Conferece Chair
Sally Ann Swearingen
Stephen F. Austin State University

Creative Scholarship Coordinator
Diana Allison
University of the Incarnate Word

Southwest Regional Chair
Sally Ann Swearingen
Stephen F. Austin State University

Keynote Speakers
Colley Hodges, AIA, NCARB, LEED AAP, WELL AP
Associate, Kirksey Architecture, Houston

Best Presentation
Amy Roehl
Texas Christian University

Best Poster Presentation
Hans-Peter (Hepi) Wachter
University of Oklahoma

Best Graduate Student Presentation
Sahar Mihandoust
Texas Tech University

Best Creative Scholarship Presentation
Carl Matthews
University of Arkansas

Proceedings Editor
Suchismita Bhattacharjee
University of Oklahoma
# TABLE OF CONTENTS

## Oral Presentation - Scholarship of Design Research

- The Use of Virtual Environments to Detect Reactions to Classroom Features .............................................. 5  
  Kristi Gaines, Michael O’Boyle, Michelle Pearson, Zahidal Islam, Debajyoti Pati & Kareem Al-Khalil
- The Evaluation of Malawian Learning Environments .......................................................................................... 8  
  Michelle Pearson, Kristi Gaines, Malinda Colwell, Peter Raab, Charles Klein
- Understanding the Impact of Teaching Pedagogy and Classroom Design on Student Engagement in Post-Secondary Institutions ........................................................................................................... 14  
  Ammara Arshad
- Developing and Testing a New Instrument to Measure the Effect of Green Building Strategies on Customer’s Perception in the Restaurant Business ........................................................................... 16  
  Nizar S. Haddad Debajyoti Pati
- The Transition to Building Information Modeling (BIM) Platform in Interior Design Practice ............................. 17  
  Duy Pham, Kristi Gaines, Cherif Amor, Elizabeth Louden, Su-Jeong Hwang Shin
- Impact of Digital Media Use on Today’s Students: Considerations for Interior Design Education ....................... 23  
  Amy Roehl
- Objects of Value and Light: Edward Durell Stone’s Exhibits for Tupperware and “The Case Against the Tailfin Age” ........................................................................................................................................ 25  
  Kimberley Furlong
- Finding Parallels Between Poetic Conventions and Architecture: A Case Study of the Katsura Imperial Villa ..................................................................................................................................................... 28  
  Jean Edwards
- Evidence Based Design: Creating the Bridge between Academics, Practice, and Research ............................. 35  
  Natalie Ellis, PhD
- Examining Main Factors Influence Generation Y’s satisfaction in Physical Work Environment .......................... 37  
  Huili Wang, Student, Pearson Michelle, Kristi Gaines
- Design Strategies to Alleviate Tactile Defense ....................................................................................................... 39  
  Kristi Gaines, Angela Bourne, Michelle Pearson, Mesha Kleibrink, Su-Jeong Hwang

## Oral Presentation - Scholarship of Teaching and Learning

- Multimodal Delivery Method to Enhance Student Retention and Prepare for Entry into the Profession ................. 43  
  Mia Kile
- Effectiveness of Flip-classroom Pedagogical Method in Interior Design Education ............................................. 45  
  Suchismita Bhattacharjee
- Linking Studios for Efficient Content Delivery and Student Discovery ............................................................ 47  
  Mitzi Perritt, Sally Ann Swearingen, Leisha Bridwell, Rhonda Calhoon
- Graduate Education in Interior Design: A Review of Current Trends ............................................................. 49  
  Suchismita Bhattacharjee
Poster Presentation

Integrating Optimal Classroom Design at the Elementary Level in the Saudi Arabia Classroom...........54
   Ibtihaj Alsadun, Kristi Gaines, Michelle Pearson

The Use of Signage, Color, and Virtual Interactive Reality in Wayfinding for People with Autism Spectrum Disorder .................................................................56
   Apoorva Rane and Kristi Gaines

Older Adults and Their Impact on the Design of Future Learning Environments.............................63
   Hans-Peter (Hepi) Wachter

Evaluation of the Environmental Features Affecting Way-Finding for People with Dementia in A Memory Care Unit.................................................................65
   Mahshad Kazemzadeh, Arsalan Gharaveis, Kristi Gaines

Creating a Multi-Purpose Environment for Children with ADHD ....................................................66
   Sahand Abbasi Sarabestani, Kristi Gaines

Exploring the Relationship Between Biophilic Design and Stress Reduction ....................................71
   Sahar Mihandoust and Dibajyoti Pati

Reducing Stress Levels for Children in a Daycare Facilities through Interior Design: Examining Research methods .................................................................................72
   Sahand Abbasi Sarabestani, Apoorva Rane, Kristi Gaines

Panel Discussion

Making Places: Interior Design for Older Adults..................................................................................79
   Hans-Peter (Hepi) Wachter, Kristi Gaines, Mitzi Perritt, & Phillip Park................................. 79

Creative Presentation

Lookout – Cocoon.................................................................................................................................
   Carl Matthews

Marriott Side Lobby and Reception .....................................................................................................
   Hans-Peter (Hepi) Wachter
The Use of Virtual Environments to Detect Reactions to Classroom Features

Kristi Gaines, Michael O’Boyle, Michelle Pearson, Zahidal Islam, Debajyoti Pati & Kareem Al-Khalil

Texas Tech University
Lubbock, TX

Evidence shows that environmental features have an impact on learning and behavior. However, most studies address the perceived impact of environmental stimuli on students (Gaines, 2014). Little is known about the correlation between neural activity and environmental stimuli. Neuroscience has revealed that seeing color activates the ventral occipital cortex. (Hsu, Frankland & Thompson-Schill, 2012). This study seeks to determine if other environmental stimuli result in changes in neurological activity.

The built environment industry is one of the few that lacks the possibility of using full scale prototypes for evaluation (Achten & Turksma, 1999). Through virtual models, designers experience a real environment in a quick and inexpensive way. For greater realism, complex interaction and game engines are considered as a reliable tool that can be used for design development, problem solving, augmented spatial experience and produce credible user feedback. Many cognitive psychologists have used virtual reality tools and techniques to compare user experiences of real environments and its counterparts. Bishop & Rohrmann (2003) and Daniel & Meitner (2001) identified the critical need for realism when studying human perception and behavior. This study combines the use of virtual environments and fMRI technology.

Institutional Review Board approval was obtained. The participants for this study were individuals ranging in age from 12 to 16 years old. The research study was conducted at a Neuroimaging Institute (TTNI). Augmented reality visualization and functional magnetic resonance imaging (fMRI) were utilized to gather data on reactions to specific features of the built environment for individuals. Participants viewed 6 virtual classrooms during the process of imaging (15 seconds each): (1) low environmental stimuli (neutral floor, artificial light, no clutter), (2) classroom with a checkerboard floor, (3) classroom with daylight (4) classroom with direct daylight including harsh shadows, (5) classroom with clutter and (6) classroom utilizing window decals incorporating a nature scene. Additionally, between each scene presentation, participants were given 10 seconds to rate the “pleasantness of the environment (on a scale of 1-7) using fiber optic response buttons.

Neurological changes were observed between each of the 6 environments adding to the validity of using virtual environments in interior design research. The virtual environments with (1)
the window decal and (2) daylight showed the greatest increase in brain activity. Activation of the amygdala is thought to be responsible for perception of emotions such as anger, fear, and sadness. The findings from this study provide quantifiable data that individuals experience changes in brain activity as environmental features are manipulated. If selected for the conference, this presentation will show the virtual environments used in the study and the fMRI scans that demonstrate the findings. This research project provides new and relevant research methods to determine the impact of environmental features on inhabitants. The information from this study will be useful for design professionals in creating all types of environments including learning, working, and therapeutic spaces that encourage a sense of well-being and positive responses to the environment.

References
5. Hsu, Nina S., Steven M. Frankland, and Sharon L. Thompson-Schill. "Chromaticity of color
APPENDIX

Figure 1. Low stimulus virtual classroom (still shot of the virtual environment video). One of 6 virtual environments.

Figure 2. Classroom with the addition of direct sunlight (still shot of the virtual environment video). The second of six different virtual environments used in the study.
Figures 3 and 4. Two examples of fMRI changes that were found when participants viewed the 6 different virtual environments.
The Evaluation of Malawian Learning Environments
Michelle Pearson, Kristi Gaines, Malinda Colwell, Peter Raab, Charles Klein
Texas Tech University
Lubbock, TX

Research has repeatedly shown that the design of learning environments has an impact on learning outcomes (Aburas, Gaines & Shin, 2014; Lackney, 2003; Dunn, Griggs, Olson, Beasley, Gorman, 1995). However, the majority of existing research relating to learning environments has been gathered in developed countries where there is a greater ability to provide more supportive classrooms. Research relating to the design of learning environments in developing (or third-world) countries is limited. In addition, many of the findings and design recommendations for learning environments may not be applicable to many of the developing regions of the world, which often struggle to provide even the most basic psychological and physiological needs. Maslow (1954) created a hierarchy illustrating the needs that motivate human behavior. At the bottom of the pyramid, one will find the most basic human needs including shelter and food. As one moves up the pyramid, the needs become more complex. Many American classrooms are able to be designed to meet even the most complex needs and help attain the highest level of self-actualization whereas many under-developed countries struggle to even provide a rudimentary structure to use as a classroom. The objective of this study was to evaluate a series of Malawian classrooms based on a list of optimal inclusive classroom features developed from a research study in the United States.

