased interest in future college studies in one of the built environment disciplines.

Surveys at the end of the program indicated that there were significant increases from the beginning of the program in the students who had a strong understanding about the sustainable built environment, teamwork approaches, interior design, construction science, and landscape architecture. A lower increase, but still an increase, was also shown with a strong understanding in architecture and regional and city planning.

**CONCLUSION:**
This summer academy provided the OU College of Architecture an amazing opportunity to expose a group of students from the State of Oklahoma to not only the five build environment disciplines, but also to the importance of sustainability and the ways these disciplines can greatly impact the quality of the environments that we all live, work and play in. It is very important that we not reach this group of students, but that we also reach
a whole other group of individuals within each of these students’ lives and communities. For this reason we have strongly encouraged the students who participated in this program to take the knowledge they gained and share it within their communities. One of the reasons for having the students give presentations at the end of the program was not only to disseminate the knowledge they had gained throughout the week and experience giving a final design presentation, but to also have a practice session for what they might go home and present to others. Although we do not yet know the extent to which this goal has or will be achieved, we did receive positive feedback from the closing surveys given to the students that they would go home and share what they have learned with some group within their community. The program coordinators will contact the participants within the next year to find out if they have done this and if not to again encourage them to do so. We hope to continue to reach out to these future students, future designers, and future leaders, continue to spread knowledge, and hopefully make a positive impact on the current and future spaces we all live in.

ACKNOWLEDGMENT:
A number of people have been involved in the execution of this program. We thank our colleagues who helped make this program a success: Toni Rice, Charles Graham, Nick Harm, Abimbola Asojo, Dominique Pittinger, Reid Coffman, Hope Mander, and Nick Thomas.

REFERENCES (APA)
LE CORBUSIER AND THE DAUGHTER OF LIGHT: COLOR AND ARCHITECTURE OF THE 1920S

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NARRATIVE

Charles-Edouard Jeanneret, better known as Le Corbusier, developed an approach of color selection for architecture on the basis of what he believed to be universal physiological and psychological constants of human perception and the effect on human beings. Le Corbusier searched for the unchangeable “mecanisme de l’émotion.” In his life-long experiences as both an easel painter and architect, his search for standards was paramount in his compositional and artistic theories. In regard to development of color models and their modes of integration into design, his rationale remains elusive to many members of the architecture and design community. “… architects have had difficulty deciding how to use color since at least the polychromy dispute of 1830, when the austere whiteness of the Neoclassical was first called into question.” Le Corbusier’s search for and arrival at constants of color as employed in both his painting and architecture is fundamental to this exploration.

Beginning in the 19th century, color came to be understood as a physiological and psychological phenomenon, and many attempts were made to classify and systematize color. Records of Le Corbusier’s work exist and were reproduced in Arthur Reugg’s compilation of color samples and writings in a three-volume set entitled Polychromie Architecturale. Ruegg worked with the paint chemist Katrin Trautwein to produce accurate color replication using the natural and synthetic mineral pigments that had been used originally in 1931. In cooperation with Fondation Le Corbusier, Trautwein established her company ktColor, and the pigments are now available for use by contemporary architects, designers, and the public.

As early as 1920-1921, Le Corbusier, along with artist and theorist Amedee Ozenfant, set forth a preferred gamut of color for use in easel painting by classification according to the sensual and emotional qualities of each color. Twelve of these colors formed the basis of the 1931 and 1959 collection of colors, and remained relatively unchanged as the basis on which his future approach to color application was built, and to which he remained true throughout the 1920s and beyond. Le Corbusier used a color standard based upon widely available natural pigments of the day which were available in pulverized form. Except for a few exceptions, he was thus able to “… simply put down the appropriate color pigment in a word on a plan…”

In addition to establishing a restricted palette of colors that he deemed appropriate to pictorial and architectural spaces, Le Corbusier also developed a “selection machine” (Salubre I collection) to assist the general public in choosing colors in their personal habitats. He labeled this system Claviers de couleurs, Color Keyboards. These color keyboards constituted a tool for selection of both chief wall hues as well as a method for choosing colors for woodwork and doors and other accents. However, it was discovered that this series or color gamut was likely developed through his personal subjective experiences in painting while searching for constant effects on the observer. Le Corbusier apparently did not take into consideration an established “objective” analysis of harmonic color theory such as Michel E. Chevreul’s or color notation systems such as those developed by

Wilhelm Ostwald of Germany or Albert Munsell of the United States.\(^2\)

It was common, almost compulsory, for the time, for a young student architect of culture, to undertake a Grand Tour. After experiences in Germany, Le Corbusier traveled Europe and Eastern Europe from about 1907 to 1909 and commenced what he would subsequently call his “voyage d’orient” or *Journey to the East*. In Greece, his encounter with the Parthenon was pivotal to his understanding of Classical architecture. He saw it as “an expression of eternal principles of mathematical form and a perfect expression of the absolute. Of Italy he wrote “I am possessed of the colour white, the cube, the sphere, the cylinder and the pyramid. Prisms rise and balance each other setting up rhythms . . . in the mid-day sun the cubes open out into a surface, at nightfall a rainbow seems to rise from the forms.”\(^3\) David Batchelor, in his book *Chromophobia*, draws parallels between the *Journey to the East* and the “dream-journey” of the character Dorothy of the *Wizard of Oz* (pub. 1900) and describes Jeanneret’s writings as leaving and entering color and told as a dream; “an ecstatic, intoxicated, confusing, delirious, sensuous plunge into colour.” Le Corbusier is intoxicated by color. Of Bucharest Le Corbusier wrote:

> There, the white of the lilies and the crimson of the nails would have been like screams. The great and imperial black would have invaded and framed this swooning of colors. And in it, the incomparable pink would have come to spread itself-this pink that all primitive and healthy peoples adore and use lavishly because it is the color of real flesh.\(^4\)

This color of “real flesh” was to become employed frequently; Le Corbusier used a variant of this hue, a salmon pink, in both *Maison La Roche* (1923-5) and *Villa Savoye* (1928-1931). Descriptions evoking vivid color imagery pervade the text of his journal. The flood of color, though, becomes overwhelming, and he begins to dream of a white city:

> . . . But enough of this wretched yellow. . . . I want Stamboul to sit upon her Golden Horn all white, as raw as chalk, and I want light to screech on the surface of domes which swell the heap of milky cubes, and minarets should thrust upward, and the sky must be blue. Then we would be free of all this depraved yellow, this cursed gold. Under the bright light, I want a city all white, but the green cypresses must be there to punctuate. And the blue of the sea shall reflect the blue of the sky.\(^5\)

The writing foreshadows Le Corbusier’s disinclination toward employing yellow in his architecture and painting, and his affinity for blues and greens. Toward the end of the journey, color no longer attains the same intensity in description, while white in contrast continues to gain force: “only later, during a storm, does the Parthenon whiten: ‘I saw through the large drops of rain the hill becoming suddenly white and the temple sparkle like a diadem against the ink-black Hymettus and the Pentalicus ravaged by downpours.’”\(^6\) . . . the Parthenon is somehow beyond colour.\(^7\)

By 1916, Jeanneret was anxious for contact with the avant-garde of France and made his home in Paris.\(^8\) About 1917 he became acquainted with the artist and theoretician Amedee Ozenfant and by early in 1918 was expressing enthusiasm for Cubist painting and Ozenfant’s work. Jeanneret and Ozenfant came to employ a restricted color palette of “electric blue, light grey, pink, ochre, earth red, green, black and white. In their paintings, they attempted to confound spatial depth by their choice of colors. Jeanneret chose a palette of advancing and receding hues creating a play of densities in light and dark. “Now painting is a question of architecture, and therefore volume is its means.”\(^9\) Jeanneret characterized color as a “perilous agent” which could destroy or disorganize volume and it could create a shock, with color striking the senses before form. He searched for the constants, systems, rules and mechanisms of perception, and it materializes as a fundamental characteristic of Le Corbusier’s work as an architect and artist.

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\(^2\) Ibid., p. 40-43.
\(^5\) Ibid., p. 85.
\(^7\) Ibid.
The “mecanisme de l’emotion” was a basic process that served as inspiration for his architectural constructs and color applications during the 1920’s. Le Corbusier’s attempt to release an aesthetic emotion was also a condition of his architecture.

There are numerous parallels between the paintings and architectural projects of Le Corbusier. Le Corbusier’s architectural plans are parallel in some cases to the compositional outlines, the “mariage de contours” of his paintings, as are the hues used in both platforms. The use of “regulating lines” to control the composition was employed by both Jeanneret and Ozenfant, illustrated in L’Esprit Nouveau 17 (June 1922), and also appear in the drawings and ultimately the architecture of Le Corbusier.

Analysis of Le Corbusier’s use of color in his architecture of the 1920s is a subjective process even if perfect conditions were today existent; conditions in which no color variables of communication, age, lighting, fading, and the chemical compositions of paint were present. Besides the un-measurable perceptual and visual acuity possessed by its author, this research is also dependent upon the work of previous authors, restoration architects, paint chemists, and archivists. Nevertheless, it can be concluded that Le Corbusier remained true, without deviation, to the palette of colors that he and Ozenfant first established through easel painting in 1920 and then throughout the phase of Purist architecture to the completion of Villa Savoye in 1931. It is also observable that Le Corbusier was generally disposed to creating color contrasts between both hues and values, and this is found consistently in both built works analyzed, and likely in other works of the era. It cannot, however, be established whether these contrasts, which conform remarkably to Munsell’s harmonic theories of color balance were derived through intuitive or scientific methods.

REFERENCES

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Experiencing Wayshowing in a Healthcare Facility: A Wayfinding Case Study

JIHYUN SONG
Iowa State University

NARRATIVE

ISSUE:

Healthcare facilities expand with demand. Getting lost is a primary concern for people visiting hospitals. How well people navigate a facility plays a major role in perceptions of patients, visitors and subsequently, those owning the facility (Arthur and Passini, 1992).

Wayfinding factors in healthcare environments include scale and complexity. Wayshowing becomes the counter part of translating wayfinding principles into action.

At intersections where more than two hallways converge, or where a connection between two wings of different architectural styles occurs, information is particularly critical. Architectural complexity becomes a barrier rather than an aid in such situations and prevents users from sensing familiarity (Moeser, 1998; Weisman, 1981). Bell et al. (1996) premise that previous experience assists users in new environments if some familiar characteristics exist. This comes into play as a sequence of problem-solving tasks requires some environmental information (Passini, 1984) and executing decisions.

The term wayshowing was introduced by Mollerup (2005) to describe how wayfinding could be facilitated through presenting information as visual, verbal, graphic and architectural systems. While the idea of wayfinding is understood as a spatial problem-solving process, the central concept of wayshowing lies in the designing the complex environment such as hospitals, concerning the aesthetics of systems’ design. A rich experience comes where the two meet. Some level of complexity in the information engages users, but too much complexity weakens the wayshowing system (Bell et al., 1996). As buildings are experienced, a well thought out wayshowing systems become essential to wayfinding success.

WAYFINDING VS WAYSHOWING THEORY:
Passini (1984) gives a structural framework to follow when dissecting the wayfinding experience into individual units. He contends the experience has two structural characteristics: decision hierarchies and decision plans. Decision hierarchies and plans read from left to right and show decisions as they relate hierarchically to complete the leftmost decision. They include all of the decisions from the decision hierarchy, but if a particular decision would require other items to complete it, these behavioral decisions become subsets of the original decision point. Passini’s decision hierarchy and decision plan diagrams are useful in diagramming the decisions a user of an environment will make in detail to follow a certain route. His concept focuses on the user’s wayfinding ability to formulate predictions about environmental features that may be encountered and then compared to information found in the actual environment (Passini, 1984). His analysis of decision points is particularly insightful as users’ journey through space. However, users’ courses have potential for changes along the way. Wayfinding is an active and dynamic activity and prone to change from the initial plan a user may have in mind. Moreover, not all users are able to facilitate cognitive mapping to accommodate these changes (Bell et al., 1996).

If the space has already been built, wayshowing designers can use various wayfinding scenarios to create specific directions of movement in the current wayshowing system. Wayshowing is about designing environment that guide people as they try to find their way in an unknown environment. Mollerup’s framework of wayshowing design presents the notion of a spatial problem solving process understood as combination of planning...
and execution. His theory is based on rule following and sense making. Thus wayshowing design parallels decision points where users need correct, leading, or complete information. Mollerup (2005) gives a list of strategies where destinations are recognizable by using variety, hierarchy, and relative position of wayshowing systems. Strategies are: (1) track following using one or more sensory capabilities along the corridors, hallways, and other paths; (2) route following--spatial direction using on-route signs or verbal instruction; (3) educated seeking--using common feature that users recognize; (4) inference--using sequential destinations within a structure, such as room numbering; (5) screening--systematic spacing so users understand organization after scanning; (6) aiming--using landmarks and focal points to aim users in correct directions; (7) map reading--orientation by using relevant information on maps; (8) compassing--directions in names relative to the destination; (9) social navigation--learning from other’s navigational behavior.

**RESEARCH PROCESS:**
A case study addresses concepts of wayshowing design to facilitate people’s own problem-solving. A site-specific analysis was conducted to focus on relationships of wayfinding and wayshowing in healthcare environments. Passini’s wayfinding hierarchy model was used to develop the guiding principle and framework of the study, while work by Mollerup (2005) provided insight used to generate the questions given to study participants. Research questions included: 1) how does the built environment of a multi-story hospital affect wayfinding complexity? 2) What elements of healthcare facilities are most influential to the users’ wayfinding ability? 3) Which wayshowing elements of a healthcare environment detract from the user’s navigational experience? The hypothesis was that insufficient signage and a lack of available maps would be identified as the major issues in the wayfinding experience of healthcare environment.

A wayfinding audit process, including observation and analysis of the site and a wayfinding survey and evaluation were used to test the hypothesis and project recommendations. Wayfinding principles were evidenced and translated to a wayfinding system for a future improvement of user experience. Recommendations included updating terminology for the better use of signage and its consistency, combating complexities with the logical placement of graphic information, improving orientation maps available, and placing appropriate signs within the environment.

**RESEARCH METHOD AND FINDINGS:**
A healthcare facility in Ames, Iowa includes a clinic and adjoining hospital serve major population of the area. While the two medical facilities are separate businesses, they share many patients and staff, making the link between the two extremely important. In addition to connecting the M. Clinic with the M.G. Medical Center, the hallway also serves as a link to other medical facilities including the Cancer Center and the Medical Arts Building. Confusion arises for users. A major contributing factor is buildings connect at different levels. Limited information at the entrance also makes wayfinding difficult. Signage and maps are inadequate to direct people and staff report that patients and visitors often ask for directions when arriving and leaving. Visitors become disoriented because the hallway link is not visible from the entrance and its location is at the intersection of multiple directions. Another source of confusion is inconsistent use of terminology resulting in disorientation as well; i.e., “Link to Hospital” and “Link to M.G. Medical Center” are both referring to the hallway linking the two buildings, but there are other buildings accessed via this link. Additionally sign placement, lighting levels and floor finishes should address navigation to further identify the user’s wayshowing experience.

A designated path from A - the North entrance to B – destination to the hallway between the two medical buildings was analyzed using decision diagrams. There were four possible paths from A to B, while each involved different vertical and horizontal circulation to reach assigned locations. Twelve college students sought appropriate ways from A to B. Six of participants didn’t have a previous visit, while four had 1-3 previous visits, one had 4-9 previous visits, and another one had 10 or more previous visits. A survey included multiple-choice questions and open-ended questions. Analysis of responses showed two of participants found the space easy to navigate, and three responded it was difficult to navigate, while the remainder responded it was average. Question on the “Check all items that you used to help you find your way to the assigned location.” showed what wayshowing elements were utilized in the process of wayfinding. Signs were the most used wayshowing element with only one participant not reporting their use. Other devices in-
including maps, lighting, changes in flooring, artworks or other landmarks, with similar response levels. Majority of responses indicated a guessing approach, instead of aiming and following the existing information available. Signage was equally deemed most distracting or confusing wayshowing element, and space layout was the second most distracting or confusing element. There were no negative responses on the lighting and color scheme of environment. The fact that color scheme did not contribute to their wayshowing experience indicates color could be used as a wayfinding tool if there is more of an intent. Only three respondents stated floor finishes aided their navigational experience, while flooring did not seem to play a role in their wayshowing experience for others. All but one participant indicated interior furnishings detracted their navigation. Insufficient signage and a lack of available maps were identified as the main wayfinding issues and the analysis of existing information at the decision points.

To facilitate user’s wayshowing experience design recommendation are:

1. Improve signage by designing a consistent sign system with the needed information that contributes route following;

2. Use the color scheme, change of floor finishes, and lighting levels to facilitate track following;

3. Create landmarks on the path to the desired destination to encourage user’s screening and aiming;

4. Update and place accurate signs and maps at the critical decision points for the user’s map readings and route following;

5. Locate informed staff/volunteers to assist verbal direction and social navigation;

6. Maintain consistent terminology to identify orientation as a reference point.

**Importance of the Topic:**
Success of wayfinding results from wayshowing that is designed for users to follow. Wayfinding systems become recognizable when guided by wayshowing principles including track following, route following, inference, screening, aiming, map reading, and social navigation. First time visitors find their way by route and track following, assuring their orientation by a map reading, and proceeding by aiming close to the destination. The strength of Mollerup’s wayshowing strategy lies in the understanding of the design problem primarily dealing with a system of wayfinding that is rational in one way or another, and that of the roles it plays in wayshowing. Combining Passini’s (1984) analysis of an environment through decision diagramming and steps to wayshowing design with Mollerup’s (2005) guidance in the design of specific wayshowing system elements would capitalize on the strengths of each.

New insights from this work suggest research possibilities and application in the field among architects, interior designers, environmental graphic designers or facility managers of healthcare facilities. Understanding of this framework could be further studied in other locations by those seeking to improve wayshowing within existing facility.
REFERENCES (APA)


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NARRATIVE

The concept that we are proposing for a 'new kitchen normal' is a culmination of observations from many disciplines including office systems manufacturers, designing for people with disabilities, Leadership in Energy and Environmental Design (LEED) rating systems, and historical research. This concept may offer existing and new home owners a flexibility that static/permanent kitchen locations cannot.

A team of researchers at Herman Miller Corporation headed by Bob Propst published a book in 1968 titled – The Office: A Facility Based on Change. Facilities that would respond to increasingly rapid changes in business and working methods were the vision of this team. A system of office furniture was designed to be reconfigured easily for offices and the people who occupied them regardless of how or how often the corporate structure changed. With this concept, flexibility became a quality everyone wanted. Over 40 years have passed since this system was introduced; offices and the need for flexibility are as strong as ever. Given a building, how flexible can it be? With raised floor systems housing power, data, and communication lines, it is possible to relocate offices and cubicles to any desired location (Herman Miller 2005). Given that the office furniture industry has responded to the challenges that existing and new buildings pose when designing for flexibility, why hasn't the kitchen industry seen parallels to this model?

The location of the kitchen, has for the most part, been determined by someone else. Remodeling and/or relocating kitchens to meet the needs of the current resident can be very expensive. If homes, condominiums, and apartment buildings were to provide multiple power and utility locations in the floor in kitchen/living areas, then generations of occupants would have the option of creating a space customized to their needs.

The LEED rating systems of the United States Green Building Council, all have as a common denominator the goal to reduce, reuse, and recycle in new construction and renovations, but points can be earned for innovation in design as well. When kitchens are torn out of residential interiors and not reused, this adds to the debris in landfills. The cycle of using new raw materials continues. Providing kitchen components that would respond to new or existing homeowner's needs and/or aesthetic and providing options as to where these could be located, it may decrease the frequency that kitchens are removed or remodeled.

During the first years of the 18th century, the middle class American home consisted solely of one large room or “hall” on the ground floor, which served as the center of family activity. Other than the fireplace, all of the components for food preparation, short-term food storage, and clean-up were free-standing pieces of furniture, providing flexibility. When a family moved, they took all of these pieces with them so that they could be used in the new location (Plante, 1995). The hall was open and adaptable to future needs. From the Industrial Revolution of the 19th century into the 21st century, the infrastructure and technological advancements impacting the kitchen include water and sewer lines, gas, and electricity along with refrigerators and cooking appliances ranging from stoves to counter top devices to serve the homemaker (Foy & Schlereth, 1997). The location of utility lines to the kitchen created a static situation whereby, with the exception of major and costly renovations, it had to remain in the same location.
During the 1950s and 1960s, the kitchen's physical segregation from the social areas of the home began to change. It started with a small, shuttered serving window between the kitchen and the dining room providing limited communication between these areas. This evolved into a serving counter with stools, sometimes with overhead cabinets. This configuration enabled even more communication among family members between the kitchen, dining, and even the living room (Plante, 1995).

Dwellings throughout our history have always reflected the complexity of our societies. In Victorian times society enforced elaborate codes of conduct, whereas modern buildings tend to have open floor plans that better suit a society that has far fewer social restrictions. Now, open space plans with minimal separation between the kitchen and living areas where the entire family can once again congregate and participate in food preparation have become increasingly popular with home owners (Kopec 2006). The concept we propose views this current trend as an opportunity to introduce a new model for kitchen design.

The new kitchen model parallels office systems in the following ways. It provides modular components in unit increments that reflect kitchen industry standards. Some components would accommodate gas or electrical couplings that could be hooked up to the respective utility. Other components would be designed to respond to the variety of storage needs a kitchen requires. While some office systems have complicated installation requirements requiring specialized technicians, designers of these systems have realized that the simpler the system, the more adaptable and flexible it becomes for the end-user. With this system, moveable modular units can be delivered to the home, and positioned by the home owner. Other than a service technician to hook up the plumbing and gas, which would be the case in any kitchen, the home owner is in control. This eliminates installation costs.

Adhering to the concept of openness in the space, this kitchen system advocates that these units remain the standard counter height of 36 inches, although some variations for special functional needs would be offered. In as much as the widths will vary depending on the interior functional need, there will be a size and shape to fit every need similar to standard built-in kitchen components offered by the industry. Unlike wall dependent units, items that are stored in these components can be accessed from both sides thus maximizing every square inch for storage. Styles and finish options would be developed to meet the tastes of the consumer. By eliminating overhead cabinets, this speaks to the Americans with Disabilities Act (ADA) and universal design solutions. All kitchen appliances, cooking utensils, and food are within reach.

Since every angle of systems furniture has the potential of being seen, they all have a finished surface. These kitchen units would offer this as well plus, incorporate sustainable construction materials, glues, and construction techniques. In tandem with construction techniques are de-construction techniques. At the end of the life cycle of the units, all of the components would be easily disassembled so that they can be recycled or down cycled. However since these units are complete standalone pieces of furniture, they could be used in any other area of a house for other purposes.

Several appliance manufacturers have pioneered modular units that respond to flexibility, adaptability, and ergonomics. For years, it seemed that there were no major advances in the ergonomics of appliance design. Technology improved, but appliances were still the same size and shape they had been since they were invented. Modular appliances have evolved to fit ever-changing lifestyles. For example, the cupboard shape refrigerator that must be located against a wall is replaced by function specific drawer units that can be located anywhere in the kitchen/living area.

The strategy that enables this system to reach its maximum flexibility is the installation of multiple utility locations, during the initial construction phase, in the open living area as opposed to straddling a wall. The geometry of these locations would be calculated so that the homeowner could take advantage of the spatial opportunities afforded by various kitchen configurations. These points enable kitchen layouts to be manipulated 360 degrees. Homeowners could orient the components to take advantage of exterior views or architectural features within the space, and/or configure them to integrate with layouts that best suit the homeowner’s furniture and lifestyle. This feature also speaks to ADA and universal design issues wherein components could easily shift to facilitate accessibility in and around the kitchen layout.
Designing for aging in place has become the topic that health care and design practitioners are looking at very closely. Layouts for the homeowners could be modified over the years, thereby enabling them to stay in their home longer.

While multiple utility points provide flexibility for the current homeowner, it creates a structure that has the capacity to accommodate substantial change. A building that is adaptable will be utilized more efficiently, and stay in service longer than one that is not. The extension of its useful life may in turn translate into improved environmental performance over its life-cycle (Hobday, 2005).

Side effects of this flexibility and adaptability in an open space are the results you get in the future. Demolition is minimal. The ceiling stays in place, the lighting system stays in place as well as the floor finish. The walls and windows stay in place. You can move all components and reconfigure the space without major construction (Herman Miller, 2005).

The concept of a new kitchen normal embraces flexibility enabled by modularity and the rethinking of the infrastructure in the home. By integrating considerations from many disciplines, this concept addresses many issues we face in this evolving world.

REFERENCES (APA)


Sustainable Methods and Practices: Learning from the Architects Small House Service Bureau

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NARRATIVE

The size of the single-family house in the United States has grown substantially over the last century. According to the U.S. Census Bureau, the size of the average single-family house across the U.S. increased from 1,525 square feet in 1973 to 2,135 in 2009. The highest reported average occurred in 2007 when the average square footage rose to 2,277. (See table 1)¹ The largest houses were to be found in the Northeast followed closely by the South while the smallest square footages occurred in the Midwest. At the beginning of the twentieth century the average house size was between 700 and 1200 square feet. In 1950, the average square footage was 1000 square feet.² In other words, during the twentieth century the single-family house in the U.S. more than doubled in size. Between 1900 and 1950, the single-family house size remained relatively constant at approximately 1000 square feet. It is within this context that the Architect Small House Service Bureau was producing single-family house designs that were limited to six principal rooms and 30,000 cubic feet.

This paper outlines the findings of extensive archival research performed using the archives of the Architects Small House Service Bureau (ASHSB).³ The ASHSB was formally incorporated in St. Paul, Minnesota in 1919 in response to the need for affordable small houses that were also designed well. The principles upon which the ASHSB based their definition of design excellence—economy, equity and environment—inform today’s need for sustainable and smaller single-family house design. Members of the ASHSB dedicated themselves to the production of small house plan designs that maximized materials, minimized waste, and capitalized on synergies with manufacturers and builders whole seeking to provide an affordable and well-designed home for everyone. Thus, the agency and its legacy have much to tell designers of today about the essence of beautiful and sustainable residential design.

Correspondence within the archives reveals the commitment of the ASHSB to making their small homes both affordable and economical in terms of material usage. The three-legged stool of sustainability often invoked today—economy, equity and environment—provided the foundation for the designs produced by architect members. They felt it was their duty to the fellow citizens to provide a well-designed and soundly constructed affordable house for all.

During a review of these materials, a pattern emerged demonstrating a strong commitment by members of the ASHSB to working with others in the industry (concrete, steel and wood manufacturers and builders) on minimizing material waste and maximizing good design through partnership and collaboration. Specific collaborations occurred with the Home Builder’s Library (Homes of Brick), the Arkansas Soft Pine Bureau, Redwood Manufacturers, Morgan Woodworking Organization, the Structural Clay Tile Association, the Finzer Brothers Clay Company, the National Lead Company, Dierk’s Lumber and Coal Company, the Estate Stove Company, the Southern Pine Association, the American Institute of Architects, and many others from across the United States and Canada.

Typically, the ASHSB would collaborate with a materials’ manufacturer to include a specific product into a built project. Examples of such project collaborations frequented the advertisements in the back of the Small Home monthly service bulletin. Common advertisers included Hoosier, General Electric, Murphy “In-A-Dor” Beds, Humphrey Gas Water Heaters, Waterbury Seamless Furnaces, Union Fibre Company Insulation,
Cabot’s Shingles, the Southern Pine Association and Mason City Brick and Tile Company, Common Brick Manufacturers’ Association of America. Another way in which the ASHSB brokered collaboration was through the production of house plan books sponsored by large manufacturers such as the Southern Pine Association or the Common Brick Manufacturers’ Association of America. The Southern Pine Association sponsored the first hard cover books of ASHSB plans entitled How to Plan, Finance and Build Your Home published in 1921.

The various partnerships within which the members of the ASHSB engaged as well as sample advertising materials the agency used to publicize the benefits of the small and well-designed single-family house. During their lifetime, the members of the ASHSB published sample designs for small houses in a series of plan book publications, magazines, and newspapers (through a series called the Homebuilders’ Clinic) that were distributed widely throughout the U.S. and Canada. Although the ASHSB is little known today, they have much to contribute to the area of the sustainably designed, efficient, and small single-family houses.

In 1924, the ASHSB joined forces with the Better Homes in America Campaign whose stated purpose: “Inexpensive but attractive and convenient small homes should be accessible to all families.” Following the introduction, the first chapter of the book, entitles “Purpose of this Plan Book,” reiterated the goals of the ASHSB:

“First, it illustrates and tells of the work of the Regional Bureaus of the Architects’ Small House Service Bureau of the United States, Inc.

Second, it suggests what the ‘Better Homers in America’ organization believes are basic needs for smaller homes; namely, a good plan prepared by a competent designer, to insure sound construction and architectural direction in the building of even the smallest home.

Third, it offers every one, no matter how small the home or purse, an opportunity to enjoy many of the privileges or architectural service at low cost.

The plans presented ranged from a Pennsylvania Colonial Four Room House to a Five Room House of the Italian Style. English Cottages, Cape Cod Bungalows, Dutch Colonials and houses suitable to the Pacific Coast were all included. Accompanying the designs, members of the ASHSB wrote about how to keep down the building costs and how to select the most appropriate plan for one’s tastes and budget. In addition, each individual design features a floor plan with dimensions, an exterior photograph or perspective view and a written description of the special features of the design. The house sizes ranged from under 750 square feet to the largest six-room design hovering about 1300 square feet. Most averaged around 1000 square feet.

The Better Homes in America Campaign issued guidebooks on how to run a Better Homes Campaign in 1925 and 1926 along with several other publications. Many organizations worked in cooperation with the Better Homes Movement including the American Child Health Association, the America Civic Association the American Home Economics Association, the American Red Cross, the Chamber of Commerce of the U.S., the Department of Labor, Department of Public Health, Department of Commerce and several other groups including the ASHSB. The movement involved the construction of new homes and the rehabilitation of older ones, including some historic buildings. One week a year, in late April or early May, was set aside as “Better Homes Week” across America. Designs by the ASHSB were featured prominently in the published materials.

The lessons that the ASHSB has for interior design are many. The first, and perhaps most important lesson, taught by the ASHSB was one of cooperation—cooperation with private and government entities. They consistently aligned themselves with agencies and groups that helped forward their primary goals. An emphasis on smaller and better detailed houses necessarily focused on the interior and the design of interior built-ins, storage solutions, minimized circulation and a host of other solutions intended to reduce waste in materials while meeting the many needs of the homeowner of the day. Special attention was given to training new members of the ASHSB organization as well as outside constituents (home owners, builders, and manufacturers) in the basics of good design and how it could ultimately reduced waste and minimize material use. An internal Design Committee reviewed all proposed designs; comments were provided to improve the designs and maintain a level of quality control. These contributions of the
ASHSB are as pertinent today as they were nearly one hundred years ago when first formed.

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A: Represents an RSE that is greater than or equal to 100 or could not be computed.
NA: Not available. RSE: Relative Standard Error.
S: Withheld because estimate did not meet publication standards on the basis of response rate, associated standard error, or a consistency review.

1: Includes houses built for rent (not shown separately).
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3 The archives of the ASHSB are stored in 64 boxes at the Minnesota Historical Society. These boxes have been sorted and catalogued in a cursory manner that states the overall basic contents within each box without detail. Architects Small House Service Bureau (ASHSB). Archival materials stored at the Minnesota Historical Society, Saint Paul, MN, 64 boxes, RLIN ID No. MNHV91-A1403, 1919-1941.


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The ABCs of Green Design: How Parents’ Pro-environmental Values, Behaviors and Knowledge Impact their Childcare Center Design Preferences

ZUZANA VATRALOVA / MARUJA TORRES-ANTONINI / CANDY CARMEL-GILFILEN

NARRATIVE

Green. Pro-environmental. Sustainable. These words represent current even fashionable terms that translate into practical concepts which inform contemporary guidelines for many sectors, including childcare—one of the fastest growing service sectors nationwide (Olds, 2001). Despite the high volume of childcare environments being produced, very few aim toward green design. According to the USGBC statistics, out of 49,600 LEED certified buildings in 2009, merely 1.72% represented childcare facilities (USGBC, 2009).

However, Durrett and Torelli (2009) state, there is no better place to employ the philosophy of sustainability and green design than in childcare facilities. Exposing children to green ideas could foster sustainable behavior because everything children learn at an early age affects their actions as they grow (Day and Midbjer, 2007). Fontaine et al. (2004) claim that by the age of three, the child’s brain reaches 90% of its full potential, which suggests that children learn the most at the earliest stages of their lives.

Research validates the critical role of the environment for children’s optimal neurological and social development (Butin, 2000). Although many studies show positive long-term developmental benefits of attending a preschool at an early age (Reynolds, Temple, Robertson, & Mann, 2001), strong evidence is building against the physical environment of childcare settings and their influence on children’s health, learning, and development (Boise, 2010). Carpets, furniture, and air expose children to contaminants that may have a serious impact on their well-being (Boise, 2010). So the question remains, why is there only a vague interest in green childcare design if the negative influences of its absence are apparent?

PURPOSE

Literature identifies parents, the main consumers of childcare services, as unsuccessful evaluators of childcare quality. Parents are viewed as lacking the necessary appraisal knowledge and tending to evaluate childcare quality based on their own needs and preferences, which typically include factors such as childcare location, cost, and curricula (Helburn et al, 2004; Olds, 2001). Additionally, parents do not seem to reflect that over 40% of current childcare centers have poor performance; and only one in seven of the centers provides good quality care for children overall (Butin, 2000). Related to this, Moss (1994) defines quality as a dynamic and relative concept based on general values, beliefs, and preferences.

This study thus explores parents’ inclination to green design as a factor for quality childcare by assessing the extent to which parents’ preferences related to green childcare design transmits their pro-environmental knowledge, values, beliefs, and behaviors.

METHODOLOGY

From the overall number of 184 contacted families whose children are enrolled in two environmentally-engaged child development centers operated by a public Florida university, 66 parents agreed to be surveyed in regard to their pro-environmental knowledge, values and beliefs, behaviors and green design preferences. Childcare center administrators assisted and mediated communication between the researcher and the parents. Data collection instruments consisted of two protocol-driven, sequential, and self-administered electronic questionnaires with closed and open-ended questions. While the first ques-
tionnaire was designed to obtain parents' demographics, pro-environmental values and beliefs, behaviors and knowledge, the second questionnaire entailed a series of questions to ascertain parents' preferences related to green childcare design. Framework for both instruments was derived from LEED assessment tools and Stern's (2000) Value-Belief-Norm Theory, both adapted to address the existing conditions of the two study sites.

Study findings were obtained from three linear regression models, which by using demographic control variables modeled the relationship between dependent and independent variables. All three models indicated a strong relationship between the three factored independent variables (pro-environmental values and beliefs, behaviors, and knowledge) and the dependent variable (parents' preferences related to green childcare design).

**FINDINGS**

Although some of the demographic variables demonstrated a strong influence on parents' preferences related to green childcare design, their role was to remain constant throughout each of the three linear regression tests and allow for examination of the relationships between the independent and dependent variables. Out of nine demographic variables, combined family income and completed education level showed the strongest effect on parents' preferences, whereas having a higher level of education was inversely related to parents' greater green design preference.

Literature indicates that individuals with higher family incomes tend to support environmental organizations, and calls out a positive relationship between educational attainment and environmental concerns (Olofsson and Ohman, 2006). While the study results support the former, the latter displayed a negative effect. According to the study settings' director, parents with advanced degrees frequently ask for research-based documentation to support childcare practices (P. Pallas, personal communication, August 11, 2010), suggesting that their interest in scientific inquiry may translate into higher expectations for the pro-environmental character of the childcare facility and services, and thus affects their assessment of the same.

More than 80% of the participants claimed personal values and beliefs aligned with concerns for climate change, use of toxic substances, and exploitation of the natural environment. Approximately the same percentage of the participants confirmed practicing pro-environmental behaviors listed in the survey sometimes, often, or always. However, such practices may as well stem from environmental sensibility as much as from convenience. An example of such behavior is recycling. According to McKenzie-Mohr and Smith (2006), recycling is a popular option of pro-environmental behavior because it alleviates guilt for not making more difficult and inconvenient changes toward sustainable living. The same explanation could apply to the use of energy efficient lighting and appliances, which are used in almost 94% of the participants' households on regular basis. In reverse, only eight out of 66 parents economize the water used for shower and washing on a daily basis.

On the pro-environmental knowledge test, more than 56% of parents achieved at least eight correct responses out of ten, with issues of interior material selection and indoor environmental quality (IEQ) receiving the lowest scores. Misinterpretation of these issues, such as not considering safety, acoustics, and maintenance when making materials choices, or disregarding the impact of heating and occupants' control of the environment as influential as daylight, natural ventilation, and use of non-toxic materials narrow their knowledge of green design and construction.

Finally, the parents' preferences section disclosed that almost 80% of the participants prefer their childcare facility to use energy efficient appliances, water efficient plumbing fixtures, HVAC and lighting controlled by occupants, environmental education, and plenty of natural environments surrounding the childcare center. However, 50% of the participants were unsure about the use of plastic and pressed wood furniture and 65% would agree for their childcare facilities to use paints and coatings that actually release high levels of VOCs.

**CONCLUSIONS**

The study findings clearly substantiated parents' general understanding of green design importance for children's
healthy and safe development, yet contradicted several findings stated in the literature. Specifically, pro-environmental values and beliefs demonstrated having a profound effect on the participants’ preferences for green childcare design. However, unexpected findings that could be explained by the high expectations of parents with high education levels, or an imperfect or biased understanding of some design features, confirmed parents as poor evaluators of childcare quality regarding childcare setting. Responding to increasing awareness to the benefits of green childcare design, the study suggests that continuous environmental education of all design stakeholders, including parents, could have a strong impact on green childcare design presence and future.

REFERENCES (APA)

Photovoice as Participatory Method in Research of Positive Aging

HANS-PETER (HEPI) WACHTER / JEFFREY BISHOP / DAVID MOXLEY / DAVE BOECK
University of Oklahoma

NARRATIVE

ABSTRACT
The Norman Aging Needs Assessment Project (NANAP) was founded by an interdisciplinary team of engaged design faculty, social and political scientists, interested in the integration of the arts and humanities into social action. The principal aim of the project is to advance good environmental design and foster positive aging within the city of Norman (Oklahoma, USA). The team is moving through its first cycle of action research and engaging in activities to foster the participation of older citizens in design, data collection and analysis, project governance, and dissemination and utilization activities.

While the project is early in its development, having formed some 18 months ago, the investigators are working to (1) formulate a framework of functional health useful in guiding action research on environmental design, (2) prototype and test a community arts exhibit to help people understand environmental assets and inequities older citizens face within the city, particularly those with diminished health, or disabilities, (3) implement a continuing education seminar in which elders can obtain information on positive aging, and consider their own aging trajectory, and (4) conduct broad-based outreach to community groups in which elders are members. The project is engaging in PhotoVoice activities with elders helping them document the environmental aspects of their own aging and preparing for a second cycle of action research.

PURPOSE
Few American cities are prepared for the surge in aged citizens and human habitats must be responsive to a quickly changing age structure. Given the many realities of aging with its myriad changes, physical, cognitive, emotional, and social, cities and small settlements, such as rural communities, must examine closely those supports they can offer their aging and aged citizens so that this period of the life cycle can be one of productivity, engagement, self-discovery, and positive functioning. Influenced by what social scientists call the positive psychology school, positive aging is exactly that: while aging well is a challenge it is possible even in the face of illness and decline in some domains of physicality. This project documents the environmental and social assets of interior spaces in public and private buildings, identifying how they support positive aging through the lenses and voices of the persons affected. Such an “as is” analysis serves as a portal through which to view the preparation of the city for positive aging and the support of its citizens.

