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Best in Category, Design as Art
   Clay Odom – University of Texas
   *Of Light, Space and Form: Effects Oriented Productions*

Best in Category - Design as Interior
   Jeffrey Day – University of Nebraska
   *Bucktown House*

Best in Category - Design as Idea
   Angela McKillip – South Dakota State University
   *The Flexnest: A place to sit. A set of loose parts to explore.*

2017 IDEC AWARDS OF EXCELLENCE

Best Presentation, Scholarship of Teaching and Learning
   Roberto Ventura – Virginia Commonwealth University
   *Come Together: Introducing Collaborative Skills in the Design Studio*

Best Presentation, Scholarship of Design Research
   Julie E.N. Irish & Barbara Martinson – University of Minnesota
   *Follow the Green Path: The Experiences of Children with Autism Spectrum Disorder (ASD) in a Wayfinding Study*

Best Poster Presentation
   Laura Morthland – Southern Illinois University
   *Design-Build: A Campus Mother’s Room*

Best Presentation - Member’s Choice
   Rula Awwad-Rafferty – University of Idaho
   *Servicescape and Student Engagement Level: For Students, By Students*
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CREATIVE SCHOLARSHIP
Paper + Air

Deborah Schneiderman
Pratt Institute

ABSTRACT
The Paper + Air lounge installation was sited at the SOFA (Sculptural Objects and Fine Art) Art fair in Chicago Illinois, 2016 for a period of four days. Inhabitation as a defining concern differentiates the approach to the design of the interior from other design disciplines. The Paper + Air lounge installation was conceptualized to heighten the experience of inhabitation by engaging SOFA visitors with the installation. The design was instigated by the notion that a city is a place of constant change. Paper + Air considers the life of a city and seeks to unify the past, present, and future through forms that might be found in the overlap between expansion and contraction. The goal is to ultimately fabricate a lounge that is readily transportable without compromising its spatial impact.

The environment was fabricated from two primary materials: paper, made spatial through parametric design and folding, and air as an inflatable structure. The use of paper is binary; it represents the future with the implementation of a computer-aided process that creates infinite permutations of form and nods to the past with the human intervention of folding and assembly.
The team was motivated by an ability to make large structures readily. The creation of a compressible temporary structure avoids many of the bureaucratic difficulties of permanent structures, and such an installation can nimbly adapt to the restrictions of site. The materials also make possible the transformation of an otherwise ordinary site into a stage for experimentation. The inflatable structures transform from a formless pile of plastic to something recognizable and architectonic and back again. Surrounded by examples of historic buildings that by nature change over time, we understand that buildings are already time-based and can be understood as performances if a viewer could sit and observe them for hundreds of years. The opportunity with inflatable structures is one that can speed this process up to something a spectator could register.

The inflatables, operated by remote control, are inflated and deflated regularly to respond to lounge inhabitants. Paper + Air is a place of inhabitation and visitor experience is both physically and visually shifted with the compression and expansion of the inflatables. When inhabiting the lounge the visitor’s experience is in flux with the rise and fall of the inflatable elements both around and beneath them.
Paper
Air
Pattern
Inflate / Deflate
ABSTRACT

Introduction to the Project
A photograph captures the history of a place and people in a single shutter frame. A captured moment reveals time, location, and cultural cues, all contributing to an overall atmosphere of place. This project titled: Remembering the Caribbean, used vintage photographs from Caribbean history ca. 1900 as a prompt for deconstructing images to understand changes to the vernacular culture. The people, details and setting in the images convey a specific time in the Caribbean where European colonization was impressed upon the local culture. The works resulted in an installation as part of a juried competition for a one-night citywide event under the umbrella theme of ‘Memory Lane’.

Photograph as Visual Foundation to the Project
This project began with an analysis of vintage Caribbean photographs in order to understand the origin of the people, clothing, and objects in view. From the 1500s onward, the colonial period in the Caribbean resulted in European settlers imposing their design principles onto the Caribbean
islands causing an arrested development of local design. The Europeans had their motifs and designs translated into local materials keeping with the original form as possible. In contrast, this historical period made it difficult for the Caribbean people to regain their identity through design and continues to do so. Through this analysis, a greater understanding of the contrast between colonization and vernacular came to the foreground. The photographs provided a conceptual base for understanding the hybrid of two cultures. In these photographs, locals are dressed in European influenced clothing carrying hand-made woven goods showing their skills in the form of utilitarian objects made from local materials. In other examples, locals are carrying fruits representative of the landscape and wearing headscarves that speak to their heritage.

Project Objectives
The objective of the installation was to highlight a contrast of two cultures – Caribbean vernacular and European colonization. By constructing forms that reference the people in the images, colorful areas were assigned to the vernacular Caribbean elements (headscarves, fruits, baskets) and the European influenced clothing was represented in a neutral textile. In order to respect the people in the photographs, light was chosen as a medium to illuminate their recreated presence from the inside. Based upon the research, a clear delineation was formed where the shoulder upward was the location of color as seen through headscarves and the way men and women carried local produce. Below the shoulder was the location of neutral clothing representing the imposed European culture. The contrast in identity between the neutral and colorful helped establish the contrast and conflict between what is vernacular and colonization.

The Site and Installation
The installation was located in a historic landmark building constructed at approximately the same time frame that the Caribbean photographs were taken, helping form a dialogue between site and installation. The specific building chosen on the site was the staging area for horses and vehicles inside the stable.
The colorful forms were constructed out of mylar, allowing color and pattern to be printed on the medium and easily transmit light with LEDs on the inside. The clothing was made from muslin using patterns that reflected those in the photographs, and was placed over a mylar substructure allowing for inner lighting to illuminate the forms. The forms were suspended on a simple steel structure that fell to the background so that the figures and their vernacular elements could come to the foreground.

In the course of the one-night event, over 800 people visited the installation. Emphasis on the Caribbean allowed us to reference the city in which this installation took place as it has a history of Caribbean emigrants who have played a role in shaping the city’s identity.

REFERENCES (APA)

Remembering the Caribbean

Introduction to the project

History and identity are the primary issues that informed the design of a full-scale installation as part of a Design Week event in a North American city.

Through a competition process, the two-member team was selected to install a project in a historically designated landmark site for this project titled *Remembering the Caribbean*. 
Vintage photographs of the Caribbean ca. 1900 provided the foundation for this project. The photographs reveal the displacement of the population's heritage as they were forced to enter into the identity of European colonization and culture imposed upon the Caribbean. The photographs reveal the influence of European clothing along with patterns such as plaid and floral, yet the form of the women's headscarves retain their identity and act as markers of their heritage. The fruits and peripheral items represent the vernacular of the geographic location with sugar cane, bananas, tropical fruits and hand woven baskets.

Remembering the Caribbean
The analysis and research of the photographs led the direction of this installation. Six figures were constructed where clothing and the elements surrounding them were assigned roles to delineate vernacular versus colonization.

Remembering the Caribbean
The Site:

The event organizers presented options for the location of this project. One site resonated best because the era in which it was built matched the time frame of the vintage photographs that influenced the project. The site is registered as a historic landmark and this specific building on the site was the former stables used to house horses and vintage cars.

Remembering the Caribbean
Mylar was chosen as the material to represent the headscarves, baskets, and fruit knowing that when internally lit with LEDs, the mylar would produce a glow and highlight various colors and patterns printed onto the mylar.

Remembering the Caribbean
Remembering the Caribbean
Details from the installation highlight the headscarves with color and patterns along with emphasis on the fruits and sugar cane to bring forward the Caribbean identity.

The clothing, made out of muslin, were made with reference to traditional patterns of the time. The clothes were supported by mylar forms underneath to capture the space of the body and assist in transmitting light through the layers.

Remembering the Caribbean
Installation showing the placement of forms. The installation was illuminated only through the internal LEDs on the forms.

Remembering the Caribbean
Installation showing the placement of forms.

Remembering the Caribbean
Remembering the Caribbean
Of Light, Space, and Form: Effects Oriented Productions

Clay Odom
University of Texas

ABSTRACT

“Beam me up… I am ready to be amazed.” Aaron Betsky

If the design of environments and experiences has become a key concern for many contemporary designers and artists. What is the medium that is most prevalent? Light. Light can be seen as the primary medium that is used by contemporary designers and it is the focus of an ongoing set of design-based explorations into surface, form, space and experience. Through this work, light is questioned relative to its parametric and geometric (associated with form and material) and sensorial and spatial (associated with atmosphere and experience) properties as conditions for preliminary investigation.

Fundamentally, light is only experienced directly when it interacts with something (objects and surfaces- or your body) so there is a direct relationship that is fundamental to design and designers interested in spatial and experiential (re: sensorial), and formal/material processes and interventions. Through this process, one may begin to question to relationship between the ephemeral effects, spaces, people and objects as a set of contingent conditions which may be
explored. Further, the very question of generating the ephemeral challenges pejorative notions of superficiality which has dogged the discipline for decades. Through exploring a set of recent and on-going projects, the questions of the production of effects through the generation of objects which are projected into existing contextual situations is used as foil to these pejoratives. The work will be used to ask questions critical for the contemporary discipline of interior design which range from theory to process to materialization and fabrication.

“(digital revolution) suggests the introduction of contingency, responsivity, and feedback into the very performance of architecture itself, shifting the discipline…towards an exploration of temporality and instrumentality as well.” Chris Perry

Exploring ephemeral effects generated a seemingly dichotomous condition which the works seeks to further engage. The work both aspires to locational contingency, and visuality while also taking on aloof characteristics which seem to recede or hide from view. Tim Morton has described this type of complex relationship, saying nothing is ever solidly itself, but is “…saturated with…a shimmering or flickering, a shadow play of presence and absence intertwined.”

Literal characteristics of form and material become effective conditions which could be described as camouflage and glamour. Camouflage is used both in the natural and human-made world to generate effects which blur form in order to blend with contexts. Surface articulations combined with conditions of surface coloration, pattern (as variegated repetitions and field conditions in themselves) and finish to produce effects that disrupt form and situate animals and people within their environment. By contrast, Glamour is used both in nature and by humans to stand-out, to draw attention, and to express individuality. Issues of surface articulation are also combined with pattern and finish to produce effects which are most often associated with ornamentation that enhance or accentuate formal characteristics. Glamour’s original linkage with concepts relating to magic and the para-normal are also of interest in their relationship to notions of effects as phantasmagoric, uncanny or sublime productions.
Finally, the paper will begin to outline qualities of contingency and autonomy as well as presence and aloofness or shimmer which underlie the projects as both conceptual positions and actualized material effects. By moving from a position where ephemerality is foregrounded, a potential for an expansion or contemporary re-definition of interior design practice may occur. This work is situated in this condition and seeks to move out into the interior spaces of the city while also directly engaging in the rigorous production of subjective experiences through objective, formal-material means.

REFERENCES (APA)


Kipnis, Jeffrey. A Question of Qualities: Essays in Architecture. Cambridge

Gilles Deleuze and Felix Guattaris, A Thousand Plateaus
PROJECT 01 (built work installed in <city>)
PROJECT 02 (unbuilt proposal only)

contextual generation and engagement

daytime effects generation

using photoluminescent paint to cast the tubing connectors; daylight is harnessed to generate nighttime/evening effects

3/8" clear tubing connected with 3D printed connectors
1/2" bent tubing system; mirror-like finish
1/2" bent tubing footings
surface articulation: generating and leveraging field conditions

vector / line

inflect

rotate and bend

line and form

add single elements

multiply / generate basic field condition

combine with articulations

Field: organizes and is organized by complex surface generative potential for surface effects that tend to produce either sameness and glemour and are both textile and textile. In addition to becoming strategy for assembly, form is simultaneously shared and reinforced.

material studies

crocheted fishing line

clear tubing linked with bronze connections

clear tubing linked with off-the-shelf connectors

clear tubing linked with simple dowel connections
3/8" clear tubing connected with 3d printed connectors

1/2" bent tubing system; mirror-like finish; prairie grass site option

3/8" clear tubing held and formed using 3d printed connections

1/2" steel conduit structure, bent pipe sections
PROJECT 03 (in progress - installation in Amsterdam in December)

Development Model (below), Visualization (above)
Drawings and Site
Second Life Furniture

Juan Roldán
American University of Sharjah

ABSTRACT
The same way that a drawing or a paper collage starts with a doodle on a white paper, can we provide the context and the right conditions to start a creative process engaging a physical design without needing to have a pre-design: a plan?

Second Life is not a furniture line, they are not either sculptures: they are part of a self-learning process, which makes them (somehow and unintentionally) unique pieces, which are born from three conditions:
- Reject the idea of a preconceived design.
- Engage with the unknown and new techniques and technologies.
- Rush: the concept that would link the two previous ones: rush and anxiety of doing and rejecting the idea of designing something: just make.