The methodology employed for this research study includes a site visit to Malawi. Malawi is a country located in southeast Africa and among the world’s least-developed countries (Human Development Reports, 2014), ranking 174th out of 187 countries on the Human Development Reports by the United Nations Development Program. The population is 16 million, with 76% living below the poverty line. The educational system has a number of concerning trends. Within the primary education system, there is a dropout rate of 50.88% with only an average of 4.19 years of schooling.

During the visit to Malawi, the researchers conducted site visits to four different schools. The researchers conducted a series of interviews with administrators and educators of the schools. Finally, the researchers conducted observations in approximately 10 classrooms and additional learning environments. While on the site visit, the researchers were evaluating the visual and auditory qualities of the classroom, based on a list of optimal inclusive classroom features developed from a research study in the United States. The recommendations include nine
objectives including lighting, color, and spatial organization. Finally, the researchers sought to determine where typical Malawian schools fell on Maslow’s hierarchy of needs.

The results of this study found that the classrooms were at the base of Maslow’s hierarchy of needs, often only able to provide the most basic of needs. While the classrooms attempted to meet some of the design recommendations, there was still a great need for improvement. In the United States, classrooms are designed to meet the needs at the highest levels of the pyramid. In contrast, Malawian classrooms serve as a purely utilitarian space. The facilities are basic and schools typically have little or no equipment. Many of the classrooms are in buildings that were not originally intended to be used as a classroom and utilizes very little furniture, if any at all. Many classrooms lack electricity and lighting, thus making it incredibly challenging to teach the necessary skills. The relevance and contribution to the field of interior design includes adding more information to how an educational space in a developed country may vary from that of an underdeveloped country of the world. The ultimate goal is to create a model for building and improving of learning environments in under-developed regions of the world.

References
APPENDIX
Understanding the Impact of Teaching Pedagogy and Classroom Design on Student Engagement in Post-Secondary Institutions

Ammara Arshad

University of Oklahoma

Norman, OK

Plenty of research studies have been done on classroom furniture and ergonomics. However, little has been explored on the layout of that furniture that help increase in-class student engagement. In order to increase student engagement in post-secondary institutions, administration and faculty need to modify traditional classroom designs and teaching pedagogies containing row-and-column furniture layout with stand-and-deliver lecture, to collaborative learning spaces. The two objectives of the study were: (1) to determine if Team-Based- Learning (TBL)/ active-learning approach combined with evidence-based design solutions impact student engagement, and (2) evaluate post-occupancy influences on learning outcomes in post-secondary institutions.

For this purpose, content analysis was done to synthesize multiple prior research studies on TBL/ active-learning strategies, student engagement surveys, physical designs of classroom, built environments and human behaviors. Both undergraduate and graduate students participated in the reviewed research studies. It was found that team-based teaching pedagogy and classroom furniture arranged in clustered face-to-face manner, were the major contributing factors in increasing student engagement. It was also found that student success is significantly influenced by increased student engagement in post-secondary institutions. Implementation of TBL and evidence-based design in learning environments fostered learner-to-teacher, learner-to-learner, and learner-to-content interactions. These two factors not only promoted collaborative learning but also supported higher academic performances. Results show that teaching pedagogy and classroom furniture layout played significant role in enhancing student engagement in learning environments as compared to the traditional classroom furniture layout. This research study demonstrated that layout of classrooms deliberately designed to facilitate active learning resulted in increased in-class student collaboration and engagement. Evidences also showed that environments have great impact on behavior of users, upon interaction. The above mentioned results will be immensely helpful for designers, administration and faculty of schools in deciding and investing for the institutions.
References


Developing and Testing a New Instrument to Measure the Effect of Green Building Strategies on Customer’s Perception in the Restaurant Business

Nizar S. Haddad Debajyoti Pati
Texas Tech University
Lubbock, TX

Green building strategies have become a major issue in recent years because of the global shift in awareness and behavior about environmental issues. However, there has been a general lack of understanding as to what extent implementing these green building strategies affect customer’s and business owner’s perceptions, especially in relation to its perceived or tangible influence on business customers.

The objective of this study is to pilot and evaluate a new instrument of different green building strategies in the restaurant business from the customer’s perspective. Methods: The sample for this study was graduate students at Texas Tech University (n=71). Five architects who are LEED Accredited Professional (AP) evaluated and approved the final instruments. The survey was developed based on the latest LEED V4 rating system, under the Commercial Interior Guide. The instrument has covered all the strategies that are listed to evaluate sustainable/green projects in the field.

The overall trend of responses from participants was positive for the pilot study. Conclusion: The two new instruments of the green building strategies were successfully piloted and demonstrated the potential to underline and highlight the most effective green strategies in the restaurant business.

References
The Transition to Building Information Modeling (BIM) Platform in Interior Design Practice

Duy Pham, Kristi Gaines, Cherif Amor, Elizabeth Louden, Su-Jeong Hwang Shin
Texas Tech University
Lubbock, TX

The current study used a qualitative approach to explore BIM applications in a professional interior design setting and BIM users’ perception in practice. An interior design firm in Dallas where the researcher worked as an architectural technician was the place for field observation participant. Field notes, memos, and log books were used to record phenomena and events throughout the firm operation while BIM software had been applied. To make the study more trustworthy, interviews with BIM users was also performed inside and outside the firm. A total of ten in-house employees with one to nine years’ BIM software working experience and six free BIM users were recruited to form the sampling for the interview data collection method. Grounded theory method was implemented using Sociotechnical System (STS) theory to direct the analysis themes. The analyzed results showed that adaptability and responsible autonomy of BIM applications were salient features in the interior design process when the firm moved from traditional hand drawing and CAD tool to BIM technology. The implementation of BIM in three scenarios of interior design process reflected an adaptation of the new technology to the existing organization. The BIM transition affected not only the firm but also its staff as well. BIM users primarily were in favor of the BIM applications with some negative responses from senior staff. However, the BIM usage was limited in simple tasks instead of a complete deployment for high-level implications.

References

APPENDIX

Interior Design Practice Scenario 1: New Interior Design in an Existing Building

Figure 1. Independent BIM interior model in relations to other media
Interior Design Practice Scenario 2: New Interior Design Happens after New Architectural Design Is Approved

Figure 2. Dependent BIM interior model in relations to other media
Interior Design Practice Scenario 3: New Interior Design and New Architectural Design Happens Simultaneously

Figure 3. BIM interior model in relations to other BIM model in a collaborative project
Interview