FRAMEWORK
Photos are useful in documenting and illuminating how older people see their environments, the influence of environment on the elders’ daily lives, and how environment influences functioning and well-being of older people. PhotoVoice offers one avenue for helping design professionals to better understand how people see the strengths and limitations of their environments, particularly those influencing everyday life. Through PhotoVoice, elders can participate directly in documenting the contexts in which they live, the supports that enrich their lives, and the barriers they face that can frustrate their independence and quality of life. The PhotoVoice products that integrate image (photograph) and narrative (the voice and words of the person who explains the significance of the image she captures photographically) can be influential in expanding public awareness and educating public and design professionals about the consequences of good and poor design and the dynam-
ics of environmental inequities, and strengthening motivation to endorse good environmental design.

Nontraditional methods serve more evocative purposes—to illuminate in graphic detail how specific individuals come to see their environments and cope with environmental barriers. One such method is PhotoVoice (Feen-Calligan, Washington, & Moxley, 2009). PhotoVoice methodology is a participatory action research strategy employed as a means to personal and community change and as such transformative in its strategy. First it is substantive focusing on positive aging across the lifespan, secondly the project pioneers a process of participation within academia and within the community and organizes multiple disciplines into high performance teamwork, thirdly the project pioneers the use of arts and humanities in its research dissemination as an participatory exhibit and lastly the project is addressing ultimate use in the form of good design that fosters functioning. Utilizing people affected by an issue to generate knowledge of the issue, PhotoVoice acts as an arbitrating force dividing power between research participants and researchers to gain meaningful changes for those affected by the issue at hand. PhotoVoice has at its conceptual base two major influences. First, PhotoVoice has been greatly influenced by Paulo Freire and his work with dispossessed peoples of South America. Secondly PhotoVoice draws on certain strains of feminist understandings of the social world and its power dynamics. Seeing power gained by those who control language and set representation, the process of PhotoVoice seeks to grant control over representation back to marginalized peoples who otherwise would suffer under the artificial images of those with the power to create them.

**PROCESS**

Participants in this study signed up in focus group meetings organized through United Way and the Osher Life Long Learning Institute at the University of Oklahoma. The group has been meeting monthly since September 2010. Participants received photography assignments, digital cameras and instructions on how to use them. Participants develop the aims and purposes of the photo taking, how it will be enacted. In some cases (Zenkov & Harmon, 2009; Carlson, Engebretson & Chamberlain, 2006; Downey, Ireson & Scutchfield, 2009; Hergenrath, Rhodes, Clark, 2006) the research initiators develop the aims and purposes of the project, but allow the project to develop once initiated through new participant interaction.

Older adult were able to construct and clarify the aging issues the interiors of public and private buildings encapsulate and in this context identify and give meaning to existing assets as related to issues of positive aging. After the photo taking, participants discussed the purpose of the photo, the enhancement or hindrance related to their view of positive aging and created a narrative in discussion with the co-investigators. The PhotoVoice participants also engaged in a post PhotoVoice debriefing questionnaire (figure 1)

**PRESENTATION/DISSEMINATION PROJECT.**

The next step in the project will be a dissemination exhibit made up of the created photos and narratives of the places studied. These narratives and their processes along with descriptions of reflexive changes that occurred in initiators and participants during the pilot will be disseminated through an exhibit and received funding through the local Arts Council. The co-investigators amplify the contributions PhotoVoice makes to the illuminative documentary process using specific illustrative case example in this exhibit. For the authors, portrayal or representation of the participant's perceptions and experiences requires the active involvement of audiences whose members interpret and make meaning. The exhibit will support emerging meaning through the linking of art form and audience, image and viewer, word and listener. PhotoVoice participants will be part of the exhibit and available to narrate and discuss their photographs, opening themselves for change and offering interpretation and a perspective of change to their audience. The co-investigators also envision a public educational experience, designed to engage people emotionally in understanding the experience of others and to bring together citizens and designers in a dialogue about what constitutes the support of positive aging. The exhibit as dissemination research strategy indicates the co-investigators' interest in the potential of the arts and humanities for changing visitors' perspectives, attitudes, and minds about a given situation, which implicates the importance of evaluation of this aspect of the project. The exhibit itself can be a design that serves as a product of developmental action research and produces a type of social intervention (one that has the power to change attitudes, for example).
Post-Photovoice Debriefing Questionnaire
NANAP/Draft 1.0/August 10, 2010/DPM

Participant’s Code: ___/___/___

This questionnaire offers participants in the Norman Aging Needs Assessment Project an opportunity to offer their feedback about their involvement in the PhotoVoice Subproject led by Mr. Jeffery Bishop, MSW, research associate within NANAP. This questionnaire does not solicit your feedback about Mr. Bishop but about your experience in the PhotoVoice Subproject. Mr. Bishop will guide you through the questions and record your responses.

1. Overall, how do you describe your experience in the PhotoVoice project?

2. When you think about your overall experience, would you say you were
   
   Very satisfied with your participation?
   Satisfied with your participation?
   Dissatisfied with your participation?
   Very dissatisfied with your participation?

   Please let us know about the reasons behind your rating of your overall experience? What influenced your satisfaction level?

3. To what extent do you feel that your choices influenced the process of your PhotoVoice project?

4. To what extent do you feel that you could modify the PhotoVoice process to suit your needs or to make your situation stand out?

5. When you think about the process, that is, the steps involved in your PhotoVoice project what stands out for you as positive aspects?

6. When you think about the process, that is, the steps involved in your PhotoVoice project what stands out for you as negative, or not so good, aspects?
7. Let’s say you are sharing your thoughts about your PhotoVoice project with a good friend, what would you emphasize about your project to that friend?

8. What would you say to that good friend about his or her involvement? What reasons, if any, would you suggest to the friend for participating?

9. What did you learn from your PhotoVoice experience? What stands out for you as important learning?

10. Through your PhotoVoice project, did you come to know something about your current situation in a different way?
   a. Did you become aware of something you had not really thought about?
   b. What was this awareness?
   c. How do you think this awareness will influence you in the near future?

11. When you think about your PhotoVoice experience, based on what you learned from it, would you change anything about your daily life as a result?

12. Looking back on the PhotoVoice project, what suggestions do you have for improving your own experience?
   a. Or, for improving the experience of other participants?

13. To what extent was the PhotoVoice experience a good use of your time and effort?

14. Are there any other thoughts you wish to share with the project staff?
REFERENCES (APA)


Beyond Codes: Addressing the Needs of Low Income Supportive Housing Residents Through Design

LISA K. WAXMAN / JILL PABLE / MARSHA MCBAIN
Florida State University

NARRATIVE

INTRODUCTION
The current economic climate is making affordable housing more difficult to obtain for many individuals and families (Davis, 2004). This housing crisis, coupled with high unemployment levels, has resulted in many households considering dramatic downsizing, sharing crowded homes, or in the most tragic of instances—going without a home. Special needs populations often find it even more difficult to locate adequate housing (FHFC, 2010). Supportive, well-designed subsidized housing has the potential to help families and individuals move into healthier and safer living conditions (Turner, 1998).

BACKGROUND
A "decent, safe, and sanitary dwelling for every American" was the goal of the 1937 Housing Act and was based on the presumption that healthy, affordable housing greatly impacts overall quality of life (Newman, Zais, & Struyk, 1984). Many noble efforts by both private and government agencies have sought to improve housing conditions for those in need of supportive and/or low-income housing. In Florida, the Florida Housing Finance Corporation (FHFC) was created by the Florida legislature with the mission to help Floridians obtain decent affordable housing that might not otherwise be available (FHFC, 2010). The FHFC provides loans to developers of low income housing units and distributes approximately 800 million dollars a year to various construction projects in Florida. Between 5,000 and 12,000 residential units are constructed each year through its programs. The organization offers a number of housing options for people with special needs including frail elderly, youth aging out of foster care, the homeless, veterans, those with mental illness, persons with disabilities, and survivors of domestic violence. Because housing needs are determined by the characteristics of the individual or the household it is important to understand each of the groups (Newman, Zais, & Stuyk, 1984).

THE PROJECT
This research focused on a unique project undertaken by the authors to assist the Florida Housing Finance Corporation expand their design guidelines for supportive low-income housing. When applying for loans from the FHFC, developers must follow baseline accessibility, visitability, and sustainability codes and guidelines. However, the FHFC was interested in expanding their guidelines to include design recommendations that foster residents’ psychological well-being. This was a unique opportunity for interior designers to help shape design policy as it relates to supportive housing. FHFC wanted the researchers to go beyond what was found in existing codes and to look for attributes that would enhance livability in the residences they fund. Specifically, the researchers were asked to provide design recommendations for the supportive housing programs which accommodate the homeless, homeless veterans, and frail elders.

METHODOLGY
The researchers analyzed existing codes and FHFC guidelines to better understand the existing building requirements. This was followed with site visits to ten supportive low-income housing facilities in Florida where tours of the facilities and photographs were taken. A unique aspect of this program is the partnership between low income housing developments and support agencies that assist their residents on-site. Therefore, interviews with developers, support agency representatives, and residents were also completed both on-site and over the phone to assess their attitudes about the existing housing designs and their housing experience.
Data were coded and analyzed using qualitative methods of analysis and a number of themes emerged.

**FINDINGS**

The study’s results have been assembled in a report to the FHFC that includes a summary of findings in narrative as well as design recommendations in a more graphic format (see Figures 1-4). Selections of the findings from the report are presented below.

**General Characteristics of the User Groups.** The report to FHFC begins with general characteristics of the user groups. After interviewing agency representatives, researchers learned that the homeless may be overwhelmed and feel vulnerable when they arrive in transitional housing and are often concerned with how long they will be allowed to stay in the facility. Many have few possessions, but are very protective of those possessions and are looking for privacy and security. Veterans have similar concerns and often derive comfort from other veterans who have had similar life experiences. Frail elders are often moving to supportive housing from another residence and have possessions to which they are extremely attached. Although they may need some support in the form of accessibility for mobility limitations, they do not like facilities that look like “old folks” live there. They often enjoy the company of fellow residents and are interested in the comings and goings of fellow residents. Many of these residential groups are in need of services from the community at large such as transportation, child care, job training and counseling, mental health counseling and therapy, and help with other health-related issues.

**Common Supportive Housing Themes.** There were a number of common themes that were revealed through interviews with agency representatives and residents. The downturn in the economy was often mentioned, as the current crisis is making it harder to find jobs and making it more difficult for residents to move into more permanent living situations. Many elders in need of supportive housing are not able to sell their homes leaving them in housing situations that are inadequate. Interestingly, baby boomers who are just reaching the age where they might need supportive housing, are often less healthy than previous generations, and are less likely to have saved for their future. Privacy is among the top concerns of residents, and closely related to concerns of security for themselves and their belongings. Storage, including adequate quantities and types, was reported by many to be a critical and necessary amenity for residents’ peace of mind. For residents with children, child-related supportive services such as daycare is central to resident’s needs, as are areas for older children to do homework. Many residents are in school or looking for work, so spaces that provide computers and places to study for adult residents are also important.

Low-income residents’ perceptions regarding the symbolism of their home were important, and represent an element not previously acknowledged in FHFC housing design requirements. Themes related to housing appearance showed most residents preferred supportive housing that “fits in” with the local community and “looks like everyone else’s” house or apartment. With regard to accessible dwellings, residents preferred units that look as much like other non-accessible housing units as possible. Smaller clusters of supportive housing units were found to be preferable to large collective structures, and provide more privacy and a sense of community. However, agency representatives felt it was important to consider spreading out supportive housing residents and units around a community to avoid “ghetto-izing” an area.

Many of the residents interviewed had established strong attachment to their residence and their fellow neighbors, especially the elderly and veterans. They often shared meals, played cards, celebrated birthdays, or participated in group therapy and supported one another. The community gathering places in the various residences were used frequently and agency representatives stressed the value of getting everyone together for meetings and other events. Many facilities did not have the space to do this.

Staff, too, reported needs for their on-site work with residents. Most facilities have some staff on site to manage operations. In addition, local support agencies often provide counseling and therapy at the housing facility. These staff and service agency representatives need space to meet with residents, in groups or one-on-one. They also need space to store confidential files and to make phone calls on behalf of their clients, which often require acoustical privacy.
Analysis. The identified resident and staff needs were examined holistically, then sorted by the researchers into the seven categories of safety and security, community, privacy, identity and self-esteem, function, environmental quality, and peace of mind/mental comfort. The needs were then examined for their viability as tangible recommendations, and applicability to the user groups of the frail elderly, veterans, the homeless in transitional shelters (with stays from six months to one year) and the homeless in permanent supportive housing.

Recommendations are being finalized at the time of this writing, and it is estimated that approximately 50 recommendations will result that address low-income development residences, interior and exterior community gathering spaces, and staff spaces. Recommendations take the form of “problem identification-context-solution” similar to the format of recommendations in A Pattern Language by Alexander, et al. (1977). Examples of expanded and abridged recommendations are provided in figures 1 through 4.

SUMMARY

Results suggest that user group-specific psychological needs exist as well as those shared by all groups. With design guidelines that look beyond codes into the social and psychological needs of residents, more human-centered low-income housing can be possible. One resident summed up his feelings with the statement, ‘It feels good when I hear myself say “I am going home now.”’
Context of the Problem

Many residents living in supportive housing have needs that go beyond the need for shelter. In many situations, there is a need for a variety of counseling and support services. In addition, many of the staff involved with counseling and support program travel to various sites to meet with residents living throughout the community. Both counselors and residents need a space to meet that is private, comfortable, and has an atmosphere that feels safe and secure.

- In many cases, there is no place to meet privately with residents for counseling sessions. In cases where there are designated spaces for counseling, they are often shared with other activities and lack the characteristics of privacy, comfort.
- Many counselors also need to fill out reports that are confidential. Often this takes place in public areas with no privacy or opportunity for reflection. In addition, these staff are often interrupted or distracted by other residents while they try to work.

Why this Matters

Many residents of supportive housing have faced challenges in their lives that require support and often counseling to overcome. Therefore, many communities with supportive housing programs also provide a variety of counseling services to the residents. If these services are to be offered in an attempt to help residents move forward in life and eventually achieve independence, then the counselors and residents need supportive environments to enhance those counseling experiences.

Solution

Provide private counseling spaces on the premises where residents can meet with counselors privately.

It is suggested that these spaces include comfortable seating for both the resident and the counselor. Natural daylight, views, and artwork can also make the space for enjoyable for residents.

Because counselors often need to write reports following their interactions with residents, a desk or other surface should also be included in the space, or in a private space nearby.

If the counselor is permanently on-site, then they should also be provided with lockable storage to keep confidential reports.

Some examples of counseling rooms can be seen below:

Figure 1. Sample Expanded Recommendation: Counseling Spaces
Supportive Housing for All User Groups
Adequate Storage & Counter Space at Vanity

Context of the Problem
People living in supportive housing are usually unable to afford supplemental storage for bathrooms. Like any person, they need a place to set down toiletries while they prepare for their day or ready themselves for bed. Without vanity space, they must juggle their belongings or set them on other surfaces, such as the toilet set.

- Those living in more permanent living situations need to be able to leave the things they use on a daily basis in the bathroom for easy access. These items may include a toothbrush, tooth paste, shaving cream, make-up, etc.
- Those in more transitional housing situations who may be sharing bathrooms still need a place to set items temporarily while they groom.
- An example of a common bathroom setup can be seen below:

Why this Matters
Those in supportive housing need environments that support the basic activities of daily living. Whether residents are getting ready for work, school, or other activities, their needs should be supported. The addition of a vanity is a small gesture that shows them the environment supports their basic needs.

Solution
Provide a bathroom setup for all user groups with a vanity and sink rather than a pedestal sink. In a situation where each resident has his or her own sink, this will allow personal items to be placed on the sink for easy access. For those in living situations where the sink is shared, they will be able to place personal items temporarily on the vanity while they are grooming.

The sink should be in a vanity cabinet that offers a horizontal counter and storage underneath. It is recommended that there be at least a counter on either side of the sink.

An additional solution includes a wall-recessed medicine cabinet which can also provide needed storage above or to the side of the vanity.

Accessible rooms will require knee space underneath the sink for use by those in wheelchairs.

Figure 2. Sample Expanded Recommendation: Vanity Space in Bathrooms
Context of the Problem

Elders moving into supportive housing often have possessions that hold deep meaning for them. In fact, it is often difficult for elders to determine what to take to a new residence and what must be left behind or given away.

- The absence of possessions has been shown to have detrimental effects on the psychological well-being of older people (McCranek, 1987).
- Residents may fill the limited number of surfaces available with their belongings, causing the space to be cluttered and disorganized.
- If they are unable to personalize their space, the transition to the new housing situation may take longer, or attachment to the new dwelling may not occur at all.

Why this Matters

The ability to manipulate or personalize a residence often results in a setting that is physically comforting (Cooper-Marcus, 1992). In addition, several studies suggest that personal possessions are reinforcers of identity in later years (Redford and Back, 1988). The lack of personal possessions has been shown to negatively affect the psychological well-being of older people (McCranek, 1987).

The ability to personalize a residence is one way to put down roots and establish feelings of "ownership" and belonging, which are important steps to transitioning to a new home. In addition, feelings of belonging have been shown to result in better overall well-being and attachment to place.

For many elders, the desire to "age in place" is a strong desire. If they move into supportive housing in their later years, it is possible this will be their last residence. Relocating can be stressful and therefore the need to make their dwelling feel like home is especially critical.

Solution

Provide permanent surface(s) on which to display personal items. These surfaces should be included as a permanent part of the residence.

These surfaces might include built-in shelving (does not include closet shelving) in living spaces, sleeping areas, work spaces, or raised counters/bars in kitchen areas (see example below). Creative ideas might include shelves as room dividers to separate sleeping and living areas. If the residence includes a separate bedroom (rather than a studio apartment) then both the bedroom and the living area should include permanent surfaces for display.

The amount of surface space should be at least 6" deep and the combined length of the surface should be at least 6 linear feet total. Residences with separate bedrooms and living area should each include surfaces meeting the sizes listed above.

Example of raised counter/bar.

Image Source: 
http://www.breadandbuttress.com/

Figure 3: Sample Expanded Recommendation: Display of Personal Objects
Gathering Spaces for Residents

There are many reasons why residents in supportive housing need a gathering space where they can come together. Residents may wish to share a meal, celebrate a holiday or resident’s birthday, participate in a group counseling session, or participate in a resident’s meeting. It is important to encourage participation in community activities so residents feel a sense of community with others in the facility. Whenever possible, designs for supportive housing should include a room that will hold all of the residents at one time.

Interview: Residents and staff from Cabin in the Woods. July, 2010


Seating Areas Located Adjacent to the Mailroom

Observations and interviews with development staff, residents, and support agencies identify that many elderly residents enjoy not only receiving mail, but also enjoy visiting with others while they wait for the mail to arrive. This can be a special time of day which provides opportunities for social interaction and feelings of belonging to a community. Many people look forward to making the daily journey to pick up the mail and connect with fellow residents. By locating the mail room in an area near a seating area or lounge, an opportunity for elders to visit with each other occurs. In some situations, outdoor seating areas outside the mailroom area can also work well.

Interview & Observations: Residents at Jamestown Woods, April, 2010
Observations at Georgia Bell Apartments, July, 2010


Figure 4: Sample Abridged Recommendations: Gathering Spaces and Mail Room Seating
REFERENCES (APA)


Toward a New Interior

LOIS WEINTHAL
The University of Texas at Austin

NARRATIVE

This paper introduces a framework for a theory of the interior as a series of layers that begin at the scale of the body and ends where interior and exterior meet. Within each of these layers is the understanding that the interior is inherently an interdisciplinary realm that offers a broader set of possibilities for the way in which interiors are experienced.

Interior spaces can be found at a range of scales, from the clothing we wear to the room we inhabit. Between these two scales are an array of layers that can be pulled apart and further investigated, often revealing an identity by which we surround ourselves. Interiors can be seen as the stage set by which we act out our lives as we move fluidly between these layers that encompass one another. This paper is based upon a forthcoming book entitled *Toward a New Interior* (Weinthal, 2011) organized into sections that begin at the micro scale and move to the macro scale, while cutting across a range of disciplines and time periods. This structure is not a historical summation of interior design, but rather, proposes a new organization for the interior through scaled layers as a way to elicit a broader set of issues.

Architectural theory helps locate major themes and ideas that record and prompt change in the history of architecture, yet, the equivalent framework for interiors is missing and needs to be written, one that references its history and builds upon its interdisciplinary relationships. This framework cannot come from a pre-existing framework found in architecture, rather, it needs to come from what is inherent to the study of the interior.

This theoretical position organizes the interior into eight sections that start at the immediate scale of the body and ends at the threshold between interior and exterior as outlined below. The accompanying diagram represents their relationship as a series of nested layers that generate outward from the body (Figure 1).

1: Body + Image
2: Clothing + Identity
3: Furniture + Objects
4: Surfaces + Color
5: Mapping the Interior
6: Private Chambers
7: Public Performance
8: Bridging Interior and Exterior

When viewing each of these sections, a richer story unfolds. Each section of the book consists of essays by authors from a range of disciplines that highlight projects grounded in areas other than interior design. This approach allows the interior to reflect upon itself and draw out perspectives that have been latent in the interior design discourse. These related disciplines include fashion design, photography, film, literature, art and engineering. Unlike the traditional model of theory readers that utilize texts based within the discipline, these examples look to other disciplines outside of interiors in order to address the same set of issues, such as furniture, lighting and aesthetics. For example, looking to the works of Courtney Smith, interior designers can learn about the complex discourse between furniture, body and gender through the lens of an artist — the same set of issues
shared with interior designers (Figure 2). In her work, Smith builds upon the history of furniture and draws out embedded associations of nostalgia, ornament and gender located within different styles and eras (Slome 2006, unpaginated). She uses these characteristics as a starting point for altering furniture and exposing these influences. What results are new bodies of furniture that no longer fully function in their previous state and instead reference anthropomorphic figures. Although they still embody their previous identity, they now take on a new persona.

Smith’s work is one example of how these sections unravel concepts and themes making visible their ability to transcend disciplines and scales. Themes that emerge from reading the interior through these interdisciplinary texts include nostalgia, personal possessions, mapping, narrative, poche, anthropomorphism and miniatures. These themes are part of the interior but rarely discussed critically in the context of interior design. Framing theory through scalar layers allows emphasis on these concepts to emerge because they have no limit to their placement in history and reappear over and over again. For example, the section on Clothing + Identity looks to the way in which clothing wraps the body and forms an immediate interior. The evolution of the cut of cloth reveals how the body has been wrapped, and with it, how clothing represents the body. The difference between draping and tailoring reveals the representation of the body from two-dimensional to three-dimensional patterns. Draping the body in cloth requires little cutting, essentially, using a large circle of material and constructing an opening in the center for the head (Kraft 1998, 67). The development of tailoring brought with it tools for measurement and an understanding of the body as a curved three-dimensional figure. Kraft provides an example of a conforming device for measuring the body that could be taken apart and laid flat, thereby producing a two-dimensional map of the body (Figure 3). Tailoring methods that mediate between two and three-dimensions still dominate the production of current fashion, especially when seen in experimental clothing. The contemporary clothing designer, Hussein Chalayan uses textiles in his work to draw a connection between clothing tailored for the body and textiles upholstered for furniture (Figures 4 & 5). Chalayan recognizes the shared forms between body and furniture and the cut of cloth as the transition between these two forms (Evans 2005, 11).

The concept of mapping returns in the section on Mapping the Interior. One can conceptually imagine a map of the interior formed by peeling off wallpaper and organizing it into a full-scale map of a room. The process of mapping an interior through orthographic projection is a timeless inquiry, as seen in a mapped interior by Jeanine Centuori. In an experimental project, Centuori maps a collection of objects that includes a table, chair, shoes, dishes and a few other household objects. Centuori coats the objects in liquid latex and once dried, peels away the skin through careful cuts based upon orthographic projection. The results are two-dimensional drawings generated from the original personal objects that contribute to the map of an interior (Centuori 1994, 186-93).

These themes are inherently part of the interior design discourse, but have yet to be pulled together in one source for reference. This theoretical organization grew from my unsuccessful search over a decade to find an interior design theory reader organized by a framework that was not based in chronological order but in a scalar relationship to the body that moves from the immediate scale of clothing to the exterior. Taking this approach opens up each of the layers so that they are not bound by historical time frames or disciplines. As a result, this paper can only touch upon small moments within the book. This author is also hopeful that the framework will act as an entry point for others to contribute to and expand upon the writing of interior theory.
Figure 1: Diagram of nested layers

Figure 2: Courtney Smith, Vanité, 2000. Vanity table, hinges and hooks. APT, New York. Photo: Fausto Fleury
Figure 3: In 1885 William Bloomer Pollock of Philadelphia was granted patents in the United States (320,496) and Britain for this conforming device. (U.S. Patent Office.)

Figure 4: Hussein Chalayan, Afterwords - Autumn/Winter 2000. Photo Credit: Christopher Moore, Catwalking. London

Figure 5: Hussein Chalayan, Afterwords - Autumn/Winter 2000. Photo Credit: Christopher Moore, Catwalking. London
REFERENCES (CHICAGO)


Alternative Studio Structures and the Studio Culture

LINDA ZIMMER / KYUHO AHN
University of Oregon

NARRATIVE

Interior design educators often focus on the culture of the design studio as a positive defining characteristic of the discipline. Yet, studio sub-culture can vary widely between programs. The Boyer report (1996) suggests that diversity in studio culture is positive and calls for “standards without standardization” to support discovery and integration of knowledge in all design programs. This study examines student and faculty perceptions in the Interior Architecture program at the University of Oregon, which has a long-standing commitment to non-graded studios and to vertical enrollment (students of different levels) in studios, and explores two different influences (incentives and diversity) on this particular studio sub-culture.

The culture of the interior design studio is defined in part by collaborative learning in a highly competitive atmosphere, whereby incentives in the form of graded individual performance are seen as a strong motivation for performance. However Hill (2007) suggests that individual grades may curtail collaboration while Daniel Pink (2009) claims that performance of complex open-ended tasks (like design) is negatively affected by external incentives (like grades). Diversity is also seen as a positive force for collaboration in studio and by mixing students of varying levels together in topical vertical studios some programs have been able to increase in the diversity of student experience and as well as the diversity of studio offerings. However, Barnes (1993) cautions that the enhanced freedom of choice associated with vertical studios must be weighed against the loss of tight control over the sequence and experience of individual students.

The University of Oregon design studio culture is based on a long-standing non-graded studio model (in effect since 1922) throughout the environmental design disciplines. A Pass/No Pass grade is the only option available for six credit design studios at all levels. Beginning level studios (the first three) for undergraduates and professional program graduate students and comprehensive studios (the last two) are segregated by level but in mid-level topical studios a preferencing system determines enrollment. Theoretically mid-level studios may contain a mix of students in their fourth through ninth topical design studio but in practice the range is typically not this wide. One mitigating aspect of the pass/no pass studio structure is that for the most part undergraduate students must take non-studio subject area and university course work for a letter grade, while graduates may select graded or pass/no pass options at will.

A voluntary anonymous on-line survey questionnaire administered via e-mail to students enrolled in the undergraduate and graduate professional programs in Interior Architecture at the University of Oregon was designed to isolate perceptions of pass/no pass studios and vertical studios and to gain insight through open-ended questions. A total of twenty-five graduate and undergraduate students participated and twenty entries were validated for data analysis. Students were divided into beginning level undergraduates having completed less than four studios (eight), mid-level/advanced undergraduates who had completed five or more studios (ten), beginning graduate students who had completed less than four studios (one) and mid-level/advanced graduates who had completed more (two). Only one of the student participants had taken college level design studios for a letter grade, therefore, the results reflect student perceptions of this culture from an “insiders” point of view.
All respondents reported that the pass/no pass policies affected their learning in a positive way (79%) or neutrally (21%) (see appendix 1). The beginning level students were particularly positive in their assessments with six out of seven reporting a positive learning outcome and one reporting a neutral experience. A large percentage of respondents would elect to keep non-graded studios, especially at the beginning level. Only one of nineteen respondents (5%) would choose to change beginning design studios to a letter grade option if given the chance, while four in twenty (20%) would elect to change mid-level studios to a graded format. When asked whether specific studios should be changed twelve of fifteen students opted to keep all studios pass/no-pass while two mentioned specific options, working drawings (n=1) and the final comprehensive studios (n=1). When answering open-ended questions (see appendix 2) the non-competitive atmosphere was cited most often by students at all levels (n=15) and collaboration was a close second (n=14). Fourteen students also reported that the non-graded format allowed some relief from pressure for grades. Typically this was linked to comments on about focus, critical thinking or risk taking. For instance, one respondent states “it teaches you to think critically and experiment without fear of a bad grade lowering your standing”. Negative perceptions of pass/no pass studios included issues of differentiation between excellent and marginal work, lost opportunities to enhance GPA, and lack of clarity in standards. Seven students were concerned that others may have expended less effort but were awarded the same passing grade and five mentioned the lack letter of grades in the studio setting with regard to overall GPA. One student wrote “huge time commitment for something that doesn’t help your GPA”. At least four students cited letter grades as a familiar feedback loop with regard to progress, improvement or standing compared to other students and one student simply said, “Standards are unclear”.

While still positive, the response to vertical enrollment in studio is more mixed. A majority of respondents (63%) reported that vertical enrollment in studios had positive affect on learning, 21% reported a neutral effect and 16% a negative effect (see appendix 3). One undergraduate and two graduate students (19% of respondents) would change to a system whereby students are segregated by level if given the choice. However, all of the undergraduate respondents (n=15) would keep the current system whereby grads and undergrads are mixed in mid and upper level studios, while two of three graduate students would opt for segregated studios and one is undecided. Peer to peer learning and diversity of experience (n=12) were cited explicitly as a positive aspect but most responses mentioned some aspect of interaction between different students/groups. One respondent states “In my studios I have been able to help graduate students or my peers but have also sought guidance and help from those that are older or just in a more experienced position”. Negative aspects cited include differing needs and expectations of graduate and undergraduates, variation in effort/skills and increased stress. A majority of the fifteen responses explicitly mentioned graduate and undergraduate expectations while none cited problems associated with levels of experience within the design curriculum.

As with any survey instrument nuances are difficult to quantify, however, overall results indicate that students perceive that non-graded studios foster a collaborative non-competitive atmosphere that encourages experimentation and risk-taking. This is seen as particularly important in beginning level studios where students are learning to think conceptually. However, some are uncomfortable with the lack of explicit and familiar incentive offered by grades, in part because the disconnect between non-graded studios and the existing milieu of the university system and in part because they perceive a lack of recognition for differing levels of student effort and quality of work. Overall students also value the diverse cohort created in the vertical studio setting. In the open-ended questions, students recognized and commented on differences between graduate and undergraduate students far more than they focused on differences between students at different levels in the same program, and they found undergrad/grad differences to be harder to manage productively.

Clearly Oregon is outside the norm in two specific aspects of studio teaching, pass/no-pass studios and vertical enrollment in design studios. When combined this structure can be challenging and sometimes cumbersome. However, there may be advantages to each of these policies, whether used independently or together. In an effort to look at these practices in the context other common studio structures a simple model illustrating graded vs. non-graded studios and lock-step studios vs. vertical enrollment was generated for discussion (appendix 5). Based on the results of our study and the
supporting literature, the increased diversity of experience offered in vertical studios may be helpful in collaborative tasks that require risk-taking and creative thinking. However, the design process requires a variety of critical thinking skills and methods of working, some of which may be better incentivized through graded studios or mastered by a homogeneous group. For instance, highly individualized technical studios or those requiring a high level of development might be better suited to a graded structure. This model of studio structure might provide one framework with which to understand how varied incentives and peer groups might be structured in a curriculum or in an individual design studio.

Appendix 1. Survey Results on Student Pass/Non-pass Studio Experience

<table>
<thead>
<tr>
<th>Pass/Non-pass Studio Experience (19 responses total)</th>
<th>Changing Beginning Pass/Non-pass Studio to Graded Studio (19 responses total)</th>
<th>Changing Mid-level Pass/Non-pass Studio to Graded Studio (20 responses total)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Beginner (n=8)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Positive  6</td>
<td>Yes 1</td>
<td>Yes 2</td>
</tr>
<tr>
<td>Neutral  1</td>
<td>No 7</td>
<td>No 6</td>
</tr>
<tr>
<td>Mid-Upper Level (n=10)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Positive  7</td>
<td>Yes 0</td>
<td>Yes 1</td>
</tr>
<tr>
<td>Neutral  2</td>
<td>No 8</td>
<td>Neutral 1</td>
</tr>
<tr>
<td>Grad (n=3)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Positive  2</td>
<td>Yes 0</td>
<td>Yes 1</td>
</tr>
<tr>
<td>Neutral  1</td>
<td>No 3</td>
<td>No 2</td>
</tr>
<tr>
<td>TOTAL (n=21)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Positive  15 (79%)</td>
<td>Yes 1 (5%)</td>
<td>Yes 4 (20%)</td>
</tr>
<tr>
<td>Neutral  4 (21%)</td>
<td>No 18 (95%)</td>
<td>No 15 (75%)</td>
</tr>
<tr>
<td>Negative  0 (0%)</td>
<td></td>
<td>Maybe 1 (5%)</td>
</tr>
</tbody>
</table>
## Appendix 2. Student Comments on Positive/Negative Aspects of Non-graded Studio

### Positive Aspects of Non-graded Studio (Undergraduate)

<table>
<thead>
<tr>
<th>Level</th>
<th>Positive Aspects</th>
</tr>
</thead>
<tbody>
<tr>
<td>Beginning</td>
<td>Create non-competitive environment (n=8)</td>
</tr>
<tr>
<td></td>
<td>No fear of bad grade lowering your standing (relief from pressure) (n=7)</td>
</tr>
<tr>
<td></td>
<td>Collaborative (n=6)</td>
</tr>
<tr>
<td></td>
<td>Make you focus on progression (n=4)</td>
</tr>
<tr>
<td></td>
<td>Grow conceptually (better) (n=3)</td>
</tr>
<tr>
<td></td>
<td>Encourage experiment (take risks) (n=3)</td>
</tr>
<tr>
<td></td>
<td>Willingness to share ideas (n=3)</td>
</tr>
<tr>
<td></td>
<td>Make you focus on projects (n=2)</td>
</tr>
<tr>
<td></td>
<td>More flexibility with balancing our time (n=1)</td>
</tr>
<tr>
<td></td>
<td>Feel comfortable in getting to know peers (n=1)</td>
</tr>
<tr>
<td></td>
<td>Get confidence about my work (ownership) (n=1)</td>
</tr>
<tr>
<td></td>
<td>Think critically (n=1)</td>
</tr>
<tr>
<td>Mid/Upper</td>
<td>Collaborative (n=8)</td>
</tr>
<tr>
<td></td>
<td>Create non-competitive environment (n=7)</td>
</tr>
<tr>
<td></td>
<td>No fear of bad grade lowering your standing (relief from pressure) (n=5)</td>
</tr>
<tr>
<td></td>
<td>Make you focus on progression (n=4)</td>
</tr>
<tr>
<td></td>
<td>Make you focus on projects (n=2)</td>
</tr>
<tr>
<td></td>
<td>More flexibility with balancing our time (n=2)</td>
</tr>
<tr>
<td></td>
<td>Willingness to share ideas (n=2)</td>
</tr>
<tr>
<td></td>
<td>Feel comfortable in getting to know peers (n=1)</td>
</tr>
<tr>
<td></td>
<td>Encourage experiment (take risks) (n=1)</td>
</tr>
<tr>
<td></td>
<td>Different strength in different area (n=1)</td>
</tr>
<tr>
<td></td>
<td>Explore your interest/working style (n=1)</td>
</tr>
<tr>
<td></td>
<td>Interested in learning what the professor has to teach (n=1)</td>
</tr>
</tbody>
</table>

### Positive Aspects of Non-graded Studio (Graduate)

<table>
<thead>
<tr>
<th>Level</th>
<th>Positive Aspects</th>
</tr>
</thead>
<tbody>
<tr>
<td>Beginning</td>
<td>No fear of bad grade lowering your standing (relief from pressure) (n=2)</td>
</tr>
<tr>
<td></td>
<td>Make you focus on progression (n=1)</td>
</tr>
<tr>
<td>Mid/Upper</td>
<td>No fear of bad grade lowering your standing (relief from pressure) (n=1)</td>
</tr>
<tr>
<td></td>
<td>Make you focus on progression (n=1)</td>
</tr>
<tr>
<td></td>
<td>Not sure (n=1)</td>
</tr>
</tbody>
</table>

### Negative Aspects of Non-graded Studio (Undergraduate)

<table>
<thead>
<tr>
<th>Level</th>
<th>Negative Aspects</th>
</tr>
</thead>
<tbody>
<tr>
<td>Beginning</td>
<td>Some slide through without producing work (n=4)</td>
</tr>
<tr>
<td></td>
<td>Best efforts but low return (tend to more focus on other class for better GPA) (n=2)</td>
</tr>
<tr>
<td></td>
<td>Not enough feedback (n=2)</td>
</tr>
<tr>
<td></td>
<td>Unclear standard (n=1)</td>
</tr>
<tr>
<td></td>
<td>Not realizing the importance in the quality of work (n=1)</td>
</tr>
<tr>
<td></td>
<td>Lack of motivation to progress (n=1)</td>
</tr>
<tr>
<td></td>
<td>Hinder level of rigor in student work (n=1)</td>
</tr>
<tr>
<td></td>
<td>May be difficult at first to adjust due to previous class structure (n=1)</td>
</tr>
<tr>
<td></td>
<td>Lack of structure in learning basic architecture (n=1)</td>
</tr>
<tr>
<td></td>
<td>Spend more time and better than others but same grade (n=1)</td>
</tr>
<tr>
<td></td>
<td>Ignorance of small assignment (n=1)</td>
</tr>
<tr>
<td></td>
<td>No sense of how well a student is adjusting to major (n=1)</td>
</tr>
<tr>
<td></td>
<td>None (n=1)</td>
</tr>
<tr>
<td>Mid/Upper</td>
<td>Lack of motivation to progress (n=4)</td>
</tr>
<tr>
<td></td>
<td>Some slide through without producing work (n=3)</td>
</tr>
<tr>
<td></td>
<td>Spend more time and better than others but same grade (n=3)</td>
</tr>
<tr>
<td></td>
<td>Hinder level of rigor in student work (n=3)</td>
</tr>
<tr>
<td></td>
<td>Uncertainty about your performance due to lack of graded feedback (n=2)</td>
</tr>
<tr>
<td></td>
<td>Best efforts but low return (tend to more focus on other class for better GPA) (n=1)</td>
</tr>
<tr>
<td></td>
<td>Unclear standard (n=1)</td>
</tr>
<tr>
<td></td>
<td>Projects seem repetitive (n=1)</td>
</tr>
<tr>
<td></td>
<td>None (n=1)</td>
</tr>
</tbody>
</table>

### Negative Aspects of Non-graded Studio (Graduate)

<table>
<thead>
<tr>
<th>Level</th>
<th>Negative Aspects</th>
</tr>
</thead>
<tbody>
<tr>
<td>Beginning</td>
<td>None (n=2)</td>
</tr>
<tr>
<td>Mid/Upper</td>
<td>None (n=1)</td>
</tr>
<tr>
<td></td>
<td>Some slide through without producing work (n=1)</td>
</tr>
</tbody>
</table>
Appendix 3. Survey Results on Student Vertical Studio Experience

<table>
<thead>
<tr>
<th>Vertical Studio Experience</th>
<th>Under / Graduate should be separated in mid level studio</th>
<th>Mid level studio should consist of same level students</th>
</tr>
</thead>
<tbody>
<tr>
<td>(19 responses total)</td>
<td>(18 responses total)</td>
<td>(16 responses total)</td>
</tr>
<tr>
<td>Beginner (n=8)</td>
<td>Positive 6</td>
<td>Yes 0</td>
</tr>
<tr>
<td></td>
<td>Neutral 1</td>
<td>No 7</td>
</tr>
<tr>
<td></td>
<td>Negative 1</td>
<td></td>
</tr>
<tr>
<td>Mid-Upper Level (n=10)</td>
<td>Positive 6</td>
<td>Yes 0</td>
</tr>
<tr>
<td></td>
<td>Neutral 2</td>
<td>No 8</td>
</tr>
<tr>
<td></td>
<td>Negative 1</td>
<td></td>
</tr>
<tr>
<td>Grad (n=3)</td>
<td>Positive 0</td>
<td>Yes 2</td>
</tr>
<tr>
<td></td>
<td>Neutral 1</td>
<td>Maybe 1</td>
</tr>
<tr>
<td></td>
<td>Negative 1</td>
<td></td>
</tr>
<tr>
<td>TOTAL (n=21)</td>
<td>Positive 12 (63%)</td>
<td>Yes 2 (11%)</td>
</tr>
<tr>
<td></td>
<td>Neutral 4 (21%)</td>
<td>No 15 (83%)</td>
</tr>
<tr>
<td></td>
<td>Negative 3 (16%)</td>
<td>Maybe 1 (6%)</td>
</tr>
</tbody>
</table>

Appendix 4. Student Comments on Positive/Negative Aspects of Vertical Studio

<table>
<thead>
<tr>
<th>Positive Aspects (Undergraduate)</th>
<th>Negative Aspects (Undergraduate)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Learning from peers with more experience/ different disciplines (n=12)</td>
<td>Feeling of hierarchy b/t grad/under grad (n=6)</td>
</tr>
<tr>
<td>Offer more vintage points (n=8)</td>
<td>Hierarchy feeling inhibit students from excelling (n=4)</td>
</tr>
<tr>
<td>More intellectual ideas (n=3)</td>
<td>None (n=2)</td>
</tr>
<tr>
<td>Positive and collaborative environment (n=3)</td>
<td>Lack of motivation when other's work is poor (n=2)</td>
</tr>
<tr>
<td>Getting to know upper level students (n=2)</td>
<td>Lack of friendly environment (n=1)</td>
</tr>
<tr>
<td>Learn real life (n=2)</td>
<td>Time conflict between under/grad in group (n=1)</td>
</tr>
<tr>
<td>Rewarding feeling to be able to help others (n=1)</td>
<td>Previous experiences with the professor can lead to unequal footing (n=1)</td>
</tr>
<tr>
<td>Opportunity for lower level student to excel (n=1)</td>
<td>Lack of upper student's ability (n=1)</td>
</tr>
<tr>
<td>More interaction (n=1)</td>
<td></td>
</tr>
<tr>
<td>Build your own skills (n=1)</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Positive Aspects (Graduate)</th>
<th>Negative Aspects (Graduate)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Offer more vintage points (n=1)</td>
<td>Lack of academic complexity (n=1)</td>
</tr>
</tbody>
</table>
Appendix 5. Studio-culture Model

REFERENCE (APA)


PANELS
Evidence-Based Design: What Kind of Conceptual Framework?