- What do you want to be, scrap wood?
- I want to be a chair, don’t you see? I need to be a chair you fool!
- All right, all right. I will do my best
Cut, rearrange the pieces as a three-dimensional cubist collage, and the elements started to shift locations, finding the right combinations to create lightness and ending up with the proper finishing: round edges in contact with the body. Little more. The technique was then serving a purpose and the construction method and fabrication becomes a mean.

They were not even meant to be chairs. It all started with the process of looking at something pre-existent –looking at some scrap wood-, and appreciating the beauty of the negative (the left-over) and trying to transform it into another object, without even having in mind any pre-conceived ideas of recycling or sustainable principles: just make it, but make it now.

The series of furniture pieces are called "Second Life", Morphologically similar to how Frankenstein was created: out of different pieces making a non-coherent whole.

Now, It´s the chairs and me.

And like Dr. Frankenstein is bond with his imperfect creature, forever, with unconditional love.

The idea of sustainability is embedded, a commitment of recycling (common sense). This furniture pieces uses a 65% of the leftover, so a Third Life is even possible.
Embedded Portrait: Digitally Induced Bespoke Moulding

Deborah Schneiderman
Pratt Institute

ABSTRACT
The current and evolving generation of digitally induced, industrially produced, mass customizable yet bespoke products can at once be one-of-a-kind, aligned with preference and taste, and fabricated to precisely fit the architectonic of the interior. Digital fabrication technologies have made possible a more individualized, serially produced interior with products that can be considered bespoke. Bespoke refers to products that are custom-made for a particular user (Sheil, 2012, p. 7). Digital fabrication technologies introduce a real ability to readily fabricate and make widely available bespoke interior elements that are made-to-measure to a space and an individual. Like the bespoke suit, the value of tailor-made products goes beyond their performance and function, instilling emotional responses linked to various notions of culture, ownership, exclusivity, and taste.

The embedded portrait series rethinks decorative ornament as a reflection of the inhabitants of an
interior environment. It is defined as dynamic profile moulding that is derived from the profiles of the inhabitants, present and/or past. The materiality of the elements resembles the bespoke and prefabricated friezes that once offered a narrative element to the ornamentation of the home, while maintaining a visual similar to the ready-made moulding available from catalogues and local hardware stores.

The mouldings can be a snap-shot in time of multiple inhabitants or they can be constructed over time from one or more people. The portrait profiles are simplified into curves in Rhino then lofted to form modular moulding elements. The modules can be matched in multiple permutations to form a non-repetitive installation. The moulding modules are digitally printed on an M-Core printer which constructs the element by layering, through cutting and gluing sheets of standard white copier paper.

Until recently the modularized prefabricated interior has been customizable to meet function and interior architectural fit—as well as individual taste—only to a limited degree because by nature the outcome of the modular kit is largely predetermined. The current and evolving generation of digitally induced interior products and environments can be manufactured serially, while having the capacity to be tailored individually.
Embedded Portrait: Digitally Induced Bespoke Moulding
Embedded Portrait: Digitally Induced Bespoke Moulding
Embedded Portrait: Digitally Induced Bespoke Moulding
Embedded Portrait: Digitally Induced Bespoke Moulding

![Image of portraits and 3D model]
Embedded Portrait: Digitally Induced Bespoke Moulding
Embedded Portrait: Digitally Induced Bespoke Moulding
Embedded Portrait: Digitally Induced Bespoke Moulding
Embedded Portrait: Digitally Induced Bespoke Moulding

Digital fabrication technologies have made possible a more individualized, serially produced interior architecture that can be considered bespoke. The embedded portrait series creates decorative elements as a reflection of the inhabitants of an interior environment, defined as dynamic profile moulding that is derived from the profiles of the inhabitants, present and/or past.
Design as Idea • Creative Scholarship

PDI Screen

Juan Roldán & Camilo Cerro
American University of Sharjah

ABSTRACT

The design of the PDI Screen project began as a first attempt to establish a first collaboration between the Interior Design department and local firms in the Interior Design sector from the region.

We have called this type of actions as “forays”, understanding them as small scale and short-term actions. Design, production, fabrication and installation happens in less than three weeks, and includes several steps of prototyping and installation on site to discuss with the team (students-instructors-client) the possible changes, modifications and improvements.

This works has been more beneficial than expected because:

• Allows students and instructors to design within a real environment (it is not design in the vacuum of the academia).
• Establishes a real relationship with clients, really intense, which shows our students behaviors and manners.
• Provides elements where to clash applied design research: materials, methods, finishes,
budgets and schedule.

From the aesthetic point of view, the project started as a study of systemic density in an attempt to emulate natural conglomerations. From a material perspective we used the opportunity to experiment with plastic coding, and sprayed finishes. The final colors were chosen by the client from an array of samples produced with the sole purpose of studying the potential diversity of finished that can take place in a minimalist design. Most of our experimentation took place on solving the problems presented by producing a modular joining mechanism. The final result ended up being a tri-arm element, laser-cut from black glossy acrylic.

To arrive to this element, multiple reiterations had to be designed to solve the problems created by the idea of density we were trying to emulate. The density had to be uniform, and natural looking but at the same time controllable. The final system allows to have a controlled growth of the cluster, deploying the design in three stages: allocation of try-arm columns (structural core), addition of single elements by triangulation (butresses) and placement of satellites (low tables and lower single elements) to sparse and create a fluffier edge.

The end result is one piece surprisingly simple, which reproduces nature in a very subtle form, appearing as if it had grown on site.

The final system allows to have a controlled growth of the cluster, deploying the design in three stages: allocation of try-arm columns (structural core), addition of single elements by triangulation (butresses) and placement of satellites (low tables and lower single elements) to sparse and create a fluffier edge.
PDiScreen

A modular spatial divider element
A Dialogue of Form, Context and Effects: Engaging Tschumi through Intervention

Clay Odom & Kory Bieg
University of Texas

ABSTRACT

“When surroundings are thought of as stable, we tend to lose a feeling of responsibility for the environments in which we move. Space becomes a background for interaction rather than a co-producer of interaction.” Olafur Eliasson

This paper introduces the theoretical and process-oriented framework for the design of a new intervention, (NAME), in the outdoor room which exists on the upper floor of the “Red generator” – one of the buildings designed by Bernard Tschumi for the Florida International University School of Architecture. The paper focuses on questions associated with context and intervention into context as generative, effects producing potentials.

Through project specific, design-based research, the paper -supported by drawings, diagrams, visual programming outlines, and photographs- describes the research, design and development of a spatio-temporal intervention in the interior. We will describe Form, Surface, Material, and Color in regard to exploring the responsive and generative conditions of context, space, ornament,
atmospheric effects and experience.

Formal Development

The paper explores how techniques are generated as attempts to weave into the existing fabric of the space by exposing spatial and structural capacities established by the form of the building itself. Exploring the generative and parametric processes which yield a new generator within the generator (re: Timothy Morton’s ‘Hyperobject’), the resulting form and its underlying topology proposition is interrogated as simultaneously theoretical and material condition.

Surface Articulation

The tile pixilation on the outside surface is one of the most striking aspects of Tschumi’s project. Using gradation within a material field to generate new formal effects is a key factor in our design. Each cell is perforated by a secondary pattern which yields structural outcomes such as reduction of uplift and weight reduction and atmospheric effects such as sun and shade patterns. The resulting is a highly differentiated set of aggregated cells which define surface and provide structure while also yielding lighting and spatial effects.

Material Selection

Material effects of mill finished aluminum allow for visual conditions to be developed where the actual form and material merge with the surrounding conditions. Light and sky are reflected and refracted from the property of surface and this effect is controlled through the parametric definition of form.

Color Application

Leveraging the information which each cell contains relative to orientation coordinates, allows orientation to be used to generate color fields parametrically. The resulting gradation of color is applied to the outer-facing side of the cells (similar to the tile applications on the exterior of the existing project). The result is a hidden color which is reflected and seen either indirectly or
through formal topological changes which reveal sidedness of the surface.

Conclusion

In his Advertisements for Architecture, Tschumi makes the point: when architecture is carried “to excess…it will reveal both the traces of reason and the experience of space.” (Tschumi 1996, 74-76). (NAME) is a project that both ‘reveals’ and ‘remakes’ its context through design. Particularly, exploring affective and effective conditions through the milieu of temporal intervention, the project attempts to synthesize these two often conflicting design approaches into a generative design process which leverages context, form, surface, structure as both affective and effective actors. The resulting process is designed to result in a project which both acts and reacts through its methodology. Finally, (NAME) is disciplinary in it’s positioning and considerations, contextual in its relationship to Tschumi’s existing building and theory, generative in how details are created through scripts which lack any reference to site, and emergent in the resulting atmospheric and spatial effects which are synthesized and produced.

REFERENCES (APA)


Evans, Robin, Translations from Drawing to Building. (Cambridge, Mass: MIT Press, 1997),
02 perspective
view looking north
03 plan and concept diagrams

The existing building is used as an armature for both the organization and support of the intervention. The physical connections align with existing formal moves provided by the Techni project while also addressing solar orientation. Entry and View out-puts are extracted and re-projected internally as both mapping and diagrammatic operations. The resulting intervention is proposed as a re-imagination of the existing superimposed with completely new spatial, formal, tectonic and lighting effects.

The new programmatic areas provide a range of potential uses as well as the option to have simultaneous events. The intervention is proposed as both support and provocation for engagement by AU Students and Faculty.
04 perspective and axonometric

AERIAL PERSPECTIVE

MAIN ENTRY PERSPECTIVE

IDEC 2017 Annual Conference | Chicago, IL
05 perspective and process

PROCESS DIAGRAMS

01 INTERSECTION OF LINES PROJECTED THROUGH OUTLIERS IN EXISTING BUILDING
02 SURFACES FROM LINE FRAMEWORK
03 SURFACE SMOOTHING
04 TORO LINES THROUGH SURFACE
05 SPACING ACROSS TORO LINES
06 OFFSET BETWEEN OFFSET SURFACES
07 FLAT SURFACES BETWEEN PARTS
08 FULL PROJECT AXONOMETRIC

ASSEMBLY STAGING CONCEPT
06 perspectives and sections

NORTH-SIDE / PERSPECTIVE LOOKING WEST

SOUTH-SIDE / PERSPECTIVE LOOKING WEST
07 process
scripting methods

diagram/surface and color

cell development

parametric color
Human wellness has always depended on nature - a perpetually changing, interconnected, incredibly intricate flow of life presenting us with a stunning interplay of ecological relationships. Within growing architectural design sectors, “research supports measurable, positive impacts of biophilic design on health, strengthening the empirical evidence for the human-nature connection and raising its priority level within both design research and design practice; however, little guidance for evidence-based interior design implementation continues to exist” (Browning, Ryan, and Clancy, 2014, 4). Health outcomes associated with biophilic spaces are of interest to stakeholders as they provide evidence for design decisions, contribute to best practice standards, inform public health policy, and provide healthy spaces for users. Further studies of environmental qualities need to be conducted in the form of measured outcomes for wellbeing. Tracking and monitoring of the space and human biological responses related to biophilic design in interior environments is needed to build the evidence for actively pursue solutions to problems that nature has already solved (Benyus, 1997). By tapping into contemporary topics of well-being, sustainability, and solving meaningful problems through system-level thinking, the field of architecture and design can further converge with other disciplines to carry out our roles as public health professionals.
Till.r+u_1.0 is the first in the series of biophilic design solutions using ecological inspiration to reimagine regional bio-waste material into a living filtration system – inspiring delight while improving human health through functions of the epiphytic plant species. The system offers a non-toxic merger of interior and landscape embodied in the materiality of the biofiltration system while rich patterns, textures, and spatial structures activated by light and air movements stimulate recognition of the natural world beyond.

The plant material utilized in Till r+u_1.0 are common to the Southern region of the U.S. and found on trees across the campus of the install. Research shows that Tillandsia usneoides (Spanish Moss) and Tillandsia recurvate (Ball Moss) are bioindicators and bioaccumulators of trace elements, particularly in urban areas, and have been shown to accumulate more than 30 chemical elements including metals (Reinert, 1998). Both epiphytic plants are efficient biomonitors of air pollution since they do not make contact with soil and pull nutrients from the atmosphere. In lab studies, their tissue content largely reflects exterior atmospheric contamination making; this project will test the ability of the plant material as a biomonitor for the interior environment. T. usneoides and T. recurvate are currently being grown in an on-campus greenhouse to test required interior moisture and light levels for growth, flowering, and propagation prior to installing in the space. The prototype utilizes a flexible web-like structure fabricated from 100% non-woven polyester that is class A fire rated, UV treated for interior use, anti-static, and easily cleanable. It is attached to the mullions through industrial strength magnets for ease of maintenance. Environmental testing will take place via a portable environmental tracker with connected smartphone app that will be displayed in real-time on a monitor in the space to inform users of the specifics of the project. Student perception of the installation will also be gauged through a series of real-time digital ethnography studies.
REFERENCES (APA)


Till.r+u_1.0 is the first in the series and offers a biophilic design solution using ecological inspiration to reimagine regional bio-waste material into a living filtration system – inspiring delight while improving human health through functions of the epiphytic plant species. The system offers a non-toxic merger of interior and landscape embodied in the materiality of the biofiltration system while rich patterns, textures, and spatial structures activated by light and air movements stimulate recognition of the natural world beyond.
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T. usneoides and T. recurvate are currently being grown in an on-campus greenhouse to test required moisture and light levels for growth, flowering, and propagation.
The plants have been studied under stereo-microscopes and baseline testing will be completed prior to install to determine levels of bioaccumulation already present in the plant tissue. The exposed root systems serve as an anchoring device and the scale-like trichomes of the leaves allow moisture to be pulled from the air and trace minerals to be gained from dust, all while reflecting solar radiation “reducing heat loads and photo damage.”