Table 1. Interview code titles and definitions

<table>
<thead>
<tr>
<th>Codes</th>
<th>Code</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Workflow</td>
<td>Workflow</td>
<td>A workflow consists of an orchestrated and repeatable pattern of business activity enabled by the systematic organization of resources into processes that transform materials, provide services, or process information.</td>
</tr>
<tr>
<td>Materiality</td>
<td>Materiality</td>
<td>The concept of, or applied use of, various materials or substances in the medium of building.</td>
</tr>
<tr>
<td>Potential</td>
<td>Potential</td>
<td>A currently unrealized ability.</td>
</tr>
<tr>
<td>Tenant development</td>
<td>Tenant development</td>
<td>A specialized discipline which requires focus on speed, accuracy and budget adherence.</td>
</tr>
<tr>
<td>Facility management</td>
<td>Facility management</td>
<td>An interdisciplinary business function that coordinates space, infrastructure, people and organization.</td>
</tr>
<tr>
<td>Hands-on</td>
<td>Hands-on</td>
<td>Refer to human interaction, often with technology. It implies active participation in a direct and practical way.</td>
</tr>
<tr>
<td>Upfront time-consuming</td>
<td>Upfront time-consuming</td>
<td>The situation that much time is required for creating BIM model for later usage.</td>
</tr>
<tr>
<td>Cloud storage</td>
<td>Cloud storage</td>
<td>A model of data storage in which the digital data is stored in logical pools, the physical storage spans multiple servers (and often locations), and the physical environment is typically owned and managed by a hosting company.</td>
</tr>
<tr>
<td>3D Modeling</td>
<td>3D Modeling</td>
<td>The process of developing a mathematical representation of any three-dimensional surface of an object (either inanimate or living) via specialized software.</td>
</tr>
<tr>
<td>Contextual issue</td>
<td>Contextual issue</td>
<td>Issues occur particularly in practice.</td>
</tr>
<tr>
<td>Ownership to the model</td>
<td>Ownership to the model</td>
<td>The situation of copyright in digital practice when BIM model is exchanged among stakeholders.</td>
</tr>
<tr>
<td>Ad hoc task</td>
<td>Ad hoc task</td>
<td>A solution designed for a specific problem or task, non-generalizable, and not intended to be able to be adapted to other purposes.</td>
</tr>
<tr>
<td>Level of capability</td>
<td>Level of capability</td>
<td>Levels of BIM acquisition of individuals.</td>
</tr>
<tr>
<td><strong>Innovative assemblage</strong></td>
<td>The non-stabilized character of the innovation process</td>
<td></td>
</tr>
<tr>
<td>--------------------------</td>
<td>--------------------------------------------------------</td>
<td></td>
</tr>
<tr>
<td><strong>Skillful insufficiency</strong></td>
<td>The situation that BIM users do not have enough skills in using BIM software to create design options</td>
<td></td>
</tr>
<tr>
<td><strong>CAD experience</strong></td>
<td>Experience in using CAD software in professional design</td>
<td></td>
</tr>
<tr>
<td><strong>Theoretical conflict</strong></td>
<td>The disagreement between theory and practice</td>
<td></td>
</tr>
<tr>
<td><strong>BIM perception</strong></td>
<td>The understanding about BIM software and BIM process</td>
<td></td>
</tr>
<tr>
<td><strong>Lack of BIM model</strong></td>
<td>The situation of lacking BIM FF&amp;E models from manufactures, vendors.</td>
<td></td>
</tr>
<tr>
<td><strong>Model manager</strong></td>
<td>Individual in charge of creating BIM model throughout a particular project</td>
<td></td>
</tr>
<tr>
<td><strong>BIM manager</strong></td>
<td>Individual manage BIM in an office or a firm</td>
<td></td>
</tr>
<tr>
<td><strong>BIM hierarchy</strong></td>
<td>Order in managing BIM model to make it proper usage</td>
<td></td>
</tr>
<tr>
<td><strong>BIM community</strong></td>
<td>Online community in sharing BIM resources</td>
<td></td>
</tr>
<tr>
<td><strong>Specific information</strong></td>
<td>Stable information for users to put in BIM models</td>
<td></td>
</tr>
<tr>
<td><strong>Underutilization</strong></td>
<td>The situation that a complicated BIM tool is used for simple tasks</td>
<td></td>
</tr>
<tr>
<td><strong>Multifunctional software</strong></td>
<td>Software integrate many functions to adapt to multiuse</td>
<td></td>
</tr>
<tr>
<td><strong>Real-time</strong></td>
<td>Immediate interaction through IT infrastructure</td>
<td></td>
</tr>
<tr>
<td><strong>Cost effective</strong></td>
<td>A form of economic analysis that compares the relative costs and outcomes (effects) of two or more courses of action</td>
<td></td>
</tr>
<tr>
<td><strong>BIM coordination</strong></td>
<td>Two or more people working separately to achieve a common goal using BIM software</td>
<td></td>
</tr>
</tbody>
</table>
Impact of Digital Media Use on Today’s Students: Considerations for Interior Design Education

Amy Roehl
Texas Christian University
Fort Worth, TX

It was felt before it was known. Over the past decade, university professors have observed a decrease in student attention span and a seeming inability to “go deep” with their own learning. “K-12 teachers and college professors use the same words to describe their students: rushed, impatient, not interested in process, unable to be alone with their thoughts” (Turkle, 2015, p. 76). This paper provides a review of the most recent studies on the impact of digital media use on today’s university student populations. Research findings reveal changes to the brain impacting attention and short-term memory (Klingberg, 2009), emotional development (Pea et al., 2012), and outlook of today’s youth as a direct result of ubiquitous, incessant access to the Internet, Apps, and the texting function on smartphones. (Gardner & Davis, 2013; Turkle, 2015) The unfolding stories of disruption to our internal landscapes are disconcerting. Tied to a diminished tolerance for boredom and lack of capacity for accessing solitude are the negative alterations to interpersonal relationships, most poignantly a stunted ability to develop empathy.

No other previous “new” media has had such a significant impact upon human beings (Carr, 2010). The tactile quality to digital media, demanding user engagement with auditory, touch, and sight senses is unprecedented. This relatively new phenomenon of digital media imprint upon students provides educators the opportunity to re-examine assumptions we may have in order to reassess approaches to teaching and learning. The author considers aspects of interior design education that may be relevant in addressing issues resulting from digital media impact upon our students. The author sees three key areas worth examining: (a) experiences requiring students to immerse themselves in the physical world including engagement with nature; (b) negotiating a balance between digital and physical media use in the design studio; and (c) seeking opportunities for students to develop empathy. In the presentation the author will discuss some of the opportunities and challenges associated with the above-mentioned ideas.

Much has been researched, hypothesized, and debated about the impact of digital media use on human beings and the author acknowledges the continued fierce debate amongst digital media enthusiasts and digital media skeptics both in the popular media and in academic circles. It is unhelpful to polarize digital media use as “all beneficial” or “all detrimental.” Educators have a balancing act to do. We must on the one hand consider how digital media may be useful for
student learning and at the same time develop awareness of the negative imprints it makes upon our students. With this awareness faculty can act with intention, reassessing how to best assist students in developing a capacity for deeper learning and the life skills necessary for navigating an increasingly complex world.

References

Objects of Value and Light: Edward Durell Stone’s Exhibits for Tupperware and “The Case Against the Tailfin Age”

Kimberley Furlong
University of Arkansas
Fayetteville, AR

Tupperware International Headquarters is a large complex of late-modern low-slung monoliths designed in the swampland of Kissimmee Florida, 30 miles north of Fort Lauderdale. When first constructed the buildings contained offices for employees as well as an extensive array of product showrooms, demonstration kitchens and bedrooms, a display illustrating the manufacture of Tupperware products, and a particularly attractive exhibit tracing the history of housewares (including a sublimely lit Tupperware products display); all designed by Edward Durell Stone. The design, history, and socio-spatial relevance of Stone’s History of Housewares exhibit is the focus of this presentation.

Edward Durell Stone practiced design and architecture during the rise of American modernism through the controversial beginnings of the post-modern period. Between the 1930s and 1970s he produced an outstanding number of significant designs ranging from exhibits and furniture, high-end as well as prototypical modern residences, to large international and urban scale commissions such as the Kennedy Center and the American Embassy in New Delhi. His musings on the value of architecture and design were widely published from the New York Times to Art in America, and Ladies Home Journal to Reader’s Digest. His work has received relatively little attention in the last three decades, yet at his peak he maintained an office of over 100 staff, graced the face of Time Magazine, and became a household name associated with a new modern view of the world. Stone was especially attuned to the design of the domestic setting. This presentation makes a careful review of his exhibit designs for housewares at Tupperware International Headquarters.

Ample use of special collection archive papers and a series of outstanding black and white photographs by famed architectural photographer Ezra Stoller are employed. Newly created drawings of the Tupperware demonstration spaces and exhibits attempt to reveal how the evolving valorization of common household goods was impacted by marketing and design strategies. Relevant excerpts from Stone’s articles, 'The Case Against the Tailfin Age', and, 'The Sense of Lightness', provide insight into the designer’s motivations and the ethos of the time these spaces and exhibits were made.
References


APPENDIX

Tupperware

DOMESTIC SERVINGWARE EXHIBIT
Tupperware National Headquarters, 1960, Kissimmee, Florida
Traditional domestic servingware in foreground, Tupperware beyond

DOMESTIC SERVINGWARE EXHIBIT
Tupperware National Headquarters, 1960, Kissimmee, Florida
DOMESTIC SERVINGWARE EXHIBIT
Tupperware National Headquarters, 1960, Kissimmee, Florida
DOMESTIC SERVINGWARE EXHIBIT
Tupperware National Headquarters, 1960, Kissimmee, Florida
TUPPERWARE BRANDS CONFIDENCE CENTER EXHIBIT
Tupperware National Headquarters, 2014, Kissimmee, Florida
Design by Design Island
TUPPERWARE BRANDS CONFIDENCE CENTER EXHIBIT
Tupperware National Headquarters, 2014, Kissimmee, Florida
Design by Design Island
Finding Parallels Between Poetic Conventions and Architecture: A Case Study of the Katsura Imperial Villa

Jean Edwards
University of Louisiana
Lafayette, LA

This conceptual study examines the relationship of Japanese poetic conventions to the architectural conventions evidenced in the design of the Katsura Imperial Villa. In Japan-ness in Architecture, Arata Isozaki suggests that beyond the carefully framed Modernist reading of the Villa “…is a text rich in ambiguity, where architectural languages of quite different formal and temporal inspiration are juxtaposed” (2006, p. 249). Using the metaphor of “villa as text,” the author explores the idea that conventions evident in classical Japanese poetry provide both “formal and temporal inspiration” for the design of the Katsura Villa complex. “…What is crucial to the entire Japanese literary tradition are conventions of reference and association that some images [words/structures] include” (Matsuo & Barnhill, p. 7). The goal of this study is to communicate not only a sense of these conventions, but also how this inspiration informs the organization and meaning of the Villa, a meaning that goes beyond the Western Modernist reading initiated by Bruno Taut, and elaborated by Walter Gropius, Kenzo Tange and the photographer Yasuhiro Ishimoto (Isozaki, 2006; Ponciroli, ed., 2011).