CHERIF AMOR
Texas Tech University

DEBAJYOTI PATI
HKS, Inc.

VERRICK D. WALKER
Page Southerland Page, LLP

EMILY PHARES
Florida State University

JILL PABLE
Florida State University

NARRATIVE

This panel presentation proposes to explore the meanings associated with the concept of EBD, but also looks at the possibility of establishing a conceptual framework through further collaborative research endeavor bringing in symbiosis researchers from industry and academia. Five presenters—three academicians and two industry representatives—are scheduled to address the following aspects of EBD:

• Evidence-Based Design between Behavioral and Neuroscience: The necessity of a conceptual framework

• Should decision-making be evidence-based? What is wrong with experience?

• The importance of architectural programming for effectively framing the (evidence-based) design problem.

• Analysis and results of a survey identifying current perceptions, knowledge and attitudes of evidence-based design held by healthcare design practitioners

Participants’ abstracts are organized as per the aforementioned list:

CHERIF AMOR, PHD, AIMS, EDRA, & IDEC
Evidence-Based Design between behavioral and neuroscience: The necessity of a conceptual framework

In the last few decades, in interior design as in allied disciplines, a growing interest has developed towards evidence-based design (EBD). While the present paradigm is indicative of the growth of the discipline, a word of caution is needed. As Marcus (2010) suggested in her EDRA 2010 invited presentation, “we need to ask what kind of evidence?” (p. 19). To do so, the necessity of a conceptual framework is needed.

Associated with the emergence of new paradigms, the necessity of a framework that describes the conceptual organization or structure of the emerging paradigm is a necessity. An Evidence-Based Design (EBD) conceptual framework will set the foundation for orienting assumptions that highlight structural connections between the different design research inclinations. The purpose is to help people in the field to relate to each other in a consistent way and to help those outside the field to understand it (Moore, 1987).

As the body of EBD research continues to grow, its conceptual framework suggests a diversity of understandings, interests, and applications. The interest in pedagogic environments has been geared towards design and research methods (Nussbaum, 2009; Kopec, 2010; Horwitz, 2005); post-occupancy evaluation (Song, 2010); design process (Hamilton, 2007; Shermer, 2010);
design theory and its application (Stankos & Schwarz, 2007; Cama, in Graven, 2010).

In the industry, the interest has been spearheaded by the health care industry triggered by the necessity in the medical world on EBD medical standards. Precedents indicate an inclination towards the process of decision making based on verifiable data (Cassidy, 2003; Harris, D., et al., 2008); impact of the built environment on behavior—healing environments, minimizing risks (Hamilton, D. & Watkins, D. 2009; Malkin, 2007; Jamie C. Huffcut); and return on investment (ROI) (Luce, R.; Mauskopf, J. & Sloan, F., 2006; Graven, 2010).

Due to this effervescent plethora of associated research endeavors relative to evidence-based design (EBD), the necessity of a conceptual framework that addresses the meanings, organizational structure, methodologies and procedures, as well as applications is needed. The purpose is to help designers and practitioners in the field and allied disciplines to relate to each other in a consistent way, and to help those outside the field to understand it.

DEBAJYOTI PATI, PHD, FIIA, LEED® AP

A framework for evaluating evidence in Evidence-Based Design

A major challenge for design practitioners has been in assessing the quality and applicability of evidence in the process of Evidence-Based Design. In response to this critical industry need an article is scheduled to be published in the summer 2011 issue of the HERD journal, titled “A Framework for Evaluating Evidence in Evidence-Based Design”. The article, authored by Debajyoti Pati, draws from decades of experience in Evidence-Based Medicine and Evidence-Based Practice, and presents a customized framework for the design industry to view and assess evidence in Evidence-Based Design. This presentation will discuss the key points in the framework.

The presentation will touch upon the following topical areas, which currently constitutes the focus of debate in the industry:

- What constitutes evidence?
- What are the different types of evidence available or that can be generated?
- What is the distinction between assessment of evidence and utilization (applicability) of evidence?
- What is the association between research design and the context of application?

Verrick D. Walker, PhD, LEED®AP, CDT

The importance of architectural programming for effectively framing the (evidence-based) design problem

Traditionally, design solutions are thought to be based in the creative inspiration of the architect. Over the past two decades, this premise has increasingly been challenged, as environment-behavior research has gained firmer and firmer footing in architectural practice, specifically in the form of “evidence-based design”. This approach asserts that design choices are more effective when they are supported by quantitative and qualitative research findings and well-established best practices. It encourages the designer to apply a rigorous research component as a foundation for design decision-making. Properly conceptualized, architectural programming provides this “evidence”.

The presentation highlights the importance of architectural programming for effectively framing the (evidence-based) design problem. Building upon the well-established methodology called Problem-Seeking, it suggests a framework for bridging the gap between architectural theory and practice through the strategic use of architectural programming. Within this framework, project goals and design criteria and concepts are operationalized as outcome variables that can be measured and evaluated.

Case studies in healthcare and workplace facility design, where indoor environmental (interior) quality is of particular importance to the welfare, comfort, and productivity of the occupants, are used to demonstrate successful applications of this framework.

EMILY PHARES & JILL PABLE, PH.D., IDEC, ASID

Analysis and results of a survey identifying current perceptions, knowledge and attitudes of evidence-based design held by healthcare design practitioners
Evidence-based design (EBD) is a practice strategy that seeks verification for design choices. Currently, healthcare interiors are a primary venue for the practice of evidence-based design (Cama, 2009). However, recent surveys of healthcare designers, design students and faculty by Cama and Kopec suggest that EBD is not uniformly understood nor applied in practice (2009; 2010). Therefore, a new survey was undertaken to better understand healthcare interior designers’ current perceptions and use of EBD, and their motivations for embracing EBD.

This survey is currently underway and will describe the perceptions of a sample of approximately 100 healthcare practitioners regarding EBD. Specifically, it will identify respondents’ degree of interest in EBD and the sources they reject and/or accept as evidence for their designs. It will also seek to capture practitioners’ current levels of involvement and rigor in EBD application and identify motivations for healthcare interior designers to use EBD.

In addition to these topics, the research will also expand on previous EBD surveys by exploring the nature of healthcare practitioners’ application of EBD practices within the design process, such as when EBD strategies are applied within the course of a project. Finally, the survey will report on the frequency of practitioners’ actions to publish or share their own findings based on Hamilton’s “Four Level Model of Evidence-Based Design” (Hamilton, 2003).

Early analysis suggests that 72% of respondents are “very interested” in using EBD. Also, most healthcare practitioners agree that EBD strategies result in more effective projects. Lastly, preliminary results suggest that 52% of practitioners never publish or publicly report their own EBD findings.

REFERENCES


A New Perspective for Interior Design Pedagogy: Scholarship of Teaching and Learning

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NARRATIVE

Since Boyer’s (1990) call for evaluating teaching as a valid type of scholarship in higher education, many disciplines have embraced his challenge for pedagogical research and conducted studies in teaching and learning (Huber & Morreale, 2002; Weimer, 2006). This growing research-based perspective on teaching and learning has become the contemporary movement labeled Scholarship of Teaching and Learning (SoTL) ( McKinney, 2007). From the perspective of SoTL, teaching and learning are subjects of rigorous research and classroom is “a site for inquiry” (Huber & Hutchings, 2005, p. 1). At a first glance, this approach might seem equivalent to pedagogical studies conducted in interior design. However, content analysis of pedagogical articles in Journal of Interior Design from 1999 to 2010 shows that existing SoTL studies in interior design represent individualistic efforts that do not yet represent a collective, referential body of knowledge. To date, this research has frequently lacked contextual references to contemporary pedagogical studies that would build an interrelated disciplinary knowledge of teaching and learning. To achieve this next level of shared knowledge disciplinary discussions and knowledge exchanges—in forums such as this panel or more concrete venues like research databases—are encouraged. In this panel, we discuss the value of SoTL to interior design from three perspectives: the characteristics of SoTL studies in interior design, the role of SoTL in mentorship for new educators, and the unique potential SoTL provides for the continued development of interior design as a discipline.

THE BACKGROUND: SOTL

An agreed definition of SoTL eludes researchers. Boyer (1990) introduced the term “scholarship of teaching” to postsecondary education with his study on American universities and colleges. His critical analysis of institutional achievements brought a new perspective to the definition of scholarship, validity of tenure, and promotion mechanisms. Boyer suggested the creation of new knowledge should not be limited to “scholarship of discovery,” which is based on scientific publications and research. Teaching, together with application and integration, should be evaluated as another valid area of research and the classroom as a context for inquiry. Glassick et. al. (1997), Huber and Hutchings (2005), Huber and Morreale (2002), Kreber (2002), Shulman (2002) and many others have built on Boyer’s work and have supported pedagogical research. The pedagogical research framed by SoTL is explained by Huber and Hutchings (2005) as follows:

“The scholarship of teaching and learning invites faculty from all disciplines and fields to identify and explore … questions in their own teaching—and, especially, in their students’ learning—and to do so in ways that are shared with colleagues who can build on new insights. In this way, such work has the potential to transform higher education by making the private work of the classroom visible, talked about, studied, built upon, and valued…” (Huber & Hutchings, 2005, p. ix).

A variety of studies correspond to Huber and Hutchings’ explanation. The commonalities of these studies include (1) a rigorous approach to the study of teaching and/or
learning, (2) contextualizing the research within pedagogical literature and discipline, (3) sharing the research results publicly, and (4) an orientation for transformation. An increasing number of conferences and publications on SoTL are generating a platform for scholars to engage in conversation on the subject and to share research (McKinney, 2007). As a result, SoTL is not about one-time tested, individualistic research on the subject, but it is a movement that searches for continuous, collective improvements through the development of a pedagogical body of knowledge.

While SoTL research can take several forms, the improvement of SoTL begins with an in-depth understanding of the past (Weimer, 2006). Weimer (2006) developed a taxonomy of styles illustrating the varied approaches SoTL-based research. This comprehensive analysis of the SoTL studies published in disciplinary and cross-disciplinary pedagogical journals identified three main categories of SoTL work (wisdom-of-practice, research scholarship, and promising possibilities) with several sub-types under each category (Table 1). Wisdom-of-practice is the experience-based approach to scholarship of teaching. Practitioners do not worry about conducting credible research; instead, they share their experience, thoughts and make recommendations. In comparison to wisdom-of-practice, research scholarship includes qualitative, quantitative, or descriptive research on teaching and/or learning. The third category, promising possibilities, includes research types that are not as widely applied as other types and that indicate future area of development.

While SoTL research can take several forms, the improvement of SoTL begins with an in-depth understanding of the past (Weimer, 2006). Weimer (2006) developed a taxonomy of styles illustrating the varied approaches SoTL-based research. This comprehensive analysis of the SoTL studies published in disciplinary and cross-disciplinary pedagogical journals identified three main categories of SoTL work (wisdom-of-practice, research scholarship, and promising possibilities) with several sub-types under each category (Table 1). Wisdom-of-practice is the experience-based approach to scholarship of teaching. Practitioners do not worry about conducting credible research; instead, they share their experience, thoughts and make recommendations. In comparison to wisdom-of-practice, research scholarship includes qualitative, quantitative, or descriptive research on teaching and/or learning. The third category, promising possibilities, includes research types that are not as widely applied as other types and that indicate future area of development.

Table 1: Weimer’s classification scheme of scholarly work (the excerpts are from Weimer, 2006)

Weimer’s (2006) study included journals from a broad range of disciplines as SoTL has grown into a rigorous area of research in many disciplines. SoTL “…is deeply embedded in [each] discipline; its questions arise from the character of the field and what it means to know it deeply” (Hutchings, 2000, p. 7). SoTL research is discipline depended; disciplinary perspectives inform research questions, research methods, research design, and the reporting of research results.

AN ANALYSIS OF SOTL STUDIES IN INTERIOR DESIGN

Interior design is not alone among design disciplines in adopting SoTL research (de la Harpe et al., 2009). However, since Dinham’s (1989) call for design disciplines to study the scholarship of teaching, we have not witnessed the growth of SoTL as a rigorous area of study within design. While there are examples of SoTL research within the field, there is not a comprehensive study of SoTL specific to interior design that is comparable to Weimer. We still do not have answers to the following questions: What is the character of SoTL studies in interior design? What is the interior design disciplinary body of knowledge on SoTL? How does the interior design disciplinary SoTL literature related with the wider SoTL literature?

Weimer (2006) suggests analyzing the current landscape of SoTL through the survey of disciplinary journals. This approach is significant for understanding the developments and trends in the field. In line with Weimer’s approach, a content analysis for SoTL-based research in the interior design’s most predominant journal, Journal of Interior Design, from 1999 to 2010 was conducted. The panel discussion relies on the preliminary analysis of this study as a springboard for discussion.

The reviewed articles published under four categories within the Journal of Interior Design: perspectives, position papers, articles, and reports. The articles that contain at least two of the predetermined keywords (educat*, teach*, learn*, student, pedagog*, university, class*, course) were read to make a final decision regarding their inclusion in the database. The articles were coded based on the Weimer’s (2006) classification scheme of SoTL studies. Out of 119 articles reviewed, there were 40 pedagogical articles (37% of the total) published in the years between 1999 and 2010. Ten of these articles (25% of the database) were published in 2010 and there were no pedagogical articles in year 2008.

Forty-seven percent of these articles (n=19) report studies of wisdom-of-practice (experience-based scholarship). The quantity of articles containing wisdom-of-practice is followed by research scholarship (n=13, 33%) and promising possibilities (n=8, 20%). Among these categories, the most applied type is the recommended in-

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1 These commonalities highlight that SoTL and educational research are not synonymous. SoTL is embedded in each discipline for the improvement of disciplinary teaching and learning, whereas educational research has its own discipline and aims developing theories and frameworks to be used by broad range of disciplines (Tsang, 2010).
The initial findings show that most of these studies primarily represent individualistic efforts with limited information exchange from bigger SoTL literature and disciplinary pedagogical research (e.g., Wang, 2007; Danko et al., 2006). A few SoTL studies are designed to enable repetition by peers and to develop a body of teaching and learning research knowledge (e.g., Carmel-Gilfilen and Portillo, 2010). The majority of wisdom-of-practice studies show that educators depend on their personal experience more than qualitative and quantitative studies to advance disciplinary teaching and learning. As a result of all these factors, the existing effort is far beyond creating a pedagogical common ground. There is no evidence of a body of knowledge on pedagogical studies.

**A CONVERSATION ON MOVING FORWARD WITH SOTL**

In the twenty years since Boyer’s (1990) initial call for scholarship of teaching, SoTL has become a growing movement in many disciplines (see Huber and Morreale (2002) for some examples). There is evidence that illustrates the pedagogical and disciplinary input SoTL can bring to a field (e.g., Jacobs, n.d.). Our brief analysis of pedagogical studies in interior design shows that SoTL has not grown into a movement in interior design. There is not yet a collective body of knowledge in interior design on SoTL as most SoTL efforts represent individualistic efforts that are not well contextualized within the pedagogical literature.

One of the prerequisites for the development of a SoTL movement in interior design is an increased knowledge exchange within scholars. This panel addresses this goal through sharing and discussing SoTL-based research specific to interior design. New educators and senior scholars will briefly discuss their research in SoTL and contextualize their work within the larger frames of SoTL’s value for the discipline of interior design. The panel discussion will concentrate on commonalities, differences, and values in terms of conducting pedagogical research and promote discussion on ways of pushing SoTL studies forward by learning from each other.
REFERENCES (APA)


Journey of Emerging Interior Design Educators: Survival, Growth, Acculturation, Adaptation, Assimilation

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JANE KUCKO
Texas Christian University

ERIN ADAMS
Western Carolina University

KELLIE HAMRE
North Dakota State University

MANDY PICKETT
Mississippi College

NARRATIVE

INTRODUCTION
The Sustaining Interior Design Education (SIDE) Initiative succinctly summarized the critical need for additional interior design educators due to retirement, increased number of students, institutional growth, and newly developed institutions (SIDE, 2008). One dilemma identified by the SIDE experts was the need to locate and attract additional educators to meet this national need. Two target markets identified for new educators included practicing, interior designers who were interested in teaching (at least part-time) and graduate students interested in teaching rather than practicing in the field. The identified need for more educators coincided with the national economic downturn sparking a graduate program enrollment increase at many institutions (personal communication, L. Waxman, September 8, 2010). In addition, an increased interest was expressed by practitioners who experienced employment lay-offs and found themselves interested in a more stable position (personal communication, L. Lee, February 12, 2010). Although statistics are not available, it seems that interest in serving as an interior design educator has increased even as position announcements for entry-level educators appear on websites (e.g. IDEC, 2010). Since dissemination of the SIDE document, many resources have been developed by interior design professionals and strategically distributed through various avenues (e.g. special CEU courses at NEOCON). These resources include such items as an interior design textbook for teaching interior design (Ankerson & Pable, 2008), mentorship links through the Interior Design Educators Council (IDEC) to IDEA Line Advisors, a “New Route for your Career: 10 Talking Points”, and the IDEC Academy course “Becoming an Interior Design Educator” (IDEC, 2010). However, less attention has been spent on preparing “the emerging interior design educator;” for the shift into academia. As effort has been made to attract students and practitioners into the interior design education profession, equal attention needs to be given to the increased retention and successful strategies needed for these new educators.

PURPOSE
The purpose of this panel discussion is to explore the journey that emerging educators experience as they acculturate, and eventually assimilate (see Figure 1) into the environment of teaching interior design in higher education institutions. The panel members will discuss their encounter with culture shock, how they learned to manage the classroom and overcome worries, navigation of collegial issues, learning the “name of the game,” and exploring doubts about their own teaching abilities. This presentation may be of interest to new educators navigating the first years of their career and those who wish to retain and/or mentor new faculty.

PANEL
Panel members will consist of four educators (who emerged from practice, recently left graduate school, or served as a department head) from around the country who have been teaching in public or private institu-
tions. The moderator will be an educator of over twenty years. Based on a modified cultural assimilation framework (Barkan, E. R., Vecoli, R. J., Alba, R.D., & Zunz, O., 1995) panel members will be asked to describe their experiences in academia that surround personal expectations, myths of working with today’s students, unexpected surprises and humorous dilemmas, strategies for coping with workload, successful stories of achievement, and suggestions for those investigating this career. See Tables 1-2 and Figure 2.

**FRAMEWORK**

A modified cultural acculturation/assimilation framework was used to describe the process of this phenomenon. See Figure 1. “Acculturation” is the process of an external culture change resulting from contact between two cultures (e.g., moving from practice into teaching). The term “assimilation” is often used with regard to immigrants and various ethnic groups who have settled in a new land (Rushton, 2001; Shall & Gramann, 1998). The process of moving from initial contact through acculturation to assimilation reflects many experiences of new interior design educators moving into the teaching profession. In their journey, they are shifting from a known culture into one that has had little published (specific to interior design) and where adaptations must be made to survive and thrive.

**PROCESS OF ACCULTURATION TO ASSIMILATION**

Following is a description of each phase and some issues encountered by emerging educators. Several of their “voices” are also captured.

Acculturation is the process of external culture change resulting from contact between two cultures. Acculturation occurs as the emerging educator interviews, accepts a position, and moves through their first year or two of teaching. As one of the educators described, “As a new educator, the first issue I was faced with was the reality of truly not knowing enough about the expectations of academia to even know that I should be worried! ..My first tenure-track job, I was teaching classes the first year that I had never taught before and found myself extremely frustrated at every turn. Having never taught the classes or seen the textbooks, the simple task of creating the syllabus and weekly schedule seemed monumental.” External culture changes may be experienced by both cultures; the emerging educator must make adjustments as well as the individuals (e.g., students, colleagues, and staff) within the existing culture.

Adaptation is the pattern of behavior which enables a culture, or individuals within the culture, to cope with its surroundings. Adaptation does not occur in just one phase of this process; however, if it does not occur, the emerging educator leaves academia or is asked to leave. Some of the identified issues that require adaptation include keeping up with technology changes, coping with the impact of budget cuts and teaching the millennial student population. Patterns of behavior they use to cope include locating mentors, systematically asking critical questions, giving up personal time/money to “get the job done,” and using appropriate humor. One emerging educator describes a humorous adaptation she made when teaching a required liberal studies course for over sixty students in an auditorium setting. “I found that keeping the attention of this HUGE art class was much more difficult than anticipated. One of my students raised his hand during the middle of the lecture and actually said, “Can you turn the lights back on… I’m about to fall asleep”. I’ve found that humor works well to diffuse most situations, so I told him I had an even better solution! I turned the lights back on and made the entire class of 60+ students stand up, move into the aisles and onto the stage and required that they all do the Hokey Pokey with me in order to get their blood pumping and prevent them from getting sleepy…Wow, the audacity of some students still floors me!”

Accommodation is the process of learning in which a person applies an existing understanding of the world to new objects or information, without necessarily changing the understanding itself. The new world the emerging educator moves into includes pressures to perform. At research institutions, the “publish or perish” adage is alive and well. For educators moving into a teaching-focused institution, a teaching load can be three to four classes per semester with heavy advising demands. One emerging educator describes the following accommodation and learning: “...It did not take long for me to realize that I needed to refine my time management skills to get all tasks accomplished and achieve my goal of tenure. In order to aim for this very vague and constantly moving target called tenure, I needed to find a balance between scholarly research, service to the students, university and community and what I actu-
ally signed up for... teaching. This was by far the biggest and most frustrating challenge for me.”

Integration is the process of bringing people of different racial or ethnic groups into unrestricted and equal association. There is a hierarchy within programs, departments, colleges and the college/university as a whole. As the emerging educators reach goals set by the academy, the process of unrestricted and equal association may occur. In some cases, powerful stories exist of colleagues not proving helpful to the emerging educator. It is important, therefore, for them to build a community outside their immediate program and colleagues. By doing so, integration within the academy will occur more quickly, respectful associations will develop and continued learning will take place. The academy is a community beyond teaching. There are many resources and cultural activities that enrich connectedness and move the emerging educator into the role of becoming a citizen of the academy.

Assimilation is the process whereby a minority group gradually adopts the customs and attitudes of the prevailing culture, resulting in the cultural traits of the assimilated group becoming indistinguishable. As with any organization, learning the language, customs, symbols, and attitudes of the culture serves to move the emerging educator into the new role of mentor for others.

**SUMMARY**
Emerging educators need assistance in moving successfully from acculturation to assimilation to help 1) support existing interior design programs, 2) bring new thought, passion, energy and processes into the academy, and 3) educate the next generation of practitioners. Once this phenomenon is understood more holistically, strategies to help them successfully overcome obstacles can be further developed. This panel presentation serves as one more step to more clearly understanding the phenomenon the “emerging educator” experiences as they move into higher education.
Figure 1. A model of acculturation, integration, and assimilation modified (Barkan, et. al., 1995).

Figure 2. Issues Identified by Emerging Interior Design Educators
Table 1. Sample of acculturation and/or assimilation issues

<table>
<thead>
<tr>
<th>Assimilation and/or Acculturation</th>
<th>Cultural Cues</th>
<th>Suggested Assimilation and/or Acculturation Indicators</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Behavior Observation</strong></td>
<td>Language</td>
<td>• Tenure/promotion</td>
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<td></td>
<td>Customs</td>
<td>• Faculty meetings</td>
</tr>
<tr>
<td></td>
<td>Traditions</td>
<td>• Commencement ceremonies</td>
</tr>
<tr>
<td><strong>Group Norms</strong></td>
<td>Standards</td>
<td>• Student evaluations given but “Why is there no one coming to my class to evaluate my teaching?”</td>
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<td></td>
<td>Values</td>
<td></td>
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<tr>
<td><strong>Rules of Game</strong></td>
<td>Rules to all in organizations</td>
<td>• Balance of teaching, research &amp; service</td>
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<tr>
<td></td>
<td></td>
<td>• Creative scholarship for retention</td>
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<td></td>
<td></td>
<td>• Promotion &amp; tenure</td>
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<td></td>
<td></td>
<td>• Difficulty in learning how to excel as an educator with other time demands</td>
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<tr>
<td><strong>Climate</strong></td>
<td>Climate of group in interaction</td>
<td>• Respect level</td>
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<tr>
<td></td>
<td></td>
<td>• Struggles as a young educator with students that are close to my age or older and the lack of respect for authoritative position</td>
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<tr>
<td><strong>Embedded Skills</strong></td>
<td>Interior Design Teaching Skills</td>
<td>• Understanding &amp; teaching the Millenial student</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Keeping up with the ever-changing face of technologies used in the interior design profession</td>
</tr>
<tr>
<td><strong>Habits of Thinking, Acting, Paradigms</strong></td>
<td>Shared Knowledge for Socialization</td>
<td>• Paradigms: sluggish economy (on many different levels), budget cuts, hiring freezes, increased teaching loads, competitive job market, increase in class size.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• “Is this the paradigm I bought into when I accepted this position?”</td>
</tr>
<tr>
<td><strong>Shared Meanings of the Group</strong></td>
<td></td>
<td>• Potential difficulties in student recruitment and retention</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• How to respond to the student question, “Can we really get an interior design job when we graduate into this market this year?”</td>
</tr>
<tr>
<td><strong>Metaphors of Symbols</strong></td>
<td></td>
<td>• New office</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Title of position</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Standing in front of my room... oh my!</td>
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Table 2. Framework definitions.

<table>
<thead>
<tr>
<th>Term</th>
<th>Definition</th>
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<tbody>
<tr>
<td>Accommodation</td>
<td>Process of learning in which a person applies an existing understanding of the world to new objects or information, without necessarily changing the understanding itself.</td>
</tr>
<tr>
<td>Acculturation</td>
<td>A process of external culture change resulting from contact between two cultures; the focus on the adjustments and changes experienced by minorities in response to their contact with the dominant majority.</td>
</tr>
<tr>
<td>Adaptation</td>
<td>Patterns of behavior which enable a culture, or individuals within the culture, to cope with its surroundings.</td>
</tr>
<tr>
<td>Assimilation</td>
<td>The process whereby a minority group gradually adopts the customs and attitudes of the prevailing culture, resulting in the cultural traits of the assimilated group becoming indistinguishable.</td>
</tr>
<tr>
<td>Culture</td>
<td>Culture consists of socially acquired information including beliefs, values, ideas, knowledge, norms that are transmitted from another person (directly = through imitation, or teaching; or indirectly = artifacts (e.g. symbolic or iconic information as in writing or images)).</td>
</tr>
<tr>
<td>Integration</td>
<td>The process of bringing people of different ethnic groups into unrestricted and equal association.</td>
</tr>
</tbody>
</table>


**REFERENCES (APA)**


The Graduate Degree as the First Professional Degree in Interior Design: A Panel Discussion

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JANE KUCKO  
Texas Christian University

JOHN WEIGAND  
Miami University

NARRATIVE

PURPOSE
The purpose of this panel discussion is to examine the issues surrounding a proposal to require an accredited Master's degree (potentially the MID) as the first professional degree not only for teaching, but also the practice of interior design. The panel intends to examine the current situation in both higher education and in practice as we consider the feasibility of this proposal.

BACKGROUND
The issue of the state of interior design graduate education has long been with us. In 1994 participants in the Polsky Forum confronted and discussed the growing crises facing the interior design profession. An especially compelling issue even then was the need for a greater commitment to graduate education by all the Interior design stakeholders: educators, practitioners and industry leaders (Dickson & White, 1994). Numerous authors since have echoed this challenge and have noted the increasing need for a research-based practice that can meet the demands of an increasingly complex built environment (Dohr, 2007; Guerin, 2007; Weigand & Harwood, 2007). Design educators and professionals continue to debate the merits of better defining the graduate degree in interior design—and more specifically designating the MID as the graduate/master’s degree recognized by the profession. The current lack of clarity in degree nomenclature and content is particularly evident in the process of hiring design educators. Additionally, there is general confusion both within and outside the profession about graduate degrees and the benefit they provide. This confusion has resulted in little concrete action in the direction of support for graduate interior design education generally and for the recognition of the MID degree specifically.

ISSUES FOR DISCUSSION
This panel’s proposal reflects the current trend in architectural education toward replacing first-professional BArch programs with an accredited MArch. It was with this understanding, for example, that the University of Louisiana at Lafayette launched its MArch program and phased out its BArch in favor of a four-year, pre-professional BS degree in Architectural Studies that could lead to entry into the accredited MArch program that the University now offers.

There are a number of factors that are driving the discussion surrounding the establishment of an accredited Master’s degree as the first professional degree for teaching and for practice. These include (but are not limited to):

Institutional pressures: There is increasing pressure to lower undergraduate degree credit hour requirements (Example: University of Louisiana at Lafayette has mandated that, unless there are accreditation requirements that dictate specific credit hour requirements, all undergraduate programs must be complete within 120 total
credit hours); this pressure is coupled with the drive to increase retention and graduation rates; schools are re-evaluating the role and number of general education requirements within the undergraduate curriculum; in most states there are shrinking resources and a lack of stable funding for existing, let alone new programs in higher education; there are a limited number of qualified faculty for both undergraduate and graduate programs.

**Recognition of professional interior design:** Both educational institutions and allied design professionals underestimate the explosion of knowledge within the interior design field and the amount of material that must be covered in a professional program in what is becoming a shrinking rather than expanding time frame. Furthermore, the increasing emphasis on evidence-based design requires the incorporation of research into the design process. This has traditionally happened at the graduate level.

**The greater emphasis on collaborative design both in education and in practice:** At the same time that there are increasing demands for specializations and technical expertise, accreditation guidelines have shifted toward content that emphasizes interdisciplinary study and a strong liberal arts base. Effective collaboration, however, requires that the collaborators have specific areas of expertise that they can share with their peers and contribute to the endeavor. This expertise is more likely to be achieved at the graduate rather than the undergraduate level. Greater parity with architecture’s educational track would facilitate the integration of interior design expertise into the design process.

**Professional “road blocks”:** The lack of a ‘single voice’ that can represent the profession as a whole hinders both educational and legal recognition of the value of graduate education in interior design. The AIA and the accrediting body, NAAB have established a strong advocacy for architectural education and practice. While the architecture profession has been organized longer, the interior design profession could learn from its effectiveness. The array of professional organizations that have staked a claim on various aspects of the practice of interior design is a significant factor that contributes to our lack of a ‘unified voice.’ This situation has produced a status quo that is difficult to see one’s way out of and represents perhaps the biggest challenge to moving forward with our proposal.

**CONCLUSION**

In the final analysis we understand that, given the existing factors outlined above, changes to the status quo will take time. In the first place, changes will require a more unified commitment to graduate education that reflects recognition on the part of all interior design stakeholders that graduate education is crucial to the future of the interior design profession. Just as Rome was not built in a day, so too, this change will not take place overnight. We recognize that implementation of the proposal we are advocating is not likely to impact the current cadre of interior design educators. But this panel discussion is intended to initiate action in the direction of change.

In light of this call for action, the panel is united in its call for movement forward toward a goal of making the Master’s degree the first-professional accredited degree. Betsy Gabb, one of the panelists, believes “the biggest obstacle is the fragmentation of the profession. If the profession could come together with one voice, most of the challenges could be overcome.” John Weigand, another member of the panel, states: “My preference is for an ‘integrated’ MID degree that would both raise the bar on professional education and similarly provide a baseline education for teachers.” He proposes a graduate degree that would combine practice with research and would provide a more flexible model to serve a variety of constituencies. He concludes, “. . . the Master of Interior Design (MID) should be adopted by the profession as a recognized professional + research master’s degree leading to professional licensure and college-level teaching. Over time [he is not predicting or proposing a timeline], the MID should become the first professional and accredited degree in the discipline.”

Given the complex issues surrounding this proposal, we conclude that this is an excellent opportunity for IDEC to take the lead in exploring the possibility of an accredited Master’s becoming the first professional degree for practice as well as teaching. We recommend the convening of a task force to review and refine this proposal. IDEC might also bring this proposal before the Issues Forum to solicit consensus from our allied organizations, While we do not expect the implementation of this proposal to be either easy or quick, we feel that it is in the best interests of the interior design profession for IDEC to take the lead in support of recognizing an accredited Master’s degree as the first professional degree in the discipline.
REFERENCES (APA)


The ability to work in groups is a fundamental component to any educational or professional environment (Colbeck, Campbell, Bjorklund, 2000); however that statement is especially applicable to the design profession. Katzenbach, Entel, and Mahony (2002) asserted in their piece entitled, Team Dynamics, that group work in interior design is unique because design professionals rely on collaborative work throughout all stages of the design process. Furthermore, Katzenbach et al. (2002) maintain that the increased demands being placed on design professionals and the tendency of the profession moving toward even more interdisciplinary work (Russ & Dickinson, 1999) creates an amplified need for the ability to work in partnerships. Since this collaborative work is such an integral component of work in the design field, it is imperative that instructors implement effective grouping strategies in the design curriculum. But, many instructors are either unaware or misinformed on effective grouping strategies (Rau & Heyl, 1990).

Russ & Dickinson (1999) assert that many of the problems associated with design collaboration result from a lack of understanding and respect for the process among designers (Russ & Dickerson, 1999, p. 54). An integral component in ensuring that collaborative learning groups will be effective learning tools for students is if instructors instill the importance of a shared purpose among each group (Katzenbach et al., 2002). Beside

Russ & Dickinson (1999) assert that many of the problems associated with design collaboration result from a lack of understanding and respect for the process among designers (Russ & Dickerson, 1999, p. 54). An integral component in ensuring that collaborative learning groups will be effective learning tools for students is if instructors instill the importance of a shared purpose among each group (Katzenbach et al., 2002). Beside

the fact that collaborative learning is pertinent in the design field, employers want today’s college graduates to have polished communication, leadership, analytical, and teamwork skills, as well as initiative, interpersonal, social networking, and problem solving skills. (NACE, 2010). Cassidy (2006) follows with the assumption by employers that academic institutions are responsible for preparing students in such skills for the workplace. Therefore, it is critical that instructors offer an improved perspective on the collaborative efforts of the profession.

The issue of how to formulate groups in the classroom setting is also often unclear for interior design instructors. Students within the Department of Interior Design at the University of Tennessee at Chattanooga were recently polled on their perceptions of the way group work is presented in the classroom. Overall, the students were open to the idea of working collaboratively to complete tasks. However, many expressed concerns relating to how the groups were formed. Employing organized groups of students is a very important element in developing successful collaborative learning groups. (Katzenbach et al., 2002). There are generally two documented methods for determining group membership: self-selection and assignment. The chief characteristic of self-selection is letting students choose their own groups (James, McInnis, Devlin, 2002). Carnegie Mellon University (CMU) recently published an article that observed the natural tendency of students, who were allowed to self-select groups. Students tended to form groups that were “homogenous with respect to ability and culture… (which) often resulted in strong teams and weak teams.”(CMU, n.d.)  Rau & Heyl (1990) believe that self-selection groups are most appropriate for “…trial or ungraded sessions with temporary groups so that students can get to know others in the classroom.”
When instructors assign members to a group, this can happen intentionally, randomly, or on the basis of a criterion selection. (CMU, n.d., Rau & Heyl, 1990) If an instructor chooses to intentionally group students, Katzenbach et al. (2002) called complimentary skills among group members the strongest building block for a design team. On the other hand, CMU suggests grouping students by motivation to prevent students with a motivated work ethic from being responsible for students with a weaker work ethic (CMU, n.d.). Random assignment of students to a group is no more than simply grouping students without specific method or pattern. This technique can be an effective mode of grouping students; however it creates the strong possibility for student “free-riders” who take advantage of the work of others (Rau & Heyl, 1990). This fact is backed by the poll taken of Interior Design students at University of Tennessee at Chattanooga. Many expressed concerns over issues of group partnership and individual group member participation. Criterion-based selections are typically used when instructors want to group students on ability levels since a criterion such as a test or examination are used to gauge student’s aptitude (Rau & Heyl, 1990). Both Rau & Heyl (1990) and CMU (n.d.) believe each type of grouping strategy to be an effective method of forming groups, however prior knowledge, skill, role, diversity and size are all important factors that should be considered in regards to the formation of a group (CMU, n.d.).

Apart from selecting the type of method to use with regard to group formation in collaborative projects, the group size should be considered as well. There are both benefits and negative consequences associated with the number of members in each group. Problems arise when groups are too large because it becomes hard to ensure that all students participate and contribute equally within the group (Raul & Heyl, 1990), while member expectations or member roles in large groups can become blurred and lack clear direction (Russ & Dickinson, 1999). Katzenbach et al. (2002) described a “herding” effect that affects large groups. This is a reference to a large group whose vision becomes unclear and/or settles on vague statements of purpose because of a lack of clear direction or leadership. In contrast, forming groups that are too small can create problems such as a lack of diversity among group members, a lack of varying thinking styles, and a lack in experience among group members, but forming permanent groups helps maintain consistency and stability among group members. (Raul & Heyl, 1990).