Crassulacean acid metabolism (CAM) allows for the plant to tolerate large amounts of water loss with minimal amounts being required for germination.


Environmental scientist, Donella Meadows describes a system as an “interconnected set of elements that is coherently organized in a way that achieves something.”

Systems are typically embedded in larger systems and may also contain sub-systems within themselves making the process of exploration multi-layered. System-level thinkers have the capacity to understand and change these complex systems by recognizing patterns or trends which can assist in demonstrating the connections between seemingly different structures so learning about one can inform responses in another. By exploring our assumptions of systems, we can discover drivers or indicators to leverage opportunities and to strategize on entry points to interfere with or adapt the systems we are studying.

Modern designers are required to exercise fluidity in their thinking between the real and the abstract as they observe and learn from tangible aspects of the environment and real-world processes followed by reframing and exploring solutions in innovative ways.


The massive Live Oak tree in the courtyard served as the entry point for introduction of a plant material that commonly colonizes the lower level branches of this tree species. Through strong visual connections from interior to exterior, the two-story atrium will become the home to the mediating structure which abstractly introduces the living material into a form that allows for light and air movement similar to the small, glossy leaves of the Live Oak tree.
The aesthetics of nature in the built environment are communicated through the use of materials, colors, light, patterns, textures, movement, and openings that connect the interior environment to landscape. Through observation, understanding, and immersion in the natural world, we begin to foster a psychological response to ecological place. Recognition of pattern of various scales reminds us of the rhythm and balance in nature as well as the interconnectedness and resilience of natural systems, plants, and animals. Beauty in nature through these place-based encounters eliciting spiritual, metaphorical, emotional, and sensory understanding moving it beyond the realm of visual to pure delight. Expanded research into epiphytic plant systems, materiality, and sustainable fabrication resulted in a prototype hosting living material in a function that is simultaneously shade-providing, light seeking, and pattern-creating. Sensory expression of biophilia is crucial in the creation of design that elicits positive responses, engagement with place, and values.
The Till r+u_1.0 prototype utilizes a flexible web-like structure fabricated from 100% non-woven polyester that is class A fire rated, UV treated for interior use, anti-static, and easily cleanable. It is attached to the mullions through industrial strength magnets for ease of maintenance. Indoor environmental quality will again be tested prior to the installation of the plant material. Environmental testing will take place via a portable environmental tracker with connected smartphone app. The device contains a total of five sensors: an optical particulate sensor, a temperature sensor, humidity sensor, pressure sensor, UV sensor, and an ambient light sensor. The data is displayed in a user-friendly interface that includes particle size and concentration. This will be translated to a real-time digital readout on a monitor in the space to inform users of the specifics of the project. Every three months during the first year, the plant material will be tested to understand the absorption rates and levels of absorptions.
AuralSurface: Designing A Responsive Surface for Educational Multi-Use Spaces

Matthew Wagner & Ivica Ico Bukvic
Virginia Tech

ABSTRACT

Originally conceptualized as a response to distractions in the workplace, AuralSurface is a responsive surface inspired by the need to control ambient noise created from everyday life in the office, while also serving as an adjustable separator that maintains a sense of open space. Further research has opened an area of interest to utilize AuralSurface in multi-purpose educational spaces, where the use of responsive acoustic partitions can play an effective role in noise reduction during high occupancy periods.

AuralSurface seeks to reduce fatigue and distraction in educational spaces by controlling ambient noise disturbances. Its design allows it to autonomously deploy an acoustic material at specific locations when the perceived decibel levels are higher than normal. In addition to a physical response, the acoustic material may be seen as a visual cue once deployed. Those holding conversations may recognize this as a subtle sign to speak more softly or to take a conversation to another area. AuralSurface, a panelized surface, is an otherwise seemingly typical modular system.
For performance and comfort, the responsive surface optimizes interior environments by adapting to the changing reverberation rhythms of voices and footsteps. AuralSurface can also be parametrically calibrated to a desired acoustic setting, which allows for increasing or decreasing acoustic dampening depending on the needs of the interior space and its occupants.

Additionally, our research is testing the capabilities of an augmented reality design tool, for real-time, immersive data visualization experience within a virtual space. Through a virtual environment, we are able to view a digital prototype in a space at full size. The information visualized and collected assists in the design refinement of our digital prototype. The virtual environment provides a better understanding of how the responsive surface responds to multisensory input (proximity and sound), as well as how it performs in various spaces.

We will identify the purposes and explain the effectiveness of using a responsive acoustic surface in an educational multi-use space. We will explain the inherent characteristics of acoustic materials and how they justify decisions when evaluating the design of a responsive surface. We will help to recognize the need for sensory automation, and understand the functions of micro controllers, sensors, motors, and other mechanisms used to construct a responsive surface. We hope to stimulate ideas leading to the design of a responsive surface for a specific application or experiment.
The Flexnest: A place to sit. A set of loose parts to explore

Angela McKillip, Kay Cutler, Chris Hume, Grey Waletich & Vanny Cahyadi
South Dakota State University

ABSTRACT

Theory
In 1972, Architect Simon Nicholson developed the theory of Loose Parts; wherein materials that can be moved around and engaged with would develop different interactions and more opportunities for creative experience in play spaces for children. Furthermore, interactions should be spontaneous for the child and and materials offer no specific set of directions. The play landscape works as a set of loose parts that can be moved, carried, combined, redesigned, lined up, and taken apart and put back together in multiple ways. The trays can be used to transport other loose parts from place to place to allow for a greater imaginative experience. For example, the tray could be taken outside to collect and transport stones and sticks to the interior environment to be combined with other interior objects.

The Loose Parts
The clean design compliments the environment and supports inquiry-based activities.
Large and Small Seat: Two nesting seats create four heights for story time, group activity, one-on-one work, dramatic play, etc.

Trays: Two trays create the storage for the building planks and can be used in multiple ways, such as step stools, building platforms, carriers, etc.

Building Planks: 48 building planks are included, offering a set of loose parts that enhances engineering, construction and imagination.

Detachable Caster Base: Used to transport the Flexnest around the classroom.

Provocations:
Children engage their imaginations as they explore the flexnest.

Dramatic Play: With endless possibilities, the Flexnest transforms into a boat, stairs, tunnel and even a cooking oven.

Music: The Flexnest becomes a percussion instrument during music time.

Reading: The Flexnest creates an elevated perch to read from during group time.

Constructing: The Flexnest provides a building platform and a set of blocks for children to construct and explore.

Learning: The Flexnest is a great way to build learning interactions between student, teacher, and parents, such as adding and subtracting with blocks, or through exploring symmetry, gravity or other physical concepts.
Problem Solving: All of the pieces create a large interactive puzzle. The Flexnest promotes critical thinking that encourages fun collaboration.

By nesting together, the play landscape requires little storage area, while carefully considering sustainability and maximization of material use. The entire piece is made from one sheet of 4x8 plywood.

Process
The Flexnest was created in a unique faculty-directed research investigation, in collaboration with an on-campus laboratory school and industry partner. This process also includes interior design students in multi-perspective design process, undergraduate participatory research, innovation, patented intellectual property and entrepreneurial endeavors through market immersion of prototypes.

The question in focus for this study is “in what way would processes of learning and teaching be modified and enriched if school culture welcomed the poetic languages and an aesthetic dimension as important elements for building knowledge?” Utilizing the Reggio Approach as a catalyst for theoretical frameworks, the design team explored nine spatial metaphors outlined by the Domus Academy in the Children, Relations and Spaces as counterparts in an inquiry-based early childhood learning environment. All too often, interacting with furniture is perceived as an ordinary occurrence. The challenge was to consider how this experience could enlighten and enhance the learning process. Though engaging in multi-perspective practice, design iteration and national product testing, theoretical underpinnings of initial prototypes were vetted, reconsidered and revised.
REFERENCES (APA)


FlexNest
A place to sit. A set of loose parts to explore.
In 1972, Architect Simon Nicholson developed the theory of Loose Parts, wherein materials that can be moved around and engaged with develop different interactions and more opportunities for creative experience in playspaces for children. Furthermore, the interactions should be spontaneous for the child and materials offer no specific set of directions.

The play landscape operates as a set of loose parts that can be moved, carried, combined, redesigned, lined up, taken apart and put back together in multiple ways. The trays transport other loose parts from place to place, allowing for an enhanced imaginative experience. For example, the tray could be taken outside to collect and transport stones and sticks to the interior environment to be combined with other interior objects.
By nesting together, the play landscape requires little storage area, while carefully considering sustainability and maximization of material use. The entire piece is made from one sheet of plywood.
Children engage their imaginations as they explore the FlexNest.

**Dramatic Play:** With endless possibilities, the FlexNest transforms into a boat, stairs, tunnel and even a cooking oven.

**Constructing:** The FlexNest provides a building platform and a set of blocks for children to construct and explore.

**Music:** The FlexNest becomes a percussion instrument during music time.

**Reading:** The FlexNest creates an elevated perch to read from during group time.

**Relation:** The FlexNest is a great way to build learning interactions between student, teacher, and parents, such as adding and subtracting with blocks, or through exploring symmetry, gravity or other physical concepts.

**Problem Solving:** All of the pieces create a large interactive puzzle. The FlexNest promotes critical thinking that encourages fun collaboration.
The clean design complements the environment and supports inquiry-based activities.

**Large and Small Seat:** Two nesting seats create four heights for story time, group activity, one-on-one work, dramatic play, etc.

**Trays:** Two trays create the storage for the building planks and can be used in multiple ways, such as step stools, building platforms, carriers, etc.

**Building Planks:** 48 building planks are included, offering a set of loose parts that enhance engineering, construction, and imagination.

**Detachable Caster Base:** Used to transport the FlexNest around the classroom.
Design process explored the relationship between digital and physical construction methodologies. Exposing the end-grain of the plywood demonstrates layering within the assembly sequence, allowing yet another platform for discussion and education within an early childhood setting.
Inquiry-Based
Multi-Perspective Practice
Industry Partnership
Reggio-Inspired
Participatory Research
Experiential Learning
Furniture Design

Process
The Flexnest was created in a unique faculty-directed research investigation, in collaboration with an on-campus laboratory school and industry partner. This process also includes interior design students in multiperspective design process, undergraduate participatory research, innovation, patented intellectual property and entrepreneurial endeavors through market immersion of prototypes.
The question in focus for this study is “in what way would processes of learning and teaching be modified and enriched if school culture welcomed the poetic languages and an aesthetic dimension as important elements for building knowledge?” Utilizing the Reggio Approach as a catalyst for theoretical frameworks, the design team also explored nine spatial metaphors outlined by the Domus Academy in *Children, Relations and Spaces* as counterparts in an inquiry-based early childhood learning environment.

All too often, interacting with furniture is perceived as an ordinary occurrence. The challenge was to consider how this experience could enlighten and enhance the learning process. Though engaging in multi-perspective practice, design iteration and national product testing, theoretical underpinnings of initial prototypes were vetted, reconsidered and revised.
Legion Brewing: A Friendly Interior

Jeanne Mercer-Ballard
Appalachian State University

ABSTRACT

Legion Brewing’s motto is “Friends and Beer” and at the first meeting, the client requested a friendly interior. He wanted the interior to be warm, welcoming, laid back, inviting, and not fussy. He also wished it to be environmentally-friendly and desired the use of honest, solid, reclaimed and salvage materials. He challenged the designer to use several 2x10s, steel “I” beams, casework (for holding instruments and sheet music) and signage which were on site from the building’s former use, an instrument and music store named Brodt Music. An old piano was placed in the back corner and “friends” can make themselves “at home” and plunk away. Several Brodt music signs and letters are also reused. The concept for the interior is “honesty” thus using solid, exposed materials as often as possible.

Other challenges on the project were that the client had a very low budget and is a contractor, which had pros and cons, but he was very open to new ideas. He questioned every design decision and often revised the design during construction as you can see when comparing some of the final images with the construction drawings.