This study examines parallels between the conventions of renga, a collaborative linked form of classical Japanese poetry, and the additive process that created the Katsura complex. Parallels to two poetic devices in particular are explored: the season word (kigo) and the cut word (kire-ji). Both of these devices are understood as necessary to the linked poetic form (renga) in which they are used.

In linked-verse… the first stanza (hokku) sets the stage for the entire poem and is considered particularly important. One feature that distinguishes a hokku from other stanzas is that it must contain a season word (kigo), which designates in which season the poem was written…. A hokku also must be a complete statement, not dependent on the succeeding stanza. (Matsuo & Barnhill, 2004, p. 4).

A cut word (kire-ji) acts as the transition between contrasting ideas, and is considered an important structural element of a renga poem. “These words separate the poem into two parts, and some of the power of the verse comes from the gap and tension between the parts” (Matsuo & Barnhill, p. 14). In the renga form, a collaborating poet joins his stanza to an existing one; he uses the old stanza as the first part of his new one, typically changing the meaning of the old one.
“The essential fact to understand is the inviolable principle that no stanza has a continuing semantic connection … with anything other than its predecessor and its successor (Miner, 1979, p. 5).

At Katsura, the Old Shoin serves as the “opening stanza,” Its orientation determined by the angle ideal for viewing autumn moonlight reflected on the surface of the pond. The moon-viewing platform - (kigo) - reinforces the importance of this seasonal event in the architectural scheme. Each successive structure is added at right angles to the rear of the Old Shoin with opaque sliding doors (fusuma), providing the transition (cut word) between the structures. While each addition addressed the changing needs and tastes of the Imperial family, they were juxtaposed against the previously existing structure(s) using transitional elements that bring contradictory elements and architectural styles into harmony, creating the “text” and style of the Villa complex as we see it today. “Taken as a whole, the extension scheme produces an irregular and asymmetrical rhythm…” (Isozaki, p. 272). The asymmetry and irregularity of this pattern, also evident in the rhythm established in classical Japanese poetry (five lines of 5-7-5-7-7 syllabic units) characterizes the organization of the Katsura Villa complex.

References
Evidence Based Design: Creating the Bridge between Academics, Practice, and Research

Natalie Ellis, PhD.
University of Oklahoman
Norman, OK

Altman acknowledged in the theory of man-environment relations symposia during EDRA04, 1973 that “considerable energy is being directed toward man-environment phenomena by practitioners and academic researchers” resulting in the fields desperately trying to learn to communicate effectively with one another. Further elaborating upon this idea, it can be seen that there are camps within architecture colleges worldwide that fall short of agreement. The statement holds true for architects and designers wishing to build structures which respond to people’s true needs instead of creating designs as self-honoring monuments. Further complicating matters, hardline researchers are convinced that the physical environment should be studied holistically and interactively with people as the central focus, while often others in the design community place higher value upon the art and publication of the final design setting. There is little wonder that students moving through the educational process of design are left confused with the end result of their cumulative education. As faculty, we owe the student’s pedagogical outcomes to be a blend and to understand the value and contribution that design and research can collaborate toward creating beautiful and functional spaces. The connection and integration of evidence based design (EBD) into current design pedagogy provides students the needed life skills to excel in their future careers. The design industry has long been considered as a neutral client advocate, but steadily has found itself in the back seat with the general contractor in the driver’s position. Placing the contractor entity that has everything to gain by cutting costs through any means possible is seen as more highly valued over disciplines trained to create buildings with best practices for each situation and individual client. The stringent application of research’s contribution for interior design aids faculty and students toward minimizing the misunderstanding gulf.

Generating a necessary bridge link between practicing professionals and those conducted research in the fields of psychology and environmental psychology with the students brings richness to a dry practice field as well as life back into those in the trenches of Environment and Behavior sciences. The bridge begins in school with connecting the student to the value of research and the value placed upon applying the correct environmental attributes.
Investigating the differences between research and practice can help the educator set up their semester’s planning whether the course is lecture or practice based. Using Altman’s work and applying it to current education and practice, these six approaches are considered as they can contribute to the great gulfs of misunderstanding between research and practice. These include approach methods (phenomena orientation vs. place), time constraints (long term vs. immediate), capital (funded vs. limited budgets), thought paradigm toward the central task, method (analysis vs. synthesis), and end-product goals (publication vs. product). These differences contribute toward alienation within each discipline as well as between design research and practice camps (Altman, 1973, pg. 103). As a basis of understanding, corporate office design will be discussed as an integrative example for these approaches.

Reference
Examining Main Factors Influence Generation Y's satisfaction in Physical Work Environment

Huili Wang, Student, Pearson Michelle, Kristi Gaines
Texas Tech University
Lubbock, TX

In today’s society, the workforce consists of three generations defined as Baby Boomers (1945-1964), Generation X (1965-1980), and Generation Y (1981-2000) (Hart, 2006). Generation Y is the fastest growing population of the workforce. Researchers are paying special attention to understanding the expectations and characteristics of Generation Y. Some managers have realized that employees work differently than in decades past. The changes of the workforce and Generation Y’s expectations are challenging for employers today. Some studies have been examining generational differences in offices (Macky, Gardner, & Forsyth, 2008) and how to manage Generation Y in the workplace (Martin, 2005). However, the preferences of Generation Y in the physical work environment need to be examined at a deeper level. This study aims to gain information about the preferences of Generation Y employees in the workplace. A literature review was conducted to find the preferences of Generation Y and the various factors that influence satisfaction in the physical environment. Articles were identified by using keywords including Generation Y, preference, environment, satisfaction and workplace. The databases that were used to gather literature included EBSCO and Google Scholar. The results of the literature review indicated Generation Y desires flexibility, collaboration and “fun” work environments. Providing a variety spaces for Generation Y employees to choose where and how to work has been linked to an increase in satisfaction (Lowe, Levitt, & Wilson, 2008). In addition, more open, informal and “fun” spaces that support collaboration can also lead to an increase in satisfaction. According to the literature, a typical cubicle office located in Texas Tech University was examined. The office was scrutinized to determine the negative design factors that may affect Generation Y employees’ satisfaction. After the problems were outlined, design solutions were given with redesigned.

References
Design Strategies to Alleviate Tactile Defense

Kristi Gaines, Angela Bourne, Michelle Pearson, Mesha Kleibrink, Su-Jeong Hwang
Texas Tech University
Lubbock, TX

Children and adults may be diagnosed with sensory processing disorder when sensory signals do not integrate to provide appropriate responses. Because of these sensory issues, individuals may experience hypersensitivity to certain textures which is known as tactile defensiveness. The sense of touch and the concept of personal space are linked. For example, people that experience tactile sensitivity often may try to avoid being close to other individuals. The responses of tactile defensiveness may be varied with a wide range of design preferences exhibited. Often, they may prefer to sit or stand close to a wall in order to manage privacy. Developmental delays, learning problems, issues with comfort and other sensory problems may result. (Shabha, 2006; Hatch-Rasmussen, 1995).

Touch is assessed concurrently with the other senses (Konkle, Wang, Hayward, and Moore, 2009). Konkle, et al. (2009) investigated the ways the senses of touch and sight impact each other. Gaines, Bourne, Pearson, and Kleibrink (2016) state that interaction with architecture is multi-sensory, and people typically know how something will feel just by looking at it. The objective of this study was to identify ways to help alleviate sensitivity to touch by identifying the relationship between critical design factors in the environment and sensory issues.

Sensory Integration (SI) theory was used for this study as a framework. For the first step, the therapeutic application of texture was investigated through search engines. The cross reference stimuli were compiled in a database in order to identify design factors associated with tactile defensiveness. IRB approval was obtained for the next steps. A mixed methods approach was utilized to gather data including 1) a series of interviews, 2) observations and 3) surveys. In all, data was collected from over 600 subjects who included children and adults with tactile defensiveness, professionals working with this population, and the parents of children with tactile defensiveness.

The findings identified design features that promote and alleviate tactile defensiveness. Allowing for personal and transition spaces, the regulation of temperature, and the use of soft textiles and other soft textures were some of the factors identified. Additionally, deep pressure was determined to be a successful intervention. Physical activity and access to nature also had a positive correlation with tactile sensitivity.
Recommendations for physical design features were developed for tactile sensitivity. The results from this study also led to the development of sensory clothing products that allow for the adjustment of pressure while using appropriate textiles. Another clothing product incorporates the use of “fidgets” of varying textures. Bamboo jersey was identified as a preferred textile due to the soft and smooth hand as well as the ability to absorb perspiration.

These outcomes are useful for researchers and designers to develop improved environments for individuals with sensitivity to touch as well as the general population. This presentation will illustrate practical design solutions that may be implemented in interior spaces.

References
APPENDIX

Figure 1. Halls zones of proxemics.

Figure 2. Neurodiverse zones with changing personal space zones.
Figure 3. Creating zones within a classroom to help alleviate tactile defensiveness.