Instructors are also faced with the difficult challenge of grading group work fairly. In their article entitled, Assessing Group Work, James et al. (2002) provided two suggestions for grading group work more equitably. They suggest providing two grades; one grade for the overall group and one grade for each individual in the group. The need for an individual grade is vital because “work-products of the group are largely individual (and) each member has strong individual accountability to his or her task.” (Katzenbach, 2002) Further support for providing individual grades and how it produced personal accountability within students was shown in the Carnegie Mellon University article and with the polling of Interior Design students at the University of Tennessee.

In conclusion, while group work is a fundamental component of professional design work, multiple dilemmas still exist for design education. How do we deal with student antipathy towards group work? How should groups be formulated? How do we evaluate students individually yet hold the whole group accountable at the same time? These are just some of the inherent problems found in this method of teaching. Exploration and open discussion of existing paradigms and successful strategies of employing group work within the design curricula still needs further exploration. This collaborative examination can only benefit both instructors and students in interior design education.
REFERENCES (APA)


To Design or Not to Design... How Do We Find the Best Interior Design Students?

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NARRATIVE

Due to the current economic condition, higher education has been assigned a negative outlook for the future. Many universities and colleges are faced with budget cuts, layoffs, faculty and staff furloughs, and cutting or eliminating programs (Goodman, 2009). Across college and university campuses, the elimination of majors and undergraduate degree programs, master’s programs, and doctoral programs are being used as an effort to reduce budgets. Most of the eliminations are based on programs with a low number of graduates. Low numbers are considered fewer than eight graduates for undergraduate degrees and master’s and doctoral programs who have fewer than two graduates in five years. No programs are sacred with eliminations occurring in areas such as nursing, art, art education, geology, and philosophy and on the master’s level architecture (Glenn, Schmidt, Laster, & Miller, 2010).

Nationally there is a prediction that by 2011 the number of high school graduates will fall by 83,000 and a further ten percent drop is predicted by 2013 (Dougherty, 2008). With these predictions and the dire straits of the economy, many universities believe that the future for their continued success and existence lies in increasing student numbers on their campuses. Interior design as a college major had been on the increase since 2000 with some interior design programs reporting 100-300% increases (Bien, 2003). However, with the current hardships in the profession and opportunities diminishing for students, the current trend for interior design programs is lower student numbers. Too many students can pose problems but not enough students can be a disaster (Bartlett, 2001).

In 2007, Waxman and Clemons discussed the problem of preconceived perceptions in incoming students into interior design programs. Many college career areas from engineering to interior design face the same problem of students not understanding their majors. Research reveals that only 21% of students entering college are sure of their decision about their major course of study (Kazmer, 2004). Popular reality televisions shows like those on the Home and Garden channel influenced students to pursue careers in interior design (Waxman & Clemons, 2007). Freshmen enrolled in interior design courses were quickly disillusioned by the technical and rigorous curriculum content upon which an interior design degree is based. These students drop out quickly realizing that their perception of interior design was solely based on television shows. How can interior design programs recruit students who have an accurate perception of the professional of interior design?

One interior design program, at Mississippi State University, has used several methods to help potential students develop an accurate perception of the professional of interior design. For two years, the program offered summer design camps to introduce the profession of interior design to high school students. Faculty from the interior design program also developed an interior design curriculum for high school teachers, in 12 public schools throughout the state, to aid in their teaching of interior design. However, to measure if any of these methods have been effective this interior design program determined that current students in the program needed to be surveyed as to how they were recruited into the program and demographic data. ID faculty developed an online survey, which is now in its third year.
Data from the survey resulted in some expected results, such as, over the three year period the gender factor remained at 98% female and other results that were not so expected. Over the three year period, 48% of the students in first year interior design courses had changed their major. Data, from the question whether they choose Mississippi State University (MSU) first or the Interior Design major at MSU first, remained consistent over the three year period with 53% selecting MSU first, 44% selecting the interior design major first, and 3% selecting MSU for other reasons. Students were asked whether they had looked at other interior design programs at other universities. This answer varied over the 3 year period, with initially only 39% of interior design students looking at other universities in 2008 to 45% of students looking at other universities in 2010.

Consistently over the 3 year period, the number one choice for how interior design students first learned about the MSU Interior Design program was from the interior design website with a total of 43%. In 2009 Noel-Levitz conducted a survey on students bound for college. Eighty-eight percent of these students made decisions for consideration of universities based on their opinion of the university’s web site. Other questions on this survey were directed at this Millennial generation and their expectation of how technologies entered into their college selection. From marketing campaigns to on and off campus services, these technologies are a part of the process in their decision making process of what university to attend. Many students are seeking information beyond what a web site can provide demanding more collaborative repositories such as blogs and wikis making it imperative for universities to provide the most current technologies (Lindbeck & Fodrey, 2010).

Other data that was collected from the MSU survey asked the question about why students decided on interior design as a major, the students selected their top three from the choices listed on the survey. The top four reasons for their major choice were the same except for their numerical ranking. In the 2008 survey, the number one reason for the major selection was they wanted to do something creative; number two was they were interested in architecture but like interiors better; number three had the same percentages for they liked art and they wanted to do something creative. The 2010 survey, the number one reason for the major choice was they were interested in architecture but liked interiors better; number two was they wanted to do something creative; number three they liked art; and number four was they wanted to have a career that could help people.

In 2008 at MSU, the university began offering freshman seminar courses, which were one hour credits. Freshman students were encouraged to take up to two a semester to assist them in their decision about a major. On the survey question about how did you learn about the interior design program, several students each year write in that they learned about the major from the freshman seminar interior design class. Only one student in the three year period wrote-in that they had taken an interior design course in high school, and there were no students who wrote-in that they had attended a summer design camp. Other written responses will be shared during the presentation.

The presenters, panel, and audience will discuss current enrollment trends in their interior design programs, as well as the current student perception of interior design. The panel participants will share methods, data, and trends from their institutions. Each panel participant will be asked to share their expertise and experience through such questions as: (1) What type of recruitment is used in their interior design program? (2) Does their state offer an interior design curriculum in K-12 schools? (3) Does their program depend or rely on their web site for potential students? (4) Does their program use other methods such as Facebook to recruit and educate students about the profession?
Panel
Communication & Media

To Design or Not to Design......How Do We Find the Best Interior Design Students?

Beth R. Miller
Amy Crumpton
Mississippi State University

APPENDIX

Interior Design Program, Student Survey

Question 1 - Choice - One Answer (Drop Down)
Age
18
19
20
21
22
23
24
25
over 26

Question 2 - Choice - One Answer (Drop Down)
Gender
Male
Female

Question 3 - Choice - One Answer (Bullets)
Year in the Interior Design Program (indicate based on current class enrollment)
Prior to 1st year
1st year (ID Graphics and Studio I)
2nd Year (Studio II)
3rd year (Passed Portfolio review, Studio III, Studio IV)
4th year (Studio V, Studio VI)
Non-Major

Question 4 - Choice - Multiple Answers (Bullets)
Please select the statement below that best describes your reason for selecting the _____Interior Design Program
I chose to attend __________ University first, and then (either initially or eventually) selected Interior Design as a major
I chose Interior Design as a major, then selected ___________ University.
Other, please specify

Question 5 - Yes or No
Did you attend a Jr College prior to coming to _____?
Yes
REFERENCES (APA)


POSTERS
The Specification and Use of Sustainable Flooring Materials by Interior Designers in Residential Design Practice

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NARRATIVE

Americans have long been concerned with the natural environment, and many people have a positive attitude toward environmental programs (Berger & Corbin, 1992; Mendler, Odell & Lazarus, 2006). According to a survey of 3,600 consumers in nine United States (US) metropolitan areas, although 93 percent of Americans worry about their home's environmental impact, only 18 percent are willing to pay more to reduce such impact (Buchta, 1996).

Interior designers are positioned to have a major influence on sustainability. “Interior designers who focus on environmentally responsible design plan, specify, and execute solutions for interior environments that reflect concern for both the world’s ecology and the inhabitant’s quality of life” (Guerin, 2003, p. 45). Interior designers have been progressive creators in regard to economic and social issues; however, now they are adding a responsibility—namely, solving environmental problems in their design practices (Forster, Stelmack, & Hindman, 2007). To meet the growing concern related to environmental issues, interior designers should emphasize environmental, economic, and social sustainability.

To satisfy their customers, manufacturers and designers need to develop and select building products that offer an attractive balance of environmental and economic performance, health and safety, and community benefits. Designers’ and builders’ conscientious selections of materials are often constrained by home environments because they consider not only residential health and safety, but also benefits to the natural environment. In their book *Cradle to Cradle*, McDonough and Braungart (2002) stated:

Imagine what you would come upon today at a typical landfill: old furniture, upholstery, carpets, televisions…and plastic packaging. Resources are extracted, shaped into products, sold, and eventually disposed of in “graves” of some kind, usually a landfill or incinerator. Cradle to grave designs dominate modern manufacturing. According to some accounts more than 90% of materials extracted to make durable goods in the US become waste almost immediately (p. 27).

For example, Moussatche and Languel (2001) in evaluating interior materials of Florida’s educational facilities determined that the service life of interior flooring materials expands an otherwise limited Service Life Cycle Cost (SLCC). However, materials for all facilities should contribute to the natural environment as well as human health and safety—factors that eventually come into play because people spend much of their lives in homes and educational facilities.

Interior material qualification is one way by which interior designers can contribute to this sustainable design attempt. Many people have been learning about the benefits of sustainable floor coverings and have become interested in the available options. Although customers and interior designers are becoming increasingly interested in sustainable materials, education in the field and believable, non-prejudiced referenced resources provide low guidelines for designers in this task (Malin & Wilson, 1997). One area that has seen a particularly strong demand for environmentally friendly as well as more exotic options is flooring, yet limited research exists in the area of flooring materials in the residential practice of interior designers. As interest in this area is only expected to increase, this study evaluated appropriate choices of flooring materials in residential practice. It also provided...
interior designers with a framework for the evaluation of sustainable flooring material regarding the health of the environment as well as people.

**PURPOSE OF THE STUDY**
The current issues of sustainability, human health, and the environment make it important not only to investigate interior designers’ current flooring choices, but also to examine core factors that influence these behaviors for future interventions. Thus, the purpose of this study was to identify environmental factors that predict designers’ material choices for floors. The primary purpose of the current study was to examine sustainable interior floor coverings, incorporating as many of these factors as possible, as well as explore the effect of such choices on residential design by applying the theory of planned behavior (TPB) (Ajzen, 1991). TPB is considered one of the most effective frameworks for explaining what factors affect how interior designers evaluate a behavior.

**RESULTS & CONCLUSIONS**
**Characteristics of Participants**

The sample consisted of 225 individuals; 198 (88 percent) participants were female. Most participants fell within the 45 to 54 years age range (n = 84, 37.3 percent), had college degrees (n = 169, 75.1 percent), and self-identified as Caucasian (n = 209, 92.9 percent). Geographic regions with a high response rate were California (n = 37, 16.4 percent), Florida (n = 30, 13.3 percent), and Texas (n = 12, 5.3 percent).

According to the years of practice in interior design, about half (n = 104, 46.2 percent) of the participants have practiced more than 20 years, which may be reflected in the result that respondents (n = 73, 32.4 percent) had chosen sustainable flooring materials two to five times during their residential practice. In addition, 55 (24.0 percent) reported using it fewer than two times, while 41 (18.2 percent) reported using it more than 20 times in residential practices. More than half (n = 127, 56.4 percent) reported the size of their typical interior design project as 3,001 to 6,000 square feet, while 30.2 percent (n = 68) reported projects that were less than 3,000 square feet. One respondent group that used sustainable flooring the most (i.e., more than 20 times) reported project sizes of 3,001 to 6,000 square feet (n = 23, 41.8 percent).

**Hypothesis testing.** The initial results indicated the presence among the independent variables. H1a predicted that beliefs about environment would be positively associated with attitude toward the use of sustainable flooring materials (β = 0.645, R² = 0.416, p < 0.001). However, H1b predicted that beliefs about human health, safety, and comfort would be positively associated with attitude toward the use of sustainable flooring materials. The data did not support H1b. Beliefs about human health, safety, and comfort were not related to attitude toward the use of sustainable flooring materials (β = -0.026, p > 0.001). Thus, environment was the only assumption of attitude toward the use of sustainable flooring materials.

H2 predicted that normative beliefs (NB) would be positively associated with subjective norm (SN), which was found to be statistically highly significant (β = .661, p < .001). H3 hypothesized that control beliefs (CB) would be positively related to perceived behavioral control (PBC). It was found to be statistically significant (β = .554, R² = .307, p < .001). In addition to the predicted relationships, several other relationships were found among the dependent TPB variables—ATT, SN, PBC, and BI. The correlation for ATT and SN was significant (.432, p < .001). The relationship between ATT and PBC was correlated positively (.528, p < .001). The correlation between ATT and BI was also significant (.678, p < .001). In addition, a significant relationship was evident between SN and PBC (.481, p < .001) and SN and BI (.499, p < .001). Finally, the relationship between PBC and BI was significant (.755, p < .001).
This study addressed significant effects when using sustainable flooring materials in residential design practice. Furthermore, it provides designers with the knowledge and behaviors, as well as helpful tools, to use for assessing future practices in regard to flooring materials in residential design or other building types in future design projects. In particular, the present study assesses and tests a conceptual model based on the theory of planned behavior (TPB) (Ajzen 1991; Ajzen & Fishbein, 1985), considered one of the most useful frameworks for explaining which key factors influence how people evaluate a behavior and how compatibly they perform that behavior (Hansen, Jensen, & Sologaard 2008; Hsu, Wang, & Wen, 2006; Lim & Dubinsky, 2005; Tan & Teo, 2000; Taylor & Todd, 1995, 1995a).

In addition, the outcomes of this study are valuable for developing approaches to assist interior designers to maximize effectiveness in flooring choice behaviors. The study can contribute to interior designers' awareness of healthy alternatives for sustainable flooring materials for residential use. Ultimately, this study is significant because it begins the systematic study of the effect of using sustainable flooring materials.

REFERENCES (APA)


An Instructional Design for Sustainable Strategies in a Lighting Design Studio

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NARRATIVE

INTRODUCTION
This poster presents strategies for teaching sustainable design in a lighting studio offered to third year Interior design students at the University of Oklahoma. Anderson’s ACT-R theory is utilized to guide students through the process of learning about sustainable design. Anderson’s ACT-R theory focuses on three stages of skill acquisition: cognitive, associative, and autonomous stages. These three stages offer implications for teaching sustainable design in a lighting studio and are analogous to stages employed in lighting design problem solving.

LITERATURE REVIEW
Cognition and Problem Solving

Early cognitivists offered many theories on how people solve problems. For example, Wallas (1926) identified the following four stages in problem solving: preparation, incubation, inspiration, and verification. Likewise, Polya (1957) suggested four stages which rely heavily on cognition: understanding the problem, devising a plan, carrying out the plan, and looking backward. While early theorist focused mainly on explaining how people solve problems, contemporary theorist focus on cognitive strategies and information processes people use to solve problems.

Knowledge is a key component of information processing relevant to problem solving. Cognitive Psychologist identified two distinct types of knowledge: declarative and procedural. Anderson (1995) notes “declarative knowledge is explicit knowledge which we can report and of which we are consciously aware” (p. 284). Procedural knowledge involves knowing how to execute tasks (J.R. Anderson, 1983, 1995; Corno et. al., 2002). Anderson (1995) notes “human cognition is always purposeful, directed to achieving goals, and to removing obstacles to those goals” (p. 237). Likewise, design problem solving involves solving problems and achieving client/user requirements.

Anderson’s ACT-R Theory

ACT-R (Adaptive Control of Thought—Rational) was developed by John Robert Anderson at Carnegie Mellon University. The basic premise is that cognitive tasks humans perform consist of a series of separate actions and procedures.

ACT-R’s main assumption is that knowledge can be classified as declarative and procedural. Declarative knowledge is factual knowledge i.e. knowledge of facts or how things are, while procedural knowledge is how to perform cognitive tasks. Anderson (1995) notes “procedural knowledge is represented as productions or condition-action systems”. For example, the hypothesis is, if certain conditions apply, then perform certain action (Anderson, 1995).

According to Anderson, procedural knowledge is acquired in three stages of skill development: cognitive, associative, and autonomous. The first stage, the cognitive stage represents the phase in which “subjects develop a declarative encoding of the skill; that is; they commit to memory a set of facts relevant to the skill” (Anderson, p. 273). The second stage, the associative stage results out of repeated practice. As a result of which performance becomes smoother and more rapid. This stage fosters practice which leads to proceduralization. As the
procedure becomes more automated through practice, automaticity emerges in the autonomous stage.

**PROCESS**

Anderson’s ACT-R general implications for teaching procedures are the following:

- Students must develop an accurate and elaborate declarative representation of the desired procedure (actions) and conditions under which it should be used;

- Teaching can be accomplished using the expository or discovery methods. The expository method is teacher-centered instruction, while the discovery method occurs via discovery;

- Feedback is an important component, because it fosters proceduralization; and,

- Continued practice leads to automatization (Anderson, 1995).

To apply these strategies in the lighting design studio in the first step, students are guided through the development of accurate and elaborative representation of lighting design principles. The course begins with fundamental premise that “Interiors designers have an ethical responsibility to safeguard the health, safety, and welfare of the occupants of the interiors they specify. As our planet experiences increases in population and a depletion of natural resources, protecting the environment has become increasingly, essential for health and welfare of future generations. As global citizens, interior designers can play an active role in educating consumers and making conscious effort to specify products and materials that minimize the impact on the environment.” (Winchip, 2005).

A major emphasis is placed on teaching students how lighting design plays a significant role in minimizing the impact on the environment. For example, Winchip 2005 notes “Sustainable design is a concept that focuses on products and processes that protect the environment and conserve energy for future generations. Whenever possible, lighting specifications should reflect the principles embodied in sustainable design. This involves selecting lighting systems that conserve energy and comply with standards, codes, and regulations” (p 284).

Examples of topics covered in Lighting design studio to help students develop an accurate and elaborate representation in order to be able to design and specify sustainable lighting systems include the following: lighting basics, design process, lighting concepts, lighting plans, reflected ceiling plans, electrical plans, luminaire types, perception and psychological aspects, lamp characteristics, light sources and color, distribution, efficient light sources, efficacy, material efficiency, photometry, lighting controls, energy management, codes, USGBC LEED rating systems, light pollution credit, energy performance credits, etc. This information is developed using the expository method which involves teacher-centered instruction, using interactive presentation lecture formats, as well as field trips to lighting laboratories and showrooms to offer real life context for students.

In the second step, exercises where students learn by discovery are integrated.

The discovery method is emphasized in hands on experiences, some of which include a lighting analysis project, a store lighting design, a fixture design competition project, and a service learning community service project. In the lighting analysis project, student document and analyze three spaces in the vicinity: a store, an office space and a gallery space. In each space, student identify the different layers of lighting, types of luminaire, brightness hierarchy, concept, architectural opportunities and constraints, integration of lighting with 2D and 3D design elements, composition, quality, color, controls, and the integration of lighting solution with 2D and 3D design elements in the space (Figure 1 and 2). In the light fixture design, students are required to emphasize originality, creativity and energy efficiency in the design of a full scale model of a light fixture (Figure 3). In a final project, usually a service learning or a community service real life project, students emphasis sustainable issues in their solutions.
The three distinct phases utilized in lighting design problem solving are information gathering and programming, design concept and design development. The information gathering and programming phase involves an analysis of owner and design team preferences, architectural opportunities and constraints, visual and perceptual needs, photometric considerations, security issues, budget, energy code requirements, sustainable strategies, and maintenance considerations. The requirement at this phase is a concise program.

In the design concept phase, students develop their concepts to provide an appropriate quality of light for visual tasks performed, respond to psychological needs of the users, and enhance architectural design features. In the design development phase, students develop their final design options as presentation drawings and schedules which include lighting layout, details, renderings, and specifications. Feedback is given during all three distinct phases of problem solving in all four projects. This feedback helps to correct any disequilibrium students may have. Disequilibrium is a state of misconception or misinformation.

Finally, students achieve automaticity through continued practice as they complete the lighting design projects and advance to upper levels courses. The accompanying chart Table 1 summarizes the application of ACT-R theory to teaching sustainable strategies in lighting in the fall 2008, 2009, and 2010 lighting design studio.

**CONCLUSION**

This poster illustrates how students acquire sustainable design skills in a lighting design studio through the utilization of Anderson’s ACT-R theory in the instructional process. Using Anderson’s ACT-R theory in the instructional process for this lighting design studio has been very effective because since 2008, projects from the lighting design studio have won national design competition and have been widely disseminated. For example, student work from the fall 2008 lighting studio was published in an article titled “Branding with Light-Interior Design Students at University of Oklahoma propose distinctive illuminated Store plans” in April 2009. In May 2008, Marissa Gomez won 1st place nationally in the Luraline fixture design competition. The jurors commended her innovative use of sustainable materials and energy efficient lamp sources in her design solution. In April 2010, Katya Yarominak won a Cooper lighting award of recognition for her store lighting design project.

While sustainability in lighting is a vast topic, ACT-R theory can effectively help design students gain a better understanding of sustainable lighting systems and help them become better designers. Future direction of this research will aim at including more student meta-cognitive strategies such as self-regulation or self-monitoring in the process since Anderson’s ACT-R procedure is very systematic and procedural.
Figure 1: Store Lighting Design project by Nikki Eubanks

Figure 2: Store Lighting Design project by Katya Yaromina, Cooper Lighting Source Award of Recognition winning entry

Figure 3: Fixture Design, 1st place winning entry in 2008 Luraline Fixture design competition by Marissa Gomez
Table 1: Anderson ACT-R General Implications for Teaching Sustainability in Lighting design

<table>
<thead>
<tr>
<th>Task</th>
<th>Process</th>
</tr>
</thead>
<tbody>
<tr>
<td>Develop accurate and elaborate declarative representation of Lighting design principles</td>
<td>Lecture topics covered in Fall 2008, 2009 and 2010 courses:</td>
</tr>
<tr>
<td></td>
<td>- Week 1 - Introduction to lighting, lighting basics, design process, lighting concepts, design elements and principles, and architectural elements;</td>
</tr>
<tr>
<td></td>
<td>- Week 1 - Lighting plans, Reflected Ceiling plans, Electrical plans.</td>
</tr>
<tr>
<td></td>
<td>- Week 2 – Lighting Workshop on 3D Studio Max presented by Adam Crespi, professor of art and animation at Digipen Institute of Technology, Redmond, Washington.</td>
</tr>
<tr>
<td></td>
<td>- Week 2 - Vocabulary and Luminaire types;</td>
</tr>
<tr>
<td></td>
<td>- Week 2 - Perception and Psychological aspects;</td>
</tr>
<tr>
<td></td>
<td>- Week 3 - Field trip to Smith Lighting;</td>
</tr>
<tr>
<td></td>
<td>- Week 3 - Lamp characteristics: Light Sources and Color, Distribution, Lumen output, Beam spread, Efficient light sources, Efficacy and Rated life, Material Efficiency;</td>
</tr>
<tr>
<td></td>
<td>- Week 3 &amp; 4 - Photometry;</td>
</tr>
<tr>
<td></td>
<td>- Week 5 - Electricity and Electrical Controls;</td>
</tr>
<tr>
<td></td>
<td>- Week 5 - Outdoor lighting;</td>
</tr>
<tr>
<td></td>
<td>- Week 6 - Daylighting;</td>
</tr>
<tr>
<td></td>
<td>- Week 7 - Electrical and Wiring lecture by Stan Grafa and Nick Thomas at the College of Architecture Modelshop;</td>
</tr>
<tr>
<td></td>
<td>- Week 8 - Energy management, Codes, Economics and Health; Energy and environment;</td>
</tr>
<tr>
<td></td>
<td>- Week 8 - USGBC LEED Rating Systems – Light pollution reduction credit, Energy performance credits, Controllability of lighting systems credit, Daylighting and Views credit;</td>
</tr>
<tr>
<td></td>
<td>- Week 9 - Alternative energy systems: Photovoltaics and Wind turbines;</td>
</tr>
<tr>
<td></td>
<td>- Week 9 - Mechanical systems, Security systems and Fire suppression systems;</td>
</tr>
<tr>
<td></td>
<td>- Week 10 – Presentation on lighting Historic Spaces and Guest Juror: Dawn Hollingsworth, LC, IALD, Visual Terrain Inc., California, Managing Principal;</td>
</tr>
<tr>
<td></td>
<td>- Week 11 - Computer Modeling and Visualization in Form.Z, and;</td>
</tr>
<tr>
<td></td>
<td>- Week 12: Computer Modeling and Visualization in AGI 32</td>
</tr>
</tbody>
</table>

Expository Methods (Teacher centered instruction)                                                                                     | Using the expository methods involved teacher centered instruction to help students develop declarative knowledge. The above listed topics were presented in PowerPoint and interactive presentation lecture format and field trips to lighting labs and lighting showrooms in the vicinity to offer real life contexts for students. All these helped students develop an understanding of fundamental principles in lighting. |

Discovery Methods                                                                                                                   | The discovery method allowed students to learn through discovery. The following four lighting design projects were accomplished during the semester.                                                                                     |
| Project 1: Lighting Analysis – Lighting analysis of a store, office space, and gallery. In teams, student documented and analyzed three spaces in the vicinity: a Store, an Office Space and a Gallery Space. In each space, student identified the different layers of lighting, types of luminaire, brightness hierarchy, concept, architectural opportunities and constraints, integration of lighting with 2D and 3D design elements, composition, quality, color, controls, sustainable strategies implemented and user satisfaction. Students documented these criteria using photographs, sketches, images, plans and notes in PowerPoint. Project 2: Store Lighting Design - Lighting design of a contemporary brand name store. In this project students designed the lighting and display space for a contemporary brand name store in a metropolitan airport. Students’ proposals were required to emphasize sustainable issues, the different layers of lighting, brightness hierarchy, architectural opportunities, composition, quality, color, controls, and integrate lighting solution with 2D and 3D design elements in the space. Project 3: Light Fixture Design - Light fixture design and full scale model of a light fixture. Students were required to emphasize originality, creativity and energy efficiency in the Lurline Light fixture competition Project 4: Service learning or Community Service project – Lighting design of the Senior Citizen Center housed in an old public library building (Fall 2008). Interior Design students designed the interiors and lighting along with Graduate architecture students. St. Thomas More Rectory in Fall 2009. |

Feedback Component                                                                                                                  | Feedback was an important component, because it fosters proceduralization. Three distinct Phases are identified for each design project and feedback from the instructor and jurors. Initial Phase – Information Gathering and Programming: This phase included an analysis of owner and design team preferences, architectural opportunities and constraints, visual and perceptual needs, photometric considerations, security issues, budget, energy code requirements, sustainable strategies, and maintenance considerations. The requirement at this phase was a concise program. Design Concept Phase: In this phase, students were expected to develop their concepts to provide appropriate quality and quantity of light for visual tasks performed, respond to psychological needs of the users, and enhance architectural design features. Some common composition techniques to be explored at this stage include mood/atmosphere, sparkle/smoothness, uniform/non-uniform, brightness hierarchy, and way finding. Design Development Phase: In this phase, students develop their final design options as presentation drawings and schedules. Presentation drawings included lighting layout, details, renderings, and specifications. |

Automatization                                                                                                                     | Continued practice led to automatization and this was evident by the increase in the quality of the work developed by the students as the semester proceeded. |
REFERENCES

Design of the third place for intimacy and social affiliation in a cultural district

KYOUNGMEE BYUN / CIGDEM AKKURT
Iowa State University

NARRATIVES

ISSUE
Every society has informal meeting places; however, in the modern society, these places should fulfill social needs, beyond the mere need to ‘meet’. Oldenburg says that the third places are anchors of community life, and facilitate and foster broader, more creative interaction (Oldenburg, 1999). Therefore, the third place is very important in enhancing the lives of people, and interior design, which concerns the quality of life and human interaction within space, should contribute to the design of third place.

While downtown areas in large U.S. cities are growing, a significant number of downtown areas in small U.S. cities are declining. “The most often (73.3 percent) reported factor contributing to declines of small urban area is “competition from neighboring large retail centers.”” (Michael, 2001). As a result, most downtown areas in small U.S. cities have planed or implemented cultural districts, positioning the community at the center of their urban revitalization efforts. Revitalization of cultural districts can be profitable for society and provide better public environments. Besides, the primary function of many cultural districts has shifted from exclusively economic purposes to a broader range of social and community related purposes (Brooks, 1995, 14-29). Therefore, cultural districts are suitable for third place design.

In order to improve social affiliation and intimacy between people, this poster addresses the relationship between environmental psychology and interiors based on Approach and Avoidance Behavior and Place Attachment. Intimacy regulation is viewed as the overall process by which individuals attempt to attain and maintain a preferred level of involvement with others and the environment. Approach and avoidance forces are present in every interpersonal encounter (Mehrabian & Russell, 1974). In order to encourage approach behavior that will arouse social interaction, physical factors for creating strong attachment to particular spaces, which defines place attachment, should be considered. These principles are the basis for the design decisions in this poster. The challenge is that the spatial arrangement of persons, as dictated by environment, which affects affiliation and is worthy of greater attention.

PURPOSE STATEMENT
The purpose of this study is to propose a design of the third place for intimacy and social affiliation as part of a revitalization project of a cultural district. In order to create social affiliation and intimacy, the interdisciplinary approach between environmental psychology and interior design is utilized. This particular study constructs a theoretical framework, which is a design guideline; how to create community with interiors based on human emotions and behaviors towards physical setting, so that not only can designers and students efficiently create community buildings for people, but they can also suggest new insight in research fields to scholars in interior design research.

This study applies the findings in the third place design processes and proposes design solutions for creating social affiliation and intimacy through analysis of an existing a train depot for a third place.

METHOD
This model, the adaptive theoretical framework, has been developed based on four major areas (the third place, place attachment, the M-R model, and other disciplines). It is also based on three factors (accessibility and programs, design tools and adjacency and proxim-
ity) which were synthesized and analyzed. The central idea of this model is inducing approach behavior, such as liking, positive motivation for meeting others, desire to stay, affiliation, and time spent with people, induced by ambiance. It is more related to perceived emotional dimensions, like pleasure and arousal, than it is to cognitive responses.

The proposed adaptive theoretical framework explains effects of environmental stimuli on emotional responses affecting approach behavior for creating intimacy and affiliation, and detailed factors composing of three parts to promote positive emotional dimension of pleasure.

The organization of this framework is composed of three parts. The first part explains the importance of accessibility and programs for creating attractiveness. In the second part, the design tools will be demonstrated for creating ambiance of interiors. The last part addresses the role of adjacency in space and proximity between people.

Finally, the issue of controlling the emotional dimension of pleasure will be addressed as a positive result of this model. In the third places, control or composition of environmental dimension is the primary concern. However, no study has been found with the interdisciplinary approach between environmental psychology and design. Thus, the adaptive theoretical framework proposed here suggests detailed factors which should be considered for creating intimacy and social affiliation from the selection of site to specific design guides.

DESIGN PROJECT
The proposed framework is applied in designing a community building as a “third place”. The Ames Train Depot located in the downtown of Ames, Iowa is utilized. Most of the design process will be conducted based on the proposed framework.

For the first component of the proposed framework, accessibility and programs are applied for the site design. For accessibility, this site provides four accesses at each corner with walkways. Also these walkways are connected to the parking lots or bus stops so it helps people to access the destination easily. Year round events, natural parks, and their associated facilities are provided so people are able to feel pleasure, which is the positive emotional dimension for social affiliation and intimacy, contributing to the approach behavior.

Besides, the Ames train depot is linked horizontally with vertical entrances. It is balanced with active function and inactive function very well. For instance, people are not interested in the history of Ames; however, they can have a chance to appreciate historic exhibits through performance areas. Also, although trains are not a popular mode of transportation in modern society, a well organized plan can make this transportation system a valuable function again.

Based on the proposed framework, the second component is the adjacency in space and proximity between people. The coffee house is applied for this second component. People prefer to sit next to walls, partitions, and dividers, which means that they want to keep their privacy. Similarly, people like to sit next to windows or open areas to the public, meaning that they want to be involved with nature or the environment. Thus, seating areas should provide private spaces as well as semi-private openings to the environment. In order to create social affiliation and intimacy, providing chances to meet others is necessary, and semi private areas can play a role for it. Moreover, consideration of various users is necessary for social gathering places so this coffee house, the third place, provides five different areas for creating intimacy and social affiliation.

The third component of the proposed framework is the design tool. Interior environment is very important for creating social affiliation and intimacy. Good combinations of lighting, aroma, acoustics, views, finishes and furniture, and ambiance help people feel pleasure and linger for social interaction.

Above all things, the third place is the coffee house, planned for creating intimacy and social affiliation. Thus, the mood of this space is friendly, welcoming, comfortable, and active. Staff and managers are very friendly to everybody. All spaces are planned for private areas as well as semi-public opening so people can approach others easily with no invasion of privacy.

IMPLICATION
Through this study, linkage between environmental psychology and interior design in terms of creating a third place for interaction, intimacy and social affiliation
among the persons is presented through the analysis of a design project. Also, it is beneficial to revitalize cultural districts with the shift from economic purposes to social and community related purposes. The theoretical framework could be adapted to other settings in the design field. Thus, the rationale of making a third place for human interaction is a significant aspect of design and the influences in interior space are addressed. This poster depicts emotional experiences for social affiliation and intimacy by visual communication.

Figure 1: Proposed framework (framework.jpg)

Accessibility and programs

Easy to access, Historical sites or Main Street having strong memories of events and activities and stories of the building itself, Physical attraction captured, Inclusion of natural features, Consideration of everyone regardless of age and status, and Beverage and Food available

Design Tools

Adequate lighting, Cleanliness, Pleasant aroma and acoustics, Outdoor View, Natural lights, Comfortable furniture, and Appealing interior décor

Adjacency in space and Proximity between people

Comfortable proximity for communication, arrangement for insuring privacy, Control of crowding and density, Flexible seating arrangement, and Provisions for semi private space
Figure 2: Floor plan of Ames Train Depot building

1. Coffee house
2. Ames train depot
3. Performance area / Waiting area
4. Museum for Ames Historical Society
5. Office of Ames Historical Society

Figure 3: Analysis of seating arrangement based on Private and Public – coffee house
Figure 4: Entrance of Coffee house

Figure 5: Socialization of Coffee house
REFERENCES (APA)

Ray Oldenburg. (1999). The great good place: cafes, coffee shops, bookstores, bars, hair salons, and other hangouts at the heart of community. New York: Marlowe
Special Care Units versus Integrated Nursing Homes

EMILI CARLSON
University of Missouri

NARRATIVE

INTRODUCTION

“Every 70 seconds, someone in America develops AD [Alzheimer’s disease]. By mid-century, someone will develop AD every 33 seconds” (Alzheimer’s Association, 2010, p. 161) and in the United States AD is considered the fifth leading cause of death for those aged 65 and older. Caregiving for an older adult with some form of dementia is a heavy burden which usually leads to institutionalization of the older adult for professional care. Within the last several decades, special care units (SCU) have become popular facilities for the care of persons with dementia. However controversy remains over what special care is being provided and if it is empirically found to be effective compared to integrated nursing homes (NH). A study in 2003 found that the environment can improve Alzheimer’s symptoms and concluded that a “balanced combination of pharmacologic, behavioral, and environmental approaches is likely to be most effective in improving the health, behavior, and quality of life of people with Alzheimer’s disease” (Zeisel et al., 2003, p. 697).

A CALL FOR CHANGE

Although the term culture change has come to mean different things for different individuals within the last decade, its use in gerontology refers to creation of a “culture of aging that is life affirming, satisfying, humane, and meaningful” (Brawley, 2006, p. 147). It is a call for organizational, social, and physical change of long-term care. Davis, Byers, Nay, and Koch (2009) make an important distinction between “active” and “passive” recipients of care and imply that currently, or at the very least in the past, care is provided based on the efficiency of the facility rather than being patient-oriented, which is something that the culture change movement is trying to overcome.

How can the physical environment contribute to better quality of life for persons with dementia? Lawton (2001) identifies four types of user-needs to be addressed by the physical environment, which include:

1. decreasing disturbing behavior,
2. increasing social behavior,
3. increasing activity, and
4. increasing positive feelings and decreasing negative feelings.

Disturbing behavior can be classified as “pacing, intrusion into others’ spaces, random vocalizing, aggression, and so on” (Lawton, 2001, p. S56). Social isolation is another characteristic common to persons with dementia and specific design solutions of an environment are believed to promote social behavior. A more positive outcome for persons with dementia is likely by designing spaces that promote social involvement through formal and informal activities and programs. However, prescriptive standards for how facilities should proceed to achieve these goals are highly debated.

Since SCU were introduced in the early 1980s (Nobili et al., 2008), three questions have emerged and will be the remaining focus of this paper. They include:

• What makes a SCU special when compared to an integrated NH?
WHAT MAKES A SPECIAL CARE UNIT SPECIAL?

Researchers in the field of gerontology argue that SCU lack a standard definition which makes it difficult to determine what is special in segregated facilities, although certain attributes have emerged in many cases. In 1994, Kane identified relevant issues pertaining to the future of SCU which included the “need for a SCU to have clear goals for its residents and plausible indicators of success…” (p. S426). That same year, Weisman, Calkins, and Sloane (1994) demanded a definition and development of taxonomies of SCU. Today, 17 years later, more recent studies are re-addressing the issue of a standard definition and whether or not SCU have shown effective outcomes for persons with dementia (Gruneir et al., 2008; Luo et al., 2010; Nobili et al., 2008; Reimer et al., 2004).

Despite the lack of a standard definition of care for SCU, certain attributes have emerged as commonalities among SCU. Arguments for SCU suggest that they have specifically-designed programs and environments for cognitive impairments, specialized training for staff, individual focus on residents, caregiving involving staff and family of the resident, and they benefit residents in NH because disruptive behaviors of dementia residents are removed (Buchanan et al., 2005; Nobili et al., 2008). Day, Carreon, and Stump (2000) state that SCUs “distinguish themselves by offering one or more ‘special’ features, including dementia-appropriate activities, small groups of residents, special staff selection and training, family involvement, and specialized design” (p. 406).

While emerging themes of specialized care have shown similarities, studies to measure effectiveness of special care are difficult without foundation criteria for evaluation. What does this say when the literature called for a standard definition of care in the mid-90s and has again re-emerged today? Has any progress been made? Buchanan et al. (2005) suggest that current SCU models are in need of improvement and “should focus on dementia-specific care, with emphasis on behavioral management and quality of life for individuals with AD to establish standards of dementia care” (p. 264). Can the success of SCU continue to grow without a standard definition of care?

WHAT IS OFFERED IN THE SCU THAT ISN’T OFFERED IN THE INTEGRATED NH, IN REGARDS TO THE PHYSICAL ENVIRONMENT?

There are “seven fundamental ‘living experiences’” (Davis et al., 2009, p. 187) to be considered in the design of environments for dementia residents. These include (1) the presentation of self-experience, (2) the eating experience, (3) personal enjoyment, (4) the bedroom experience, (5) family involvement and community connections experience, (6) the staff experiences, and (7) the end-of-life experience (pp. 187-196). Other design guidelines that align with Davis et al. (2009) suggestions provide more pragmatic environmental recommendations. Table 1 illustrates design guidelines found within the literature.

Certainly what is mentioned here is not all-inclusive to design recommendations for SCU, however this highlights some of the key issues and design trends. While the recommendations outlined in Table 1 are specific for residents with dementia, are they specific only to SCU? Design guidelines for long-term care facilities in general are embracing the culture change to homelike cluster units including private rooms, spa-like bathing, smaller dining spaces, and smaller social gathering spaces. What about the environment of SCU sets it apart from integrated NH except from the fact that it is a segregation of residents based on cognitive levels? Is there a difference? Should there be a difference?