The Taproom interior also pays homage to the building’s past use as the reclaimed pallet wood
ceiling is an abstracted piano keyboard and the vertical details of the half-walls and screens also mimic the keyboard. One of the biggest challenges in the space was the 9’-2” existing ceiling height from the concrete floor slab to the concrete ceiling in the Taproom space. The designer detailed a ceiling that would warm the space, hide low profile LED downlights and conduit while maximizing the height.

The bar top used end grain reclaimed wood, the die is reclaimed wood, and the bar footrest is a repurposed “I” beam. Tables and booths are also constructed from reclaimed and salvage wood and the seating includes a variety of used chairs from salvage stores. Existing instrument and sheet music cases were repainted and used in the Taproom as storage and sales shelving. On the cases are displayed pickled goods for sale and many board games for the “friends” to play.

Even the restrooms used reclaimed materials as the walls were partially tiled with old toilet tank lids adding a bit of fun to the interior. Toilet partitions were designed with reclaimed wood.

All new light fixtures are LED with a warm color temperature making the existing concrete floored space feel more comfortable and friendly. The existing floor was originally to be stained a warmer color, but was cut due to budget although the client hopes to stain the floor in the future. Existing “Brodt Music” signage was refurbished and reused including a nineteen-forties neon sign on the roof.

In the Brewery, the existing wood barrel vault ceiling was exposed and provides character and a friendly atmosphere in the space. From the Taproom, you look down into the brewery space and the warm tile pattern created for this clean space.

The reclaimed, repurposed, reused, honest materials, and lighting combine to create a warm, inviting, friendly atmosphere for the friends.
Drawings showing reuse of existing 2x10's and pallets for ceiling and millwork
TAPROOM BACK BAR
TAPROOM DINING AND BOOThS
RESTROOMS
FINISHES AND MATERIALS

RECLAIMED AND SALVAGE MATERIALS INCLUDE:
- LUMBER
- PALLETS
- CASES
- "I" BEAMS
- TOILET TANK LIDS
- CHAIRS
- SIGNAGE
- AND MORE
All LED sources with warm color temperature

LIGHTING LEGEND

A - LED SURFACE MOUNTED DOWNLIGHT
B - CUSTOM "INSTRUMENT" PENDANT FIXTURES
C - TRACK ACCENT FIXTURES
D - CUSTOM "INSTRUMENT" WALL SCONCES
E - CUSTOM "TAP" WALL SCONCES
F - EXISTING "BRODY MUSIC SIGN"
G - LED LINEAR STRIP LIGHT (4'-54", 1'-36')

NOTE: ALL 'FRONT OF HOUSE' LIGHTS TO A CENTRAL CONTROL PANEL WITH THE CONTROL LOOPS SHOWN.
NOTE: ALL LED DOWNLIGHTS ON DIMMERS.
Perception based architecture for contemporary health care design

Christoph Korner
Woodbury University

ABSTRACT
Over the last years, in part due to the demographic trend towards an older population, in part due to increasing numbers of environmentally triggered illnesses, the amount of admissions, as well as the average length of stay in Intensive Care Units (ICU) has been rapidly increasing. Unlike hospitality, the healthcare sector is interested in a shortened stay in the hospitals. In an attempt to find factors for the slow recovery process and at the same time to develop countermeasures, we were invited by the Charité, one of the most important hospital and research facilities in Germany, to develop a prototype for the ICU unit of the future.

Prof. Spieß from the Charité Hospital in Berlin is involved in research about the causes and condition of “delirium”. She identified the relevance of stress factors such as noise pollution, distractions, the lack of views, of light, and of privacy as important factors that influence the healing process and patient outcome. A lack of daylight and insufficient lighting conditions, for example, generally triggers fatigue and dizziness during the day, which causes sleep disorders at night.
With this in mind two rooms were designed that are carefully tailored according to the perception of the patient, attempting to eliminate the above mentioned stress causing elements, usually present in the design of healthcare facilities. They are keeping the patient in a more familiar, soothing physical environment and within the natural circadian cycle, in order to support a faster healing process and lower remission rates.

Following consultations with specialists ranging from sleep researchers to experts in lighting and acoustics, the project Parametrische (T)Raumgestaltung was born.

The space on either side of the bed was freed up and all technical equipment was moved into a wooden headboard behind the patient. The flickering displays of the vital signs are therefore not directly visible for the patient and allow for a more relaxed experience in the ICU. A further significant decision was to remove alarm signals and sounds of vital data away from the patient into a so-called observation room that each patient can see into through a window. The patient is not distracted and petrified by the constant display of data, but at the same time can see all activities, which minimizes the feeling of uncontrollable dependence on staff and medical personal. More than in any other spaces, the ceiling above the bed is the most visible surface. It is designed as a large-format LED media screen that bends, in order to cover as much of the field of vision as possible. A series of images, like blue skies, moving clouds or green leaves, was developed in cooperation with a media design agency. Daylight-supporting measures that reinforce circadian rhythms during the day, indirect, warm light in the evening, and individually controllable illuminating content provide doctors and patients with a broad spectrum of possibilities, with the aim of creating a comfort-reinforcing experience of space and time. These interventions are reported to improve melatonin suppression - helping patients to stay awake and focus during the day and sleep soundly at night.
The construction of the prototypes was finished at the Charité Campus Virchow-Klinikum in Berlin, Germany. Currently a team of scientists and doctors is monitoring the outcome and long-term effects of the rooms as part of a three-year research program. Final research data will be available in early 2017.
Place-ness or Place-less: Addressing Place in Private Residence Design

Melanie Duffey & Will Barnes
Auburn University

ABSTRACT

A home or a house - a neighborhood or a subdivision - these words are often used interchangeably in common every day language, yet these words represent polar descriptions in my mind. When tasked to take on a project in a new subdivision development; it is difficult not to contemplate the nuances of these words. The intent of this projects was to create a home with a large square footage program, but with the same characteristics and scale of traditional 19th century English country residence.

Where community is often disconnected in the privacy of a subdivision, this private residence strives to connect and respond to views of nature, to the pedestrian on the street, and ultimately complete a neighborhood and create community through the transparency of public spaces. To achieve these elements three major considerations were studied in the schematic design: (1) historical precedent, (2) site and views, and (3) massing study.
Charles Voysey, English 19th century architect, industrial, and graphic designer during the Arts and Craft movement manipulated solids and voids and the use of light and shadow in order to achieve clean forms in design (Durant, S., 1992). While his portfolio consists of a wide range of scale of projects; the principles and elements of design are consistent and offer a clean and clear hierarchy of importance and celebration in scale. Complemented by quiet subtle nuances that whisper in scale. Voysey’s work largely influenced the design of the private residence, where you can observe it most is in the plan and massing of the home. The two vertical masses connect through a centerpiece of the home, described as “the spine” – the spine connects the public spaces to the private spaces forming a H-Plan that compliments the site. The public spaces are celebrated with transparency to the street and large windows and openings. While the private spaces are protected from sunlight and exist with careful placement of windows. The interiors reflect daylight in their neutral and light selection of finishes and materials; while the exterior is dark and aims to blend into the landscape. The project celebrates both the historical references of the past and strives to bring forward contemporary living for its users.

The site was carefully planned to acknowledge and respect views. Views of the natural landscape and creek, that tightly embrace the site, and views to the street. The street is one of America’s most forgotten and neglected public spaces. The position of the home on the site sought out to embrace this public space and its visitors through a careful manipulation of solids and voids. As the visitor turns the corner, the solid steps back, and the interiors open up to the public on the street through a void. The center spine, home to the public spaces and heart of the home remains transparent with a series of windows and glass doors. The transparency welcomes the pedestrian to look in – and through – through to the creek and natural landscape nestled behind the home. The solids consist of two vertical masses housing the private spaces and bedrooms with carefully sequenced windows to allow northern exposure in. A series of sketches, massing model studies, and ultimately final drawings were created to complete this project.
Contained in Container: A Sustainable Approach to Modern Home Building

Kijeong Jeon
California State University

ABSTRACT

Originally conceived as a device to transport goods, shipping containers have begun serving a disparate purpose – to provide housing. In the modern day trade world, shipping containers are most frequently used to import/export goods between countries. However, because of their ubiquity, exotic material and structure, architects and designers have developed ideas of repurposing these containers into housing units. The distinctive nature of shipping containers as a building or housing structure has posed a worldwide challenge for designers and architects alike.

All shipping containers share a standard support system, regardless of the cuboid’s dimensions. The vertical corners of a shipping container are 6 in. x 6 in. steel posts; a 2 in. x 2 in. steel beam runs along every edge; and 6 in. steel u-channels are present in the under floor. Adding little support to the overall container is the 14 gauge corrugated steel vertical faces. All containers are eight feet wide, but differ in length and height. This design does not only allow for every shipping container to support its own load through transport, but also provides proper weight distribution when stacked.
In the housing context, shipping containers are single-room modules that can form a multi-room system once combined. I designed and built a home by adjoining containers to create a spacious interior. Offsetting the containers from each other – whether adjoined side-by-side or cantilevered – allowed for a unique and dynamic design to the overall building without requiring additional structural details. Although modifications were made in creating this spacious and dynamic design, designing a home or building with shipping containers limits the design to the container’s dimensions, restricting freedom in design.

Along with being forced to design around the containers dimensions, the material of the container presents an added hurdle. The container is made of steel, which easily transmits the cold and heat. To combat this issue, multiple measures were taken to assist in the insulation of the container home. The exterior of the container was sprayed with ceramic paint; a one-inch air pocket between the container and inner wall was created; and solar guard was added between the drywall and container wall. With the combined passive solar system and methods of insulation, the container home feels as insulated as a conventionally built residence.

The building site endures a very strong sun and dry California summer, with temperatures often reaching over 100 degrees, thus influencing the design of the container house. Feng shui theory was applied to the site development, and the building orientation helps control climate while providing protection from natural disasters, including flood. A passive solar system was adopted from the planning stage of the building's design.

Despite all of the challenges in building a home using alternative material, the rewards are significant. Repurposing abandoned shipping containers into a residence not only provides unique aesthetics, but also assists in mitigating the world’s unused non-decomposable material. With a reduction in the world’s waste, repurposing shipping containers into residences are a win-
win approach to modern home building.
Contained in Container
A Sustainable Approach to Modern Home Building

In the modern day trade world, shipping containers are most frequently used to import/export goods between countries. Originally conceived as a device to transport goods, shipping containers have begun serving a disparate purpose – to provide housing.

Containers ubiquity, exotic material, and well engineered structure allow architects and designers have developed ideas of repurposing these containers into housing units.
Feng shui theory was applied to the site development, and the building orientation helps control climate while providing protection from natural disasters, including flood.

The container is made of steel, which easily transmits the cold and heat. The biggest challenge of building a container house is achieving efficient insulation. With the combined passive solar system and methods of insulation were applied.
INTERIORS
• image 1: cargo container ship
• image 2: cargo container components & structure
  • image 3: site plan
  • image 4: sustainable building system diagrams
  • image 5: floor plans
• image 6: exterior view & gate
  • image 7: exterior view
• image 8: interior view - living room
• image 9: interior view - 2nd floor study / gallery
  • image 10: interior view - dining area
Elevating the Experience: Reshaping Concepts of a Medical Spa to Promote Brand Loyalty

Darrin Brooks & Steven Mansfield
Utah State University

ABSTRACT
The owners of an existing medical spa wanted to build a new retail environment offering spa treatments, skincare, and laser services. This involved conceptualizing a new brand identity called Revivology. The owners selected a storefront in a new retail community. The intent of the designer was not to simply create an interior but rethink the way a design can promote increased productivity, revenue, client satisfaction, and brand loyalty. This project was designed from the ground up and finished with exquisite and custom details. The role of the designer was to provide a space plan, architectural details, lighting design, millwork, and full material specification.

The concept involved rethinking elements of a traditional medical office by creating an environment that would focus on an enhanced client experience. Revivology would resemble a high-end cosmetic store, hotel, and/or spa. Elements from the former location including the reception desk and waiting room were eliminated. Medical uniforms were replaced with contemporary high-style uniforms. This accentuated the new branding by adding an element of
professionalism more consistent with a health spa than a doctor’s office.

A custom skincare bar greets clients as they enter the space. This allows clients to browse and shop before and after services. After checking in, clients visit changing rooms with lockers and change into luxurious robes. Clients move to a private secluded lounge as they transition to treatment rooms. Clients relax in a quiet private lounge before and after treatments. Multiple water features counteract the noise created by the laser machines. The sound of falling water gives the zen-like mood. The spa features several treatment rooms and bespoke massage rooms with high-end finishes. After their procedures, clients may visit a private steam room infused with lavender and eucalyptus before transitioning back into their street clothes.

Sustainable materials and finishes were an important part of the project. The design utilized daylighting as a means of saving energy. Frosted glass windows and doors were installed to transfer light through the space. Awnings were added to control light at various times of the day. LED or low voltage lights were frequently used to highlight architectural details as well as conserve energy. All decorative lighting had dimmers. A water saving steam unit was used to preserve energy and water.