Figure 4. One of the outcomes from the study was the design and development of a line of sensory clothing.
Multimodal Delivery Method to Enhance Student Retention and Prepare for Entry into the Profession

Mia Kile
University of Oklahoma
Norman, TX

Emboldening students to actively engage with course material is an ongoing challenge for many educators. However, research has found the Millennial Generation students take a more active role in their learning. (Stratton, Julien; 2014) In Bloom's "Taxonomy for the Digital Age," analyzing, evaluating, and creating are at the top of the list of higher order thinking skills. These skills are vital in any discipline. Engaging students in multimodal projects allow educators and students to focus on higher-order skills through analyzing diverse problems, evaluating evidence, and creating solutions to projects which best communicates a given situation. (Arms; 2012)

This presentation showcases two different courses which implement an innovative delivery method in which multimodal format is used to actively engage students and further retention of core concepts and course objectives. The course structure was also designed to simulate a typical working environment which allowed for some design freedom. As an experimental model, two separate one-week intensive courses in which students met from 8:00am-5:00pm Monday – Friday were developed. One focused on historic preservation and the other lighting design. The courses were conducted in two separate summer sessions prior to normal summer courses. Students enroll in one course and commit to having this class as their focus for the week. Each course incorporated a service learning component in which students conducted client interviews, site analysis, and precedence studies. The courses also engaged industry professionals, guest lectures, and field trips all which ultimately informed design solutions which were presented to the clients at the end of the week.

Qualitative self-report student learning data were collected for each course. The data offers insight into why and how both courses excited the students and positively affected their perceptions about designing, applying course concepts, and demonstrating an understanding of the course concepts.

The outcomes proved this structured format provided students an opportunity to quickly problem solve and implement a solution which resulted in a number of learning outcomes, including creative freedom which enhanced engagement with the material, greater understanding and application of concepts, and design competency. It is believed this format for the class will prepare students for future success in the professional arena. Student responses also reflect increased satisfaction with this format.
Traditional classroom settings and structures are not meeting the needs of the millennial generation. (Tang, Austin; 2009) As educators, it is our challenge to investigate new and innovative methods to engage this diverse group. Providing our students with the tools to be successful yet allowing the flexibility to manage the material is important in their academic success.

References

Effectiveness of Flip-classroom Pedagogical Method in Interior Design Education

Suchismita Bhattacharje
University of Oklahoma
Norman, OK

Flip-classroom pedagogical model has been adopted by several educators over decades both knowingly and unknowingly. In this pedagogical model, the traditional classroom lecture and homework settings are flipped. Students are required to watch short video lectures as homework while the regular class sessions are devoted to solve assignments or work on projects. Flip-classroom teaching method has been used as a pedagogical approach in different classroom environments such as high school and middle school classroom settings to college or university level class settings. There are several evidences of this pedagogical approach being adopted in both social science and pure science class settings.

The purpose of this study is to determine the effectiveness of flip-classroom teaching method as an effective pedagogical approach for interior design educators in achieving educational objectives. I wanted to investigate how the flip-classroom setting would affect the communication among the students and instructor and hence influence student learning, confidence on subject matter, and attitude toward learning. I investigated flip-classroom pedagogical approach by adopting it in a sophomore level interior construction class. The same class using the same course content was taught another year in a traditional class setting. Both the classes held in two consecutive years had been structured as lecture and assignment class. Few topics were structured differently between two classes, where one class that was taught using flip-classroom pedagogy, required the students to watch short lecture videos as homework and the class time was used to work on individual or team assignments. In an effort to gather data that would help analyze the effectiveness of flip-classroom pedagogy method, I recorded the grades of the students’ assignments and tests for all topics which were taught both similarly and differently using flip-classroom approach. I also distributed surveys to measure students’ confidence in their abilities to solve assignments and answer test questions on the topics taught. The quantitative data was analyzed using a t-test to check for significant differences between the two classes. The qualitative data was analyzed by performing a theme analysis to look for patterns that could provide explanations of what was happening in in the two classes.

An analysis of the confidence survey indicated that the students from the flip-classroom were more confident in their abilities to successfully and confidently answer problems. Analysis of the flip-classroom revealed that though majority of students performed better on assignments and test, but several students complained about their struggle to fit into this new pedagogical approach. It seemed that to a great extent students were reluctant to change their personal
learning strategies they had been used to for years. Such adjustments are often difficult to cope up within such short period of time.

References
Linking Studios for Efficient Content Delivery and Student Discovery
Mitzi Perritt, Sally Ann Swearingen, Leisha Bridwell, Rhonda Calhoon
Stephen F. Austin State University
Nacogdoches, TX

With the growing knowledge base of interior design (CIDA, 2016), faculty face the challenge of concentrating necessary content into the parameters of a reasonable degree plan. Linking courses—acknowledged as high impact pedagogy—can reduce repetitive activities and allow more class time for either new learning or deeper investigation.

Linking is a learning community model that coordinates scheduling, content, and teacher collaboration. Professors coordinate syllabi and assignments so courses complement each other and are linked around a particular theme. A student cohort participates in the linked courses concurrently or consecutively. Linking studios occasionally, such as allowing the content of one studio course to begin where the previous one ended or coordinating content between simultaneous studios, can promote integrative learning as students make connections between disciplines (Soven, Lehr, Haynaha, & Olson, 2013).

In this case study, faculty linked learning objectives for three studios to maximize student progress (Appendix A).

a) Studio A—Students researched a self-selected architect and created an original small residential design and study model based on the architectural precedent. Students selected a real client, recorded interview notes, gathered research on small spaces, and developed a floor plan. Students practiced drafting skills and symbology by manually drafting the design’s floor plan and exterior elevations. Building a study model introduced the students to three-dimensional form and helped them to plan an interior loft and an appropriate roofing style (Appendix B).

b) Studio B—Students moved forward to prepare a framing model of the residential design. This linkage of two courses provided more time in the second studio for students to investigate various construction methods and apply their learning to building a balsa framing model. Since Studio B did not begin “from scratch” requiring students to design another structure, students had more time to study construction methods and engage in experiential learning through the building of a framing model (Appendix C).

c) Studio C—Students studied design software concurrently with Studio B, even attending this class immediately after Studio B. Instead of designing a separate project for this course, students applied Revit software to develop construction drawings and renderings for the Studio A and B residence (Appendix D). They also learned InDesign and used this software to prepare the cover sheets for their construction documents (Appendix E).
An additional benefit of linking was that students made a great discovery in Studio B: the reality of construction methods can impact creativity and consequently, design is not always a linear process (Koberg & Bagnall, 2003). Some students allowed construction methods to determine the final design; others honored their concept and made construction serve the design (Appendix F).

Certainly, students do benefit from repeated practice of skills, but if project requirements are repetitive or several courses require similar outcomes, linking courses can help faculty wisely plan an engaging and efficient curriculum. As Koberg and Bagnall (2003) suggested, the idea of linking curriculum can both increase student engagement and improve retention. Student testimonials (Appendix F) indicated that learning experiences in the three linked courses were positive and beneficial.

References

APPENDICES

APPENDIX A

COURSE OBJECTIVES

Students will achieve the following objectives:

Studio A (Fall 2015)—Selected Course Objectives Related to Small House Project

- Implementing an architectural precedent
- Space planning an original design
- Emphasizing creativity in the design
- Exploring vertical circulation
- Constructing the first model

Studio B (Spring 2016)—Selected Course Objectives Related to Small House Project

- Constructing a wood framing model
- Integrating principles of thermal design
- Implementing strategies for acoustical control
- Analyzing the impact of construction on the design solution (joists, trusses, roofing, cantilevering, etc.)

Studio C (Spring 2016)—Selected Course Objectives Related to Small House Project

- Advancing student computer skills in Revit
- Drawing construction documents
- Exploring presentation features of InDesign
APPENDIX B

STUDY MODEL*

* All images reflect the progressive work of one student.
* All images reflect the progressive work of one student.
APPENDIX D
REVIT WORKING DRAWING SAMPLES

* All images reflect the progressive work of one student.
Graduate Education in Interior Design: A Review of Current Trends

Suchismita Bhattacharjee

University of Oklahoma

Norman, OK

Interior Design (ID) gained wide acceptance as a profession over the last forty years, but has been in existence for more than a century. The origin of ID can be traced back to the art of decorating (Martin & Guerin, 2006). Since then the profession has evolved into a specialized area of expertise that requires several years of education and experience. In spite of this progress, there are still several significant issues that need to be resolved, especially increasing the ‘universal acceptance from allied professions of the value of Interior Design, and recognition of Interior Design as a discipline within the academia’ (Guerin & Thompson, 2004). Today there are approximately 167 Universities/Schools in US offering Bachelor degree in Interior Design and only 11 Universities/Schools in US offering Master degrees in Interior Design that are recognized by Council of Interior Design Accreditation (CIDA). Additionally, there are another 31 Universities/Schools in US that offer Master degrees in Interior Design which is not accredited by CIDA.

Students graduating with a graduate degree in Interior Design have several options, where they can either join the professional workforce as an Interior Designer, work as an educator in an Interior Design program or pursue a Doctorate degree in Interior Design. As part of their graduate education, students in most of the Universities/Schools can select from a wide variety of choices for specialization. Students select from these specialization choices based on their interest, job opportunity, knowledge on the topic, etc.