WHAT OUTCOMES (POSITIVE OR NEGATIVE) HAVE BEEN FOUND WITH SCU VS. INTEGRATED NH?

Many studies completed by researchers in gerontology agree that the segregation of cognitively impaired from mentally-alert residents benefits those that are not cognitively impaired because there are fewer behavioral disruptions (Buchanan et al., 2005; Day et al., 2000; Gruneir et al., 2008). However, beyond that, research that demonstrates benefit to the cognitively impaired is lacking. In a recent study, Nobili et al., (2008) claim “studies to date have failed to establish definitively the effectiveness of SCU on clinical outcomes in comparison with NH” (p. 353).
While little research has been conducted to determine positive or negative outcomes of segregation of the cognitively impaired, some recent research on comparing SCU to integrated NH was found. Table 2 provides a breakdown from recent studies.

Claims from authors of the design recommendations stated earlier suggest environmental differences reduce “behavior disturbances, abnormal motor activity, apathy, and hallucinations among residents” (Day et al., 2000, p. 406). However many of these design guidelines may be applied to integrated NH facilities and most likely achieve similar outcomes. Some believe the integration into one facility benefits the cognitively impaired because it is a more stimulating context (Regnier, 2002). The reason SCU attached to a long-term care facility has become popular is because “residents with light mental impairment can be moved into an assisted living environment and later moved to a secured dementia unit when they require more specialized care” (Regnier, 2002, p. 146).

CONCLUSIONS AND FUTURE RESEARCH
Findings of the literature review revealed a deficiency in agreement of a standard definition of SCUs. Little progress has been made to clarify such a definition. However certain attributes and commonalities have been identified especially in dementia-specific activities and specialized staff training. The question still remains: Can the success of SCU continue to grow without a standard definition of care?

Findings from the review of literature also unveiled pragmatic design recommendations such as smaller size units, fewer resident rooms, more designated private rooms, private dining rooms, separate and larger activity rooms, and access to the outdoors (Day et al., 2000). However, these design recommendations are not unique to a SCU as a trend for long term care facilities moves in this direction and a lack of evidence-based support exists (Calkins, 2009). Research conducted in this area has provided mainly case studies without generalizable results. Studies have indicated the quality of life for people with dementia is better in a SCU compared to an integrated NH, however pinpointing exactly why—who it’s the social, physical, and/or operational environment—is still questionable (Grunier et al., 2008; Reimer et al., 2004).

Part of the problem lies between the design profession’s need for design guidelines based on evidence and a deficiency in the literature to provide such evidence. Lawton (2001) identifies that:

[T]here is still a large gap between existing knowledge and its access to professionals facing an immediate demand to design for people with dementia. Thus, construction of a dynamic database using both research-based knowledge and qualitatively generated observations on environments in use is suggested as a means of bridging this gap (p. S63).

A lack of empirical research that has studied the benefits for the cognitively impaired in SCU compared to those in integrated NH has been found. This is a hindrance to the necessary progression of providing a better quality of life for persons with dementia. Until a clear definition of care can be attained and implemented for all SCU, studies investigating this comparison may lack generalizable outcomes. Future research is needed to demonstrate definitive outcomes on the clinical, social, and behavioral well-being of persons with cognitive impairment.
Table 1.

Pragmatic design guidelines for designing facilities for persons with dementia.

<table>
<thead>
<tr>
<th>Design Concept</th>
<th>Design Guideline Description</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overall layout</td>
<td>Smaller units ranging from 10-15 residents. Typically includes a living room, kitchen, dining room, separate activity room, patio space, and access to outdoors</td>
<td>Regnier, 2002; Day et al., 2000</td>
</tr>
<tr>
<td>Wandering paths &amp; destination rooms</td>
<td>Planning for wandering behavior to reduce disruptive behavior and agitation. Both indoor and outdoor.</td>
<td>Regnier, 2002</td>
</tr>
<tr>
<td>Private resident rooms</td>
<td>Encouraged to bring their own furniture and personalize space.</td>
<td>Brawley, 2006</td>
</tr>
<tr>
<td>Bathing rooms</td>
<td>Creating a more spa-like atmosphere to include bathe suites.</td>
<td>Brawley, 2006</td>
</tr>
<tr>
<td>Social living spaces</td>
<td>Eliminate long corridors. Dining rooms and kitchens designed similar to a household. Several smaller private gathering spaces.</td>
<td>Day et al., 2000</td>
</tr>
<tr>
<td>Sensory environment</td>
<td>&quot;[R]emoving unnecessary clutter, providing tactile stimulation in surfaces and wall hangings, and eliminating overstimulation from televisions, alarms, and so forth&quot; (p. 407). Incorporate adequate lighting and visual contrast.</td>
<td>Day et al., 2000</td>
</tr>
</tbody>
</table>
Table 2.

*Outcomes of Special Care Unit residents and staff, compared to integrated Nursing Homes.*

<table>
<thead>
<tr>
<th>Population</th>
<th>Outcome</th>
<th>Study Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Residents</td>
<td>Poorer cognition</td>
<td>Buchanan et al., 2005; Gruneir et al., 2008</td>
</tr>
<tr>
<td></td>
<td>Less likely to have chronic diseases</td>
<td>Buchanan et al., 2005; Gruneir et al., 2008</td>
</tr>
<tr>
<td></td>
<td>Fewer hospitalizations</td>
<td>Buchanan et al., 2005; Gruneir et al., 2008</td>
</tr>
<tr>
<td></td>
<td>More behavioral issues</td>
<td>Buchanan et al., 2005; Gruneir et al., 2008; Nobili et al., 2008</td>
</tr>
<tr>
<td></td>
<td>Received more antipsychotic medications</td>
<td>Buchanan et al., 2005; Gruneir et al., 2008</td>
</tr>
<tr>
<td></td>
<td>Less likely to use pads or briefs</td>
<td>Gruneir et al., 2008</td>
</tr>
<tr>
<td></td>
<td>Less likely to have restraints or bed rails</td>
<td>Gruneir et al., 2008; Nobili et al., 2008</td>
</tr>
<tr>
<td>Staff</td>
<td>Staff more likely to be trained specifically for dementia care</td>
<td>Buchanan et al., 2005; Nobili et al., 2008</td>
</tr>
</tbody>
</table>
REFERENCES (APA)


Illuminating Artifacts in a University Library: An Empirical Evaluation of Existing Conditions

SYLVIA CHANEY / PAULETTE R. HEBERT
Oklahoma State University

NARRATIVE

PURPOSE

In the current study, a university library wanted to display unique and historic artifacts from their archived collection. The majority of these artifacts were works on paper, such as documents, photographs, artwork, and maps of historic significance from the university’s home state. Much of the collection was considered to be one-of-a-kind and irreplaceable. Many of these artifacts had not been previously exhibited to library patrons; therefore, no internal standard for their display had yet been established.

The current researchers were engaged to study the existing lighting in the library and to determine the existing illumination’s acceptability for showcasing the library’s valuable collection. This poster presentation describes the processes and results of the study in a printed 3’ x 4’ format, featuring photographs of interior design student researchers in action, research instruments, and featured interior spaces, as well as tables and other descriptive graphics.

BACKGROUND

An institution’s desire to exhibit fragile and important artifacts in a proper and compelling manner is often tempered by its need to protect and preserve its collection for future generations. One of the most dangerous threats to delicate artifacts is the very illumination that allows for their viewing in interior spaces (Scuello, Abramov, Gordon, & Weintraub, 2004). Although the damaging effects of light have been known for centuries, even noted by the ancient Roman architect, Vitruvius, it was not until the nineteenth century that the phenomenon was explored by modern scientific methods (Druzik and Eshøj, 2007). Unfortunately, given the limitations of current technology and the essential necessity of display lighting, degradation of displayed artifacts is inevitable, and the only recourse is to minimize the potential damage. In the 1980’s, lighting for artifact conservation began to be viewed in terms of risk management: trade-offs are made between the ideals of artifact display and artifact preservation, depending on the goals of the institution and the needs of the institution’s patrons (Druzik and Eshøj, 2007).

The system of factors that affect artifact display is not a simple one. Damage to artifacts is dependent upon multiple factors, including, but not limited to, the materiality and media of the artifacts, the intensity of nearby light levels, and the amount of ultraviolet radiation emitted by light sources in the exhibit rooms. These numerous factors interact in complex and dynamic ways. For example, short wavelengths of light are generally more damaging; however, artifacts that are blue in color may be protected to some degree, because they reflect – rather than absorb – the shorter wavelengths of light that give them their visual color (Scuello, et al., 2004). Industry standards have been developed to control the amount of light-induced damage to artifacts (Scuello, et al., 2004). General guidelines recommend utilizing lowered light levels to conserve paper artifacts. However, to facilitate viewing, light levels should also comply with minimum industry light level recommendations for successful viewing. Further complicating matters, some...
library patrons visiting and supporting institutional exhibits, such as those of a library, are anticipated to have aging eyes or other vision challenges which require more light than younger or healthier eyes (Illuminating Engineering Society of North America [IESNA], 2007). This problem is exacerbated when viewing artifacts that have low contrast levels.

In addition to variability in visual ability between individuals, many factors affect each person’s specific visual system. This system is neither uniform nor linear, and an individual’s visual system is constantly changing to adapt to its surrounding environment, in order to optimize visual perception (Scuello, et al., 2004). The dynamics of aesthetics are even more complicated, varying between cultural groups and cohorts, between individuals within a group, and within an individual over time. However, the aesthetic experience of display lighting must be superseded by the desire to preserve the artifacts on display from fading and degradation.

Although light at all wavelengths contributes to artifact degradation, ultraviolet (UV) radiation is particularly active in this process; and unfiltered daylight, for example, has about ten times as much UV radiation as standard incandescent lamps (Rea, 2000, p. 8.9). Because UV light has a shorter wavelength than visible or infrared light, it will “bombard an object with more energy in a shorter time” (Patkus, 2007, ¶ 6). Since any presence of UV light endangers display artifacts, it is recommended that all UV be eliminated from archival spaces (Rea, 2000, & IESNA, 1996). However, because people cannot see the ultraviolet wavelengths of light, there is no aesthetic loss, when this type of light is eliminated (Scuello, et al., 2004).

**METHODOLOGY**

Undergraduate and graduate interior design students participated in data collection and data analysis. Previous to the data collection period, the library faculty identified various locations within the library as potential sites for displaying the artifacts. Working with the current researchers, students examined existing light levels and ultraviolet light levels in the areas of the library under consideration for artifact displays. In order to test the potential for light-induced damage, representative walls in each area were selected for study. Light levels were measured in vertical footcandles on selected walls, utilizing a Sylvania GTE DS-2000 digital light meter, which had been recently calibrated. The Illuminating Engineering Society of North America (IESNA) has published recommended procedures for the measurement of light levels (Rea, 2000). These recommendations were used to develop the current data collection methodology, in order to maximize the accuracy and applicability of the data gathered. In addition to footcandle readings, ultraviolet radiation was measured in microwatts/cm² with a Mannix UV-340 meter on selected walls.

Individually, the meter readings provided a snap-shot of the state of the existing lighting in the library, and, collectively, the series of data points gave the researchers a broad view of the lighting situation. However, a more panoramic view was necessary, to more fully explore the accumulation of ultraviolet radiation over time. Blue wool dosimeters (each conforming to the ISO 105-b01 standard and consisting of eight strips of wool cloth, tinted with blue dyes with varying degrees of light-fastness, and mounted on a 5” x 1 1/2” card) were installed in six locations in the library’s interior, none of which were located near windows. One exposed and one unexposed dosimeter per location were monitored for a period of twelve weeks. Student researchers compared the strips bi-monthly and recorded fading and reaction times.

**FINDINGS**

Student researchers created data charts, compared findings to industry light level recommendations, and summarized the results in digital presentations. Over 50 light level measurements were made on regular intervals located at the intersections of imaginary grids located on vertical surfaces within the library. These locations had been proposed by the library administration as potential artifact display sites of the future. The highest light level recommended in a library by the IESNA is 30 footcandles, and that is for carrels, individual study desks, circulation desk, cataloguing and audiovisual areas. In museums, the highest light level recommended for flat displays on vertical surfaces is 30 footcandles. However, 5 footcandles is the highest light level recommended for exhibit cases and for the display of three-dimensional objects in museums (Rea, 2000).

The highest existing vertical light level recorded by the student researchers was 68 footcandles which was measured within an existing display case. This reading was 63 footcandles higher than the 5 footcandles recommended for this application (Rea, 2000, p. 10.13,
A review of the existing lighting fixtures in the studied areas revealed that they were lamped with fluorescent sources. Daylighting was also present, emanating from sheer-draped windows. Both fluorescent light and daylight emit substantial amounts of potentially damaging ultraviolet (UV) radiation.

The highest UV level recorded in the library was a relatively high 6 microwatts/cm². This measurement was recorded in an existing display case. Additionally, six dosimeters were placed at various vertical locations in the library. Utilizing these cumulative measurement tools, the student researchers found the potential for damage to occur to artifacts left in these locations over time. The observed fading at “reference level four” on one dosimeter indicated that the existing library lighting may cause artifact fading and deterioration in as little as 15 years, should the library elect to display artifacts in that area (MacEvoy, 2005).

RELEVANCE AND IMPLICATIONS

The results of this study were used to inform design recommendations that were later implemented in a renovation of the university’s library facility. Because these results suggested that the library’s existing lighting could be anticipated to damage the valuable artifacts on display, proposed design solutions included efforts to eliminate the presence of ultraviolet radiation in artifact display areas and mitigate light damage. This student-centered data collection methodology may be useful in the examination of similar spaces at other universities.

REFERENCES (APA)

Introducing Non-Digital Social Gathering Into Instructional Systems Learning Spaces

JIM DAWKINS / VAL SHUTE
Florida State University

NARRATIVE

Think back to when you were in a school classroom--sitting at a desk, listening to lectures, and frantically trying to absorb all the knowledge that your teacher knew. Collaboration with other students was infrequent. Such traditional learning spaces can lead to limited creativity and problem solving (Shute, 2007). Alternatively, imagine learning spaces that draw inspiration from digitally mediated and collaborative practices that mirror those in most professional industries. These practices are marked by participatory, co-creative processes and social engagements that exemplify what contemporary learning scientists have been saying for some time: that learning is not simply individualized, but a highly social, context-dependent and collaborative achievement (e.g., Bransford, Brown, & Cocking, 2000).

Today, virtual environments offer students a wealth of social opportunities to connect with other students, to share ideas about class work, and generally grow personal knowledge and expertise. However, digital collectives too often leave the student alone, in a dorm room or campus nook, and away from real-life interaction. Our position is that we can leverage the positive features of digital communities and embody them within what is called a community of practice--i.e., a group of people who share an interest, craft, and/or profession. It is through the process of sharing information and experiences with the group that the members learn deeply from each other, and have an opportunity to develop themselves personally and professionally (Lave & Wenger, 1991). At our university, we are focusing on architecting a space for one such community--the Instructional Systems Program. Participants will have ample opportunities to produce and iterate on content endemic to real knowledge/skills of instructional system designers, and collaborate and share their work with a community of peers.

The purpose of this presentation is to examine the notion that designing a collaborative learning space can promote learning and creativity. For instance, exposure to alternative perspectives produces a type of cross-fertilization of ideas that can generate new insights. Setting up the space to accommodate small groups of participants can help to ensure that individual voices and ideas are heard, promote growth of that information, and generally bear out the notion that two heads are better than one. Our goal is to discover factors that en-
hance truly collegial collaboration, instruction, presentation, and conferencing. Daniel Kraft (2009) stated it well: “Imagine a coffee house: you go in, get your coffee and get out. This is what e-mail is doing to communication: you ask for information and you get information. Now imagine you enter the coffee place again: you wait in line; you start a conversation; and you find out that the person next to you has been working on a similar problem that you have to solve and is offering you support. What just happened is typical offline social networking activity. Two people with the same interest (coffee) meet at a place they both like (coffee place) and they build a social network to share (knowledge).”

Teamwork provides a source of stimulation and inventiveness. It is a structural footing for academic learning. Spaces designed and arranged to foster collaboration are conceived well before the placement of bricks, sticks, and wallboard. Careful consideration of the users, thorough analysis of their learning behaviors, and the implementation of proven principles and elements of design can lead to thought-provoking and well-used academic learning spaces.

**AUTHOR’S NOTE**

1) “Architecting” is a term most often utilized to describe a process of creation and application within the digital realm of software systems analysis and construction. Specific to the poster abstract, Dr. Val Shute and the author utilize the term “architecting” to describe the physical intervention in a built space in the traditional architectural building sense relative to the university’s Instructional Systems program. It illustrates the combination of the corporeal ‘systems’ of humans (students and faculty) and their actual places of learning and teaching with the instructional systems they are designing.

**REFERENCES (APA)**


Visualizing Environmentally Responsible Design across the United States

AMANDA GALE / MELANIE A. DUFFEY
Auburn University

NARRATIVE

Environmental awareness is essential to society as well as to those influencing the built environment. The general public is becoming increasingly more aware of green products, sustainable buildings, renewable energy, and environmental responsibility (Whitemyer, 2007). This growing public awareness can partially be attributed to the media’s increased coverage of the depletion of natural resources, the recent oil spills, and the identification of the causes of climate change. This rapidly expanding awareness of environmental concerns has challenged those in industry to develop innovative ways to assess the built environment and its ecological footprint. The Leadership in Environmental and Energy Design (LEED) is one response to those concerns. Currently, LEED is the most predominately used building rating system in the US, with many states and municipalities requiring facilities built with public funds to meet or attain LEED certification requirements (Schendler & Udall, 2005).

This exploratory study was designed to investigate the geographic dispersion of LEED participation and state legislation within the United States. The objectives of this research were to: 1) examine the current participation and develop a model to predict future trends of state and individual implementation, see figure 1, 2) create a scale that graphically ranks state involvement in sustainable development practices, and 3) aid researchers in visualizing environmentally responsible efforts in the United States.

REVIEW OF LITERATURE

Environmental awareness has initiated an influx of research, conferences, and committees focusing on various environmentally responsible design (ERD) theories. ERD combines both the macro view of sustainable design and the micro view of green design to encompass a holistic perspective conserving natural resources and the global environment while protecting individual’s health, safety, and welfare in the built environment (Jones, 2008). ERD requires the knowledge, commitment, and communication from various academic, political, and professional disciplines in order to succeed. LEED is one method where professionals can implement ERD strategies.

The LEED rating system is supported by the US Green Building Council (USGBC), a non-profit organization. In 1998, LEED developed a pilot study for the rating system, and certified the first project in 2001 (Zukowski, 2005). LEED takes a complete environmental performance approach when addressing specific criteria regarding human and environmental health (Jones, 2008). According to the Green Building Council Institute (GBCI) (2010), there are currently 115,526 LEED accredited practitioners (APs). In addition, there are 19,609 registered projects and 5,321 certified projects. In 2009, LEED accreditation standards were changed, and in order to be an accredited professional, work experience on a LEED certified project was required. As an alternative, practitioners could take the LEED Green Associate (GA) exam prior to gaining the required work experience. There are currently 9,694 LEED GAs and those GA’s have the potential to specialize as a LEED AP in any one of the rating systems (Personal communication, Aug. 19, 2010). Although LEED has been widely adopted, there have been critiques regarding the certification cost and the true sustainable contribution measured through the point system.

A key complaint within the industry is the cost of LEED certification. Commissioning, registration, certification, and USGBC membership are costly, where the decision
to become LEED certified is more difficult (Schendler & Udall, 2005). A second major criticism of LEED is the validity in whether or not the status of being certified makes an impact in environmentally responsible building practices. There are many occurrences where LEED certified buildings, “are a compilation of green technologies stacked on a standard building” (Schendler & Udall, 2005, para 71). In these occurrences, it becomes integral for states to participate in legislation that involves energy, water, and land conservation.

It is important for researchers to measure the level of state participation of LEED, and the extent to which LEED coincides with state legislation. Cidell (2009) investigated the geographical disbursement of LEED certified buildings and LEED APs in conjunction with regional perceptions within the US. The South is generally perceived to be lagging in the adoption of sustainable strategies (certification and accreditation), whereas, the West Coast tends to lead. The findings showed that regional perceptions for both the South and West Coast regions of the US were confirmed. The South had the least LEED certified buildings, whereas, the West Coast was the leader in certified buildings. When comparing the geographical dispersion of certified buildings with LEED professionals, the professionals were not as widely distributed throughout the US as the certified buildings were. This suggests that green building practices might not be as integrated into industry practices as data might suggest. Therefore, a smaller number of professionals are contributing to a larger number of green buildings spread throughout the country (Cidell, 2009). There is a need for further studies to assess the impact of LEED certified buildings, accredited professionals, and state legislation.

There is no denying the increase in public awareness and research in the area of ERD. However, there is a lack of empirical information regarding the level of commitment to environmentally responsible legislation, LEED certification, and LEED professionals at the state level. As the public awareness increases, there is an increasing need for researchers and the industry to be aware of the geographic dispersion of LEED-certified buildings and LEED professionals. It is also important to understand how the distributions of these buildings and people are evolving over time. This awareness will aid researchers in understanding how green building practices are spreading across the United States (Cidell, 2009).

**METHODOLOGY**

Data was collected from the US Green Building Council (USGBC) pertaining to the number of LEED APs, GAs, and LEED registered and certified buildings. The US Census Bureau was used to collect state population data. This data was then combined to create two ratios one between state populations and individual LEED certifications another between state populations and building certifications. States were then ranked on their level of environmental responsibility. Data regarding legislation on energy and water conservation and building construction were collected at the state level from government websites. States were again ranked on the number of environmentally responsible laws. Descriptive statistics were then used to compare rankings for environmentally responsible legislation with rankings of LEED certifications for both individuals and buildings.

**FINDINGS**

The findings reveal a definitive separation between the top ranking and bottom ranking states. Each aspect of the study, LEED projects, LEED Commercial Interiors (CI), and LEED professionals, was analyzed independently providing state rankings. Then, more complex relationships were evaluated, such as the comparison of LEED buildings versus LEED professionals and current state legislation.

When reviewing registered and certified projects for all rating systems, there are six states consistently ranked in the top ten. Those states are Maryland, Washington, Colorado, Vermont, Oregon, and Massachusetts. When investigating the lower ranking states for LEED registered and certified projects, there were seven states consistently in the bottom ten. Those states are Kentucky, Oklahoma, Alabama, Mississippi, Louisiana, West Virginia, and Indiana. See table 1.

Looking specifically at the LEED CI rating system, there are seven states consistently in the top ten for registered and certified CI projects. Those states are Massachusetts, Washington, Colorado, Oregon, California, Virginia, and Hawaii. Where, the CI projects in the lower ranking states consist of Alabama, Oklahoma, Kentucky, Louisiana, Nebraska, and North Dakota. See table 2.

This study also included information regarding number of LEED professionals by state and population. There are six states that are consistently ranked in the top ten
for the number of LEED APs, LEED GAs and their sum. These states are Colorado, Massachusetts, Virginia, Maryland, California, and Illinois. There are eight states consistently found in the bottom ten. Those states are West Virginia, Mississippi, North Dakota, Oklahoma, Arkansas, Kentucky, Alabama, and Delaware. See table 3.

When examining both certified buildings and accredited professionals, this study found two states that are consistently ranked in the top ten, Massachusetts and Colorado. Additionally, this study found consistency within the bottom ranking states, which included Kentucky, Oklahoma, and Alabama. Further analysis revealed that Colorado was ranked first in legislation, with 71 laws pertaining to environmental responsible efforts. Alabama was ranked at the bottom with only four laws, the only state below Alabama was Mississippi with one law. These findings are consistent with earlier findings that suggest Colorado is one of the top leaders in sustainable practices, through LEED criteria and through state legislation, and that Alabama has consistently ranked at the bottom.

**CONCLUSION**

This study allows researchers to visualize state rankings across the United States and examine the country’s adoption of sustainable building practices and state legislation. It will also allow researchers to select a balanced sample when researching state participation in sustainable practices. The research paired with the graphic poster will depict the rankings in a straightforward and easy to read method, and outline the complex relationships between building practices, state legislation, and professional accreditation. Thus, this study will provide a tool for interior design faculty researching or teaching concepts of ERD and sustainable design.

Figure 1: Future Trends Model
REFERENCES (APA)


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**Table 1**

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<th>LEED Projects</th>
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**Table 2**

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**Table 3**

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Comparing user experiences through drawn cognitive maps

CLIFFORD J. GENTRY
Iowa State University

NARRATIVE

This study addresses the relational value between the drawn cognitive maps of a specific interior environment and the indicated Environmental PREceptions and POSTceptions. Utilizing drawn cognitive maps to indicate significant elements along the participant’s journey allow for both qualitative and quantitative results to indicate significant recalled elements as participants travel through the specific environment, for this study, the Des Moines International Airport.

This study builds from the combination of work by Lynch and Rivkin (1959), Raubal, Egenhofer, Pfoser, and Tryfona (1997), Downing (2000), and Gentry (2010). Similar research has begun to investigate similar recalled experiences through airports and wayfinding (Raubal, et al., 1997), there is no existing research utilizing drawn cognitive maps indicating specific cognitive maps and using content analysis to identify specific interior elements that are anticipated, experienced, and recalled.

BACKGROUND INFORMATION

The concept of an Environmental PREception is based upon a projected mental map of a specific environmental space. It utilizes schemata based upon projected mental maps and previous, although not always similar, user experiences. The foundation of PREceptions asks questions such as: “What should you expect to be in the space?” “What will be in the space?” and “What could potentially be in the space?” (Gentry, 2010).

Actual Experience, for the case of this study, is defined as the time when one was in a specific environment recording one’s cognitive map and the significant spaces of the built environment. There is no need for a projection or recall; the subject is still within the space.

Similar to the PREception concept, an Environmental POSTception utilizes information from the environmental PREception and the Actual Experience to recall a space, frequently using the stored mental maps and recalled significant elements of the space. The foundation of POSTceptions asks questions such as “What do you recall as significant elements of the space you are asked to recall?,” and “How did you know how to function within this particular space?”

REVIEW OF LITERATURE

Cognitive map is a process composed of a series of psychological transformations by which an individual acquires, stores, recalls, and decodes information about the relative locations and attributes of the phenomena in his daily environment (Downs & Stea, 1973). Cognitive maps in the most general definition stated by Kaplan (1973), are mental constructs which we use to understand and know the environment. They assume that people store information about their environment that they then use to make spatial decisions.

The term cognitive map refers to the knowledge a person has about environmental and spatial relationships through the process of coding and retrieving information (Kitchin & Blades, 2002). The terminology cognitive map is a conceptual umbrella to which more specific taxonomy have been developed to refine the genre of a specific discipline.

Characteristics of cognitive maps are based, in part, from a person’s previous experiences and prior learning (Evans & Pezdek, 1980; Presson & Hazelrigg, 1984; Thorndyke & Hayes-Roth, 1982). Knowledge of spatial layout is acquired through the direct observation of the environment or through navigation (Presson & Hazelrigg, 1984).
Lynch and Rivkin (1959) create an experiment in 1959 which asks subjects to perceive their landscape while taking a walk around the block. Accuracy increases with the amount of previous experience (Evans, Marrero, & Butler, 1981; Gärling, Böök, & Engezen, 1982); there are possibly also qualitative changes in cognitive maps as a function of previous experience.

Mental spaces, also considered cognitive maps, are not internalized images of external space; rather, they are schematized, through elimination of detail and simplification of features. They are mental constructions built around frameworks consisting of elements and relationships based upon their specific location and proximity (Tversky, Morrison, Franklin, & Bryant, 1999). Cognitive maps are schematized too, yet they differ in significant ways from mental representations of space. The space of experienced navigation is often learned vicariously from maps and descriptions, as well as actual experience. Pocock (1976) identifies a mapping exercise, such as the one utilized in this study, imposing a filter on the individual’s information store.

**DRAWING FROM EXPERIENCE**

Lynch (1960) theorizes that individuals who were more familiar with an urban space concentrated on specific landmarks for navigational purposes more than on paths. Appleyard (1970, 1976) supports Lynch’s arguments and stated that through the comparison of sketch maps drawn from individuals who lived in a city for less than a year, their maps were dominated by sequences of events and greater path usage. The sketch maps of long-term residents emphasized boundaries and landmarks. Devlin (1976) additionally supports that newcomers to an area focused on the same pathways, but showed a greater increase in landmark identification. Devlin also indicates that initial paths based upon initial structures, were further elaborated on with continuous exposure.

Appleyard (1970) categorizes two key dimensions of drawn cognitive maps: the type of element emphasized and the level of accuracy. His findings further identify these maps consist of either sequential elements or spatial elements. Sequential elements within a map provided a literal and dominant connection (e.g.: circulation routes and paths); whereas the elements in the spatial maps were zones (e.g.: landmarks, districts, or large-scale structures) scattered across the map.

Buxton (2007) states “Learning from sketches is based largely on the ambiguous nature of their representation. That is, they do no specify everything and lend themselves to, and encourage, various interpretations that were now consciously integrated into them by their creator” (pg. 118).

Downing (2003) addresses the connection between memories and places. Memories create networks to link people, cultures, and societies. By gathering together “image banks” through the process of drawing they allow Downing to identify the “how and why” a place is important. Although Downing acknowledges that each person’s image is unique, recurring patterns begin to emerge from this process.

Downing further states that individuals “whether conscious or not, constantly refer to past experiences in order to understand their emotional, experiential, or objective intentions toward a design task and the significant and logical forms of domains appropriate to its solution” (F. Downing, 2003, p. 230) This has the opportunity for one to implement their specific past experiences, as recalled from their “maps” and allow the user to vicariously participate in the experience of the recalled map.

**STUDY INFORMATION**

The duration of the study was approximately one month and consisted of three phases: The PREception phase, which was two-weeks prior to the travel experience; the Actual Experience, on the day of the travel experience prior to boarding the aircraft; and the POSTception phase, two-weeks after the travel experience.

The survey was conducted using 17 subjects (n = 17) for all testing and survey phases. The demographic data identified participant’s gender as female and age range from 21-24.

Content analysis was used to analyze the text written on the drawn cognitive maps and overlays of the subjects. The maps were separated into groups of maps (drawn on an 11” x 17” piece of bond paper) and overlays (a piece of 11” x 17” vellum, placed on top of the map): each map consisted of the drawn and annotated cognitive maps and significant spaces the subject expected to encounter.
The data collected through content analysis and was analyzed in two categories to identify both the following relationships: the relationship between the PREception, Actual Experience, and POSTception, and relationship based upon travel frequencies and experience.

Four groups were created based upon the frequency of participant travel (either domestic or international) within the past five years. These groups are identified as: Never Travel (n = 3), Infrequent Traveler (n = 6), Moderate Traveler (n = 4), and Frequent Traveler (n = 4).

DISCUSSION

Overall results from this study demonstrated the majority of the subjects drew maps as a series of sequential events, compared to grouped spatial events. Only a few instances of a hybrid of the two styles were indicated. When comparing the indication of interior elements on the maps and overlays, the frequency of indication increased each time the subjects drew a new map. Even two weeks after the event, subjects had a 150% increase in indication of interior elements, specifically regarding signage and wayfinding elements.

When examining groups specifically based on travel experience, Never Traveled group did not indicate any interior elements on the PREception map; all subjects in this group, however, indicated interior elements on the POSTception map. The Frequent Traveler group was consistent in indicating interior elements throughout all three phases, where the Infrequent and Moderate groups shifted from minimal indication on the PREception map, to moderate indication on the Actual Experience, to all but one member indicating these elements on the POSTception maps.

Therefore, conclusions can be drawn that because the group that does not have the travel experience does not know what to encounter on a travel experience; experienced travelers actively seek out these wayfinding and signage elements throughout all phases. Infrequent and Moderate travelers seek out information while actively in the experience and recall these elements after participating in the experience.

REFERENCES (APA)


Exploring Effective Designs for Building Primary Schools in Haiti

LESLIE HALLQUIST / LISA WAXMAN
Florida State University

NARRATIVE

INTRODUCTION

"Without education, development is a dream" - Diébédo Francis Kéré, architect

Most Americans spend a dollar a day without giving it a second thought. In Haiti more than half the country’s population struggles to survive on less than one dollar a day (The World Bank, 2006). As the poorest nation in the western hemisphere, Haiti exists amidst a crisis where economic development stands still and lack of education and illiteracy runs rampant (see figures 1 & 2). It is not that Haitians are unwilling to learn, in fact studies show that Haitian families are willing to make great sacrifices in order to education their children (World Bank Study, 2006). In addition to overwhelming poverty, part of the problem with Haiti’s educational system is the lack of sufficient school buildings.

To better understand how the Haitian people arrived at the impoverished state in which they currently exist, it is important to note that Haiti has had a long unstable and violent history. Examining the history of their educational systems is important for an overall understanding how Haitians view education. It should also be noted what has been done and left undone for the forward progress of education of Haitian children. Other underdeveloped countries facing many of the same challenges as Haiti, such as a warm tropical climate, lack of stable electricity and clean water supply, and poor economic infrastructure have built successful schools with designs solutions addressing all of these challenges.

As an interior designer, I am interested in exploring effective designs for building primary schools in Haiti. In order to make a recommendation for such designs, the history of Haiti along with the history of their education systems will be considered in this study. Along with this history, careful attention will be given to the local building materials, which are available for use in school buildings. As part of the process of developing design guidelines, examples of successful primary school designs in other underdeveloped nations will be studied. Recommendations will consider Haiti’s poor economy, their tropical climate and tendencies for earthquakes and hurricanes, and unique culture.

THE NEED

The Haitian government has unsuccessfully fulfilled their promise to provide free education as stated in their constitution. More than 90 percent of the schools in Haiti are operated by the private sector thus placing the burden of financing education on the students and their families (Lunde, 2008). Haitians highly value education and see it as way out of poverty. A livelihood study conducted in 1996 showed that, “many families are forced to sell livestock, their principle form of savings or assets, to finance the beginning of the school year” (World Bank Study, 2006, p 8). Even with the educational reforms of the 1970s, where an effort was made to make education more accessible and relevant to the poor, education still remains vastly unattainable for the general Haitian population. Furthermore, where education is attainable the quality is alarmingly low and inconsistent.

A major obstacle for the education of the children in Haiti, particularly affecting the rural areas, is the lack of physical access to school facilities. It has been noted that some children, as young as those in first grade (6 years old), will walk hours one way to school each morning after performing their domestic chores at home (Lunde, 2008). This long fatiguing walk, oftentimes before dawn, drains the students’ ability to stay focused and alert while...
at school. Low attendance and high dropout rates are common in most primary schools. It seems that there is a correlation between children who travel long distances to school and the high dropout rates. Although this is not the only reason, it is a contributing factor.

On January 12th, 2010 a 7.0 magnitude earthquake shook the island of Hispaniola. According to the U.S. Department of the Interior (2010), official estimates show 222,570 people were killed with 300,000 injured during the earthquake. Over half of the 15,000 primary and 1,500 secondary schools in Haiti were destroyed or severely damaged. The three universities in the capital city of Port-au-Prince suffered serious damage (UNESCO, 2010). The Haitian children affected by the earthquake have experienced intense trauma and many suffered from physical injuries. Thousands of children are currently displaced and roaming the street without a purpose. Education plays a critical role in the rebuilding and recovery from a natural disaster such as this. A return to some semblance of normalcy, such as returning to school, is crucial for them. If Haiti is ever to progress, there must be greater opportunity for education for Haitian children.

THE PURPOSE OF THE STUDY
The purpose of this research study was to examine the educational facilities in Haiti and other underdeveloped nations worldwide and to explore effective methods for building primary schools in Haiti. Reviewing literature about the history, building materials and building practices, earthquake and hurricane considerations and education systems of Haiti and other underdeveloped countries along with observations and interviews of principals in existing schools in Haiti was used to raise awareness and to make recommendations for primary school design elements addressing issues related to the country Haiti.

The primary question of this research is: What are effective design methods for building primary schools in Haiti taking into consideration their economy, climate and culture?

SIGNIFICANCE OF THE RESEARCH
Very few Haitian children are able to compete a primary school level of education (Lunde, 2008). Many factors contribute to the low enrollment levels with one cause being the lack of adequate school facilities, especially in rural areas. This research is intended to raise awareness of the poverty and lack of educational opportunities for Haitian children. In addition, the research will make recommendations effective school design elements with consideration given to the local climate and culture of Haiti.

METHODOLOGY
The researcher reviewed supporting literature about the history of Haiti, its past and present educational systems, available building materials and current building practices and Haiti’s hurricane and earthquake tendencies. The literature review also addressed the needs of school children in poverty-stricken countries and other underdeveloped countries and explores some of the more successful school building solutions. Following the literature review the researcher traveled to Haiti for observations, visited four different primary schools and conducted interviews with the principals of each school. The schools visited were located near the second largest city in Haiti, Cap Haitien. The schools are part of the private sector as the majority of schools in Haiti are. Two larger primary schools (around 200 students) and two smaller schools (around 100 students) were visited. Photographs were taken to document the current condition of Haiti and Haitian schools. Following the data collection, recommendations were made for effective design methods for building primary schools in Haiti.

FINDINGS:
The trip to Haiti and the visits and interviews at the four schools revealed needs for improved lighting, access to running and clean water, more classrooms, bathroom facilities, noise control, ability to address the hot climate, a place to prepare and eat food, a safe area for children to play, and general safety for the school to protect against intruders and vandalism (see figures 3 & 4). School uniforms are worn by all children in school due to government regulation begun during the Duvalier rule and now enforced to make sure children have clothes to wear while attending school. For Haitian children attending school is a privilege and some will walk up to 2 kilometers or more each day, even those as young as 3-4 years old (see figure 5).

THE RECOMMENDATIONS:
After reviewing literature and traveling to Haiti for observations and interviews the researcher made recommendations for effective design elements for primary schools
in Haiti. The recommendations include solutions such as providing a wall around the facility with a lockable gate to provide safety for the teachers and students, a closed in and safe courtyard area for children to play, and high placement of windows openings for ventilation for the hot climate of Haiti. To address the poor lighting in the classrooms, recommendations for large openings in the walls as well as fiberglass skylights in the roof will allow natural light in. A method for capturing rainwater is also important in order to capitalize on Haiti’s rainy tropical climate. Rain collected can be used for cleaning, for toilets and showers. The final recommendations will be presented in a problem and solution format with each of the issues mentioned above being addressed.
REFERENCES (APA)


Connecting Place and Technology in Contemporary Green Building Design: Enhancing LEED Building Certification with Vernacular Design

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NARRATIVE

ISSUE
The practice of sustainable design has led to an increase in energy conserving system technologies in building design and construction through application of Leadership in Energy and Environmental Design (LEED) certification criteria. Requirements to reduce energy consumption to meet energy and atmosphere criteria, as well as the needs of building occupants, are largely satisfied through the use of energy-efficient technologies in building mechanical systems, lighting, and equipment. The benefits of incorporating current and emerging technologies into building design include significant reductions in energy use as compared with conventional systems. The tradeoffs for incorporating these technologies however, are high up-front project costs and a substantial energy investment in technological production and manufacturing. The visual impact of the technological approach to design may also lead to buildings that are qualitatively generic and lacking in connection to people and place.

In contrast to the technological approach, vernacular architecture serves as a valuable source of accumulated knowledge and grassroots technology that optimizes building energy performance with minimal environmental impact (Kibert, 2005). The passive design characteristics of vernacular structures incorporate regional site conditions and work with nature to ventilate and illuminate interior spaces. Building ratios, site orientations, and materials of vernacular structures also contribute to reduced solar loads and limit the need for the mechanical conditioning of building interiors. Applied in conjunction with LEED certification criteria and building commissioning, the vernacular approach may increase energy efficiency in green building design and help to establish connections to place that the technological approach alone cannot achieve.