This new design and business model required trust by owners to rethink the way they practiced business, as well as radically changed how they had operated and interacted with clients in relation to the new environment. This design inspires clients to connect holistically in an experiential approach. This innovative project was able to enhance the experience of clients, and as a result, increase brand loyalty and revenue in a high-end spa environment.
room layout + flow

[1] check in + skincare bar & retail display
[2] procedure changing room
[3] massage changing room
[4] lounge
[5] aromatherapy / steam room
[6] skincare bar + check out

branding

pre-construction
Coupeville House: Modern Carpenter Vernacular Outside and In

Linda Zimmer & Peter Keyes
University of Oregon

ABSTRACT

Like many homes that designers build for themselves this modest vacation house is an ongoing experiment as well as a dwelling. The initial design was driven by a desire to understand and respond to historical context and a need to facilitate incremental construction. As the design evolved, a simple straightforward “carpenter vernacular” vocabulary was used to define space and provide a practical fitted out interior.

It was important for us to respond the historically important landscape and town of Coupeville Washington at every scale; site design, landscape, house form, interior space, materials, furnishings and color. While a variety of historical styles are represented in over ninety structures on the historic register in Coupeville we related most strongly to 19th century gabled structures such Haller house. Our house takes on the same familiar gable end shape and uses traditional elements, but proportions, composition and layout are all clearly modern.

A balloon framed structural shell, built by a general contractor, provided a starting point for our
incremental construction process. Four levels (basement, split main floor and loft) are connected vertically and unified by an angled central stair. A clear spatial order combined with a basic materials palette (a white interior volume paired with exposed wood structure) was defined at the outset. Interior elements built over the course of eight summers expanded and clarified our ideas.

Pragmatic considerations dictated that the house, designed for a family of three be flexible for many friends and guests. Because the house is essentially one room wide, interior space is defined primarily through level changes and extensive built-in cabinetry. By articulating the edges of the small rooms with functional cabinetry, we preserved the center for activity and circulation. Built-in seating expands occupancy and storage capacity while beds incorporated into cabinetry alcoves boost sleeping capacity to twelve.

Our vernacular philosophy was not driven so much by appearance but by a clarity and simplicity in use of readily available and economical materials. White shell and wood structure are further articulated by “screen” elements (wood slats, galvanized wire fencing, polycarbonate sheets). These provide layering both outside and inside. Painted cabinetry defines room edges and alcoves. The central stair is composed of both screen and cabinet elements. Painted bead board wraps the stair tower whereas guardrails protruding from the tower are galvanized wire fencing. A slatted screen wall mediates between entry and kitchen/dining while polycarbonate cladding defines an ancillary bathroom. Screens are typically clear finished. Cabinetry is painted in definable hues related to traditional milk-paints. Freestanding furniture is simple and practical: a small collection of easily moved Windsor chairs and wing chairs comprise the bulk of the loose furniture.

Like other vernacular houses we admire, the Coupeville house uses the intermediate scales of cabinetry and furnishings to reinforce the larger moves that relate the house to the context. We intend all these scales to read and we want them to reflect the place, the people and the clutter that is the special province of vacation houses. We continue to tinker.
The simple gabled form is compatible with nearby historic buildings
The entry is separated from the kitchen by a sliding screen wall.

The stair tower is the central element through the whole height of the house.
The beadboard-sheathed stair tower with galvanized wire guard rails.
The window seat defines the living room and provides generous seating and storage.

The loft cabinetry surrounds a bed alcove and defines a bedroom.
The dining alcove and living room as seen from the loft.
The loft bedroom behind the bookshelf cabinet wall.
A cabinet bed (with trundle beneath) next to the stair tower in the ground floor guest room.
Bucktown House

Jeffrey L. Day
University of Nebraska

ABSTRACT

Project Information
Located in the rapidly transitioning Bucktown neighborhood of Chicago, this extensive reworking of a recently completed spec. house combines a quiet urbanity with intimate spaces, unexpected moments, and a close attention to detail. Without moving a single structural wall or modifying any existing fenestration, we radically changed the relationship and character of spaces through an emphasis on custom millwork, furniture (custom-designed by the architects as well as commercial selections), nuanced lighting, and an extensive art program including commissioned works. White Oak paneling and cabinetry walls dominate the public areas and create a sense of cohesiveness from space to space. The solid, rabbeted Oak construction is detailed like veneer at its edges. Cleverly hidden storage and infrastructure sit behind the wood walls while hot-rolled steel animates fireplaces, niches and shelving. White walls and white furniture with red accents fill the Oak-defined rooms.

Certain rooms deviate completely from the White Oak and white paint regime such as the glossy black exercise room, red wine cellar, the black, white, and chrome office, and the pink bedroom. Decks on 4 levels and pocket gardens provide outdoor spaces with city views as well as intimate...
spaces for contemplation. We used Garapa wood, stained to match the interior White Oak, on a painted steel structure for all exterior surfaces. Where seen together through sliding patio doors, these two woods create the appearance of continuity between inside and outside.

Reminiscent of the secret mechanisms in a Bond villain’s lair, the Dr. No Cabinet animates the dining room on the main level. The cabinet responds to important needs: it conceals existing flues and adds privacy screening at a property-line window. An existing fireplace remains at one end, and a new steel built-in side table provides necessary storage for the dining room. Above the niche, a cnc-milled wood screen filters natural light from the window, obscuring views to the neighbor only 30” away. At the push of a hidden button, a bright-orange motorized liquor cabinet drops slowly from the top of the niche with all the ingredients for the perfect (shaken) martini. Hidden light coves transform the object into an ambient light fixture at sunset when the space becomes the perfect room for devising any evil plan.

New glass guardrails contain the main stair and the White Oak reappears in the master bathroom and bedroom suite. In the bedroom, a secret orange desk with custom bench opens into the room. The office and pink bedroom are additional moments of surprise on this floor. A last flight of stairs takes one to a small penthouse with bar that opens out to a covered outdoor dining area and an open deck with tall-grass planter. The penthouse and upper deck form a continuity of indoor, semi-enclosed, and outdoor spaces untied by a straightforward use of wood boards.

The Client Matters
The owners set a goal to increase usability of the entire house, including all outdoors spaces and to improve aesthetics throughout via integration of architectural interiors, furniture, finishes, and art work. They also wanted to use cabinetry throughout as a way to integrate utilities, storage, and other accessories into the house (ie. to hide everything via clever cabinetry and paneling). Examples of integrated surfaces include a minimally-detailed Oak passage with hidden doors
connecting the highly-detailed kitchen and family room, dominated by backlit Oak cabinet walls. In the basement, a minimal White Oak wall with simple cabinets unites a well-stocked bar with a home a/v theater. A new stair / bench leads from the basement to an intimate and sheltered basement garden and deck. The result is a carefully orchestrated sequence of living spaces and curated art installations (including important works of contemporary photography) that respond directly to the personalities of the inhabitants.
PANELS
Designers are Historians: Critical Discussion about History's Relevance in Contemporary Design Education

Bryan D. Orthel, Dana E. Vaux, John C. Turpin, & Lisa M. Tucker
Kansas State University

ABSTRACT

Relevance / Problem
The explicit value of history to the design process is often unclear. During discussion at the 2016 conference, one attendee challenged the relevance of history as part of design education, “We’re designers, not historians.” We cannot accept that design history—whether as distinct design knowledge or as a part of design culture—lacks significance for what designers do. Historical knowledge and criticism expands beyond grand narratives to examine cultural forces and evolving societal values (Hinchman, 2013). Designers cannot understand contemporary culture without considering our past values and actions. Design history provides active context for the decisions we make in solving design problems. The 2017 CIDA Standards recognize this relationship in the requirement that students understand material culture in the context of architectural and interior spaces. Beyond having historical knowledge, designers must understand how their viewpoint to this history matters. How does knowing design’s past shape a designer’s response to a present-day
solution? And, how do we frame design history education in a way that matters?

Context
Design history requires designers to analyze and consider aspects of the human condition that are broader than any one design solution (e.g., gender relationships, sociopolitical meanings), and that range from the idea of space to ornament to ethical implications (Turpin, 2013). This history must be multivalent, inclusive, and complex (Orthel, 2014). History cannot disappear into design process any more than it can be ignored as unrelated to the creation of human environments. The design process inherently relies on knowledge about the past (e.g., typologies, stylistic characteristics, cultural expectations, precedent) often through contributions to heuristics and typologies that inform design solutions (Vaux & Wang, 2016). Design without history misses the point of thoughtful, contextual, response to human problems (Tucker, 2013). Learning design history is one way for students to apply analytical, synthetic, and critical thinking skills.

Method
The panel offers four distinct explanations for how history is relevant to addressing contemporary problems, including gendered space, global and cultural space, material objects and mass consumer culture, and history as design. Each panelist will present a concise demonstration of one design history research example applied in classroom activities or real-world design solutions. Together, the examples challenge design educators to consider how history might be defined and ways that history can be integrated into the design process.

Outcomes
Attendees will gain exposure to varied understandings for what contemporary design historiography includes, why designers are historians, new approaches for including history across the curriculum, and thought-provoking discussion about the boundaries of the interiors realm.
Advancement of Design Knowledge

History provides a lens for understanding socio-cultural interpretations and meanings of spatial environments over time. History develops in the context of our surroundings—as a material, spatial, and cultural product of human creation. History informs design thinking in the how and what of an environment by shaping what knowledge designers consider relevant to solving design problems. The design history we research and write reflects and molds society and individuals. The integration of design history across design curricula advances students’ ability to address the complex, wicked problems present in contemporary society. As students learn to address these problems in studio and technical courses, their understanding of the human condition is improved. The panel will highlight ways that including history is a design (and designers’) issue.

REFERENCES (APA)


What We Teach is Changing

Bryan D. Orthel, Julia K. Day, L. Jesse Peck, Rebekah Radtke, Douglas Seidler, & Khoi Vo
Kansas State University

ABSTRACT

Relevance / Problem
The character of interior design education is changing. Core ideas that define strong design are assuming even greater importance in professional practice (e.g., creativity/design thinking, environmental stewardship). Aspects of professional practice that have been taken for granted are requiring renewed attention (e.g., written and graphic communication, professional behavior). Technology continues to redefine the way that we live, interact, and communicate with each other as humans and design professionals. And, interior design’s professional realm has expanded through active collaboration and expectations about interdisciplinary, evidence-based design solutions. As a result, what we teach—and how we teach—continues to change. How are educators adapting to the changes that will define the next ten years of design students?

Context
While the characteristics of professional design practice have shifted, the group of students preparing to become design professionals is also often described as fundamentally different from
previous generations of learners. Although significant research efforts have tried to distinguish the characteristics of generational cohorts, the results are contradictory and incompletely understood. Recent academic evaluation of generational characteristics has determined that many conclusions are not generalizable or that data points to the similarities rather than differences of generational cohorts (Twenge, Campbell, & Freeman, 2012; Real, Mitnick, & Maloney, 2010). At the same time, educators are challenged to adapt teaching techniques to reflect the expectations and learning needs of the Millennial student (e.g., Espinoza, 2012; D’Souza, Yoon, & Islam, 2011). Educators are placed in a difficult position between fluid goals and constituents. In response, our teaching is increasingly informed by rigorous scholarship of teaching and learning that examines how students learn to design (e.g., Carmel-Gilfilen & Portillo, 2010). Educators must also evaluate how we, ourselves, are changed by the profession, technology, and social forces.

Method
This panel presentation will engage a diverse set of six educators to evaluate specific, desired characteristics for future interior designers and corresponding educational approaches that are tailored to develop these characteristics in the student cohort entering post-secondary education in 2017. Each educator will present her/his idea and response in a 5-minute series of timed slides. Following the presentations, an interactive exercise will encourage the audience to look afresh at what we hope our students learn and to discuss how to teach the characteristics that future interior designers will need to be successful. The audience will be challenged to develop specific teaching ideas in response to the characteristics.

Outcomes
The panel presentations will conceptualize interior design education in an informed way that draws on recent and ongoing discussion about the future of interior design (e.g., Future Vision and the CIDA 2017 Standards), as well as the regular discussion that happens between educators and practicing professionals about the way forward. The discussion activity will link proposed
instruction with rigorous teaching-and-learning research. The new teaching ideas generated during the group activity will be shared in a format (TBD) outside the boundaries of the session.

Advancement of Design Knowledge
The session will engage participants in what we do best—identifying and solving problems in creative ways. This discussion will provide a focused venue to shape collaboration and exchange of ideas about issues that face interior design education. The outcome should promote broader conversation at the conference to emphasize how and why interior design education will lead change in the third decade of the twenty-first century.