The goal of this study was to perform a qualitative analysis of the existing ID graduate degree programs in US that are both accredited and non-accredited by CIDA. Review of all the 42 existing MS in Interior Design degree programs indicates a choice of 12 different specialization options available to the prospective students which could be further grouped into 5 focused choices. Results indicate the variations in the credit requirements for degree completion, choice of courses, availability of funding for graduate students, and the number of students enrolled in each program.

References


Integrating Optimal Classroom Design at the Elementary Level in the Saudi Arabia Classroom

Ibtihaj Alsadun, Kristi Gaines, Michelle Pearson
Texas Tech University
Lubbock, TX

The physical classroom environment may support a safe and welcoming atmosphere for students and educators. For students, a secure classroom may help them to concentrate on the target lessons material and to be comfortable in the classroom with their peers and teachers. For educators, the design of classrooms aids them in their teaching journey as they are able to effectively make use of different equipment available in the class to achieve the course objectives and to pass their knowledge smoothly to the encourage learning for their whole class.

The purpose of this project was to develop a model of the physical classroom environment for the elementary level in Saudi Arabia. This model would be constructed by compiling features of an optimal classroom identified in previous studies and adapting them for integration in classrooms in Saudi Arabia. The research questions were:

1. How can appropriate design features be implemented to improve an existing Saudi Arabian elementary classroom?

2. Are there differences between males and females as it relates to the design of Saudi Arabian classrooms?

The literature review was completed by locating peer-reviewed articles that related to Saudi Arabia and physical classroom environments in general. School buildings were observed in Saudi Arabia, they are separate for boys and girls, but the curriculum is standard for boys and girls (S.A.C., 2006). The classroom had concrete interior walls without acoustic treatment. The whiteboard and the screen were placed beside each other or small size. Fluorescent lighting was used. Neutral colors were on the walls.

This project Suggested three different seatings. The first suggestion was directly centered position of seating, in a T-shape facing the whiteboard. The second suggestion for a seating arrangement was clusters. The semi-cluster arrangement was the third suggestion for the classroom. Daylighting needed to be controlled by using blinds. The LED used for electric lighting. Colors were a combination of students’ preference for colors by gender and color with the most positive effect on mood and productivity. Acoustics may be managed through wall panels, ceiling tiles and VCT flooring. There were no differences for males and female in some design features such as seating arrangements, acoustical treatment, window and daylighting and electric lighting.
A clear difference between male and female in color preference and the effects of colors on their mood and productivity.

References
APPENDIX

Classroom Layout

1. T shape in direct center position for clear view (Al-Haboubi, 2000; Marx, Furher & Hartig, 2000)

Seating Arrangement
2. Clusters arrangements help to build a good relationship between teachers and students and the students with other students (van den Berg & Cillessen, 2015)

3. Semi-clusters are one solution to avoid talking between students and moving without permission (Wannarka & Ruhl, 2008)
Existing Classroom

1. Males Classroom

2. Females Classroom
Design Recommendation

1. Males Classroom

**LED Lighting**  
Long life  
- Low maintenance  
- CCT range 2,700 to 10,000K  
- CRI range 80-90 (Energy Star, 2008)

**Blinds**  
Chance for daylighting by provide blinds (Kennedy, 2015)  
- Visual access to natural view (Benfield, et al., 2015).

**Wall Colors**  
Use natural colors to avoid depression, confusion, and anger in high-saturated environment (Kwallek, et al., 1996)

**Color Scheme**  
- Children prefer cool colors such as blue, and green (Read & Upington, 2009).  
- Children prefer natural colors and human skin tones (Fielding, 2006)  
- Boys have positive emotion for dark color (Boyatzis & Varghese, 1994)  
- Men were depression, confusion, and anger when they work in high-saturated colored (Kwallek, et al., 1996)

**Acoustical panels**  
Reduce the echo and use to display students work (Seep, et al., 2000).

**Acoustical Ceiling Tile**  
Reduce sound traveling in classroom (Seep, et al., 2000).

**Finishing**  
- Light color finishing (Kennedy, 2015; Dilaura, Houser, Mistrick, & Steffy, 2011)  
- VCT flooring to absorb the sound (Seep, et al., 2000).
Design Recommendations

2. Females Classroom

**LED Lighting**
- Long life
- Low maintenance
- CCT range 2,700 to 10,000K
- CRI range 80-90 (Energy Star, 2008)

**Blinds**
Chance for daylighting by provide blinds (Kennedy, 2015)
- Visual access to natural view (Benfield, et al., 2015).

**Wall Colors**
Use natural colors with light purple to avoid depression, confusion, and anger between girls in low-saturated environment (Kwallek, et al., 1996)

**Color Scheme**
- Children prefer cool colors such as purple, blue, and green. Girls chose the purple as first choice (Read & Upington, 2009).
- Girls have positive reaction for light colors (Boyatzis & Varghese, 1994)
- Children prefer natural colors and human skin tones (Fielding, 2006)
- Women were depression, confusion, and anger when they work in low saturated colors (Kwallek, et al., 1996)

**Acoustical panels**
Reduce the echo and use to display students work (Seep, et al., 2000).

**Acoustical Ceiling Tile**
Reduce sound traveling in classroom (Seep, et al., 2000).

**Finishing**
- Light color finishing (Kennedy, 2015; Dilaura, Houser, Mistrick, & Steffy, 2011)
- VCT flooring to absorb the sound (Seep, et al., 2000). VCT flooring to absorb the sound (Seep, et al., 2000).
The Use of Signage, Color, and Virtual Interactive Reality in Wayfinding for People with Autism Spectrum Disorder

Apoorva Rane and Kristi Gaines
Texas Tech University
Lubbock, TX

Current accessibility codes and architectural design guidelines include populations with physical impairments; however, provisions for people with intellectual or neurodevelopmental diversities (IDD) are not included. One in every 68 children in America is diagnosed with autism spectrum disorder (ASD), irrespective of race, ethnicity and socioeconomic status (ADDM, 2012). Autism spectrum disorder (ASD) is a neurodevelopmental impairment which may affect daily social interaction, communication, behavior, interests and more. Looking at the growing number of diagnosis for ASD, the architectural building codes need to consider creating an enabling environment for people with neuro diversities. The function of the corridor in the built space is to reach the destination space, comfortable movement towards exists and every zone. Public spaces may be confusing with never-ending corridors resulting in dependency, anxiety, stress and lower confidence levels for a neuro-diverse population. Finding a way to a destination in the built-in environment can not only save time but provide one with motivation, a sense of satisfaction and empowerment. This research poster examines plausible wayfinding solutions that can be incorporated into to a universal design for individuals with neurodiversity.

A meta-analysis of research was conducted that included sensory issues, learning techniques and the built educational environment for individuals with ASD. The current literature on the physical environment for people ASD includes personal territorial spaces (for example home) and semi-personal territorial space (for example classrooms). To move a few steps ahead, this literature review scrutinizes the available research on the physical environment for people ASD and aims for widening the scope towards the public territorial spaces. Moreover, to look at a specific element of the indoor environment, the meta-analysis concentrates on gaps of wayfinding in built-in spaces and silver lining for bridging these gaps with the help of a sensory design matrix. As the prevailing literature provides evidence of enabling environment for people with and without ASD, the combination of sensory matrix design and wayfinding can be further used to create public spaces for people with and without autism.

The educational environment research provides successful design interventions for children with ASD. Studies show that typically developing children also benefit when these interventions are implemented into general education spaces and wayfinding strategies for the general
population were also evaluated. The aim/objective was identifying features and tools to aids in wayfinding. These include signage, virtual interactive reality, color, and brightness. The existing literature shows a clear overlap between sensory design matrix and tools of wayfinding. This exercise helps to analyze the recommendations for wayfinding for people with and without ASD. This poster illustrates ways to incorporate these features to improve wayfinding for all users.

References

Older Adults and Their Impact on the Design of Future Learning Environments

Hans-Peter (Hepi) Wachter
University of Oklahoma
Norman, OK

As part of a study of aspirations and motivations of older adults coming back to higher education into a degree program during their retirement years, researchers wanted to understand what factors influence the design and functioning of learning environments to accommodate older adults 50 to 89 years of age. 26 older adults in this age group were interviewed in a pilot with follow up interviews scheduled. The researcher anticipated that older adults participating in a university sponsored Osher Life Long Learning Institute would be the best target to identify potential design impacts for learning spaces in higher education accommodating the 50-89 age group.

As universities struggle with attracting an adequate number of students, older students or learners are receiving increased attention as legitimate segments of student bodies (Hussar & Bailey 2009; Schuetze & Slowey, 2002). Understanding the educational needs among older adults as they define them, and the qualities of learning environments older adults prefer, can prepare universities, community colleges and other educational settings for addressing the potential demand for education among older adults. By examining the relationship between educational interests originating in the older adults’ aspirations, their preferences for learning, and the qualities of learning environments they imbue with relevance, interior designer will extend their knowledge to advance interior design of educational environments for older adults.