FRAMEWORK
The vernacular approach to sustainable design also reflects a practice of environmental stewardship more closely aligned with the leading views of society and nature. The exemptionalist view, in which man dominates the natural world, has been largely replaced by a more naturalist self-image, which works with nature to achieve sustainable interactions with ecological systems (Wilson, 1998). Within this framework, additional efforts to engage natural capital and the free work of nature are incorporated into green building design and operation.

PROCESS
The vernacular approach to green building design is incorporated into the LEED certification proposal for a new construction commercial office building to be located in the Florida panhandle. The design process begins with the formation of an ecological design concept to guide decision making pertaining to the design, and point distribution for the green building design proposal. A survey of climatic conditions and passive design alternatives for regional architectural precedents is also used to identify viable strategies for adoption within the design phase. Throughout the design process, efforts to meet LEED credit prerequisites and acquire points for achievement of Gold certification status are incorporated within the design decisions. Consideration is also given to adhering to the naturalistic approach to building design and operation.

Connections to place and optimal integration of natural systems interfaces are achieved at both the community and building scale. The site for the project is located within a traditional neighborhood development that pro-
motors mixed residential and commercial uses with emphasis on public transportation, pedestrian connectivity, and shared greenspaces. Architectural design guidelines for the neighborhood support the use of regional materials and the vernacular aesthetic of traditional southern architecture. Balancing the functional requirements of the commercial office interior with the vernacular vision, the proposed commercial office building incorporates the characteristics and passive design strategies of the Four-Square Georgian. This traditional architectural archetype of the late-cracker period is commonly found in the hot and humid climate of North Florida and is characterized by a symmetrical plan with a broad, central hallway, lap board siding, tin, pyramid shaped roofs, and building structures which are elevated above the ground plane (Haase, 1992).

Visual connections to the history and tradition inherent in the Four-Square Georgian archetype are incorporated within the LEED design proposal through the use of symmetry, scale, materials, and interior forms designed to maximize daylighting and thermal buoyancy. Efforts to reduce solar gain during operating hours include East-West building orientation, as well as light building mass and values. Strong insulation, low-e window glazing, and high-sloped, high-albedo roof materials are used on the building envelope to reduce heat gain as well. Native ground vegetation and shrubbery are utilized for shading purposes and to reduce water demand to a level of 0% potable water use for irrigation. Native deciduous trees, such as the saucer magnolia, star magnolia, and crabapple trees are incorporated to minimize solar heat gain in the building envelope.

In addition to the vernacular strategies utilized to maximize natural capital, technological systems are also considered and incorporated into the design proposal where necessary to meet the anticipated occupant comfort levels for contemporary interior environments while satisfying the minimum energy performance prerequisites of LEED-NC v 2.2. In the hot and humid climate zone of North Florida, temperatures and humidity levels can exceed general human comfort levels of 90°F and 50% respectively, making interior air conditioning a valid component of the thermal comfort strategy (Black, 1993). For this reason, systems that work with natural air circulation and light distribution are prioritized, such as the incorporation of a displacement ventilation system distributed through an under floor plenum. Coupled with a raised access flooring system, the displacement ventilation mimics the raised-platform structures of Florida cracker architectural precedents. The use of an energy recovery ventilator with a desiccant dehumidification system is also used to exchange cool air temperatures from exhaust air with intake from outdoor air, thereby optimizing the use of chilled interior air in the hot Florida climate. Alternative energy sources are also incorporated into the building operation scheme through the purchase of green power from an off-site power marketer. A 5% solar and 95% biomass blend is proposed to supply 75% of the electricity needs for building operation. The cost for the solar-biomass blend provides considerable cost savings compared to solar power alone, at a premium of 1.6 cents/kWh, and limits the need for onsite solar collection and storage devices.

The interior lighting scheme in the design proposal combines both passive strategies and energy efficient fixtures to maximize the controllability of systems for building occupants. A central light-well adapted from the broad central hall and cupolas of the vernacular style, along with fenestration totaling 29% of the gross wall area in compliance with the recommendations of the Advanced Energy Design Guide for Small Office Buildings 2004 for Climate Zone 2, are used to provide daylight and views to 75% of all regularly occupied spaces, achieving a minimum daylight factor of 2%. Natural lighting is supplemented by electronic ballasts with dimmable linear parabolic fluorescent pendants and dimmable compact fluorescents with CRI levels of 80 or above and LER ratings of 75 in order to meet lighting needs of commercial office functions. To promote building occupant interaction with place and related energy consumption measures, a real-time energy monitoring program is specified for use with an energy dashboard having a display monitor in the central stair atrium adjacent to the building entrance. The monitoring program provides a tool to allow building occupants to be conscious of energy use intensity and encourages reliance on passive design alternatives to conventional interior air conditioning and lighting control systems.

RESULTS

The resulting green building design proposal incorporates the accumulated knowledge of place and climate existing in the vernacular architectural predecessors with technology-enhanced building products to meet the
interior thermal and lighting expectations of present day building occupants. Integration of both the technological and vernacular approaches to green building design reflect a symbiotic relationship between grassroots and emerging technologies which are necessary to moving forward to solve the growing issues of minimizing resource consumption in the built environment. Through application of emerging green building rating systems in conjunction with ecological design principles, a more naturalistic approach to society and environment can be achieved. This presentation and the associated LEED design proposal are intended to initiate discussion on the use of passive design strategies for minimizing primary energy consumption in green being design in a manner that is responsive to regional climatic conditions and cultural contexts.

REFERENCES (APA)

Towards a More Humanistic Courthouse Interior

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University of North Carolina at Greensboro

NARRATIVE

BACKGROUND:
The case study building represented in this poster is the new Durham County Courthouse, a building currently under construction to replace an existing county courthouse built in the 1970s. The architect of record for the new courthouse is the firm of O’Brien/Atkins Associates of RTP, NC, for whom I worked before joining the faculty at UNC Greensboro. The 300,000 SF Durham County Courthouse is a project for which I served as lead design architect and lead interior architect. The new courthouse is under construction in a part of Durham, North Carolina, that has a mix of public and private uses, including the American Tobacco Campus, the Durham Bulls minor league baseball park and the Durham Performing Arts Center. This part of Durham represents the vibrant future growth of the city to the south of downtown. The geographical anchor holding the new courthouse in place is the Durham County Detention Facility, directly adjacent and to the north of the new courthouse. There will be a direct interior connection between the detention facility and the courthouse.

The new courthouse will replace the county’s existing courthouse, perhaps most famous for the 2006 Mike Nifong/Duke Lacrosse team case. While adequate for a national news media backdrop, the existing 1970s-era courthouse suffers from a number of internal problems that stem from planning principles based on efficiency, not environmental psychology. These problems include dark corridors, confusing circulation, dark stairs and elevators shared by judges, detainees, attorneys, and witnesses, and a lack of space for security screening. As a result, users of the existing courthouse feel anxiety and stress leading from the street into the courtroom, and the building has become a running joke in the social culture of Durham. The design of the courthouse that is under construction proposes solutions for these problems.

THEORY:
The theoretical framework for the interior design of the new courthouse is underpinned by the research of individuals and institutions such as the Law Reform Commission of Western Australia, which notes that “the physical organization of Court space gives social and psychological messages. The layout of waiting rooms and jury rooms, the way parties are seated in the court, and the differences in accommodation provided to judges, witnesses and prisoners all communicate non-verbally to those using each space. The court environment is not just a set of rooms, corridors and entrances; it is a cultural, intellectual and emotional world.” (1018).

BUILDING AND INTERIOR ORGANIZATION:
With any contemporary multi-courtroom courthouse structure, the courtroom module drives the organization. With up to 20+ courtrooms at complete build-out, the new Durham County Courthouse is organized around the module of a pair of courtrooms with shared detainee holding cell cores. The module of a pair of courtrooms and shared holding cell is repeated to make a standard of four courtrooms per courts floor. High volume courtrooms, such as traffic court, are positioned on lower floors of the 10-story building, while lower volume and more sensitive courtrooms – such as juvenile court and family court – are on higher floors of the building. High-volume public service functions, such as the county clerk’s office and the jury pool space, are located closest to the main public entry into the building.

The massing of the building is that of a slender tower that comes to rest of a broader base, with a public entry loggia on the southward-facing front of the building. The
slate-clad entry is one of three slate-clad elements in the scheme. Each of the three slate elements addresses the public at different scales. A slate-clad corner to the parking deck gives visual clues to visitors approaching the site from their vehicles. The entry loggia addresses the pedestrian scale. And a tall slate-clad stair tower signals the importance of the civic building at a distant scale, primarily to the Durham Freeway passers-by.

Courthouse interiors are organized in order to provide safety and separation of different populations while allowing for civic dignity. People should not feel as though they're “guilty” before they ever reach the courtroom. To this end, attention has been given to arrange public interior spaces in a logical and predictable flow. From the main entrance, wayfinding from one space to the next is visible and clear. An open stair off the main lobby invites users up to the second and third floors where those high traffic functions occur. A wide, generous bank of elevators provides expedient vertical circulation for those going higher in the building. As one moves up the building, the public circulation is located at the most day-lit portion of the courthouse, facing the plaza to the south. The separation of populations between public and restricted areas of the building occurs outside of view; judges and detainees share only the courtroom spaces, not stairs and elevators, with the general public.

**CONCEPTS:**

The primary concept for the project is that a courthouse is a civic space where different populations of the public meet in order to handle important business. The architectural concept that evolves from this broader statement is that the civic space connects the city of Durham to the courtroom, where these populations come together, in a transparent and open architecture. To this end, much attention is given to public spaces, both inside and outside the building, and the details of those spaces. In front of the 10-story building are a public plaza and lawn that hold the place of the traditional courthouse lawn or courthouse square. All visitors to the courthouse will approach the building through the public plaza, and the memory and view of the plaza will serve as an orienting device throughout the building. Transparency is accomplished through large expanses of curtain wall along that same façade.

The architectural style of the building and site is, overall, a modern one that uses traditional materials of other civic buildings in Durham, such as granite, limestone, slate, and brick. While the existing courthouse building is an International Style glass and precast building elevated on a base that detaches the building from the city, the new courthouse attempts to reconnect to the city at a pedestrian level as well as a historical one.

The main interior design concept is that a clear interior organization provides comfort and familiarity to the courthouse users of different populations. Organizing public circulation in the same open and transparent zone within the building from floor to floor promotes an ease of wayfinding, leading to a reduction in anxiety among visitors. The public circulation is realized in stacked corridors along the south façade of the building. The location of these public corridors provides a consistent vista out to the public plaza. Unlike the existing building’s fire stairs, which are hidden and buried in the core of the building, stairs at each end of the public corridor of the new building – on magnetic hold-opens - will encourage openness and access from floor to floor.

A secondary interior design concept is that physical transparency in the interior design of the courtrooms and public spaces breaks down the psychological barriers that exist between the powerful and the powerless. By providing clerestory windows between the primary public corridor and all the courtrooms, daylight is allowed to penetrate into the courtrooms and provides a visible relationship between justice and the community it serves. While the sill height of these windows is high enough to ensure security, respect, and in some cases privacy, there is still access to natural light in each courtroom. In addition, courtrooms along the western side of the courthouse tower have exterior windows along the west side of the courtroom offering direct views to the Durham skyline.

A third interior design concept is that the material palette selected for these interiors should be durable yet inviting. While certain building users would prefer a material palette of concrete and steel to prevent vandalism, the design responds to a different concept, namely that users will resist vandalizing interior finishes when those interior finishes are upgraded in quality. Instead of using materials that are bullet-proof and graffiti-proof, the interior palette consists of stained hardwoods, honed limestone, honed slate, carpet tile, acoustical wall panels,
and a signature resin wall with historical images of the courthouse’s downtown context.

While only time will tell how successful these design concepts are in the ultimate build-out of the courthouse, county and court officials who participated in the design process are hopeful that the new building will provide a safe, open, and humanistic place for citizens of Durham County for decades to come.

REFERENCES (MLA)


Towards a More Humanistic Courthouse Interior

1 plaza serves as orienting device
2 public circulation corridor opens to urban context and plaza
3 floor to ceiling curtainwall provides views and orientation
4 clerestory windows offer daylight to all courtrooms
5 upgraded interior finishes promote civic dignity
6 entry pavilion breaks down scale of tower to human scale
7 ceremonial courtrooms offer views to city
8 natural slate at head of courtroom carries exterior material inside
A Home For Everyone: Designing small spaces that transform to accommodate multiple household types

ADRIANNE W. KAUTZ / ERIC A. WIEDEGREEN
Florida State University

NARRATIVE

INTRODUCTION
There exist a multitude of problems within the United States housing market. Among these problems are lack of affordability, lack of suitability and lack of sustainability. The purpose of this study is to address the lack of suitability in our houses and create a residence more appropriate for our diverse society. The goal of this project is to create a small residence with a transformable interior that can be changed by the residents. This poster presentation will graphically present the context of this design problem and concepts that will become a final solution.

THE DESIGN PROBLEMS
A major problem is that American houses are unsuitable for our diverse population. After World War II, the predominant family structure was the “traditional family” with a stay-at-home mom, working father and three children. This homogeneity made it easy for builders to anticipate homeowner needs. Houses have been built for these “traditional families” for over 60 years (Hayden, 2002). However, only 23.5% of households across all races were nuclear families as of the 2000 census (Simmons & O’Neill, 2001). Also, the average household size is only 2.61 persons (US Census Bureau, 2010). People are delaying marriage and family, having fewer children, and they are living longer.

The ideal home is built with the occupants' needs in mind as a direct reflection of their lifestyle (Kicklighter & Kicklighter, 2005). However, custom homes are often more costly, more difficult and stressful to build (Johnson, n.d.). Also, we live in a highly mobile society where 63% of American adults have moved at least once in their lifetime (Cohn & Morin, 2008). Only 30% of housing units started in 2009 were built for the occupant (U.S. Census Bureau, 2009). As a result, residents must adapt their life to fit a space designed for a generic consumer.

Another problem is that our houses are unaffordable, often for those earning middle incomes and especially for single parents and minorities. In America, homeownership is a widespread goal that transcends class or race (Cullen, 2003). Owning a home is a central component of the “American Dream” (Starks, 2003). However, data released in 2009 shows 42% of Americans cannot afford to purchase a home (Savage, 2009). Also, families with lower incomes will pay higher interest to purchase a home, which means homes are less affordable for them.

Housing expenses are the largest component of a family's budget (Holleb, 1978). The Department of Housing and Urban Development recommends that housing costs take up less than 30% of household income. According to Quigley & Raphael (2004), up to half of the income in “poor” or “near poor” households is spent on housing. This creates situations where “the effort of paying for the house controls every family dynamic found in it” (p. 12, McLendon, 2005).

The last problem is that our residences are environmentally unsustainable, built in a manner that causes strain on the environment and depletes our natural resources. American homes have grown drastically over the past century. The average home size in the United States has ballooned from 983 square feet in 1950 (National Association of Home Builders, 2006) to 2,367 square feet in 2009 (U.S. Census Bureau, 2009). These large homes create an enormous amount of construction waste, either when constructed or when they are being remodeled or demolished (Celento, 2007).
These homes are built in a low-density pattern that creates sprawl and car dependency (Meredith, 2003). Between 1945 and 2002, urban land area increased two times faster than population growth (Lubowski, Vesterby, Bucholtz, Baez, & Roberts, 2002). This low-density style of living has become a theme in America. According to Isenstadt (2006), people in America “just do not like to feel fenced in” (p. I). American homes are taking up too much land and placing a strain on the environment.

America’s houses must be reevaluated to take diversity, affordability and sustainability into account. The proposed design project seeks to address these housing problems.

**GOALS OF THE PROJECT**

The primary goal of this project is to create a residence that can transform to accommodate diverse household types. The residence will be designed as a single-family detached structure, in keeping with ideas about the American Dream of homeownership. This residence will be more affordable for consumers than average houses and more environmentally friendly, due partially to its small size. The transformative nature of the interior will allow residents to live more comfortably as household demographics change. It will also make resale easier by being appropriate for a larger amount of the population through its ability to be changed. Finally, the affordability of the structure will allow more people to be able to purchase the home.

**TARGET POPULATION**

It is critical to understand the composition of the modern American household when creating a residential design. As determined by the United States Census Bureau, there are two household categories: family households and non-family households. These categories are further divided into five types: married couple, female or male family householder with no spouse present, and female or male nonfamily households.

Over a third of households are “non-family” households, with 27.5% of this group living alone. As of the last census, 49.3% of households did not contain a married couple (Simmons & O’Neill, 2001). According to Census data from 2008, only 21.4% of households were married-couples with children. While households with children used to be the norm, today only a third of households have children under the age of 18. Close to a third of all households have at least 1 member older than 60. Also, there is a greater mix of ages in today’s households. 16% of households have a mix of two different adult generations or have a grandparent present (Pew Research Center.) All of these variables must be considered in potential design solutions.

**PRECEDENT STUDIES**

The designs of five different residences have useful data to inform the design solution. A chart comparing general information about these five residences can be seen in Figure A. Each residence was less than 1,000 square feet and each included at least one transforming element. The residences were designed for different household types, including singles and families.

When comparing the precedents’ amenities, themes began to emerge. An amenities comparison of the residences can be seen in Figure B. All of the residences included a kitchen, at least one bedroom and one bathroom and space for dining. All of the residences included a second full bedroom or a secondary bed. They all included an office space, and 80% included laundry facilities. Only 2 residences had a second bath. The residences with the largest square footage included second baths, so it seems a second bath is a logical addition where square footage allows.

These precedents successfully accommodate multiple functions within small footprints, partially due to the transforming features present. In some cases, these features are as simple as leaving the space undefined and allowing for user customization. In others, dual-purpose furniture is used. In the most complex, entire walls are made to move on tracks, revealing new spaces and amenities.

**DESIGN SOLUTIONS**

Based on household demographic information, it will be necessary to design four interior variations within the exterior shell to accommodate each type’s needs. A chart explaining the correlation between the four design solutions and five household types can be seen in Figure C.

Due to space constraints and the average household size of 3.25 people, the maximum occupancy considered will be three people. Married couples with a child will require a 2 + 1 solution. Those without children will require a Double solution. Householders with no spouse
present will require a $1 + 1$ solution. This solution should accommodate up to 2 children because a majority of these households have children under age 18 and have an average size of around three people. The needs of children of varying ages should be considered in this design. 22% of these households have a person over age 60, so the needs of the elderly must be considered in this solution.

Non-Family households will require several solutions: $1 + 1$ solutions for individuals living as roommates. A Double solution is required for cohabiting couples. Those living alone will require a Single solution. Those age 65+ are most likely to live alone, so the needs of seniors must be considered in this solution also. When all four design solutions are considered together, they will cover the needs of all possible scenarios for the five household types.

**CONCLUSION**

Based on the information presented, it is obvious that the way American houses are designed must change to accommodate our society’s diversity and to embrace principles of sustainability and affordability. Precedent studies show small residences that allow for owner customization can be created with success. The final phase of this research will be the design of a residence that transforms to meet the needs of all household types. This topic challenges the current pattern of the American home, and the information presented here provides a launch pad for a new generation of socially responsible housing.

<table>
<thead>
<tr>
<th>Name</th>
<th>Occupants</th>
<th>Size</th>
<th>Location</th>
<th>Type</th>
<th>Lighting</th>
<th>Color Scheme</th>
<th>Spaces</th>
<th># of floors</th>
<th>Transforming Features</th>
</tr>
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<tbody>
<tr>
<td>&quot;Core&quot; Residence</td>
<td>1, student</td>
<td>900 SF</td>
<td>NYC, Tribeca</td>
<td>Apartment</td>
<td>halogen, fluorescent, daylighting, incandescent</td>
<td>maple, birch, white, gray</td>
<td>bedroom, kitchen, guest &quot;room&quot;, 1.5 baths, dining, living, office</td>
<td>1</td>
<td>Murphy bed/wall</td>
</tr>
<tr>
<td>Flexible House</td>
<td>Family of 4</td>
<td>1000 SF</td>
<td>Seattle, WA</td>
<td>Single-Family Detached</td>
<td>daylighting, incandescent</td>
<td>white, wood tones, beige</td>
<td>living room, 2 bedrooms, dining room, kitchen, bathroom</td>
<td>1</td>
<td>Unfinished 2nd floor</td>
</tr>
<tr>
<td>The Grow Home</td>
<td>Multiple</td>
<td>1000</td>
<td>Montreal, Quebec</td>
<td>Single-Family Attached</td>
<td>daylighting, incandescent</td>
<td>any</td>
<td>living room, eat-in kitchen, bedrooms, bathroom</td>
<td>2</td>
<td>All interior walls can move, murphy beds</td>
</tr>
<tr>
<td>Domestic Transformer</td>
<td>1, architect</td>
<td>344 SF</td>
<td>Hong Kong, China</td>
<td>Apartment</td>
<td>daylighting, fluorescent</td>
<td>black, silver, white, yellow</td>
<td>living room, kitchen, bathroom, dining room, office (24 total spaces)</td>
<td>1</td>
<td>Interior has walls that move on tracks</td>
</tr>
<tr>
<td>East Village</td>
<td>3, couple plus small child</td>
<td>390</td>
<td>New York City</td>
<td>Apartment</td>
<td>daylighting, incandescent</td>
<td>purple, red, navy, black</td>
<td>living/dining room, kitchen, bedroom, bathroom</td>
<td>1</td>
<td>Trundle bed, multipurpose furniture</td>
</tr>
</tbody>
</table>

*Figure A. Chart comparison of basic features of precedent study residences.*
<table>
<thead>
<tr>
<th></th>
<th>PS-1</th>
<th>PS-2</th>
<th>PS-3</th>
<th>PS-4</th>
<th>PS-5</th>
<th>Percentage</th>
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<tr>
<td>Kitchen</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
<td>100%</td>
</tr>
<tr>
<td>Bedroom</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
<td>100%</td>
</tr>
<tr>
<td>2nd Full Bedrm</td>
<td>no</td>
<td>yes</td>
<td>possible</td>
<td>no</td>
<td>no</td>
<td>40%</td>
</tr>
<tr>
<td>Bathroom</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
<td>100%</td>
</tr>
<tr>
<td>2nd Full Bath</td>
<td>no</td>
<td>no</td>
<td>possible</td>
<td>no</td>
<td>no</td>
<td>20%</td>
</tr>
<tr>
<td>2nd Half Bath</td>
<td>yes</td>
<td>no</td>
<td>no</td>
<td>no</td>
<td>no</td>
<td>20%</td>
</tr>
<tr>
<td>Laundry</td>
<td>yes, in half bath</td>
<td>unknown</td>
<td>yes, in bathroom</td>
<td>yes</td>
<td>yes, in closet</td>
<td>80%</td>
</tr>
<tr>
<td>Dining</td>
<td>yes, table</td>
<td>yes, table</td>
<td>yes, in kitchen</td>
<td>yes</td>
<td>yes</td>
<td>100%</td>
</tr>
<tr>
<td>Guest/Second Bed</td>
<td>yes</td>
<td>no</td>
<td>possible</td>
<td>yes</td>
<td>yes, trundle for child</td>
<td>80%</td>
</tr>
<tr>
<td>Office Space</td>
<td>yes</td>
<td>yes, in master bedroom</td>
<td>possible</td>
<td>yes</td>
<td>yes</td>
<td>100%</td>
</tr>
</tbody>
</table>

*Figure B. Chart of present amenities in precedent studies.*
## Figure C. Chart of Household types and proposed design solutions.

<table>
<thead>
<tr>
<th></th>
<th>Family Households</th>
<th></th>
<th>Non-Family Households</th>
<th></th>
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<tbody>
<tr>
<td></td>
<td>Married Couple</td>
<td>Female Householder</td>
<td>Male Householder</td>
<td>Female Householder</td>
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<tr>
<td>Occupancy</td>
<td>2+</td>
<td>2+</td>
<td>2+</td>
<td>1+</td>
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<tr>
<td>Beds Required</td>
<td>1+</td>
<td>2+</td>
<td>2+</td>
<td>1+</td>
</tr>
<tr>
<td>Appropriate Solutions</td>
<td>Double, 2 +1</td>
<td>1 + 1</td>
<td>1 + 1</td>
<td>Single, 1 + 1, Double</td>
</tr>
<tr>
<td>Solutions:</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Single</td>
<td>1 occupant, 1 sleeping area</td>
<td>1 + 1</td>
<td>2 occupants, 2 sleeping areas</td>
<td></td>
</tr>
<tr>
<td>Double</td>
<td>2 occupants, 1 sleeping area</td>
<td>2 + 1</td>
<td>3 occupants, 2 sleeping areas</td>
<td></td>
</tr>
</tbody>
</table>
REFERENCES


Healthcare Wayfinding Systems

RHONDA R. KLINE / SEUNGHAE LEE
Purdue University

NARRATIVE

One of today’s challenges as interior designers lies within the visual communication of the environment. This study focuses on the wayfinding systems of three healthcare facilities and highlights their various techniques.

Field Studies conducted present environmental research from the following 8 categories of wayfinding:

SIGNAGE
Various components can be used to supplement the legibility of a signage system. These components are described as: symbols, text, contrast, and placement.

SPACING AND LOCATION
According to McGowan & Kruse (2004) sign placement can be best viewed when placed at consistent and strategic decision-making locations.

AMERICAN DISABILITIES ACT
The ADA (U.S. Department of Justice, 2010) suggests options that have proved to be helpful in creating legible signage design.

LANDMARKS
Peponis, Zimring and Chi (1990) refer to a landmark as a way to organize, anchor, or remember information with a reference as a distinct point to provide users with a sense of their environment (Carpman & Grant, 2003).

BUILDING LAYOUT
The floorplan configuration can easily affect the wayfinding design of a facility. Weisman (1981) found that individuals reported being lost less frequently in a facility with a simple floorplan as opposed to more complex facilities.

COLOR SCHEME
Color, when used in facilities, can be used as an effective means in designing wayfinding systems. Color can be used to express the planning logic within a facility by visually connecting or counteracting one part to another (Smith, 2008).

LIGHTING
In order to provide proper wayfinding systems the lighting of a facility must be considered. Overlighting is an issue many designers face when trying to accentuate an area of a facility.

POSITIONING OF STAFF
A possible solution for wayfinding design is to provide individuals with one-on-one personnel to escort them individually throughout a facility. This trend has become common among large, complex healthcare facilities (Carpman & Grant, 2003).

HOSPITAL 1 FIELD STUDY
This hospital has three exterior entrances; the Emergency Entrance, Main Entrance, and the Cancer Center Entrance. The building layout is set up as a square with each corner devoted to a department. Departments are positioned throughout the remaining upper levels. Although the layout is simple, multiple renovations have drastically changed the existing structure causing uncertainty among some individuals.
Areas of confusion were among the Main Entrance, the Heritage Wing, and the core of the hospital that housed the Cardiopulmonary Department. Navigation without the aid of a volunteer seemed to present the user with a negative view of the facility.

This facility focused on providing one-on-one care for the patrons as they entered the facility. Retired volunteers, referred to as “Redcoats” took patrons to their desired location upon entering the facility. This convenience seemed to create a sense of relief and delight for the older users of the space.

Manager Interview

Recently, Hospital 1 has undergone significant changes to the facility. The Surgery and ED/ICU wings have been renovated followed by the addition of the Cancer Center that has added another department. These renovations have improved overall satisfaction of the facility; however, the wayfinding system hasn’t been considered with every construction.

Landmarks are prevalent in the newly renovated wings; however, the lack of visually distinct elements in older parts of the facility proved to showcase their importance in the renovated areas. User satisfaction reports have noted that their wayfinding system hasn’t provided enough for the patrons to navigate individually throughout the hospital.

 Patron Interview

The disconnect users felt while navigating from one wing to another created a sense of confusion and strain. Similar to the way a mouse feels in a maze, patrons of the facility felt as if they had to wonder around until they found the correct path. The users found that the further they traveled into the core of the facility the less useful the environmental information was.

The respondents reacted quite positively to the use of color in the newer wings of the hospital; however, renovations have created problems with consistency in the color scheme and become more of a hindrance when traveling from one wing to another.

The signage system employed wasn’t sufficient enough for respondents navigating the space. Although the text to background contrast was more than sufficient, the inconsistencies among the text, spacing and location, and the color of signs hindered the success of navigation (Figure 1). Current signs have created confusion because of their degree of variation.

**HOSPITAL 2 FIELD STUDY**

Constructed in 1999, Hospital 2 consists of two stories. The main floor services all 7 departments while the lower level consists of miscellaneous offices and services. The 116,000 square foot symmetrical building layout utilizes a main corridor to connect all departments of the hospital.

The public areas of the hospital have been designed with several visually distinct elements. The main entrance houses a distinct visual anchor using heavily designed floor to ceiling casework. The decorative wall can be seen throughout the main corridor of the facility (Figure 2).

Hospital 2 has been designed with clerestory windows throughout the entirety of the main corridor. These windows bring in generous amounts of natural daylight for the interior of the facility providing proper illumination for the space. Unfortunately, when the sun is at its peak the sunlight shines directly on informative signs making them essentially unreadable.

Manager Interview

Through the use of retired volunteers and willing staff members, Hospital 2 has been transitioning from an independent facility to one where people feel more welcome. To create this idea volunteers have recently been encouraged to walk individuals to their destination instead of pointing in the direction they need to go. User reports have commented on their preference for immediate assistance upon entering the facility. While this seems to be working, their main concern is the added number of volunteers needed to manage the desk and escort the patrons.

 Patron Interview

The respondents voiced their preference for more environmental assistance inside each department. The main corridor seemed to be relatively easy to navigate; however, once inside each department wayfinding ele-
ments weren’t as prevalent. Departments have slightly more challenging layouts due to their use of the 45 degree hallways created. Adding to the more difficult layout is the lack of landmarks, reassurance signs, and color. Respondents mentioned color as being an element of wayfinding that they would like to see utilized more frequently.

Signage is sufficient enough for the respondents; they did however mention their preference for color and the absence of color throughout the hospital. The consensus among the respondents was the location of the department signs weren’t placed very well for them to see. These signs were placed exceptionally high above the doors they coincided with.

**HOSPITAL 3 FIELD STUDY**

Hospital 3 is the newest construction that opened in 2008 with a combined total of 441,000 square feet. This facility services patients on the main level, five upper levels, and one lower level. The lower level consists of the Banyan (cafeteria), The Gift Shoppe, and various training offices. The main level is comprised of the three separate entrances: The Main Entrance, Emergency Entrance, and the Imaging Center. These separate entrances create a building layout that is relatively easy to maneuver. The upper levels are all symmetrical and separated by departments, consisting of six various departments.

Wayfinding features within the building are accentuated through artwork placed around the facility. Each themed level of the building has artwork to supplement its floor. Architectural landmarks have been incorporated within the structure by the use of distinguishable materials; i.e. wood and rock.

**Manager Interview**

The main level is comprised of three separate entrances: The Main Entrance, Emergency Entrance, and the Imaging Center. These separate entrances create a building layout that is relatively easy to maneuver. The upper levels are all symmetrical and separated by departments; consisting of six various departments.

This facility is rather unique in the setup of their wayfinding system. The interior utilizes an arbor theme to assist in navigation within this facility. The arbor theme, as visually appealing as it appears does not seem to assist navigation within the hospital (Figure 3).

**Patron Interview**

The arbor theme as well as the extensive collection of artwork provided the patrons with a positive sense of overall ambiance. However, these visual elements did not serve to provide the respondents with a great deal of wayfinding assistance.

Overall the signs were located appropriately, at major decision points and were consistent in their text, color and size. Of concern however were the signs that contained background graphics. Respondents liked the visual appeal of the signs containing these graphics, but they did not provide a high level of contrast, making it difficult to see them clearly.

Creating wayfinding systems is a topic heavily researched in the field of interior design. By creating a wayfinding system that implements proficient sensory clues, we can create environments that provide a safe surrounding for our aging population.
Figure 1: Photograph of signs displayed throughout facility

Figure 2: Photograph of floor to ceiling wood casework wall
REFERENCES (APA)


Nursing Home Design Criteria for the Small Household Model

YOUNG S. LEE
Michigan State University

NARRATIVE

PURPOSE
Creating a home environment is the most difficult challenge in nursing home design. There have been constant efforts to improve quality of resident's life in nursing homes. However, the fundamental problem is that nursing home environment does not feel like home. The recent "culture change" movement in long-term care suggests a household model for nursing home reform. The small household model departs from the original nursing home design practice modeled after hospital design. It aims to decentralize the institutional environment by creating resident-centered environment. Critical to the small household model is the implementation of evidence-based design for achieving successful nursing home design. This presentation showcases an exemplary creative scholarship that applied design criteria that meet both requirements of home and nursing to a small household nursing home.

CONTEXT
There is a consensus between long-term care professionals that the traditional medical service-centered nursing homes based on the institutional model had limitations in becoming home to the residents. A significant contributor to this is that the conventional practice meeting the minimum nursing home standards became the maximum allowance (Nelson, 2008). For instance, double-loaded corridors with bedrooms on both sides of the corridors became the standard practice to meet the code requiring bedroom design that exits through a corridor. Also, the code allowing maximum 60 beds per nursing unit created a typical nursing unit with 60 beds.

Culture change is a concerted grassroots movement in long-term care to transform the conventional practice to resident-centered practice, changing a nursing facility into a home (Bowman, 2008). Along the progression of the movement, a new residential model called small household was evolved. The focus of the small household model was decentralization of core services against the traditional institutional model. The physical environment of nursing homes of the small household model mimics the typical household environment by consisting of private bedrooms with a bathroom; communal spaces of full kitchen, living room, and dining room; laundry rooms within the household, and staff work areas integrated into the communal spaces (Bowman, 2008). It is a self-contained small house with residents of 16 or fewer.

The new model has presented significant improvements not only in satisfaction from residents, families, and employees but also in resident's physical and psychological problems (Feather & Campbell, 2006). Recognizing the benefits, the Center for Medicaid and Medicare Services (CMS) and the National Commission for Quality Long-Term Care are currently supporting this model (Rahman & Schnelle, 2008). More states including Arkansas, Oklahoma, and Wyoming are approving the small household model as an alternative model for skilled nursing care, and passing legislation supporting the development of such nursing homes (Bowman, 2008). Furthermore, a bill is currently undergoing the legislative process to assist the implementation of small house nursing homes (GovTrack. 2010).

However, challenges still reside when determining design decisions between two fundamental purposes of nursing homes: residential environment and nursing service capacity in following the philosophy of small household nursing home model (Cutler & Kane, 2009). Crucial is to make design decisions based on evidence largely
found in literature rather than individual anecdotal success stories when applying the small household model to nursing home designs (Calkins & Joseph, 2008).

**PROCESS**

Drawing from three frameworks: design principles of the Society for the Advancement of Gerontological Environments, design attributes for home and nursing developed by Lee (2009), and Creating Home Symposium recommendations, nursing home design criteria for the small household model were identified. These design strategies were applied to a hypothetical nursing home design for small household model in an urban context.

**FRAMEWORK**

The Society of the Advancement of Gerontological Environments (SAGE) identified eight design principles for gerontological environments, aiming to advance the built environment for the older adults. Those are based on the resident-centered philosophy paralleling the essence of the Nursing Home Reform Act of 1987 that addressed the issue of the quality of life of nursing home residents as well as the quality of care. The eight design principles include Physical Safety and Psychological Security, Environment as a Therapeutic Resource, Holism and Well-being, Individual Rights and Personal Autonomy, Communities and Relationships, Support of Caregivers, Function Enhancing Technology, and Evaluating (SAGE, 2010).

Lee (2009) identified nursing home design criteria based on common attributes for “home” and “nursing” found in literature. The common home attributes identified by Lee consisted of privacy, independence/autonomy, control, safety, social interaction, personalization/individuality, and familiarity for the residential environment. Nursing home design criteria were identified to meet these common home attributes including personalization, familiarity, private spaces, control over environment, and sense of safety and security. The common nursing attributes to meet nursing service and care included promotion of physical health & recovery, prevention of physical illness & injury, promotion of psychological/emotional health & recovery, prevention of psychological/emotional illness, and spiritual support/quality of life. The nursing home criteria meeting these common nursing attributes identified included physical safety, wayfinding, environmental competency, sensory stimulation, spiritual healing, healthy environment, sensory comprehensible environment, and interaction in a home and within the community.

The Creating Home in the Nursing Home: A National Symposium on Culture Change and the Environment Requirements was a national symposium hosted by the CMS and Pioneer Network in 2008 to seek innovative solutions for environmental design on creating home in nursing homes in line with the culture change movement. Following the symposium, a set of recommendations to create home beyond homelike environment were identified. Those recommendations included: increased private bedroom size of minimum 125 SQ FT with private shower; increased personal closet space; flexible room arrangement; daylight; environmental competency to compensate aging eyes including adequate lighting level following ANSI/IESNA RP-28 2007, visual contrast for reduced contrast sensitivity, reduction of direct and indirect glare, and color balance for reduced color sensitivity; decentralization of nursing station using electronic charting systems; smaller dining rooms; inclusion of kitchen area to social gathering place; access to outdoors with solid surface; and provision of technology such as wireless call system, adjustable beds, wireless Internet access and electrical outlets in various locations (CMS & The Pioneer Network, 2008).

Application of Small Household Nursing Home Design Criteria

The design criteria above were applied to the interiors of a hypothetical nursing home project in an urban site in Washington, D.C. It was originally designed for a small household nursing home design competition in 2008. The interior design of the competition project was further developed by the author to bridge between research and design process to create an improved nursing home environment that contributes to the quality of life as well as physical health of nursing home residents based on the frameworks discussed earlier in the paper. The original competition was held by the Green House Replication Initiative and a team of four designers produced the design of each discipline including two architects, Connie Brown and Celeste Novak, an interior designer, the author, and a landscape architect, Patricia Crawford. The original program for the space required twelve private bedrooms with a private bathroom in each room, kitchen, dining room, hearth area, separate laundry rooms for clean and soiled linens, guest room, pantry, and stor-
age. Keeping the same program, the design criteria from the three frameworks were incorporated to the original interior design.

**CONCLUSION**

There is a growing interest and support for the small household model in long-term care. As nursing home design criteria are shifting, interior design educators need to play a proactive role in educating on the new paradigm of the nursing home model and design criteria to serve the growing population of the aging. The important issues to consider in the new model include clearly defined household spaces and individual spaces and careful circulation design between those spaces along with regulatory and costs issues. Interior design based on evidence in creating nursing home environment for the frail elderly as suggested in this presentation will help to transform traditional nursing homes to genuine homes that enhance the quality of life of nursing home residents.

**REFERENCE (APA)**


Teaching strategies for building Critical Thinking, Professional Values, and Processes through a comprehensive design project

YOUNG S. LEE
Michigan State University

NARRATIVE

PURPOSE
Comprehensive design projects in interior design studios have a crucial role in helping students understand multiple issues in interior design as well as responsibilities to become successful in interior design practice. Comprehensive design projects are meant to simulate the actual design practice as close as possible in the academic environment (Bermudez & Neiman, 2005). They, thus, need to be structured in such a way for students to fully experience the commonly shared professional values and processes required in interior design practice established by the interior design profession.

The most important components of the framework of interior design practice are identified in the six professional standards under Critical Thinking, Professional values, and Processes in the new Professional Standards 2009 of the Council of Interior Design Accreditation (CIDA) (CIDA Professional Standards 2009, 2009). The Standard 2 Global Context for Design addresses the need of entry-level interior designers' global view and weighted design decisions by understanding the parameters of ecological, socio-economic, and cultural contexts. The Standard 3 Human Behavior accentuates informed decisions by knowledge of behavioral science and human factors. The Standard 4 Design Process emphasizes the need of entry-level interior designers' application of all aspects of the design process to creative problem solving. The Standards 5 Collaboration points up the importance of engaging in multi-disciplinary collaboration and consensus building. The Standard 6 Communication stresses entry-level interior designers' effective communication. And the Standard 7 Professionalism & Business Practice underlines the use of ethical and accepted standards of practice and understanding of the value of the contribution to the built environment.