REFERENCES (APA)


Spatial Ecologies for Interior Design Educators

Anjali Bhalodia & Kendra Ordia
Texas State University

ABSTRACT

Much of the primary research surrounding higher education has focused on topics of active learning, flipped classrooms, and technology as related to student engagement with peers, faculty, tools, and artifacts in the classroom (Doshi, Kumar and Whitmer, 2014). Although office space makes up more than 30 percent of campus real estate and consumes a larger footprint than classrooms, little research exists around faculty work environments and even less around the future of academic workplaces including needs of changing faculty profiles, increasing space constraints, and University-level efforts for increased collaboration (Haggans, 2016).

Our industry partner, Herman Miller, has conducted preliminary research on the topic along with the architectural firm Gould Evans and identified some of the important historic and modern aspects of faculty work environments. In a Gould Evan’s blog posting titled “The Secret Lives of Faculty” (2015), Principal David Reid included some important statistics from the National Center for Education Statistics reinforcing the timeliness of this topic: “Sixty-three percent of faculty today are 55 years of age or older. In the next ten years there will be a huge shift in faculty
demographics and attitudes.” He went on to state that, “From 1960 to 2009, the ratio of tenure-track to contingent faculty has reversed. Combine the rising number of contingent faculty with the new generation’s desire for better work-life balance and there could soon be a new ideal in academia: contingency is the new tenure, free agency the new status symbol.”

While contingent and millennial faculty will certainly change the dynamics of overall academic work environments, academia is not known as a fast-pace, risk tolerant entity. The carefully created boundaries of departments, colleges, and divisions within a university can limit true collaboration and interaction. The majority of academic workspaces are based on outdated workplace typologies built around solitary and paper-based work (“How Innovation Can Thrive on Campus,” 2011). Modern, innovative academic workspaces must support increased connectivity and collaboration; they must cross boundaries, create new categories, and support a sense of spatial ecology. How then, do faculty workplace typologies support this changing paradigm of higher education while providing a thriving environment for emerging faculty to operate in productive and collaborative work modes for relevant classroom and student interactions, research agendas, and collegial service?

This panel presentation will discuss the ongoing Herman Miller funded Pilot Study reimagining the faculty workspace in an Interior Design (ID) department at a public university. Through focus groups, digital ethnography, and surveys, the contributing ID faculty have been able to test theories regarding innovative workplace typologies among various faculty groups in differing departments, colleges, and universities. The panel members will also address the increased effectiveness of space and increased collaboration among the full time and adjunct ID faculty members. The presenters will guide open discussion to understand formal and informal modifications to academic workspaces at attendees’ institutions while tapping into the professional and unique perspectives of design educators. During the panel, real-time feedback through social
polling will also be captured on the topic and will contribute to ongoing research and practical applications of effective spatial ecologies for the evolving academic environments.

REFERENCES (APA)


What’s next? The Ethics of Interior Design Practice and Evidence-based Design in Healthcare and Beyond

Justin Wilwerding, Maureen Soules
St. Catherine University

ABSTRACT

This panel discussion will examine both broad ethical and legal concerns of the impact of evidence-based design on a variety of project types. The ethics of design practice is not merely a way to stay out of legal trouble, it is the very foundation of the value of Interior Design. From its inception Interior Design has sought to assure and promote the life, health, safety and welfare of users; to ethically promote the human good. Yet, much like the medical professions, we can no longer afford to define the ethical standards of health, safety and welfare narrowly. Just as the capacity of medicine to promote health has deepened and widened the responsibilities of healthcare professionals, so too does the burgeoning body of research in design ‘raise the bar’ to be surmounted by designers for the outcomes associated with the designed environment. This empirical knowledge implies to raise several questions

• How has the enhanced legal standard of care in healthcare affected litigation in this area of
design practice?

- How does the application of ethical guidelines to the use of evidence-based design principles in the development of Healthcare environments impact the welfare of those who are particularly vulnerable?
- How is the emergent standard of care for other project types environments likely to affect ethical concerns?
- What concerns are indicated by the evidence of emergent research conclusions indicating the application of evidence-based design to a wider range of project type and differing user profiles?
- How are design practitioners going to assess their design interventions against the ever-changing standard of care? (We need to ask something about how practitioners tie their practice to research)

The application of research to the practice of a profession is modeled by other disciplines and these models serve as analogous paradigms; the parallels to the practice of medicine seem particularly significant in this regard. The development of a comprehensive approach to research the delivery and improvement of healthcare is spearheaded by the Agency for Healthcare Research and Quality, which,

“...serves as the science partner with private-sector and public organizations in their efforts to improve the quality, effectiveness, and appropriateness of health care delivery in the United States, and to expedite the translation of evidence-based research findings into improved health care services.”

The implications for our own discipline indicated by this model are reasonably reflexive; as the basis of the body of knowledge in the discipline of healthcare design continues to grow and achieve nuance and diversity, designers will be faced with two additional questions:

- Does the Interior Design profession, as is often the case from a socio-legal perspective, simply react to this emerging standard of care as a function of the dialogue between the undesirable outcomes suffered by users and litigation?
or

• Does the Interior Design discipline (professional community in concert with the academy) actively develop a research agenda based on a close examination of those factors that are most malicious to the life, health, safety and welfare of users (similar to that of medicine) that actively shape the standard care?

In the evolving practice of Interior Design, we provide value to users through our ability to successfully predict the impact of design interventions on users; certainly as regards their “…life, health and safety…”, but in the broader demands of their social, psychological, and economic “welfare.” The foundation of this ability, to predict outcomes, lies in the body of evidence to be found in design research. These factors point to the need for discussion examining both the prospective legal standards under which practitioners will operate and the breadth of foundational ethical guidelines beyond those of professional liability.

REFERENCES (APA)


What is the Future of Design Education, Design Practice and The Role of Design in Society?

Aaron Kadoch
The University of Wisconsin Stevens Point

ABSTRACT

Question
What are the future learning, working and lifestyle patterns that designers are responsible for envisioning, planning and pioneering? This inquiry is relevant for students, educators, practitioners and the general public to lead and envision design’s future as a collective network with common trends, goals and outcomes. What emerges from research is a future where digital and physical environments resemble and incorporate nature symbiotically with a shared emphasis on experience, social interaction, electric energy, information and data design, materiality and natural resources (Fig. 1). Yet how do design leaders integrate these ingredients formally and functionally? This research is based on literature and case study review of Futurist theory and praxis. Three panelists will present the main components of Futurist applications; History and Theory, Current Trends, and Design Practice.

Research
Transformational Leadership Theory, sets a contemporary stage from which to look at the future as a cognitive process that leaders can collaborate towards “global trends, challenges and opportunities to advance innovation.” A central aspect of leadership theory is to inspire a shared vision. Designers are inherently equipped with the tools to imagine and communicate such work. In addition, there is a historical tradition of futurist philosophy and practice in the arts. The early Italian Futurist Filippo Marinetti, published in 1909, a revolutionary vision of society tied to energy and electricity, machines and movement. Artists translated this into spatial experience. Benedetta Marinetti’s, Speeding Motorboat, shows space-time as a physical environment (Fig. 2). In a contemporary interior design, The CloudDCS facility exemplifies the “Cloud” in real space visually and experientially, merging theory and practice (Fig. 3). Today’s leading futurists Dr. Ray Kurzweil and Dr. Michio Kaku predict similar forms of exponential acceleration related to Moore’s Law with “disruptive” cultural transformations as depicted by Marinetti. Tony Siba’s Clean Disruption of Energy and Transportation is a predictive model showing a new energy-living pattern. The Wiki House (Fig.4), a changing paradigm for the entire construction industry is an outcome of Moore’s law and built on Siba’s prediction. Market drivers like Google’s Nest and Apple are banking on the future of home innovation as part of an interconnected grid, however design research and development is still needed to align technology with human needs.

Conclusion

New processes yield new realities within historical patterns and we must be aware of such forces in order to act as effective design leaders within contemporary networks to promote “Design Intelligence.” According to “Live, Work, Play in 2025,” A study of trends presented by Gensler, six dispositions emerge, consistent with future looking research and practice. They are Embracing our iHumanity, Designing for Time and Space, Leading Smarter Lives, Scaled Resilience, Urbanity, and Cities as Innovation Engines. (Fig. 5) Such forecasts act as a framework for individual and collective actions within a progressive society.
REFERENCES (APA)


Figure 1. “Butterfly Effect” Design by 3Delux. Al Noor Island, United Arab Emirates. Interior Design Magazine, March, 2016, p165.
Figure 2. Benedetta (Benedetta Cappa Marinetti), Speeding Motorboat (Velocità di motoscafo), 1923–24 (detail). Guggenheim Museum, 2014.

Figure 3. “CloudDCS” Design by Arboit Limited, Guangzhou, Chine. Interior Design Magazine, March, 2016, p179. Photos by Dennis Lo.
Figure 4. WikiHouse Model. WikiHouse Foundation. 2016

Figure 5. Gensler Design Forecast 2016. “Live Work Play in 2025.”
Doing Good! Faith, Ethics, Morality, and Social Responsibility in Interior Design Education

William Riehm
Mississippi State University

ABSTRACT
This panel discusses issues of faith, ethics, morality, and social responsibility, specifically addressing issues of students’ training to be responsible and ethical design professionals. This panel looks beyond an interior designer’s very important call to protect the health, safety, and welfare of the public in the spaces we design (ASID 2013) (Guerin and Thompson 2004) and ask how, as educators, we can teach a deeper meaning of good. This is a contentious issue. Immediately it can be asked, “whose morals,” “what faith,” and “whose definition of society responsibility” are we discussing? And it is not the intention of this panel to answer those questions, rather it is to create a dialogue where concepts of social responsibility, ethics, moral education, and faith are exchanged so we can be better educators in our respective academic environments.

Every academic environment is unique, and issues of public versus private setting, religious versus secular, and liberal versus conservative, will always impact the way that educators approach...
teaching students to “do good.” In his seminal 1955 article in Progressive Education “A secular approach to moral education,” Algernon D. Black wrote, “there is no one simple and easy way to develop moral and spiritual values in human beings. No one method can guarantee growth of character.” This is certainly true in interior design education where we work with community groups, non-profits, religious organizations, and professional organizations to achieve learning outcomes that, hopefully, create professionals who understand their role as bigger than themselves.

This topic presents challenges to educators. For many this is personal, and this panel is intended to allow for a conversation to occur that respects individual belief as well as institutional settings and social constraints. One key question to be discussed is how educators reconcile their personal beliefs with those of their institutions and communities. “What limits us”, “how do I reconcile my personal beliefs,” and “what empowers us” are questions to be discussed.

Panelist will be expert in professional practice, service learning, and/or social justice and from a range of public and private institutions including for-profit, secular, and those that are religiously affiliated. Our discussion will be driven by how each panelist teaches students to “do good” in the framework of their institutions, communities, and their own professional and personal beliefs.

REFERENCES (APA)


Developing Creative Minds: Lessons from First-Year University Students

Jae Hwa Lee & Margaret Portillo

University of Florida

ABSTRACT

The Council for Interior Design Accreditation (2017) declared that “Interior designers employ all aspects of the design process to creatively solve a design problem. The ability to create fresh insights and solutions is a valuable commodity within the field of interior design; therefore, it should come as no surprise that the latest generation of CIDA Professional Standards 2017 highlights the central role of creativity in interior design. The purpose of this study is to describe first-year students’ perceptions and worldviews on creativity and explore the development of creative confidence through participation in a set of paired creativity courses. There are three research questions: 1) To what degree might students have changed their perceptions and worldviews on creativity including creative personal identity and creative confidence; 2) Is there any evidence that the course has influenced the development of creative personal identity and creative confidence; and 3) What implications of these findings for interior design education?
A total of 85 first-year-in-college students, who enrolled in a paired set of creativity courses required for the university’s innovation minor in 2016, completed pre and post surveys on creativity, at the beginning of the first course and at the end of the second course. The sample consisted of 50 (58.8%) male and 35 (41.2%) female students. The first introductory course introduced the fundamentals of creativity theory and also presents experiential learning opportunities to cultivate a set of creative skills including design thinking. The following companion course was more project-based and required the application of design thinking to address real-world problem solving using teamwork, the development of prototypes, and the presentation of proof of concept displays at a juried showcase. The creative personal identity which refers to the perception of creativity as an important aspect of the self were reported with 3 questions. Moreover, areas of creative confidence were measured by fifty questions using the Kaufman Domains of Creativity Scale (K-DOCS), which is a standardized test assessing self-perceptions of creative behaviors within Self/Everyday creativity, Scholarly creativity, Performance-based creativity, Mechanical/Scientific creativity, and Artistic creativity. Finally, student written reflections also revealed the most impactful learning experiences relating to creativity and design thinking.