Educational opportunity for the older adult as one possibility of enhancing society could be a driver of self-fulfillment in the older years, especially as society comes to realize that there is no longer a one career imperative guiding human development. Long ago Sarason (1979) anticipated that people would come to redefine themselves in their older years and, as a consequence, could and would pursue new careers.

Shifts in work and employment, as well as in roles in community leadership, augment the possibilities for older people, who in the past may have experienced less social integration. Such opportunities can change both the nature and possibilities of education for older adults who are entering retirement. Cultural and social conceptions of old age as a distinctive period of the life course are undergoing substantial change. Thus, existing theories of aging and the implications of getting older for interior design will likely undergo a tremendous revision in the years to come (Rogler, 2009; Sugar, Rieske, Holstege & Faber, 2014), and we can anticipate that educational
engagement among older adults and the environmental needs of this prediction will emerge as a focus of environmental gerontology.

The initial findings of this pilot qualitative inquiry will discuss the perceived needs and preferences for the educational spaces older adults 50 to 89 years of age nominate as important.

References
Evaluation of the Environmental Features Affecting Way-Finding for People with Dementia in A Memory Care Unit

Mahshad Kazemzadeh, Arsalan Gharaveis, Kristi Gaines
Texas Tech University
Lubbock, TX

Way-finding issue for people with dementia in memory care units is well-documented. Some evidence shows that residents’ emotional problems, like stress and anxiety, are linked to their inability to orient spatially. This issue becomes more significant when it comes to people with severe dementia as they do not have the ability to regulate environmental factors. Thus, their physical environment should be designed to meet their needs. The aim of the present study was to identify the environmental features that can influence way-finding for people with dementia in memory care units through reviewing the literature. Therefore, a table was constructed to evaluate empirical evidence conducted on this topic. These outcomes provided guidelines that were used as a bases for analysis of the memory care unit of Carillon House Health Center, which was selected as a case study. Finally, some design solutions were implemented to remodel the existing facility to improve the quality of way-finding for people with dementia and promote their mobility and independence.

References
Abstract

Wayfinding issues for people with dementia in nursing units are well-documented. Some evidence shows that residents' emotional problems, like stress and anxiety, are linked to their inability to orient spatially. This issue becomes more significant when it comes to people with severe dementia as they do not have the ability to regulate environmental factors. Thus, their physical environment should be designed to meet their needs. The aim of the present study was to identify the environmental features that contribute to resolving wayfinding problems for people with dementia using design thinking. The study was designed using the activities of the Forsyth Manor unit at the Carnegie House at the University of Dundee, Scotland. The results demonstrated that the integration of some design elements, such as the use of visual cues and the provision of information in simple and clear ways, can improve wayfinding for people with dementia and promote their mobility and independence.

Keywords: Wayfinding, Dementia, Housing, Environmental design.

Introduction

Dementia is an increasingly important worldwide public health issue. Longitudinal studies have suggested that the absolute number of people with dementia, and the proportion of the population who suffer from dementia, are set to rise substantially (Prince, 2003). Therefore, strategies to create appropriate living environments for people with dementia are required. Paasi, Feltell, et al. (1995), and Paasi et al. (1998) have identified specific wayfinding problems for people with dementia, the notion of “wayfinding” was used when planning the design of an inpatient hospital setting. Although the people were able to make certain decisions, for example, they were incapable of developing a solution to the relatively complex wayfinding problem they were given. Not being able to plan, which is an essential aspect of complex problem solving, were constrained to function in an incremental and sequential fashion from decision point to decision point in the literature of psychology and environmental psychology. The “spatial orientation”, which relies on a person’s ability to mentally imagine or represent a physical setting and of getting oriented or finding spatially within that representation (Paasi, 1984). This mental representation, referred to as a cognitive map, relies on a structuring process of integrating into an assemble that is perceived in parts (Dennis & Man, 1977).

There are over two decades of studies that examine the relationship between people with dementia and their environment with respect to wayfinding. The most significant criteria that contribute to wayfinding problems are discussed in the tables.

Methodology

The methodology was in 2 parts. Literature review: A systematic review of the literature was conducted. Data were extracted from papers that meet inclusion criteria peer-reviewed papers that focused on dementia, wayfinding, and the setting of nursing units. The review followed a 2-step process, including an extensive search for existing literature and a screening of each identified study for the relevance and quality of evidence. The search included 12 scientific articles for review, which were reduced to 7 relevant studies. Case study: In this case study, the findings of previous studies were integrated into an intervention. The research was conducted at the Carnegie House Health Care who mentioned it as a big concern about the efficiency of the memory unit and that design solutions were introduced where possible.

References

Creating a Multi-Purpose Environment for Children with ADHD

Sahand Abbasi Sarabestani, Kristi Gaines

Texas Tech University
Lubbock, TX

ADHD is a neurodevelopmental psychiatric disorder and has been cited as the most commonly diagnosed behavioral disorder in children, with estimates suggesting that it affects between 3-5 percent of all children worldwide. For improvement of learning skills in children with ADHD the interior design elements play an essential role; moreover, the relationship between interior design and psychological health was fairly investigated. The focus of this poster is to provide a design solution for an enabled interior environment for a children with ADHD based on evaluation the design guidelines backed by a systematic literature review.

The previous research indicate that every interior environment can play an outstanding role in children’s living situation and their future. Based on these theoretical findings, we made a design solution which is providing different “zones” in a child’s room by introducing some new ideas. In the design solution we emphasized on these main issues: (1) Safety, (2) Privacy, (3) Improving concentration and creation and (4) Improving discipline and order.

One of the most important issues in designing a place for a child with ADHD is their safety and privacy. Since children's room is the place they spend most of their time in and parents doesn’t have supervision on them all the time, safety is an important issue. The interior environment also has to be a fun and inspiring environment for the population in order to reach the main educational goals which are improvement in creativity and discipline.

As White, R (2004) says: “Environments for children need to be designed with careful consideration of four basic environmental needs children have: (1) Movement, (2) Comfort, (3) Competence and (4) Control.”

A design solution has been established and the special “zones” will function as means to reach these four basic environmental needs for children.

A child's room is a special place where hopes, dreams and fantasies can take place. A place for creation and memories. This is more important for a child with ADHD. They need a safe place for play and also they need a special place for improving their concentration and their learning abilities. They need a place for private thoughts and a place to be alone but also controlled by parents.

Children with ADHD are in the process of rapid brain development in their early ages. Their experiences help to make this happen. Since children’s experiences are limited by their
surroundings, the environment we provide for them has a crucial impact on the way the child’s brain develops. Children with ADHD need more special attention in order to learn to be disciplined and concentrated and to remember the materials they have learned. Importance of a specific design for their room is not negotiable so we hope we could help to make a better environment for them by the mean of interior design.

References

Exploring the Relationship Between Biophilic Design and Stress Reduction

Sahar Mhandoust and Dibajyoti Pati
Texas Tech University
Lubbock, TX

Stress is a forerunner of several diseases. Design that intrigues stress reductions provides people opportunities to live, work, and rest in healthy spaces. Biophilia is humans' intrinsic psychological inclination to be attracted to life-like processes and the natural and non-human environment. This study explores the relationship between biophilic design patterns and stress reduction. The purpose of this study is to gain understanding of relevant biophilic design patterns to stress reduction in office and hospital setting. Beginning with biophilia, this study derives meaning from this simple notion into a series of related patterns that serve as the framework for biophilic design. The most relevant patterns to stress reduction are: visual connection with nature, biomorphic forms and patterns, material connection with nature and complexity and order. Next the relationship between each of these patterns and stress reduction was studied. This study will also specifically focus on evaluating levels of complexity and its relevance to stress reduction. Fractal dimension is found to be the critical value in complexity and therefor is an important factor for stress reduction. Results suggests that erratic curves have higher fractal dimension in comparison to even curves and even curves have higher fractal dimension than straight lines. Another interesting finding was that contrast ratio effects the fractal dimension.