While there are many examples of interior design projects that address singular Standards in literature, how to strategically address all Standards in a comprehensive manner is rarely discussed. It is necessary to explore how to structure a comprehensive project in a more 'comprehensive' manner to provide a learning experience close to the full spectrum of interior design practice. This paper intends to provide teaching strategies in structuring comprehensive design projects to meet all professional standards identified in the Section 2 of CIDA Professional Standards 2009.

PROCESS
Teaching strategies for a comprehensive design project to meet the six Professional Standards of the CIDA Section 2: Critical Thinking, Professional Values, and Processes are proposed via an empirical basis. Examples from a project are, then, provided through the analysis of design process and details of the project with the six Professional Standards. The strategies are intended to be a suggestive framework for structuring a comprehensive design project.

TEACHING STRATEGIES
Strategy 1 Enough preparation to seek an appropriate project in advance to thoroughly structure the project to complete a design project.

Strategy 2 Checking the contents of Standard 2, 5, and 7 when examining possible projects in the initial stage for the potential benefits in experiencing comprehensiveness of a real project. Ensure the project offers a learning opportunity for different ecological, socio-economic, and cultural context (Standard 2), multi-disciplinary col-
laboration (Standard 5), and community service as well as different client type (Standard 7).

Strategy 3 Appropriate client background that enhances student learning in developing communication methods (Standard 6) and understanding the importance of research and evidence based design (Standard 3 & 4). Having a client with science background can easily convince students the importance of research and evidence based design for effective communications with such clients.

Strategy 4 Requiring documents for each phase to ensure the appropriate design process from identifying problems to applying research findings (Standard 4). Requiring statements such as how concepts and research findings are applied to the design solutions ensures students’ adherence to the design process.

Strategy 5 Allowing enough time during the programming phase for data gathering and research. Less time is required with fewer mistakes during the design phase when correct information is available, not to mention it addresses the importance of research.

Strategy 6 Including various research topics and research methods to ensure successful design decisions based on evidence. Assign various research topics and research methods and let students apply the findings to design solutions (Standard 4). To ensure application of behavioral science and human factors to design decisions, assign observation tasks, literature review, and/or interviews with appropriate personnel as part of research tasks (Standard 3). Gather ergonomic and anthropometric data during the research phase to apply during the design phases (Standard 3).

Strategy 7 Requiring design alternatives in the beginning of the design phases to encourage the development of various ideas and creative thinking (Standard 4).

Strategy 8 Making sustainable design (Standard 2) and universal design (Standard 3) a premise of the project.

Strategy 9 Providing collaboration opportunities for various tasks and accountability between teams (Standard 5). In addition to creating design teams for the project, it is also a good idea to divide research tasks between teams and share the information with the entire class. This reduces the time needed for the redundant tasks between teams and encourages students to focus on collaboration and accountability for the task.

Strategy 10 Requiring various types of communication methods in appropriate phases (Standard 6).

Strategy 11 Evaluating the project with regard to professionalism and business practice (Standard 7). A short essay or survey can assess student understanding of the contribution of interior design to the client organization, professional ethics, and/or project management & delivery.

**CASE STUDY**

In Spring, 2010, students in the fourth year comprehensive interior design studio at Michigan State University (MSU) were provided an opportunity to redesign the Atrium of the Agriculture (Ag) Hall in the East Lansing campus. The focus of this studio was to provide students a ‘comprehensive’ experience of a real project to prepare entry-level interior designers. The initial planning was to redesign the landscaping outside the Ag Hall building by Landscape Architecture (LA) students and the Atrium space inside the building by Interior Design (ID) students to celebrate the 100 anniversary of the building. This was arranged in Fall, 2009 between the client Dr. Fear, Senior Associate Dean of the College of Agriculture and Natural Resources (CANR), Dr. Crawford, Associate Professor of Landscape Architecture and the author. The main purpose of the Atrium redesign project was to improve the under-utilized space for all users and to meet the function to host events of the college.

The project was structured as a collaborative project between the LA and ID students to create a united theme between two spaces. The landscaping project took place in Fall, 2009 and the Atrium project in Spring, 2010 due to the purpose of the studio and the curriculum sequence. For the Atrium redesign project in Spring, 2010, the schedule of the events and the coordination with the LA student project were done throughout Fall, 2009. The Atrium project was structured as a team project of 3 people for approximately a month. The schedule for the project was divided based on the tasks in each phase of the typical design process according to the timeframe. Figure 1 presents the process of the project and the application of the six standards.
CONCLUSION
The project significantly contributed to building competency of students in preparing them as entry-level interior designers, meeting all six Professional Standards of CIDA for the framework of interior design practice. Having a client who is a scientist provided students a good motivation for the use of various research methods and the application of research findings to design decisions. It was also a good opportunity for students to learn how to speak the same language as the client to communicate design ideas better. Involving the University Physical Planning Department in the process offered students a good opportunity to learn the organizational structure of academia which is different a commercial organization. As the focus of the LA studio was conceptual design development, ID students had an opportunity to learn the design process and concept building in LA. In addition, it was another type of good service learning project that served the academic community, where students learned the significant role of interior design profession in the society and community.

The design proposals of students based on extensive research and understanding on the user behaviors yielded many creative and functional ideas. Students’ clear communication with the scientist group of the client and the administrators for design solutions based on evidence found from legitimate research methods convinced of the feasibility of the project. The project resulted in several events: the administrators of CANR decided to implement the design solutions; the project was presented in the CANR Stakeholder meeting; it was featured in the Ag Expo News; and it was selected as an exemplary student project for the real world application of knowledge on the School website.

Well developed and structured comprehensive design projects are a good teaching tool to produce competent interior design students meeting all professional standards to practice interior design. While good interior design practice is not limited to only the CIDA Standards, the teaching strategies analyzed in the design process of a successful comprehensive design project in this paper can be used as a suggestive framework for how to integrate all professional standards of interior design practice to a comprehensive design project.

REFERENCES (APA)
### Figure 1 Analysis of the Design Process by Six Professional Standard

<table>
<thead>
<tr>
<th>Phase</th>
<th>Activities</th>
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<tr>
<td><strong>Preparation</strong></td>
<td>• Coordination with the client, University Physical Plant architect</td>
</tr>
<tr>
<td></td>
<td>• LA Ag Hall Landscaping Project</td>
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<tr>
<td></td>
<td>• Interview with the client, University Physical Plant architect, &amp; Dr. Crawford</td>
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<tr>
<td></td>
<td>• Site visit</td>
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<td></td>
<td>• Research by teams of 2-4 people for each topic covering: building &amp; site analysis, systematic observation, behavioral mapping, trace observation, interview with students, faculty &amp; staff, survey with students, faculty &amp; staff, literature review, case studies. The summary of findings from each team was uploaded to the course website to share the information one another.</td>
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<tr>
<td><strong>Programming</strong></td>
<td>• Ergonomic &amp; anthropometric data gathering</td>
</tr>
<tr>
<td></td>
<td>• Programming documents by design/teams of 3 people</td>
</tr>
<tr>
<td><strong>Schematic Design</strong></td>
<td>• Formulation of concepts and alternative design ideas via ideation sketches</td>
</tr>
<tr>
<td></td>
<td>• Formulation of design solutions that are harmonious with a LA project each team chose as suitable to the design for the Atrium space</td>
</tr>
<tr>
<td></td>
<td>• Sustainable design &amp; universal design basis</td>
</tr>
<tr>
<td><strong>Design Development</strong></td>
<td>• Production of architectural drawings in 2D &amp; 3D</td>
</tr>
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<td></td>
<td>• Development of FF&amp;E, lighting fixtures, &amp; job book</td>
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<td></td>
<td>• Development of cost estimate</td>
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<tr>
<td></td>
<td>• Development of project statement</td>
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<tr>
<td><strong>Documentation &amp; Presentation</strong></td>
<td>• Design development documents</td>
</tr>
<tr>
<td></td>
<td>• Production of architectural drawings</td>
</tr>
<tr>
<td></td>
<td>• Production of presentation drawings, boards, &amp; PowerPoint file</td>
</tr>
<tr>
<td></td>
<td>• Production of job book for FF&amp;E and lighting</td>
</tr>
<tr>
<td></td>
<td>• Production of cost estimate sheet</td>
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<tr>
<td></td>
<td>• Production of process packet</td>
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<tr>
<td><strong>Evaluation</strong></td>
<td>• A short essay or survey to assess student understanding on the contribution of ID to community, professional ethics, and/or project management</td>
</tr>
<tr>
<td></td>
<td>• Evaluation of project regarding professionalism &amp; business practice: Standard 7</td>
</tr>
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Utilizing Third Place Theory in Museum Design: Connecting Community through the Experience of Art

CARLIE L. MOODY / LISA K. WAXMAN
Florida State University

NARRATIVE

PURPOSE
The purpose of this study is to increase the body of knowledge related to museum design, explore the impact museum environments have on visitors, and to help inform the design of museum facilities so they may serve as gathering places in communities. The findings recommend design criteria that enhance the museum’s role as a third place. Third places are those environments, other than work or home that often hold special meaning for visitors and may contribute to feelings of attachment to community (Oldenburg, 1989; Waxman, 2006).

BACKGROUND
The museum serves various roles in the community and is influenced by the population it serves. Presently, museums contribute to the education of the public by collecting, preserving and interpreting the objects they house. The experience of the museum visitor includes the interaction between the visitor and the facility, the visitor and objects, and the visitor with other individuals. To be viable into the future, the museum must transition from a place where patrons visit occasionally to becoming an integral part of the surrounding community.

Banerjee (2001, p. 20) suggests “reinventing old and languishing areas” to create a sense of community and will encourage public interaction among individuals who visit the museum as a way to keep it relevant. Redefining the museum as a third place will provide a setting that fulfills the desire individuals have for relaxation, social contact, entertainment, and leisure in a public atmosphere (Pine & Gilmore, 1999).

Change in the function of the museum will not only benefit the visitor but the object. Waxman states “When relationships develop between people and places, the result is often a feeling of place attachment” (2006, p. 36). As the museum provides its visitors with a community gathering place, feelings of place attachment develop creating a bond of loyalty between museum and visitor. The museum facilitates the visitor’s need for social interaction and sense of community; in turn the visitor supports the museum through involvement and financial support. “Creating affective bonds to places can help inspire action because people are motivated to seek, stay in, protect, and improve places that are meaningful to them” (Manzo, 2006, p. 347).

Transitioning the future museum into a third place will not only benefit visitors in the community that will be utilizing the space, but will enable the museum to continue to carry out its mission “to collect, preserve and interpret objects” into the future because of the growing support of the museum as a community gathering place (AAM, nd). This study seeks to create guidelines for museums environments that serve as places for social interaction and gathering, where people can establish strong feelings of place attachment and sense of community that is facilitated through of art and history.

RESEARCH
This study sought to identify the physical design attributes that create a museum environment that serves as a third place and enhances feelings of place attachment for visitors. The researcher used mixed method qualitative tools including observations, interviews and with behavioral mapping which took place over 75 hours, with 25 hours in each of the three selected museums. The museum facilities selected for this research were chosen based on location, variety of objects exhibited and availability to participate in study observations and interviews. Museums varying in object content from fine art
to decorative objects, and science history were selected as well as facilities that represent three urban categories from small to large.

Observations along with behavioral mapping (see Figure 1) were conducted and provided insight into the function of the facility itself, and the involvement of the museum visitor within the space. The quality of interaction, activity, common situations, and environment were investigated to describe what actually happens. The findings provide information about the function of the facility and the involvement of the museum visitor in the space and with other patrons. Visual documentation (see Figure 2) of the facilities and Interviews with museum administrators provided information about the museum facility and visitor experience. The interviews also provided insight into the staff attitudes regarding the physical spaces of each museum including traffic patterns, spaces of social interaction, seating, and coffee shops and lounges.

**FINDINGS**
The study focused on design features and areas within the museum including retail shops, cafes, and areas for special events. Particular attention was paid to circulation patterns, seating, and areas of social interaction. The three museums participating in the research varied greatly in size and layout. Two of the three facilities featured fine art in their collections and displayed these objects in contemporary exhibition style, using minimal surface treatments and open floor plans. The third museum specialized in objects of decorative art and was located in a retro-fitted historic hotel. This facility included more confined spaces and displayed many of its objects on pedestals and in vitrines. The museums with open floor plans that displayed objects on walls and used few case pieces had clearer circulation paths. While this did not affect the length of time visitors spent in the gallery it did prohibit social gathering and interaction among visitors.

Seating throughout all three of the museum galleries was limited to bench style seating, and only accommodated three to ten visitors total depending on the specific facility. This resulted in little interaction between visitors, brief amounts of time spent studying the objects displayed and overall shorter visit lengths.

Amenities such as cafes and shops were observed in all three locations. Two of the three facilities housed a café and retail store, while one location was limited to a small shop catering specifically to children. The facility that located its café at the museum entrance saw a higher number in daily patrons in the café compared to the museum with café located at the rear of the museum. However, the facility with the café near the entrance saw many patrons visit the café, but not the museum. Furthermore, the museum with the café in the rear of the museum experienced a higher number of patrons visiting the gallery space both before and after patronizing the café. Both cafes limited their hours of operation between 11:00 AM and 3:00 PM. Similarly, the museum shops that were located near the entry and exit of the museum facility saw a greater amount of foot traffic.

Overall, very little independent social interaction among visitors was observed. Group tours, art classes and free community events resulted in greater interaction between both staff and visitors, as well as among fellow visitors, but these events were very limited in number.

Observations indicated that museums with open, flexible floor plans, incorporating clear circulation patterns, seating, and areas conducive to social interaction, such as coffee shops, result in higher numbers of visitors and provide a community gathering place facilitated by art and design.

**DESIGN IMPLICATIONS**
The findings of this study suggest that attention to space planning, circulation, consideration of the physical and social needs of the visitors, and placement of amenities enhance the ability of museums to serve as third places. This research provides examples of behavioral mapping, photos of the observed areas, discussion of the interview findings that will result in the design of a prototype museum that incorporates these design recommendations.

The research presented will inform design criteria that will enhance the museum’s role as a third place. Transitioning the museum facility into a third place will not only solidify its viability into the future, but will also provide the surrounding areas with a meaningful gathering place connecting the community through art.
Figure 1: Behavioral Mapping

Figure 2: Visual Documentation
REFERENCES (APA)


Oldenburg, R. (1997). *The great good place: Café’s, coffee shops, community centers, beauty parlors, general stores, bars, hangouts, and how they get you through the day*. New York: Marlowe.


Designing the Built Environment to Music

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The University of Southern Mississippi

NARRATIVE

The power of music is profound. Music affects most every aspect of a person’s life. Music has the ability to evoke pleasure, as well as other emotions, including anxiety, nostalgia, happiness, and sadness (Vuust & Kringelbach, 2010). Music can be experienced in a variety of forms and is readily available for personal pleasure. Music is utilized to enhance the atmosphere of spaces, adding ambiance to restaurants, dynamic energy to gymnasiums, and improved sales to retail stores. Music plays a vital role to emphasize critical moments in a movie, play, or performance. Music surrounds everyday life, sometimes standing out, loud and vivacious, like the music at a carnival or a concert. Other times music is barely noticeable, such as the mundane background music in a grocery store. Even a person without the sense of hearing can experience the patterned vibrations of music.

Throughout the ages, music has also been associated with the ability to incite conflict. Although no studies have focused specifically on documented military use, several studies have examined the correlation between music and military conflicts and wars. Music has been used to promote political propaganda, incite hatred, and encourage violence. However, recent studies have shown that music can play an integral role in promoting non-violence and conflict resolution. (Grant, Mollemann, Morlandsto, Munz, & Nuxoll, 2010)

The emotional aspect of music is powerful enough to enhance, emphasize, and inspire.

According to Vuust & Kringelbach (2010), all music provides an element of prediction/anticipation that is the commonality of the emotional experience of pleasure. Similarly to the principles and elements of design, music can be broken down into elements that form together as structures to produce principles such as harmony and balance. Additionally, Vuust & Kringelbach (2010) suggest that emotion derived from music is conditioned in humans over time and through experiences. In essence, one person’s music can be another person’s noise, barely tolerated, and considered an unwanted sound. While in other instances, the same music can provide the foundation for a subculture, inspiring personal image, branding, lifestyle, and communication.

Today, the new generations of interior design students have replaced the once audible music playing in late night design studios with the outwardly silent personal media players and headsets. Although the generations, music genres, and certainly the media and media players have change, students have remained connected to music. The connectivity of students to music, as well as music to everyday life, can serve as the conceptual inspiration for a student interior design project.

METHODOLOGY

Student correlation of music to the built environment can provide a solid and flexible foundation for inspiration to convey the abstract process of conceptual thinking. The abstraction of music compels students to dissect and analyze the elements of sounds and words into graphic representations. The result is the inspiration for a course long endeavor, separated into three (3) projects for clarity and design feedback opportunities.

At the onset of the course, each student begins the project development by selecting a favorite song from any genre from which there is sentiment, an emotional response, or some sort of significance. Additionally, students are warned to select a song that will not become
tiresome, and to avoid the selection of romance music. Each student selects his or her own song, brings the music to class, and discusses the emotional response and/or significance of the music while playing the music in class. Students are asked to translate the music into the built environment by translating the emotion of the music into visual elements. In an effort to assist with the visual translation, students complete a series of assignments, including the initial assignment of drawing concept sketches that best describe the imagery in the student’s mind while listening to the music. After completing the concept sketches, each student develops a concept statement, again using the music, as well as the sketches, as inspiration.

Project One (1) develops the concept board and project proposal board. The concept board, designed as an artistically expressive mood board, allows students to utilize photo editing software to portray the graphic representation and/or translation of the music. Students are told to use imagery, words, lyrics, and the principles and elements of design to create a symbolic translation of the music. The resulting concept board becomes the graphic foundation for the design of all project materials for the remainder of the course. To achieve graphic cohesiveness, students are told to create a presentation layout for the project proposal board based on the concept board design. The overall goal is to create a layout that is unified without overpowering the content of the presentation materials. Students create a preliminary furnishing layout using computer-aided design (CAD) software, incorporating design elements derived from the music. The result is a project proposal board, including the written concept statement and the proposed floor plan, which is profoundly reminiscent of the musical concept.

Project Two (2) is the development of the complete project using Building Information Modeling (BIM) software. The floor plan is exported into the BIM software and modified based on the evaluation of the project proposal. All furnishings, finishes, and equipment (FF&E) are specified and applied in the three-dimensional model of the space. Perspective views of each area are generated and rendered, as well as the floor plan view of the furnished space. The rendered furnishings plan, perspective views, and enlarged plans for each area are composed in a project presentation book, along with images and schedules for all FF&E.

Students are directed to re-think the project presentation. The presentation layout for the project book must be graphically cohesive, but cannot appear to be a typical interior design board layout. Students are asked to avoid outlining images with squares or using square backdrops for images, unless extraordinarily unique in application. Although, FF&E images are shown on the layouts, schedule information may only be shown if incorporated in an atypical manner. Otherwise, schedule information must be provided in table format in the back of the project book, as to not take away from the graphic quality of the layouts.

Project Three (3) is the development of the project presentation. Students are told to transform the layouts from the project presentation book into presentation slides appropriate for projection during the verbal presentation. In order to convert the content, layouts must be reconfigured into slides, showing fewer objects for each slide and illustrating larger fonts. All print formatting is removed, such as the table of contents, page numbers, and specification listings. The concept music is embedded into the slideshow in order to play in the background during the verbal presentation. Additionally, a video walkthrough of the space generated with the BIM software is added to the conclusion of the presentation, and prior to the slide designated for the questions and answers segment.

RESULTS
Students develop abstract thinking skills, while developing technical skills using a myriad of software programs typically utilized in the interior design profession. Overall student ability to create more cohesive project components, develop advanced presentation compositions, and use a variety of media has increased significantly as demonstrated in overall project scores and scores of subsequent courses since the implementation of this project.
REFERENCES (APA)


Sensory Integration: Understanding Challenges exploring Evidence Based Design

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NARRATIVE

Among many challenges in behavior development of children with Autism, coping with sensory integration plays a major role. “Although sensory processing and motor abnormalities are neither universal nor specific to autism, the prevalence of such abnormalities in autism is relatively high” (Dawson, and Watling, 2000). Context of space in use for learning, play work and adaptive behavior development is vital and important. “Sensory integration refers to how people use the information provided by all the sensations coming from within the body and from the external environment” (Lindsey Biel, 2005). The presentation will review evidences regarding prevalence of sensory integration and motor control challenges in autism based on research conducted by behavior development professionals and reviewing research literature.

UNDERSTANDING SENSORY PROCESSING DISORDER

The Foundation for Knowledge in Development, defines sensory processing as-

“Our ability to take in information through our senses (touch, movement, smell, taste, vision, and hearing), organize and interpret that information, and make a meaningful response.

Sensory Responsiveness is broadly of two categories.

• Underactive response or Hyposensitive
• Over reactive or Hypersensitive

The primary senses that can be affected by Sensory Processing Disorder include

• Visual
• Auditory
• Olfactory (smell)
• Oral
• Tactile (touch)
• Vestibular (movement: balance and orientation)
• Proprioceptive (movement: body awareness, position)

VISUAL CHALLENGES

Children with SI dysfunction have impaired ocular-motor and eye teaming skills. Climbing stairs, navigating obstacles like furniture and other people, playing sports, reading, and writing extraordinarily difficult.

• follow moving objects and able to read depth of field
• visually fixate on objects as you move to keep the visual field stable;
• control sequential scanning
• re-fixate from one point to another

AUDITORY CHALLENGES

Children with auditory issues often have speech-language difficulties as well, trouble understanding what is being said, going off topic during conversation or written composition, problems with reading or spelling, or finding the right word to use.
Common Problems

- have excessively strong reactions – or virtually none at all – to loud or unusual noises
- seem to ignore you when you call his name
- covers ears frequently to block out sound
- seem uncomfortable or distracted in a group or busy room
- have trouble with phonics and learning to read
- seem to move awkwardly or stiffly
- seem to be physically weaker
- use too little or excessive force on things
- avoid – or crave – jumping, crashing, pushing, pulling, bouncing, and hanging
- chew on clothing or objects more than other children do
- always look at what he is doing

TASTE AND SMELL SENSITIVITY
Taste and Smell work together. Children with SI dysfunction, many tastes and smells can be repulsive. Certain odors can be so noxious that they overwhelm a child and interfere with learning, playing, and, wellbeing.

- Common Signs of Taste and Smell Sensitivity

- have a limited repertoire of acceptable foods
- crave or become upset by certain smells or tastes
- hold her nostrils closed
- gag, get nauseated, or vomit easily

TACTILE DEFENSIVENESS
Tactile defensiveness is a condition in which all or some types of touch are perceived as noxious and dangerous. Like all sensory issues, tactile defensiveness can run from mild to severe. A tactile defensive child needs to be desensitized so he can more readily accept touch experiences.

VESTIBULAR AND PROPRIOCEPTIVE CHALLENGES
Proprioception is the internal sense that tells you where your body parts are without your having to look at them. This internal body awareness relies on receptors in your joints, muscles, ligaments, and connective tissue. They pick up information as muscles bend and stretch as well as when your body is still.

Common Problems
in the classroom, but the effects of this work move into the child’s personal life and everyday activities. The program consists of precise methods to set up the classroom, make schedules, create activities, and teach the children.

TEACCH classroom comprises of distinct areas for specific activities. Each activity is consistently done in its own designated spot.

Minimal decorations to avoid distractions. It is beneficial for the students to be facing a blank wall to avoid added distractions.

Dividers for each work area are necessary for the success of the program. Flexibility to use space for variety of activities is essential.

Sensory Integration Therapy Basics

SI therapy needs to be part of a complete and holistic approach with other academic and social skills development training. Occupational therapy is essential in developing fine motor, sensory, visual motor, and/or motor planning.

Areas of Occupational Therapy

Fine motor skills

The actions of the hands, wrists, and arms, including dexterity, coordination, and strength are called fine motor skill. Sensory integration trains individual to control fine motor skills for motor planning, learning and behavior development.

Motor coordination

Poor range of motion, deficits in eye and hand coordination, problems with fine motor ability, and decreased visual perception often result in poor performance and the child may not be able to function at a developmentally appropriate level.

Tactile Processing

The tactile system interprets touch and the perception. It protects us from stimuli that may be perceived as harmful. With an over or under sensitive tactile system, the body interprets touch differently.

Sensory Therapy and Products for the Preschool Classroom

Visual stimulation and therapy - mirrors, bubble columns, and fiber optic items will all be effective.

Auditory-products include music players, pianos, shakers, bells, and other musical instruments, chimes, animal noise tins, and the like.

Tactile-toys of tactile products like koosh balls, textured toys and wallboards, sand and water tables that can hold sand, water, flour, beads, rice, and other such items. Wiggle cushions and squeeze balls are also handy.

Oral and Olfactory (smell)-senses are usually food-related, and include gummies, crunchy carrots, and other healthy food snacks that may possess an interesting aroma. Scratch and sniff books, scented pencils, or crayons are all highly therapeutic as well.

Proprioceptive and vestibular dysfunction is challenged with heavy lifting, jumping, rolling and spinning. Stretching, short dancing, wiggling, and wheel barrowing are other ideas.

Movement therapies can also be accomplished with sit and spins, mini trampolines, vibrating toys, weighted blankets, body brushes, and massagers.

**IMPORTANCE OF EVIDENCE BASED DESIGN**

Evidence based design (EBD) is defined as design decisions based on the best available information from credible research and evaluation of existing projects. Supporters believe that EBD can assist designers to create better hospitals that may help patients recover faster, improve staff retention, enhance staff performance, and make hospitals safer places for receiving medical and surgical care (Ulrich, Quan, Zimring, Joseph, & Choudhary, 2004; Hamilton, 2003)

Lerner School for Autism at the Cleveland Clinic Children’s Hospital

Designed by Cleveland based firm Westlake, Reed and Leskoske the 24,000 sft facility is programmed for the
widely varying needs of people with autism, for services that are highly individualized, and for outreach and family support, the school serves 80 children with a staff of 100. It includes eight classroom suites that address different age groups, ranging from infant and toddler to activities of daily living and adult and vocational training.

Formulating Programming and Design Guideline

Together, the staff of the Center for Autism and designers at Westlake Reed Leskosky arrived at seven points as design criteria for an effective environment for people with autism:

**Limit stimulation and prevent distractions**
- Minimize the use of grids, busy patterns, and bold colors in building materials
- Provide spaces for one-on-one student-teacher activities

**Control clutter, while still allowing children to make autonomous choices**
- Provide adequate built-in storage to limit exposure of educational materials not in use

**Control acoustics**
- Design air-conditioning systems to minimize machine noise and air noise
- Provide acoustic separation between rooms

**Provide proper indoor air quality and temperature control**
- HVAC system to be multizone VAV system with filtration and adequate air changes

**Prevent injury**
- Eliminate sharp corners and projections from surfaces
- Provide resilient surfaces

**Minimize perceived flicker from lighting sources**
- Provide lighting sources that do not create a distraction
- Provide window treatments

**Provide durability**
- Use impact- and stain-resistant materials

**SUMMARY**

Successful education of children with autism is an overwhelming challenge. The individuals have academic, cognitive, linguistic and social characters that are very unique and challenging. Much has been learned about autism but seems like only the tip of an iceberg. This is a small step towards understanding the spatial challenges, needs and wants to help professionals develop strategies to develop/design learning environments for children with autism. The focus will be to translate the findings to propose guidelines and strategies to facilitate space design suitable for students with ASD.

**REFERENCES**


Environments for Young Children: A Qualitative Study for Healthy and Nurturing Preschool Environments

TANYA WEST / LISA WAXMAN
Florida State University

NARRATIVE

PURPOSE
The purpose of this research study was to evaluate the interior spaces of child care centers and the impact these spaces have on young children and the adults who care for them. The data gathered in this study will then be integrated with existing research literature and used to practically inform the design of child care centers that are nurturing and supportive of the activities that both young children and adults perform on a daily basis.

BACKGROUND
The first five years of a child’s life are the most crucial to their physical, social, cognitive, and emotional development (Woodward, 1966). These are the years that young children typically spend in a child care center, away from the comfort and familiarity of home. In 2009, it was reported that nearly 14.5 million children under the age of six need care while their parents are at work (NACCRRA, 2009). The design of built environments where child care takes place deserves particular attention with the increasing number of children who spend many of their days in such settings (Olds, 2001).

In order for the physical environment to accommodate the day-to-day functions of a child care center in a way that children are properly nurtured, the environment must be structured so that potential problems such as crowding, aggression, and antisocial behavior are moderated (Greenman, 2007; Olds, 2001). An understanding of how young children interact with their peers and their built environment will impact and inform the design and spatial arrangement of child care spaces.

Curiosity of one’s environment lays the foundation for much of a child’s play, enabling them to learn about and understand the world around them (Weinstein, 1987). Play offers a transitional step from the helplessness of infancy to the comparative independence of school-aged children. One of the advantages of the child care center is the relatively safe setting it provides as the location for young children’s social interaction with peers and friendship formation. When appropriately designed, child care centers can offer a stimulating environment for the social development of children as they learn to adapt to their setting and the situations structured by interaction with their peers (Legendre, 2003). Careful considerations should be taken to ensure that preschool classrooms are designed to allow young children’s play to be an integrated part of the learning environment.

PROCEDURE
Three child care facilities in a southeastern city were selected as the sites for this research project. Three qualitative methods of data collection were utilized for this research study, including interviews, visual documentation, and observation. Interviews were conducted with the directors of each facility and the teachers of the classes that were involved in the observation sessions. Photographs were taken of the exterior and interior of each facility as a means of visual documentation. Observations of children who were three to five years old were conducted in the form of behavioral mapping using nonparticipant observation over the course of three consecutive months (see Figures 1, 2, 3).

FINDINGS
The location and adjacencies of activity centers was one of the most influential factors affecting social interactions, the appropriateness of children’s behavior, and how the children and adults used the classroom space. Each of the three child care centers that were observed organized the interior space of their classrooms differ-
ently. At Child Care Center A, the activity centers were close together but still well-defined with very distinct traffic paths through the room (see Figure 1). The spatial layout was much different at Child Care Center B where there was one large open space subdivided into the activity centers, with a different teacher at each activity center, rather than individual classrooms (see Figure 2). The centers and traffic paths were clearly delineated with tall bookcases that provided a visual barrier for children. At Child Care Center C, the classroom observed had activity centers similar to center A, but the room was much larger in size, which created more open floor area between centers (see Figure 3). This also resulted in unclear traffic paths and boundaries.

Behavioral mapping revealed that at centers A and B, the teachers were able to consistently monitor the children, and they were more readily accessible to help the children or to intervene when an argument occurred. Even though the classroom was the smallest at center A, the teacher stated that the room was well organized, and the children moved easily among the different activity centers. This was due to the fact that every part of the room was intentionally planned and organized to have a specific function. Center B was also organized in a manner that facilitated easy movement through the space and in a way that the children understood, enabling them to navigate through the building on their own.

The findings suggest that young children’s behavior is significantly impacted by both physical and visual access to the teacher and to play materials. More fighting and arguing occurred in play centers that were not easily visible by the teachers and when there were not enough play materials available at each center. For example, at Child Care Center C, where the activity centers were more spread out, the teachers were not always able to be nearby when the children needed comfort or assistance. Disagreements, fighting, and inappropriate behavior also occurred more frequently at center C due to the fact that it was difficult for teachers to monitor everyone. This was not the case at Child Care Centers A and B, where the children had immediate access to the teacher both physically and visually. Visual barriers can at times be a positive design feature, such as at Child Care Center B. Since all the children are grouped into one large space that is subdivided into the separate activity centers, the tall bookcases keep the children focused on what they are doing and learning within their own center. Even when noise levels became quite loud in a nearby center, children were able to concentrate on their activities and the teacher because the visual barrier was adequate enough to keep them focused. These furniture pieces were truly multifunctional, for they were also used to create distinctive pathways and boundaries around the various activity centers while also providing large amounts of storage.

The three child care facilities featured similar activity centers for the children to experience. The basic centers that were common to all three included a block play area, an art/messy play center, a reading center, a reading area, and a home living/dress-up area. Unique to center A was a computer station, a Lego table, a music center, and a science center. Unlike the other two locations, center B featured a cooking center and an outdoor play deck for wet and messy play. The process of behavioral mapping revealed that the block play area and home living/dress-up area were the most popular choices. Tending to become overcrowded unless regulated by the teacher, the most disruptions and arguments occurred at these centers.

While the research literature seems to indicate that colors in child care centers should be carefully selected so that children are not under- or overstimulated by their environment, there were no definitive findings related to this topic. The color palette varied among all three centers. Center A featured several different bright, bold colors on the walls and floor with light-toned wood furniture. A pleasant balance of artificial and natural light was achieved in the classroom. Center B had light blue walls with medium-toned wood furniture and a combination of wood laminate and carpet flooring. There was a heavy reliance on artificial lighting to illuminate the interior. Center C had light, soft green walls, light-colored VCT floors, and light-toned wood furniture. An abundant amount of soft natural light filled the interior, supplemented with fluorescent lighting. Despite this wide variation in color palette and quality of lighting, the activity or energy levels of the children did not appear to fluctuate significantly among the three centers.

**DESIGN IMPLICATIONS**

Based on information gathered in this study, design guidelines have been identified to help direct the design of child care facilities that are intended to provide spaces supportive of the activities of both the young children.
and the adults that care for them. Twelve key guidelines have been extracted from the research literature and the research conducted for this particular study. These guidelines include: (1) create a variety of well-defined activity centers with clear boundaries, (2) remove any visual barriers that prevent teachers from monitoring the children, (3) appropriately scale architectural features and furnishings for children, (4) use color in a selective and careful manner, (5) establish an environment that fosters competence and encourages self-control for the children, (6) allow and encourage a variety of movement, (7) provide access to nature and outdoor play areas, (8) control noise levels, (9) allow sufficient natural light to penetrate a large portion of the interior spaces, (10) carefully integrate design solutions which address safety and security concerns, (11) provide ample storage, and (12) create an atmosphere of comfort and stability for children and parents. By applying these guidelines as a basic starting point, designers can then integrate different and unique features for each facility they design to make them truly special and meaningful places for children.

Figure 1: Child Care Center A
Floor Plan and Behavior Map
Figure 2: Child Care Center B
Floor Plan and Behavior Map

- Children playing outside and on the deck pass through here, which is sometimes distracting for children in this center.
- Semicircle table shape enables teacher to sit in the center where she/he can see and assist every child.
- Bookcases serve as dividers between the activity centers. The visual barrier helps children to not be distracted by nearby centers.
- Sink is at a child appropriate height so children can wash their hands on their own.
- Countertop height is more than the standard 36", keeping them safe by making it more difficult for children to reach convection oven sitting here.
- Easy access to a sink in the art center is important for easy clean up.
- The arrangement of these areas makes it easy for children to rotate to the different activities at each table.
- Height of shelving is too tall for children to see over but still low enough for teachers to see over.
- Large area allows each child to have plenty of space for building with blocks.
- During the cold months, all children and teachers (70-80 people) gather here in the morning.
- When children do something wrong, they like to hide from their teacher here between the chair and bookshelf.
- The lack of reception area makes it difficult for staff to monitor who comes and goes through the center.
- When children are lined up to use the restroom, the entrance is blocked.

Legend:
BK = Bookcase or Shelving
REFERENCES (APA)


CREATIVE SCHOLARSHIP
Roja Mexican Grill + Margarita Bar

TOM ALLISMA
University of Nebraska at Lincoln

DESIGNER STATEMENT

Two of the four owners of this establishment are originally from Texas and they bring a lot of experience in Mexican cuisine to the table. The partnership approached me to design both their first Roja Mexican Grill (2004) and now their most recent location (completion July 2010). For research I was able to travel with the owners to Texas, Arizona and Mexico where we experienced the food, culture and architecture first hand. The most influential places that we explored were the small towns in Mexico. The towns had amazing little establishments that were mostly raw in nature (stone or wood floors, unfinished wood framing, corrugated metal, adobe, brick, etc.) and along with that the food was the most authentic and memorable. The material palette for Roja was highly influenced from this “old town” Mexico experience, but has a modern twist.

The location for this project is in the historic downtown district of Omaha, Nebraska. The site is located within the first floor retail bay of a parking garage structure (fig. 1). As one drives up to the restaurant they would not suspect that this establishment is part of parking structure. Brightly lit red canopies, back-lit signage, and an outdoor patio that is flanked by 3 large torch towers and 3 outdoor fire pits all help with the curb appeal (fig. 2). To help create a smooth transition from the patio to the interior, 5 glass garage doors are used that open up the bar and dining room to the exterior (fig. 3 & 4). Stepping into the space corrugated metal, rust colored tile, wood flooring, copper, cultured stone, brick and raw wood along with red acrylic accents all come together in a sleek and stylish interior. To top off the bar area a large red illuminated canopy hovers over the bar which also acts as a display for the 100+ tequilas that are on the menu (fig. 5). Within the two dining rooms there is also a red illuminated wall and a large 8 foot by 8 foot lantern that help put the red into Roja (fig. 6 & 7). The restaurant has quickly become a hot spot in the downtown district and plans for another location are on the horizon.
Figure 1: View of restaurant from the street

Figure 2: View of patio and restaurant from the sidewalk
Figure 3: View from patio with garage doors opening into the bar

Figure 4: View of bar with garage doors opening to the patio
Figure 5: Reception desk and red illuminated bar canopy

Figure 6: Dining room and red illuminated accent wall
Figure 7: Back dining room area and large red custom lantern
The baheHOUSE.

LINDSEY ELLSWORTH BAHE
University of Nebraska-Lincoln

DESIGNER STATEMENT

The baheHOUSE is a lakeside retreat developed on a former sand quarry in the outskirts of Ashland, Nebraska. The recreational dwelling was designed for a fiftysomething couple and their expanding family to enjoy. The design began by identifying an inventory of spatial necessities and responding to the context of the site; all the while wanting to create a celebratory dwelling that marked the event of relaxing, gathering, and entertaining.

Spatial needs were determined through various discussions in asking the clients to visualize how the space would be used. A conclusion that a large kitchen, expandable dining space, and versatile entertainment room were needed for various types of entertaining. There was a desire to separate the master sleeping area from the general space in order to create privacy from noise and various activities. When defining the master bedroom it was determined to be on the ground floor due to the couple’s desire to retire to this home in the future. An outdoor shower was a specific request by the owners for all visitors to utilize after a long day of sun and sand, which was to be connected to a large bathroom space to hold many beach towels and guests “lockers”. A second floor needed two bedrooms and a large “bunk room” for a growing generation of grandchildren. Various outdoor decks were to be designated for outdoor gathering for all to enjoy through the day and through varying seasons.

After the collection of events and spaces were determined, the shape and form of the “architecture” began through establishing connections to the sand, water, crops, expansive horizon, and trees for which the site was chosen. North of the site was calm water, expansive horizon, and golden cornfields, whose repetitive rows became the trajectory to the structural organization of the event spaces and linear nature of the dwelling. A dominant line of trees on the earthen dam to the East of the site was acknowledged by positioning the dwelling perpendicular to its angle. Formally, the house was divided by an exposed structural system that allowed various volumes of event space to be pushed and pulled along its linear stitch. Event spaces were clad in a system of natural materials [cedar, porcelain tile, and stone]. The materiality was chosen for the desire to allow the skin of the building to actively respond to the elements of the site that define it. The shifting volumes blur the boundary between interior and exterior space due to a continuous skin. Expanses of glass allow one to see the connection of materiality and space from the inside – out. The house itself is only 18 feet wide, which was done intentionally so that each and every room has immediate and direct views of the lake and ever-changing landscape through a 2-story glazed wall. The final gesture was the act of peeling a portion of the flat roof up, gesturing toward the morning sun, allowing natural light to pour into the open gathering spaces below.
Figure 1: Front elevation at sunset.