The findings showed a statistically significant growth in creative personal identity throughout the courses, based on the results from a set of paired samples t-tests. While levels of creative confidence within five domains did not significantly change from the beginning to the end of the second course, but they did show high levels of confidence in most of the domains. Among five domains of creative confidence, performance-based creativity and artistic creativity were mostly correlated with the creative personal identity. Valuing creativity in teamwork also emerged later in the course as a means to spur creative ideas, the students also appeared to value prototyping as a means to facilitate their creative thinking as well as learning from failures and successes. The results of this study can be applied to interior design education to study how creativity cannot only be fostered in the individuals but in groups. These findings also call for additional research and
application of how to cultivate creativity and design thinking to deliberately improve student development in the field of interior design. Development of creativity as a fundamental life-long skill can and should be encouraged in interior design students. Design thinking as a best way to experience trial-and-error processes and to implement their creativity explicitly should be encouraged as opportunities for interior design students that can position them well for professional success and personal fulfillment.

REFERENCES (APA)

APPENDIX

Table 1. The increase of creative personal identity (results of paired samples t-tests)

<table>
<thead>
<tr>
<th>Item</th>
<th>Pre Mean</th>
<th>SD</th>
<th>Post Mean</th>
<th>SD</th>
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<th>p</th>
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<tbody>
<tr>
<td>A</td>
<td>3.48</td>
<td>1.053</td>
<td>3.94</td>
<td>.836</td>
<td>4.474***</td>
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<tr>
<td>B</td>
<td>3.73</td>
<td>.931</td>
<td>4.06</td>
<td>.836</td>
<td>3.631***</td>
<td>.000</td>
</tr>
<tr>
<td>C</td>
<td>3.87</td>
<td>.813</td>
<td>4.13</td>
<td>.704</td>
<td>3.286**</td>
<td>.001</td>
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</tbody>
</table>

**p<.01, ***p<.001

A: What role does being creative play in your life? (1: Very small, 2: Small, 3: Neutral, 4: Large, 5: Very large)

B: How do you rate the following statement: “I’m a creative person.”? (1: Strongly disagree, 2: Disagree, 3: Unsure, 4: Agree, 5: Strongly agree)

C: How important is it for you to be creative in your life? (1: Not at all, 2: Not sure, 3: Neutral, 4: Somewhat, 5: Extremely)

Table 2. Creative confidence within five domains

<table>
<thead>
<tr>
<th>Domain</th>
<th>Pre Mean</th>
<th>SD</th>
<th>Post Mean</th>
<th>SD</th>
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<th>p</th>
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<td>2</td>
<td>3.46</td>
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<td>1.360</td>
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<tr>
<td>3</td>
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<td>.927</td>
<td>3.24</td>
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<td>.543</td>
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<tr>
<td>4</td>
<td>3.01</td>
<td>.967</td>
<td>3.00</td>
<td>.952</td>
<td>-.405</td>
<td>.687</td>
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<tr>
<td>5</td>
<td>3.32</td>
<td>.873</td>
<td>3.33</td>
<td>.850</td>
<td>.180</td>
<td>.858</td>
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</tbody>
</table>

Note. The participants rated their levels of creativity on each activity in five domains (1: Much less than others, 2: Less than others, 3: Neither more nor less than others, 4: More than others, 5: Much more than others) and the means of five domains here indicate the averages of all activities in each domain.

1: Self/Everyday creativity
2: Scholarly creativity
3: Performance-based creativity
4: Mechanical/Scientific creativity
5: Artistic creativity
Table 3. Correlations between creative personal identity and creative confidence

<table>
<thead>
<tr>
<th></th>
<th>A</th>
<th>B</th>
<th>C</th>
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<td>.216*</td>
<td>.289***</td>
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<td>4</td>
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<td>.283**</td>
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<td>5</td>
<td>.359**</td>
<td>.341**</td>
<td>.215*</td>
<td>.565***</td>
<td>.598***</td>
<td>.608***</td>
<td>478***</td>
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</tbody>
</table>

* <.05, **<.01, ***<.001

A: What role does being creative play in your life?
B: How do you rate the following statement: “I’m a creative person.”?
C: How important is it for you to be creative in your life?
1: Self/Everyday creativity
2: Scholarly creativity
3: Performance-based creativity
4: Mechanical/Scientific creativity
5: Artistic creativity
Color Design for People with Color Blindness

HEEJIN Lee & Eunsil Lee
Michigan State University

ABSTRACT

It is estimated that about 8% of the male population has color blindness. This is a considerable number of people that should not be overlooked. However, design professionals often neglect people with color blindness. Given that designers should consider the needs of all people based on universal design principles, it is critical for design professionals to be aware of the needs of people with color blindness. The purpose of this study is to (a) understand the color perception of color-blind people and analyze the differences in color vision between people with color blindness and people without color blindness and (b) propose proper color scheme designs that are easily seen by color-blind people and are aesthetically pleasing.

To understand the color vision of color-blind people, we utilized Vischeck, a color blindness simulation program developed by Stanford University. After developing simulated images for color-blind people’s view, we compared and analyzed the original colors and the simulated colors. To design effective color schemes for color-blind people, we reviewed color functions and color harmony theories. According to the environmental design planning theory (Ewha Color Design
Research Institute, 1997), there are eight functions of color: safety function, camouflage function, physical function, psycho-physiological function, therapeutic function, identification function, symbolic function, aesthetic function. We focused on the three most important color functions appropriate for color blindness: safety, identification, and aesthetics. Through reviewing color harmony theories, we selected applicable color harmony theories to satisfy users in terms of aesthetics: complementary contrast, brightness contrast, and association contrast. Combining three color functions and three color harmony theories, we proposed a series of color schemes which provide clear distinctions between colors for people with color blindness when applied to public facilities (Table 1).

We also applied the results of color simulation and the proposed series of color schemes to Seoul City, South Korea. Seoul City created its new city branding in 2010 based on the symbols of the city. Seoul’s branding included 50 Seoul colors that were developed from Korean cultural colors and utilized in many public facilities and signage. We evaluated the visibility of Seoul’s color palette and found that many color schemes were not functioning properly for those with color blindness. This study proposed effective color schemes for public facilities and signage in Seoul City that are easy for all visitors and citizens to see, especially those with color blindness. We expect the proposed color schemes to be useful for design professionals in improving their color planning to meet the needs of all people.

REFERENCES (APA)


APPENDIX

Table 1. Color combinations based on color functions and color harmony theories. (Color combinations are simulated to see how color blind people see them.)

<table>
<thead>
<tr>
<th>Color Function and Harmony used</th>
<th>Color Combination (Normal View)</th>
<th>Color Combination (Color Blind View)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Color Function</strong></td>
<td></td>
<td></td>
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<tr>
<td>Safety Function</td>
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<tr>
<td><strong>Color Harmony</strong></td>
<td></td>
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</tr>
<tr>
<td>■ Chevreul’s color harmony theory</td>
<td></td>
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<tr>
<td>- Brightness Contrast</td>
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<tr>
<td>- Complementary Contrast</td>
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<td>■ Munsell’s color harmony theory</td>
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<tr>
<td>- Complementary harmony</td>
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<tr>
<td>■ Ostwald’d color harmony theory</td>
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<tr>
<td>- Complementary harmony</td>
<td></td>
<td></td>
</tr>
<tr>
<td>■ Birren’s color harmony theory</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Tint-Tone-Black</td>
<td></td>
<td></td>
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<tr>
<td>- Color-White-Black</td>
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</table>
**Color Function**
Identification Function

**Color Harmony**

- Chevreul’s color harmony theory
  - Brightness Contrast
- Munsell’s color harmony theory
  - Achromatic harmony
- Ostwald’s color harmony theory
  - Gray harmony
- Birren’s color harmony theory
  - White-Gray-Black
  - Tin-Tone-Black
  - White-Tone-Shade
Color Function
Aesthetic Function

Color Harmony
- Chevreul’s color harmony theory
  - Similar color harmony
- Munsell’s color harmony theory
  - Achromatic harmony
  - Single color harmony
- Ostwald’s color harmony theory
  - Similar color harmony
- Birren’s color harmony theory
  - White-Tint-Color
  - Color-Shade-Black
  - Tint-Tone-Shade
Place attachment and design features in senior cohousing in a rural community

Melissa Lies, Mihyun Kang, & Rachel Sample
Oklahoma State University

ABSTRACT
As the population of older adults continues to grow, the issue of where and how older adults can continue to live in community becomes increasingly pressing. Relocation can be a difficult task for older adults, especially when having to downsize and lose connection with previous place attachment (Eshelman & Evans, 2002). Place attachment can be defined as a “bond or link” between residents, places or things, or the desire to remain close to an object (Hidalgo & Hernandez, 2001). Community design assisting the creation of place attachment can facilitate the transition of the older adults’ living environments. When older adults feel attached to a space, they typically use the space more, thus increasing the amount of socialization opportunities, while also allowing for greater wellbeing of the older adults (Zavotka & Teaford, 1997). The purpose of this study was to examine the design features that assist residents of a rural senior cohousing community with enhancement of place attachment.

Purposive sampling of a Midwestern senior cohousing community established in 2012 was used
for this study. Ten older adults aged from early 60s to late 80s, who had been living at the community for longer than six months, participated in this study. Data was collected by employing visual research methods, specifically photo-elicitation, which incorporates photos into individual research interviews to better understand the viewpoint of the research participant (Lorenz & Kolb, 2009). Participants were asked to take photos of various places that had meaning to them. These could be described as design features or items that they felt they would miss or that they could not live without. Participants photographed elements within their individual homes, outside their individual homes, areas within the common house, and areas around the senior cohousing community. Individual interviews lasting up to an hour were conducted to discuss the photos the participants had taken. Audio recordings were used to create the transcripts of the interviews. The interviews were then transcribed and organized by the computer software NVIVO. Content analysis was conducted, and three researchers collaborated to identify and reach a consensus on the emerging themes of the interviews. Constant comparative analysis, generative coding, and memorandums were employed. Emerged themes were categorized with the five dimensions of place attachment, place dependence, place identity, friend bonding, family bonding, and nature bonding as developed by Raymond, Brown and Weber (2010).

The findings showed that place attachment can be observed throughout the senior cohousing community, including individual homes, the Common House, and surrounding areas of the community. Related to the five dimensions of place attachment, friend bonding and nature bonding were the most dominant dimensions while family bonding appeared the least. Friend bonding was promoted with the available places for all levels of spontaneous, proposed, and organized interaction with other residents. Design features such as Front Porch, Nodes and Sidewalks, Clustered Mailboxes and Parking evoke spontaneous conversation. The community is located in a rural environment, and nature bonding was enhanced by the connection and ability to interact with nature through design features such as Large Windows, Labyrinth, Common Garden and Wild and Raised Flowers around the community. Design features that allow for autonomous life and an easy
transition from previous homes were related to place dependence, while design features that enable personalization and connection to personal past helped place identity. Family bonding was connected to community policies that allow for family activities rather than a connection to the physical environment. This study could be used as a foundation for further research into older adults’ place attachment to senior cohousing communities, as well as other environments for older adults.

REFERENCES (APA)


Intergenerational Center with Sensitivity to Autism Spectrum Disorder

Julia Nieman & Jeanneane Wood-Nartker
Central Michigan University

ABSTRACT

Research on design of physical environments for children with Autism Spectrum Disorder (ASD) is limited. Further, there is a lack of research following these individuals across their lifespan. Today, 1 in 42-68 children are diagnosed with autism and in 2020 there will be 4 million people with autism in the United States (Gaines, Bourne, Pearson & Kleibrink, 2016). This calls for a serious need for evidence-based design development of environments to support needs of both children and ageing adults with ASD. There are limited number of self-sustained purposeful living environments to address the crisis of the growing and aging population with ASD (Gaines et al., 2016). Design guidelines for living environments for people with ASD were developed from a literature review of emerging research. These guidelines will guide design decisions in the design of an intergenerational center focusing on environmental needs of both children and aging-adults with ASD. The purpose of the center is to provide a living environment where older adults are able to age in place. The center will include individual rooms for older residents as well as a full-day daycare center that employees may utilize. Integrating Green House Design and Eden philosophy
will encourage social interaction, educational opportunities, development of physical motor skills, and interaction with children enrolled in the daycare center. Inclusion, durability and maintenance, safety and visual instruction, visual structure and parent participation are all aspects found to be beneficial to both able-bodied children and children with ASD (Khare & Mullick, 2009). These spaces will provide adequate communication of their purpose and their expected behaviors to help limit the confusion or over-stimulation of individuals with ASD. Children with ASD are more often interested in the physical world than the social world and that leads to them being a minimum of two years behind their peers socially (Kutscher, Attwood & Wolff, 2005). Predictable, permanent landmarks and curved walls will promote wayfinding, which is beneficial to both typical aging adults and individuals with autism. Tactile sensitivities are more prevalent than visual sensitivity for children with ASD but special care will be taken with regard to selections of lighting, e.g., natural, artificial, and glare/reflection; color; spatial organization; escape spaces; noise; materials, as well as tactile sensitivities (Gaines et al., 2016). One goal of this poster presentation is to receive feedback on my finalized three dimensional design of the Intergenerational center. The Intergenerational center will be created to addresses both the needs of children with ASD in a daycare environment, and for aging adults with ASD in a semi-assisted living environment. Within these environments, areas of refuge will be incorporated for individuals with hypersensitivity and areas for increased stimulation for individuals with hyposensitive individuals. Hypersensitive design solutions allow individuals to retreat; zones are created that break up the space into loud, transition/buffer, and quiet spaces, shown in Figure 1. In the areas for individuals with hyposensitivity, spaces will be designed to allow maximum visibility by caregivers. Caregivers are then able promote sensory stimulation. Both active and inactive spaces will need to be created, shown in Figure 2. This division of space helps hyposensitive individuals know what behaviors are appropriate in which setting (Gaines et al., 2016). This design prototype will incorporate characteristics that are beneficial for children and aging adults with ASD (see attached assignment). Floor plans will focus on zoning as well as three dimensional views of the design. The poster presentation will provide the opportunity for feedback from individuals in design community on
the final design created of an Intergenerational center with sensitivity to older adults as well as children with ASD.