References

APPENDICES

APPENDIX 1

Figure 1. IMAGEJ and FRACLAC interface

Figure 2. Complexity and fractal dimension order matches the pleasantness order or NASA original experiment
Figure 3. Fractal dimension comparison (curves)

Figure 4. Fractal dimension comparison (contrast with background)

Figure 5. Appropriate complexity ratio and fractal dimension
Figure 6. Inappropriate complexity ratio and fractal dimension. The image is too dense with too much detail.
**APPENDIX 2**

Table 1. Major findings on the Biophilic design and stress, Visual connection with nature in office and hospital setting

<table>
<thead>
<tr>
<th>Office Setting</th>
<th>Health care setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>visual connection with nature</td>
<td>less hospitalization time, less patient complaint, less need for relief medication in the hospital setting</td>
</tr>
<tr>
<td>studies indicate that the presence of natural greenery in a scene has a high correlation with stress reduction in hospital and office setting</td>
<td>(Ulrich, 1984) (Hartig et al., 1991; Honeyman, 1992)</td>
</tr>
<tr>
<td>A view to elements of nature, living systems and natural processes</td>
<td>more pain threshold, more pain tolerance</td>
</tr>
<tr>
<td>bringing plants to indoor space and providing window views resulted in stress reduction, increased productivity and satisfaction</td>
<td>(Tse et al., 2002)</td>
</tr>
<tr>
<td>study suggests that employees in office setting put images of nature to their office environment to compensate for a lack of nature exposure</td>
<td>lowers blood pressure and heart rate</td>
</tr>
<tr>
<td>virtual windows presenting nature, block anxiety and stress, also has a therapeutic effect on nurses.</td>
<td></td>
</tr>
<tr>
<td>stress reducing effect for visual connection with real nature and images of nature on a screen or painting.</td>
<td>(Tse et al., 2002).</td>
</tr>
<tr>
<td>view of natural landscape reduces blood pressure and heart rate in elderly people.</td>
<td>(Tang &amp; Brown, 2006)</td>
</tr>
<tr>
<td>ninety five percent of the people in the garden reported a therapeutic benefit and higher tolerance for medical procedures.</td>
<td>(Maccio &amp; Barnes, 1995)</td>
</tr>
<tr>
<td>Study suggests that there is a strong relationship between exposure to nature environments and recovery from physiological stress and mental fatigue</td>
<td>(Berto, 2014)</td>
</tr>
<tr>
<td>in a study conducted in hospital environment 61 percent of the 826 patient participants reported that artwork setting has reduced their stress level in comparison to no artwork setting, in addition 73 percent reported that their mood has improved and 59 percent reported lower levels of pain</td>
<td>(Korniah, Prinz, &amp; Pinkel, 2014)</td>
</tr>
<tr>
<td>A different study conducted in a lab setting suggests that viewing nature scenes positively affect recovery of antecortical function flowing acute stress.</td>
<td>(Brown et al., 2013)</td>
</tr>
<tr>
<td>reported having positive findings and associations with respect to nature artwork.</td>
<td>(R. S. Ulrich et al., 2008)</td>
</tr>
<tr>
<td>Another study reveals that participants in gardening activities report positive mood skills. “Nature Fascination,” sensory joy, contentment, and tranquility receive the highest ratings from the participants in hospital</td>
<td>(Kaplan, 1973; Kaplan &amp; Kaplan, 1989)</td>
</tr>
</tbody>
</table>
Table 2. Major findings on the Biophilic design and stress, Material connection with nature, Biomorphic forms and patterns, and complexity and order.

<table>
<thead>
<tr>
<th>Material connection with nature</th>
<th>Ratio of 45 percent wood coverage has moderate restorative effect and leads to lower blood pressure, but 90 percent of wood ratio in the room has high restorative effect and reduces brain activity</th>
<th>[Tsunetsugu, Miyazaki, &amp; Sato, 2007]</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Materials and elements from nature that, through minimal processing, reflect the local ecology or geology and create a distinct sense of place</td>
<td>Wood has a meaningful impact on stress reduction in an indoor environment, reduces skin conductance level</td>
<td>[Fel, 2010]</td>
</tr>
<tr>
<td>Biomorphic forms and patterns</td>
<td>Positive distraction and restorative effects</td>
<td>[Feuerstein, 2002]</td>
</tr>
<tr>
<td>Symbolic references to contoured, patterned, textured or numerical arrangements that persist in</td>
<td>View preferences, reduced stress due to induced shift in focus, and enhanced concentration</td>
<td>[Joye, 2007] (Vessel, 2012)</td>
</tr>
<tr>
<td>Complexity and order</td>
<td>Views with less graphical complexity create less pleasant mental response</td>
<td>[Biederman &amp; Vessel, 2006] (S. Kaplan, 1988)</td>
</tr>
<tr>
<td>- Rich sensory information that contributes to a spatial hierarchy similar to those encountered in nature.</td>
<td>According to experiment iteration three of nested fractals has more stress reducing effect</td>
<td>[Salingaros, 2012]</td>
</tr>
<tr>
<td></td>
<td>Skin conductance and stress level are affected by different images</td>
<td>[Wise &amp; Rosenberg, 1988]</td>
</tr>
<tr>
<td></td>
<td>The preferred fractal ratio according to Taylor is (D=1.3-1.8)</td>
<td>[Taylor, 2006]</td>
</tr>
</tbody>
</table>
Reducing Stress Levels for Children in a Daycare Facilities through Interior Design: Examining Research methods

Sahand Abbasi Sarabestani, Apoorva Rane, Kristi Gaines
Texas Tech University
Lubbock, TX

Approximately 4.74 million children under the age of 5 are spending 20 to 60 hours a week in an organized child care setting in the United States. The children at the daycare facility are acquainting themselves to a new social and cognitive environment with other children of their own age. However, this experience can be overwhelming and traumatic. The prevailing research shows that children in day care have more stress than children living at home. A hormonal response to such anxiety is cortisol secretion. Geoffroy et al (2006) indicated that (disturbed cortisol - a stress-sensitive hormone - hypothalamic pituitary adrenocortical) stress induces hormonal imbalance which may not affect a child at an early age but might have a negative impact in elder age. Cortisol production is tied to circadian rhythm. Circadian rhythm is a response to illumination (light and dark) and follows a twenty-four-hour cycle. The purpose of this study is to evaluate the use of light in reducing stress in children in daycare facilities.

The study manipulates lighting and color as tools to evaluate circadian rhythm. To avoid obscurity in the results, this study filters the participant with respect to diet and other probable factors which may affect the stress level and sleep pattern. Here the parents can be a helpful source to understand child’s everyday task. This study also might aid to some general physical design guidelines to be implemented in a daycare or a house to have better emotional, social and physical effect.

During the process, data collection is exhibited with these three research methods:

1. Interview and survey: This method will provide very valuable quantitative information from parents and caregiver as well as the qualitative information with a better insight on the daily schedule and behavioral pattern of the target population (children age 3-6 years).

2. Observation method: this method will be suitable to decipher the action and responses of children and the key to the smooth communication, will be the caregiver, who will act as a translator/ mediator between children and the researcher.

3. Cooperative exercise technique: This will guide the researcher with an appropriate time to conduct the cooperative exercises (games). To study the impact of stress and anxiety, these games will be conducted in high rhythm cycle as well as low rhythm cycles.
The children spend substantial amount of time of their important building years in the daycare. Therefore, it is important that these facilities should provide a productive and nurturing environment for their intellectual growth. The existing evidence-based literature shows that the daycare environment has a scope of improvement which can be used to create enable environment for children. However, the factors for this physical design solution can be analyzed in terms of color, lighting and other interior elements. Moreover, the link between stress level, lighting color temperature and circadian rhythm is well established in previous research. Therefore, it provides a bases for this study to reduce stress in children in a daycare facility.

References
Making Places: Interior Design for Older Adults

Hans-Peter (Hepi) Wachter, Kristi Gaines, Mitzi Perritt, & Phillip Park

We start aging the day we are born. The term aging however, is more often used when we get close to retirement age, when we are "over the hill". Often will we use the term "aging in place" to express our desire to stay in our homes or neighborhoods at old age and where we currently live (Rowles & Bernard, 2013). If we enjoy a healthy life, we dream to live to old age, functioning, contributing and still many people fear growing older.

When we think of aging in place we often think of manipulating our homes with the goal to accommodate the physical challenges which come with growing older, reaching 50, 60, and 70 or beyond. Today's older adults age 50 and older, the so called baby boomers, see the world through their live experiences which are shaped by up and downs, a better understanding of self, compared to their parents' generation. For the baby boomer, aging in place is not a concept for tomorrow, but something they will invest in right now as they move ahead. For the baby boomer aging is about growth and not about decline. Universal design, a concept which accommodates our needs to negotiate our living and work spaces at all ages, seems to fit right in with the baby boomers’ attitude to see opportunities and to grab hold of them, making the world work.

For the most part, today's older adults nearing retirement age are looking forward to the years ahead as workers, caregivers, volunteers and leaders in their communities, helping hands in their neighborhoods and leaders and supporters in their houses of worship. The concept of retirement is radically questioned (AARP, 2006). Adults 50+ are still living in ways which reflect the attitudes of the boomer generation’s professional years, their activism and aspirations.

The boomers do not want to be defined by their age, not any more than we all want to be defined by our race, sex or income AARP, 2000; Albohrer, 2012). Too often are we dealing with outdated expectations of what people age 50+ should do. Too often are we apologizing for our age, or denying it, while in fact many older adults are not over the hill, but on the top of the mountain. More and more older adults come to accept the idea of shifting the paradigm, were growing older is not a disease and a burden, but a positive act off "living on "(Sugar et al, 2014). We come to realize that aging does not equal decline and that we can embrace "positive aging".

While the shift to positive aging supports the associations between aging and growth, creating new opportunities and recognizing older adults as contributors, we do also have to acknowledge, with age come physical limitations. This panel presentation will illuminate research contributions to environmental gerontology or " the places in which we age", ranging from the
universal design paradigm to color preferences by age, color, texture and pattern preferences of Alzheimer patients and the concept of home for older adults.

References