Figure 2: Form and space evolution diagram.
Figure 3: Floor plans.

Figure 4: View from entrance towards main gathering space.
Figure 5: View of kitchen and dining.

Figure 6: View of second floor catwalk and clerestory roof.
Baseline

ANNIE COGGAN + CALEB CRAWFORD
Mississippi State University

ARTIST STATEMENT

“Design depends largely on constraints.”
-Charles Eames

This project is at its core a pragmatic project, albeit one that is tempered with a measure of poetry. It takes a critical view of both contemporary and traditional building practices with an eye towards the performance criteria for a 21st century building.

Our title for the project was the “Baseline” – this project should represent a minimum standard for construction. The project is a four-story, four family row house located in Brooklyn, NY. It is a speculative development. This project embraces many of the constraints while simultaneously attempts to shift them. It uses many common materials, and standardizes components and assemblies, but modifies these to achieve a higher design quality and much higher energy efficiency. This project is certified LEED Platinum. In terms of energy efficiency, it comes close to Architecture 2030’s mandate for a 60% reduction in CO2 emissions by 2010 – final analysis indicates a 58.9% reduction over the reference standard.

Green features include location in an urban area on a brownfield, high levels of insulation, triple glazed windows, solar thermal hot water and heating, high efficiency HVAC, FSC wood, reclaimed and recycled materials, high efficiency appliances and lighting, and a green roof.

CONTEXT

The site is in Brooklyn, NY, in a neighborhood known as Greenwood Heights or South Slope. It is a neighborhood of three and four story townhouses. The site is a half block from Fifth Avenue, a shopping street, one block from a bus stop on Fifth Avenue, seven blocks to the subway. It is three blocks from Greenwood Cemetery, and a fifteen minute walk from Prospect Park.

CONCEPT

The concept of the house is derived from an analysis of the site. The rear of the house faced south, so we wanted to employ a reflective surface to reduce heat island effect. We knew we could play with the front or north face, since there wasn’t the same functional requirement. The idea of light and dark faces lead to white and black brick, and eventually to a version of a yin-yang concept. The front of the building is black glazed brick with white window frames and other accents. The rear of the building is white with black window frames and other accents. The black and white restriction became a tool for making all subsequent aesthetic and material decisions.

INTERIORS

The interior continues the black and white concept, with some materials left in their natural state. The concrete masonry unit bearing walls are left exposed on the interior. This is a modernist ideal of the expression of structure, but also is a low-maintenance material, and provides thermal mass. It also saved approximately 41% of the drywall used in a comparable project.
The Yin Yang House is a new house with a north and a south face. The classic diagram for a Passive House house in the Northern Hemisphere is to open the house towards the sun, and to enclose the glazing on the north.

Concept sketch

Building front

Building rear
lobby
living room

stair
concept sketch

kitchen
Hand Making History

ANNIE COGGAN
Mississippi State University

ARTIST STATEMENT

My theoretical work is research based. Reading history, visiting house museums and making pilgrimages to historic sites result in a built manifestation: a chair, a room, a place. The work is inspired by the writing of historian Lauren Thatcher Ulrich, author of The Age of the Homespun. She examines the material culture of early American settlers, women in particular, and how cloth making is key to the production of history. I have ventured to do the inverse of her examination, developing material culture from the research rather than observing material culture for a cultural critique. The work tries to examine questions of economics, sensibility and cultural values by using the process of stitching, embroidery and needlework as a tool for empathy. The research provides the impetus for design decisions and offers a take on history, identity and values by embellishing the reality with design interventions.

PRECEDENTS

I have been examining various needlecrafts as a form of drawing and storytelling. The 19th century sampler by Elizabeth Parker began the research. As a young indentured servant Parker found the act of stitching her daily thoughts was a way to both express her frustrations and perform a traditional womanly activity. The Day Joyce Sheet from the Second World War was made in a Hong Kong internment camp. The sheet was an encoded camp diary made by Nurse Day Joyce during her captivity. With these pieces in mind I sought to tell stories through the needle work with simple markings and minimal notations. Map making is a devise that mirrors the designer’s craft of drawing while producing “data” that develops the narrative. These needle works are then incorporated into an upholstered piece for it to serve as a history lesson as well as a functional object.

THE WORK

This work has evolved from embroidered maps to chairs that pay homage to Eudora Welty, Marie Antoinette, and William Faulkner. Marie Antoinette’s loveseat explored the figure ground relationship of Le Petit Trianon. The Eudora Welty Chair charted the small garden her mother started in her Jackson, Mississippi neighborhood. The Faulkner Chair told the story of his beloved Oxford homestead, Rowan Oak. The technique of “stitching place” or “making history” has brought me closer to a career long inquiry – Can furniture have meaning?

Most recently my focus has been on the collection of ephemera that resides at the Ulysses S. Grant Collection. I have designed two upholstered pieces of furniture that illustrate Grant’s military movements through the Mississippi countryside during the Civil War. This project was a commission for the Ulysses S. Grant Association. At first I considered the piece to be decorative and along the lines of a 19th century commemorative piece of furniture. What I found was that the power of simple dates, numbers and markings can tell a story. I found that the act of stitching 40,000 as a tally of the Union troops in central Mississippi, verses the 2500 Confederates was an eye-opening exercise. Stitching the landscape and embankments of Vicksburg took many more months than anticipated, mirroring the conflict itself. So the process of stitching the map is as much a lesson in history as the resulting artifact.
General Grant Loveseat
An alpha female can be a strong leader and inspiration. She might inspire others to be more ambitious and confident. She can also be a source of comfort and support. The alpha female is also known for her wisdom and knowledge.

Precedent-Day Joyce Sheet

Precedent-Elizabeth Perkins Sampler
Eudora Welty Chair
Marie Antoinette Loveseat
William Faulkner Chair
Vicksburg Chair
General Grant Loveseat
The Willing Room: Poetic Projections of Home

KATHLEEN M. FRITZ
Savannah College of Art and Design

ARTIST STATEMENT

The Willing Room: Poetic Projections of Home is an exploration of the intimate spaces we build out of our emotional narratives. Through the manipulation of new, re-claimed and re-purposed materials, furnishings and found objects, six original poems are translated into the memory and feeling states of relationships embodied in the familiar rooms of this 500 square foot home: the entry corridor - anticipation; the kitchen - revelation; the living room - pretense; the bedroom - conflict; the library - retreat; the dressing room - reflection. While the arrangement and selection of contents within these rooms are personal to and reflective of the writer’s inner workings, room typology and object symbolism translates these complex relationships into a familiar home narrative.

Gaston Bachelard postulates in the Poetics of Space, “Through poems, perhaps more than through recollections, we touch the ultimate poetic depth of the space of the house” (6). Poetry does not necessarily describe the house in detailed pros, but provides brief glimpses of the perceived feelings that the house contains for the writer.

Can the nature of poetry, through its use of vivid imagery, metaphor, and allegory, be an activator of thoughts into the built form? What significance does the written and built form play in expressing a common experience of the relationships we encounter in the home?

In her review, Alison Hersh wrote, “As the observer walks through these raw, intimate spaces, the objects, words and symbols take on more universal meaning, forming a larger narrative about the vexing complexity of relationships and the thick layers of self-deception that can separate us from the naked truth of our own lives”

(“Art & Soul: Exhibit shows home (not so) Sweet Home in ‘Willing Room’ ”)

The Willing Room: Poetic Projections of Home was in conceptual development for 18 months and was fabricated from April 2010 to early September 2010. It was installed, with the help of ten volunteers, at the Indigo Sky Community Gallery in Savannah, GA and on view from September 15, 2010 to October 9, 2010.

REFERENCES (MLA)

The Willing Room: Poetic Projections of Home

500 square foot installation built from used or reclaimed paper, fabric, wood, cardboard, metal conduit, furniture and objects and new laser cut plywood on new wood 2 x 4 stud construction.
The Entry: An Introduction

Reminders

The photograph
Taken of spring daffodils
Reminds me of
The view
From the kitchen window
Late March
Grey
Yellow and blue
The slow moving storm
That hung outside

A small cigar box
Wrapped in Christmas foil
Sitting behind the closet door
Contents of
Letters
Vanishing correspondence
Summer postcards
A cross
Crystal beads
A single rhinestone earring
Darkly kept

The right drawer
Of the roll top desk
Looking for
Pencils and rulers
Phantoms placed neatly
Covered
By slips of paper
Receipts
The customer portions of utilities
Their order
Avoided,

A cassette recording
Labeled
Encased by plastic
Voices echoing up the stairs
Mixed with the din of
Glasses, laughter
Lighters clicking
Bringing hands close to the flame
Music
The Little Bird
Reminds your heart
Is still
There.

Wall covering assembled using cotton thread, reclaimed cotton fabric, re-purposed paper, photos and found and personal objects.
The Corridor: Anticipation

In one hour
the dough will rise
and can be turned out for kneading.

The primer of pale blue will dry,
and the first finish coat can be applied.

In one hour
the connecting flight will board
for Hartford, Savannah, Washington,
Tokyo.

The test will be over,
and summer break will begin.

In one hour
the alarm will go off
after another sleepless night.

The glue will set
on the broken teacup.

In one hour
I will ask you what it meant
when your eyes, flickering,
met mine as we passed in the hall.

Wood frame wall assembly date book made from laser cut 1/4" plywood. Ceiling structure of 1/2" electrical metal conduit.
The Kitchen: Revelation

Layers

If I were an apple, what would you use to reveal me?

A paring knife passing just under the skin with surgical precision?

Or the domestic peeler an obvious choice, with the ergonomic grip handle just marking the surface, leaving small red lines against white flesh; leaving strappy fringe scattered on the counter.

Maybe the sections of the tin corer would segment me, my limbs from the center of pith and seeds.

But what if I were wrapped in brown translucent paper?

Day-glo verde shoots sprouting from the bulb. The chef’s knife cuts in two the cellulose layers of an onion.

Who would cry? Me or You?

Used display cabinet and yard sale purchased utensils with fabric and wood. Wall covering of plaster of Paris apple and peach relief castings made from yard sale 1950’s wall molds.
The Living Room: Pretense

Muse Part 1
Muse tormentor
Muse deceiver
Tangled strings
Pull me (into your path).
I wrap you in pins, pens and paper.
I pull one way,
a hand.

Turn another
your head.

Strike through
the torso.

Where does it come from?
(Does it come from you?)

What controls the occurrence?
(Who controls me?)

Who is the doll?
(Puppet?)

Interactive puppet boxes: Stages of a Relationship Love: Approach Avoidance; Life: Together Alone; Loss: Fight Flight laser cut from 1/4" plywood and re-purposed cardboard boxes, and painted. Tete-a-tete: Husband Chair and Wife Chair Consignment store chairs painted and collaged with classic works of art.
The Bedroom: Conflict

Muse Part 2
Pulling up
Pulling down
Whipped
from black to white
red to calm blue

Rolling and tumbling
Resting on the arm
Leaning against a chair
In a quiet room

Split beds made from re-purposed clothes and head board, used foam, and new electrical conduit. Ceiling constructed from reclaimed electrical rx cable and wires; re-claimed doors and window frames.
The Library: Retreat

To have some quiet, peace
My own space with
My own thoughts.

No distractions,
Explanations,
Repeating myself,
Planning.

No words.
Just my mutterings.

Reclaimed wood shelves donated from Emergent Structures; used chair, table and lamp; yellow note pad.
The Dressing Room: Reflection

The Mirror

Am I your compliment, your twin?
Your mirror to check yourself
in the morning?

I would have you speak, but say nothing.
I would have you act, but do nothing.

I am the thinker, the actor, the speaker;
too much for your eyes.

You are my twin, my mirror over the dresser.
The fraction of hair tucked behind your ear, my ear.

I would have you speak,
but say nothing.
I would have you act,
but do nothing.

my ear.

Reclaimed medicine cabinets supplied by Emergent Structures.com and mirrors purchased at yard sales. Wood frame wall construction with re-claimed electrical conduit and pvc pipe.
Skin Perfect Aesthetics Medical Spa

TAMIE GLASS
The University of Texas at Austin

DESIGNER STATEMENT

This medical spa is characterized by a harmonious color palette that balances soft cream and warm grey tones against bold accents and natural materials inspired by land and water. The reception is carved out by a curved, maple-paneled wall that separates the public from the treatment and back of house areas. The welcoming space is accentuated by a custom pendant that filters natural light in the day and glows in the evening, becoming a beacon and focal point of the room. Ample perimeter wall space and lighting has been provided for future retail display as the owners, new to the medical spa industry, determine their product needs. The reception desk comfortably accommodates two employees, and its placement provides easy access to the adjacent administrative areas. This allows for fluctuations in the number of staff present who often perform more than one role within this small business model.

Faced with the challenge that is driven by the efficiency required of medical spas, the designer strove to combat the lack of spatial interest and natural light beyond the reception. The hallway widens to support a central beauty bar near the restrooms where clients can try new products and freshen up after treatments in a semi-private area. The treatment rooms are set back and color-coded, with each entry signaled by a vertical light box. In the absence of daylight, the ceiling treatment provides visual structure and diffused ambient light by concealing energy efficient fluorescent tubes in drywall ceiling elements placed in a regular rhythm. A similar “skylight” is implemented in the treatment rooms, which are uniquely styled by the individual aestheticians, who prefer to personalize their spaces to promote their own work styles.

In addition to adjusting ceiling heights to the activities and level of intimacy required in each space, distinct changes in flooring patterns and materials aid in defining spaces and circulation. The circular pebble “carpet” defines the seating area, while commercial-grade maple flooring leads clients down the central pathway to the core spaces, including the treatment rooms. To offset the durable hard flooring surfaces, various acoustic treatments, including ceiling tiles, carpet, as well as additional insulation in walls, insure privacy where needed.

The environmental identity is created through the implementation of an analogous color scheme often found in nature that ranges from blue-green to yellow-green, evoking a serene and comfortable environment. Additionally, the strong palette creates overall visual appeal that is memorable to clientele, while camouflaging low-budget construction. The designer assisted the client in the selection of the logo and illustrated how the graphic designer’s artwork could be fully integrated with the interior color and finishes palette. The logo is placed in key locations, and it is reinforced spatially by the use of sweeping curves and the leaf motif. The custom reception table, for instance, is both a sculptural and a branding element. Ultimately, the interior design is not only a functional space but also a critical marketing tool for the new medical spa in attracting employees and clientele.

(Glass_IDEC_01.pdf)

(Glass_IDEC_05.pdf)
INSPIRED BY LAND & WATER
SKIN PERFECT AESTHETICS MEDICAL SPA

Figure 1: Detail of Custom Leaf Pendant
Skin Perfect Aesthetics Medical Spa

Figure 2: Reception Desk, Ceiling Treatment, and Finishes
Skin Perfect Aesthetics Medical Spa

Figure 3: Reception Area, Custom Leaf Pendant, and Paneled Wall Elevation
Skin Perfect Aesthetics Medical Spa

Figure 4: Reception Area, Concept Sketches, and Details
Skin Perfect Aesthetics Medical Spa

Figure 5: Hallway with Central Beauty Bar, Concept Sketches, and Treatment Room “Skylight”
Core – an exploration environment

TAD GLOECKLER
University of Georgia

ARTIST STATEMENT

Encourage viewers to reexamine familiar objects and surroundings, cultivate a curiosity of all earth life forms and processes, and contemplate unique mediations of nature and human existence.

Serious intent and peculiar indifference emerge simultaneously; viewers oscillate from one understanding to the next, and struggle to clearly grasp the truth. Fantasy and reality are obscured.

Projects embrace a methodical and deliberate design process. Beautiful assemblage (the art of fitting together) is an essential aesthetic concern. Complexity is deceptive; individual components are precisely engineered for simple function, structural clarity, and/or striking appearance. Invention is a standard.

Core presents a mobile cart that manually transforms to sheltered exploration environment. A carefully orchestrated movement through time and space is the principal design experience. Visual participation in the unfolding narrative helps clarify conceptual intentions, ordered movements, and integration of component and detail relationships. Precision packaging is initially crucial and results in an assembled environment that visually defies original boundaries of the mobile cart.

Artifacts are displacing natural experiences. The apple provides a scalar and symbolic origin for this project. Obsessive manipulations of fruit, unexpected relationships of fruit-cores and fishing instruments, comprehensive 24-page instructions manual, and complex interactions with seating, shelter, and supporting components; suggest a compulsive desire to interact with the natural environment. A sincere experience with nature is diminished by misguided enthusiasm?

The project first engages a viewer through its delightful form, surface harmlessness, and subtle sense of humor. These gentle cues gradually diminish as the viewer continues interaction with project components, and the deeper, darker conceptual message begins to reveal itself. Thoughtful design, meticulous craft, and formal beauty of the apparatus, help to increase irony and ambiguity of the intended message. Striking visual appearance and obvious design quality could also suggest great optimism.

Core’s main features include a device that precisely extracts an apple core, and dimensions the core to three exact lengths. Each unique core fragment unites with a corresponding fish-like wood and metal assembly to realizing a useful research/recreation instrument. The apple coring device contains three front drawers; each drawer
showing a four-lure set at unique development stage. Identifying three stages of lure dynamics allows a viewer to understand and experience the aesthetic transformation of each lure without a real-time demonstration. Strong supporting components include: 24-page instructions manual, rapid-deployment shelter, bench seat and reading stand, sliding and rotating work surfaces, apple storage, and integrated pedestal. The entire sheltered environment is efficiently stored and protected (excluding pedestal) in the mobile cart (shelter components and instructions manual are visually displayed).

Project creation involved meticulous pre-planning and precision design, frequent experimentation, and intense problem-solving. Accidents and discoveries were made throughout design and construction, but were enthusiastically embraced and profoundly inform the final product.

A real-time transformation performance from mobile cart to sheltered environment takes 45 minutes. Images represent an abbreviated attempt to communicate Core’s transformation and assembly experience from Mobile Cart to fully functional Exploration Environment.
Core Bench and Reading Stand with Manual of Assembly and Operation
Images indicate stages of Core Shelter deployment. Core Mobile Cabinet provides a unique, and stable foundation for attachment of the primary structural elements.
Core Preparation Center and Lure Assemblies featured on cabinet surfaces. Apples and Apple Container located on Core Bench.
Core Preparation Center - Coring Vehicle (small wheeled push-pull cart featured in image) will precisely section an apple and extract the core. Sections of apple drop down to a smooth accessible vessel, while the core is held in place. The apple core cylinder is removed from sectioning device, then positioned behind Coring Vehicle into one of two channels, and segmented into three possible sizes.

Stainless steel blades located on underside of Coring Vehicle are responsible for cutting cores to proper length.
(above) Lure assemblies resting on mounting plate. Four lure assemblies complete a set; there are three duplicate sets (12 lure assemblies in all). Each assembly set is mounted and secured in a separate drawer and accessed from end of Core Preparation Center.

(right) Cylindrical apple core segments are loaded into lure assemblies. Apple cores load horizontally with one exception, the smallest assembly (featured in image) contains a vertically loaded core segment.

This smallest lure assembly is the one missing from the three assemblies featured above.
SchoodicPeninsula-BlackDiabaseDikeTeaTablewithPopoverJamandButterDipPools

TAD GLOECKLER
University of Georgia

DESIGNER STATEMENT

INSPIRATION/PLACE - (ACADIA NATIONAL PARK – MAINE)
Project conceptually unites spectacular geology of black diabase dikes at Schoodic Peninsula with historical traditions of serving tea and popovers at near-by Mount Desert Island. The product (a tea table) was informed by landscape, and conveys a conceptual message about our relationship to nature as well.

GEOLOGY
Black diabase dikes visually exposed at Schoodic Peninsula are long, narrow, charcoal-colored rock outcrops that distinctly contrast with adjacent light-yellow granites. Dikes make formal, obvious marks in the landscape, like single dark lines drawn on light-colored paper.

Black diabase dikes are formed by molten magma, deep in the earth’s crust, forcing its way into joints in the granite shelf above. The fine-grained diabase rock erodes much faster than the hard, coarse-grained granite flanking the dikes at the surface.

CONCEPT
Schoodic Point features a remarkable dike that widens slightly as it leads directly into the Atlantic Ocean. The black diabase rock was cracked and eroded into strong geometries: stacked narrow rectangles, and volumetric cubes. The rock fragmentation pattern appeared as ordered assemblage, a dish-filled drying rack... then a packaged tea-set entered my mind. Visual and intellectual insights, combined with scalar abstractions, synthesized into concept of choreographed tea ceremony.

ORIENTATION
Tea table surfaces metaphorically imitate the Schoodic Peninsula landscape. The large, yellow, bisected volume establishes primary tea table surface and symbolizes granite peninsula landform (similar color). The dark, narrow bisecting channel signifies unique black diabase dike geology. Dike is prominently expressed with color, form, and texture contrast; this enhances separation from symbolic landform and establishes visual hierarchy. Serrated wave-like volume located perpendicular to the dike represents the Atlantic Ocean, and three small cavities in the main landform symbolize tide pools.

The symbolic black diabase dike contains all tea ceremony paraphernalia and is ordered and detailed to suggest increased fragmentation, or erosion, as it widens toward the wave-like volume that signifies ocean. The
ocean-form provides additional surface for tea ceremony activities, and tide pools convert to jam and butter containers for popover dipping.

**EXPERIENTIAL**
Visual clues lead viewer to orientation information located in dike pull-out. Tea table napkin and place-mat provide enthusiastic graphics and multi-layered narrative to support project comprehension, and suggest an order for further exploration. The project first appears harmless, but innocent preconceptions of a tea ceremony begin to dramatically expand and transform to reveal a dark and disturbing message.

The informed viewer now experiences the psychological discomfort of sitting upon excavated landform fragments, recognizes the shame of relentlessly mining tea serving dishes from a metaphorical geologic feature, and captures the irony of setting a table that invades substantial areas of symbolic peninsula landform and ocean-form. Popovers imply engineering of our food, tea infusers resemble buildings…

Participation in this tea ceremony stimulates questions about how we use or abuse our land. Project understanding requires intellectual thought, but the conceptual message is most clearly and profoundly sensed by physically interacting with the piece… *setting the table.*

JOHN HUMPHRIES
Miami University

DESIGNER STATEMENT

The ability to quickly transform the essential nature of a context might not be to design, create, fabricate the ideal representation of a place. The point of transforming the perception of a place is to make things that heretofore have not been seen or considered and then, through hard work and fabrication and careful consideration, analogously capture the essence of a place or moment, for the purpose of engaging, intellectually and emotionally the context as opposed to some didactic or formulaic response.

This commissioned design project uses watercolour drawings to describe a spatial composition in order to begin to understand the dynamism of the human form as it might move through a volume. The orthographic space simultaneously considers the body. These might be described as two designs trying to become the other and simultaneously describing how they might accomplish this task. The images are a frozen instant in this dialog.

Borrowing from the Beaux-Arts tradition of the analytical drawings which included perspectival, orthographic, and conceptual images at various scales to convey a more complete image of a complex condition, multiple techniques of representation are used within the picture frame. Drawings slowly shift from two dimensional lines and colored planes to three dimensional structures of wood and steel embedded within the plane of the paper. Oscillation between modes of representation projects the viewer into the visual equivalent of a state between two-dimensions and three, sliding from delicately built object to a graphite and watercolor representation of the thing.

The act of moving through a space to inscribe a trajectory in space is the act of assembling and crafting in space. Through this inscription a drawing can transform a notion, idea, or concept and allow for one concept to connect to another. By embracing the conceptual nature of representation the design has begun to slowly develop a body of work which considers multiple subjects simultaneously in an effort to understand the elements which are kept and things lost in translation. Is a greater understanding of the client, the users complex path, or even of the space formed? Likely not. Can considering multiple spatial configurations simultaneously transform the pre-conceived notions surrounding the start of a new context? Likely yes. Transformational learning states that the primary manner in which one learns is through transforming one known or familiar concept to another—incrementally. By connecting small portions of one set of knowledge to another, insight can be gained in another set of knowledge. It proposes that ideas and notions and understandings are evolutionary and not instantaneous. Even the apparent instant connections and “ahha” moments or bolts-out-of-the-blue are the results of an active thought process which has been transforming many things until several connections are made. There is a critical moment where cascade events can happen—this is the result of not instantaneous revelation but one small thing transformed acting as a connection catalyst for several notions.
Figure-1: One Harmonic Step. Designs to understand the dynamism of the human form inscribing its movements through a volume.
Figure-2: Bending and Folding Along the Corridor. The orthographic space simultaneously considers the body.
Figure-3: Something From the Eye’s Corner. The first of two designs trying to become the other.
Figure-4: Measuring and Mismeasuring. The Second of two designs trying to become the other.
Figure-5: Internal Light Source. One simultaneously describing how they might accomplish this task.
Figure-6: Of Tiles or Scales.
The other lamenting the act.
Red Velvet Wedding Cake

MAURA SCHAFFER
Purdue University

ARTIST STATEMENT

The wedding cake as a symbol of fertility.

This piece is an elaboration upon a current series of work of life-sized sculptures focusing on tables, chairs, beds, dressers, and other furniture as a means to explore human relationships. These anthropomorphic pieces of furniture are caught in the act of fighting, dancing, dining, love-making, and dreaming. The furniture, place-settings, food and other objects allude to the human actions without the presence of the human figures. Within this idea is the relationship that takes place during meals, while in bed, on the dance floor, etc. and what that says about us.

In the Red Velvet Wedding Cake, I was interested in creating a piece of art that the audience could interact with and take a portion with them. The tradition of the wedding cake fits this description. This tradition has its origins in Roman times when a small thin wheat cake symbolizing bounty was broken over the head of the bride which was thought to promote fertility. It was also a symbol of the husband’s dominance over his wife. The family and guests then ate the crumbs off of the floor. Though the tradition has changed slightly since then, the wedding cake still has the underlying meaning of fertility. It is the first food that the bride and groom share as a couple – and often stuff in each others mouths - and in earlier traditions the bride served the cake to the groom’s family symbolizing one of her new wifely duties.

The table and the cake on top are representative of the bride walking down the aisle. The exterior of the wedding cake is “iced” in pure white fabric and yarn but when cut open a red velvet “cake” is exposed. The red velvet interior is reminiscent of the inside of a Pomegranate which is also associated with fertility and birth. In biblical times the pomegranate was called Rimmon which meant “to bear offspring.” It is my intention to serve the cake to the guests at the gallery and as the pieces are removed an inner cavity is discovered. The piece is constructed of a wire structure that is braise welded using a gas torch and then is painted to create the armature. Fabric is stretched around the wire structure, and then is trimmed, and hand-stitched. The wire structure and translucent white fabric gives the piece an ephemeral quality and a sense of purity and focuses the viewer’s attention on the action the furniture is involved in. The interior red velvet contrasts that of the white exterior and symbolizes the interior of a body as well as the inner psyche. The act of cutting apart and giving the pieces away is sacrificial and allows the viewer to partake of the bride (art) in a more intimate way. Rather than only being allowed to view the art, the artist is inviting you to touch and also possess a part of the work.
Figure 1: The sliced wedding cake
Figure 2: The pieces of cake are distributed to the guests.

Figure 3: The cavity inside is slowly revealed.
Figure 4: Detail of slice of cake.
Florals

IGOR SIDDIQUI
University of Texas at Austin

DESIGNER STATEMENT

*Florals* is an ongoing investigation of patterning in the design and construction of three-dimensional interior surfaces. Patterns are commonly associated with repetition, but also have the capacity to simultaneously handle variation and difference. As such, *Florals* considers ways in which individual components aggregate into larger formations, and how within aggregations of same and/or similar parts it may be possible to generate variation, and as such engender specificity. Experimental in nature, the produced artifacts are primarily vehicles for testing, observation, and evaluation of design ideas in relation to their material manifestation. At full scale, they also serve as prototypes that suggest potential applications within interior environments.

**PROCESS**

As design-research, *Florals* investigates the relationship between digital and material processes. Digital drawings and models used in the initial stages of the design process are developed into templates for laser-cutting and CNC-routing. Flat material is digitally cut after which it is manually and mechanically assembled – by stitching, folding, tying, draping – into three-dimensional components and aggregations. The resulting prototypes, once assembled, reveal their performance in relation to gravity, materiality, and atmosphere, frequently revealing properties not visible in the digital realm. These properties are recorded through drawings, photographs, and models, with the intention of incorporating them into next iterations of the design.

**MATERIALS**

*Florals* is particularly interested in soft materials, partially because they address more intimate and ephemeral spatial layers of the interior, but also because their properties resist formal determinism. In other words, the shape of a soft surface, unlike those made of hard materials that can be stereotomically manipulated, cannot be predetermined without taking into account material behavior. As such, the prototypes to date have been made using ripstop nylon, wool felt, and cast urethane rubber. In addition to their softness, these particular materials were also selected for their ability to make self-sealing edges, a decision that was primarily related to managing the amount of finishing work, but that has also revealed its own new challenges and opportunities.

**INSIGHT**

The project’s name suggests an interest in decorative surface, with the intent of transforming flower-like patterns into three-dimensional constructs. Unlike wallpaper, these surfaces are not one-sided and their thickness provides opportunities for modulating light, framing views, manipulating sound, and providing comfort. Unlike drapery, which often relies on a single large piece of flat material to produce an overall surface, these prototypes are based on the accumulation of much smaller parts, suggesting flexibility, choice, and change as the components can be combined and connected to produce surfaces of varying sizes, shapes, and uses. Like a kit of parts that can be expanded, adjusted, and customized, each prototype in this research project points to the potential utility of an interior system that can be mass-produced on the one hand, while retaining its capacity to be tailored according to specific site conditions or individual desires.
FLORALS: from pattern to surface

FLORAL SURFACE MADE FROM RIP-STOP NYLON
Digital drawings and models translate 3D forms into 2D cutting patterns.

Digitally constructed physical models ("3D prints") used in the design process.
CREATIVE SCHOLARSHIP

FLORAL COMPONENTS CAST FROM URETHANE RUBBER FROM DIGITALLY FABRICATED FORMWORK

RUBBER COMPONENTS USED TO STUDY SURFACE TEXTURE AND PERFORMANCE
DIGITAL DRAWINGS INVESTIGATE PATTERN VARIATION

FLORAL SURFACE MADE FROM WOOL FELT
FLORAL SURFACE MADE FROM WOOL FELT

FLORAL SURFACE MADE FROM WOOL FELT, DETAIL
Intricacy of Visualizing the Narrative: Interiors and Exteriors

JIHYUN SONG
Iowa State University

ARTIST STATEMENT

“People have a need to make out of space their own ‘place’ by defining enclosure, no matter how sketchy the definition. At the same time, people want to be liberated from restrictions of enclosure, if only by seeing [the] outside…..” (Benzel, 1998. P.67)

ORIENTATION:
Narrating the visual and visualizing the narrative is a topic of increasing interest as scholars seek to integrate creative performance, research-based practice and design research (Beamish, 2010; Danko, S., Meneely, J., & Portillo, M., 2006; Dohr, J., 2007). Three sets of exterior and interior illustrations grew from interpretation of three written narratives appearing in Design Thinking for Interiors (Dohr, J. & Portillo, M., in press). As most illustrators tell, visual narrative begins when a design story ends. Visualizing the Narrative include: (1) The HospiceCare Center where entrance and a butterfly donor wall have deep meaning to staff, patient, and patrons alike; (2) Mozell Benson’s new home and studio, an architecture and design community-university service project of Auburn’s Rural Studio program (Garmaz, 2009; Sharpee, K. 2010); and (3) a Katrina story of devastation and restoration of Dorothy Phillips historically significant home. With narratives written, visualizing them--interpretation from word to concrete image--is the story of design illustrators and their challenge.

CHALLENGE:
Three different environments, three different situations concern empathetic design and how to visually share what environmental reality expresses. Key ideas include: interior and exterior paradox and emotional attributes in narratives as paths--physical and metaphorical (1); design-build, living and work--studio and teaching (2); and devastation and rebirth (3).

PROCESS/APPROACH:
My illustrations respond to each story’s reality addressing relationships between people and their built environment in terms of past, present and future. Illustrations are live representations of selected design aspects that emphasize storytelling, leading to an expressive quality, sense of drama, and meaningful purpose. Illustrators draw upon past memory, initiate change of environment in the present, and anticipate and embrace the space for users. In this context, artistic engagement requires connecting me to persons’ experience of place with an understanding of respect and empathy. The method of visualizing the architecture and interior space heighten my own empathy where creating emotional and sensory integration are paramount.

I initially generate a digital structure to which I then apply watercolor suggesting a transcendent sense of engagement at a deeper and affective level. I focus on visualizing the nuance of scene, tonal value and aesthetic quality as a whole. With interior and exterior features embedded in the narratives, I must capture the moment in time and place, focus on transient effects of mood and atmosphere, while conveying a personal, emotional and meaningful connection for viewers.

KEY IDEAS DISCOVERED:
An ongoing interest is exploring unique benefits of multimedia and what each brings to understanding place design. Through three visual sets, I’ve grappled with creating vivid images of the narrative, using the hybrid of digital and analog media-watercolor. The initial computer model simulates and accentuates details; whereas watercolor conveys unique qualities of fluidity, transparency, and its versatility, yet also captures what in a story
Narrating the graphic visuals provides me an opportunity to uncover the most intimate connection to real-world issues that concern designers and their clients/users. Blending and practicing the method mirrors possibilities and ways of thinking and working inherent in our field.

REFERENCES (APA)


Figure 1: HospiceCare, Inc.: one inclusive path—enter and depart

Figure 3: HospiceCare, Inc.: interior path—butterfly donor wall
Figure 2: HospiceCare, Inc.: detail 1

Figure 4: HospiceCare, Inc.: detail 2
Figure 5: Mozell Benson’s Home Living

Figure 7: Mozell Benson’s Studio—noted Teaching and Creative Work
Figure 6: Mozell Benson’s Home Living: detail

Figure 8: Mozell Benson’s Studio: detail
Figure 12: Katrina Devastation of Phillips Home: detail

Figure 10: Rebirth of Phillips Interior and Historical Memory
Figure 13: Katrina Devastation of Phillips Home: detail

Figure 11: Rebirth of Phillips Interior and Historical Memory: detail
The Visions of Spaces II

SARAL SURAKUL
University of Georgia

ARTIST STATEMENT

The second series of conceptual paintings took the inspirations from my past experiences visiting several large and small cities in different countries and continents. During each visit, as a designer, I started to investigate the potential of the surroundings and gradually transform them into design possibilities. This project reflects and continues my personal design philosophy and teaching approach with the questions - "why and why not" from the first series. Imaginations have no boundary and the design solutions are limitless. The digital paintings are my visions of the spatial designs that could be conceptually executed. This second series focuses on my visions of the spatial designs that attempt to fuse the new forms of architecture with the historical sites. I employed various methods of both traditional and digital imaging, including pencil sketching and digital matte painting techniques to bring the ideas to live.

THE CHARLES BRIDGE, PRAGUE, CZECH REPUBLIC

Charles Bridge, which links the old Prague Castle to the old town over the Vltava River, is the main tourist destination in Prague. The atmosphere was the great inspiration for me to create a new vision of a serpentine bridge that varied the spatial perception of the city and prolonged the exceptional walking experience. The covered bridge from the Prague castle was redesigned to be floating as the engineering wonder. An additional glass canopy above the middle section of the bridge gave a new definition to the art market. The glass would reflect the colorful sunset sky as it was the best time to take a stroll.

NOTRE DAME DE PARIS, PARIS, FRANCE

The Notre Dame de Paris, located on the bank of the Seine River, is an exemplary evidence of human's faith. Similar to the architecture of the same period, the architects placed the emphasis on the sense of verticality to accentuate the spiritual volume while the early technology only allowed minimum numbers of openings. As a result, interiors were dark and gloomy. My vision of the cathedral utilized the filtered natural light through the re-introduction of the stained glass on the ceiling above the nave to create a luminous effect. The proposed idea of the cathedral could elevate the spiritual experience to the next level.

KIJOMIZU TEMPLE, KYOTO, JAPAN

Built in 1633, the Kiyomizu (clear water) temple was built during the Tokukawa shogunate. The main hall of the temple has a famous 13 m. (43ft.) veranda supported by large pillars joined together without the use of a single nail. The veranda, offers the best panoramic view of Kyoto, was the inspiration to create an observation deck which would be equivalent to the Tokyo Tower in Tokyo. In contrast with the rectilinear form in the Japanese architecture, the new design introduces curvilinear structures that altered the scale and spatial perception without losing the original integrity. The temple was designed to become one with its environments. The experience on the veranda would be varied as the seasons come and go which would make Kiyomizu temple the landmark of Kyoto.
Concept sketch
The Charles Bridge, Prague, The Chez Republic

Image: http://picturesfromprague.com
The Charles Bridge, Prague, The Chez Republic

Representational details
Concept sketch
Notre Dame de Paris, Paris, France

Image: http://www.sacred-destinations.com
Notre Dame de Paris, Paris, France
Representational details
Concept sketch
The Kiyomizu Temple, Kyoto, Japan

Image: http://commons.wikimedia.org
The Kiyomizu Temple, Kyoto, Japan

Representational details
for Gabriel

ROBERTO VENTURA / JOSHUA POTEAT
with “Starshine,” by Elisabeth Reinkordt

Virginia Commonwealth University

DESIGNER STATEMENT

In 1800, Gabriel led a failed slave rebellion in Richmond, Virginia. He was captured and, along with 25 of his associates, executed. A plaque describes this spot, now a parking lot, and explains its earlier purpose: the center for trading, executing, and burying of slaves.

A collaboration with poet Joshua Poteat, “for GABRIEL” grows from his work, “memorial Department,” a meditation on memory, history, and place. Like a mayfly, the installation would last only a night as part of an international light art exhibit, InLight Richmond.

Situated in a long dormant storefront in a rapidly transforming arts district, the installation introduces itself through recordings of former slaves, presenting a sonic texture at the front façade. Thirteen columns march into the dark linear space and align with a distant room, its door ajar. Within it, a nest hovers, illuminated by a single light.

Each column is a totem, an irregular dry stack of simple concrete masonry units. On each totem, two lanterns represent the memory of Gabriel’s army. Modest bulbs illuminate these avian-themed lenses, introducing a warm glow into the space. Ambiguity abounds in the graphics; the viewer determines whether the birds flee from or return to the nest. Dim flickers along their edges impart movement, activating the space with shadow and reflection.

Opposite the columns, a series of floor-to-ceiling burlap scrims divides the space roughly in thirds. Text, imagery, and a short film project onto, across and through the screens, orienting the viewer to the rear room. Moreover, the digital imagery animates the derelict space, catching the imperfections and delaminations that result in an interior environment neglected for decades and left to the whims of moisture, abuse and neglect.

Across the first panel, “Memorial Garden” cycles somberly, a couplet at a time. As the text passes through the scrim, it spills across a back wall, leading one to the second panel. There, Elisabeth Reinkordt’s short film, “Starshine,” loops abstracted images of sunlight dappled through a filigree of branches, penetrating deep into the volume. From the rear of the space, a third digital projection launches images of birds towards the observer. These images and video streak across the space, illuminating its textures in quick glances.

Within five hours, the installation expired. Through recycling and repurposing of materials, only a small bin of waste remained.

The narrative of Gabriel’s life and rebellion is incomplete; his “history” results from a record which excluded him.

In spirit, the space also communicated no definitive memory; the installation made no attempt to establish a clear or singular history of itself. It exists as a collective recollection by all who experienced it. Unsynchronized text, images, and video meant no two moments were identical; it exists only as a collage of memories of flight, shadows, and light; of liberty, shame and truth.
layers | the exterior context influences the acceptability of the interior

time lapse images | video and projected images animate a static environment, activating the space
ghosts and ruins | the ephemeral imagery engages the existing space; a contemporary ruin, relegating its textures and spirits instantly to memory.

vacancy | memory fills the space; after one evening, the only artifacts remaining are recollections.
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