REFERENCES (APA)


Figure 1: Designing with transition and buffer zones for hyper-sensitivities (Gaines, Bourne, Pearson & Kleibrink, 2016)

Figure 2: Designing for Parental/ Care giver observation for hypo-sensitivity (Gaines, Bourne, Pearson & Kleibrink, 2016)
Our environment affects each of us and each generation in a very different way. This project will allow you to focus on the relationship between the built environment and children, typical older adults, adults with Autism Spectrum Disorder (ASD), and staff/caregivers. As seen in current societal trends, the diagnosis of ASD is becoming more frequent with 1 in 42-68 individuals being diagnosed. As these individuals get older, they often find themselves needing to move into a group home setting. This facility will provide opportunities for social interaction, educational opportunities, development of physical motor skills and most importantly, the opportunity for children and older adults to interact and develop relationships together. It should be sustainable, and look to the future with regard to facility layout e.g. Green House Design, Eden philosophy, access to cultural activities and other amenities that appeal to baby boomers. The childcare facility is to be added to provide in-house care for the children of staff members and show sensitivity to children on the spectrum.

You are to use the information provided to design your client’s “ideal” facility. For this schematic phase, you are to select a historical style to interpret a general concept/feeling and convey it through layout, color, texture and pattern in the material and furnishing selections for every aspect of the project.

The following list shows the design items to be included in this new facility. This list is separated primarily by age.

**Care Concept:** Incorporate a Greenhouse approach to physically laying out the space; embrace Eden Alternative (plants, gardening, animals, staff empowerment, children); create a residential feeling; promote southern exposure for all resident living spaces and child activity spaces; maximize natural light throughout; maintain independence; identify all rooms to assist with wayfinding; provide residential; non-institutional setting; provide opportunities for residents to interact with children to maintain self-esteem and promote independence; promote family unit; enhance resident quality of life; maximize interactions between children and frail elderly; accommodate multiple changes of artwork and seasonal decorations without damage throughout corridors; maximize storage; minimize glare and exterior elements (e.g. hot, cold) from all windows; maintain keypad entry; maintain 1 story solution; connect to existing facility corridors in at least one location; promote sustainable planning principles e.g. promote southern exposure in living areas; show relationship of final selections to LEED checklist, select sustainable materials, use of censored lighting; and provide airlock exterior entrances.

**Covered Shared Main Entrance:** separate airlock entrance from current main entrance. Create a shared entrance for the residents and children that is protected from inclimate weather. Include bike racks adjacent to entrance.
**Daycare:** incorporate a separate interior entrance to the daycare. Provide spaces that are age sensitive. Children with ASD should be integrated into the same spaces as typical functioning children but with close attention given to adaptations they may need, e.g., How might a child with ASD play differently on a playground than a typical child? Can environmental stimuli be minimized while encouraging developmental learning?

Full day child care for the children of staff –

<table>
<thead>
<tr>
<th>Children</th>
<th>Staff</th>
</tr>
</thead>
<tbody>
<tr>
<td>Infants</td>
<td>6-2 (you need to confirm ratio)</td>
</tr>
<tr>
<td>Toddler/Preschool</td>
<td>14-2 (you need to confirm ratio)</td>
</tr>
<tr>
<td>Schoolagers</td>
<td>(3 males, 3 females) - 1 staff</td>
</tr>
</tbody>
</table>

-1-way viewing windows to all child spaces with the younger children being planned closer to the corridor viewing windows.

**Staff unisex restroom:**
1 watercloset, 1 sink

**Storage Rooms** – as many as possible, include sprinklers, no storage above 18” from ceiling, maximize shelving.

**Corridor**
Need exit every 100’ from living quarters; Viewing windows to outdoor child spaces-tinted; Seating for older adults to rest while walking

**Schoolagers** (after school or care option for night shift employees)

*Lounge area - Living room style; Study Area: Two computers in private study carrels; One 36” table with four chairs (for games or homework); Portable TV/DVD – flat screen is okay (Understated media options to promote social relationships); Schoolagers’ playground with adjacent access; separate by age; Privacy space (niche?) for a child with ASD to move to when there is a need to rejuvenate and move into a less stimulating area; Sleeping area – separate by gender; One additional private bedroom set aside for a child with ASD; Adjacent restroom to sleeping area that includes at least two compartments: a watercloset and sink; and separate shower area – needed for both males and females.

*Sub-areas below are to be indicated on the block plan* (consider how to define these boundaries clearly and how to indicate how many children will be using in each sub-area)

**Infant:**
- Crib space; Nursing space; Diaper changing area with sink (mirror above to see the room);
- Caregiver rockers; Table to accommodate 6 for activities; Flooring surface for crawling/play (extra padding);
- Parent information area; Mirrors; Adjacent access to infant/toddler play space;
- Supply storage closet; Child storage/coat area; Infant outdoor napping/play area; and Refrigerator.

**Toddler/Preschool:**
- Napping area (could be shared with older child space)-incorporate an exterior transitional roofline)
- Restroom within space (scaled to children); Cubbies for coats, boots, backpacks at classroom
entrance; Large motor area; Dramatic play area with hanging racks; Craft area adjacent to sink; Educational areas: two computers, reading loft with book storage and a listening center; Small animal area for fish tank, rabbit/hamster/bird aviary; Privacy space (niche?) for a child with ASD to move to when there is a need to rejuvenate and move into a less stimulating area; Modular storage for toys, supplies and equipment (boundary definition); Meals to be served in each space (tables and chairs – one for each; could share craft space); Combination of hard floor surface and carpeting; direct access to playground; One–way glass windows from corridor for parent viewing; Viewing niches in the corridors with wheelchair access and audio capabilities for older adults and parents; Low classroom windows to the outdoors; Drinking fountain adjacent to playground door, water tables; Adjacent access to infant/toddler playground space; Supply storage closet; Toddler/Preschool playground; and Separate from other age groups.

**Commercial Kitchen:** Fully enclosed. Stove, dishwasher, sink, microwave, refrigerator; Consideration: For meal and snack preparation. Universal design for staff and child use; if your space is located on the outside perimeter, consider including a door to the exterior for deliveries.

**Childcare Director**

Desk which provides a conference space with seating for four; 2 side chairs; File storage (to include two- 2 drawer lateral files); Computer; 1-way viewing windows to child spaces; Artwork; Plants; Close to main interior entrance.

**Childcare Restroom Considerations:** (unisex restrooms are allowable for toddler/preschool) Incorporate 1 staff unisex restroom in the daycare area, 1 restroom with separate toilet/sink and separate shower for both males and females in Schoolagers’ spaces.

- Barrier-free accessible in each room (5’ turn diameter, grab bars, 1’6” on pull side of doors; Incorporate universal design concepts where possible; Label wet columns and show plumbing chaises; Compute the number of fixtures in each space based on a ratio of 1:15. Consideration: boundary definition, easy maintenance

**Adult Residents:** Approved for 80 beds maximum in this facility. To incorporate Green House spaces, you may explore “neighborhoods” to the west. Color palette: Be sensitive to the complexity of “aging eye” issues, and the stimulation effect on people with ASD. Lighting for the aging residents should be flexible to add up to six times the normal footcandles, but also be sensitive to minimizing glare within the environment. Create a coordinated facility scheme; Signage: Develop a standard; Zoning: Be sensitive to the private (quiet) and public (nosier) zoning which is critical to consider in your space planning; Can include an additional room for overnight family visitors. Add 12-16 new rooms to allow for more single occupancy living accommodations. One pod needs to provide half of the rooms for typical aging older residents with the other half designed in a second pod for adults with ASD.
**Adult resident room** to include: ~150 square feet (approximately 11’ x 13’). Think of planning in zones, e.g., caregiver, family, and private.

Southern exposure windows from each room (tinted); Dresser (can be built-in or provided by resident); Chair or rocking chair (can be provided by the resident); Call buttons at bed, bath and chair; Monitored food storage; Single bed; Mirror; Over bed table and over bed light; Night stand.

Visitor seating for at least two away from sleeping area – separate sitting area; Privacy curtain at entry door; Closet; Sink in room with paper towel storage

Restroom to include: Watercloset, Shower (4’ x 5’) – handrails, adjustable shower head, sink

**Staff Locker Room**

Individual lockers to hold a coat and purse (lockable); Bench or seating; Shower area(s) for bike riders – consider gender privacy.

**Janitor’s Closet (lockable):** Sink, storage for broom, mop and buckets; storage for cleaners

**Resident Central Courtyard/Playground:** (a portion with protective covering for shade, and the rest full exposure)

Perimeter paved walking surface for older adults with benches; Will consider perimeter plantings; Opportunities to work on activities with children; Birdfeeders, benches, growing/planting areas; Outdoor “kitchen” for facility picnics – provide covered area for setting out food, and to cover tables and seating; Landscaped and green area; Provide a “protected” area for someone to come to in an effort to “regroup”

**Restroom Considerations:** (1 unisex for staff and visitors in adult resident “houses”; Separate restroom in each resident room

Barrier-free accessible in each room, Incorporate universal design concepts where possible. Consideration: boundary definition, easy maintenance

**Optional Spaces for Consideration**

Chapel, Café-open to community, Spa, Physical Therapy/rehabilitation space, Workout/exercise room, Gift Shop, Bank, Theatre with large screen, Library… Consider what spaces would be important to your own grandparents/great-grandparents to promote high quality of life.
Synergies between Universal and Sustainable Design

Stephanie McGoldrick & Nicolette Gordon
Mount Ida College

ABSTRACT

There is a rising popularity of building rating systems like WELL certification and increased awareness that health, wellness, and resiliency of building users are as critical as environmental concerns. Interior design curriculums must ensure students have the ability to integrate strategies that collectively address these issues into their projects. Simply incorporating sustainability into interior design does not always meet the needs of users and occupants, and conversely universal design approaches sometimes ignore the importance of sustainability. If universal design is about giving individuals with varying abilities and limitations access to control their own surroundings and participate similarly in all activities within a space, then shouldn’t designers also empower these individuals to have more control over their impact on the environment? Saunders (2015) explains in his article, “Accessibility: The Missing Dimension of Sustainable Design”, that “…the concept of social and environmental sustainability are not at odds with each other; rather they enhance each other.” (p.25). Saunders reinforces the idea that a holistic approach to interior design is imperative and should showcase the links between these two subject areas. Instructors should guide students to create comprehensive design projects that highlight the idea of social sustainability, while also addressing environmental sustainability and universal design as one.
In the article, “Universal Design as a Significant Component for Sustainable Life and Social Development,” the authors state that “social sustainability relates to how the environment influences human quality of life,” but that this is often neglected and environmental sustainability has been given more emphasis (Kadir & Jamaludin, 2013, p.179).

This poster presentation will explore the way these concepts can be equalized and enhance one another, while focusing on synergies that exist between universal design and sustainable design. Examples of some of the synergies that may be presented include energy efficient lighting that gives off less heat, resulting in reduced environmental impact but also protection of users with visual limitations from burns that come from incandescent light sources. The lighting selections presented will also ensure adequate lighting levels, color rendering, and controls that are both accessible and sustainable. Smart technology will be explored that uses clear visual cues like the Nest thermostat, which can assist those with cognitive disorders or memory loss while ensuring cost and energy savings.

The presentation will use two separate projects designed by a graduate student as case studies, one from a studio with a sustainability focus, and the other from a studio with a focus on universal design. The faculty and student will re-evaluate these projects to showcase where the overlap between these topics already exists, and assess where the synergies between sustainability and universal design could be enhanced. Additionally, they will identify how the WELL Building standard aligns with the synergies they present to see if this building certification program serves as an adequate model for demonstrating links between sustainable and universal design. The majority of interior design curriculums seem to explore these topics independently, so methods for implementing this holistic approach and establishing relationships between universal and sustainable design in studio courses will be presented.
REFERENCES (APA)


APPENDIX

The following pages include the student project from the course that had a key focus on Universal Design. This project will be re-evaluated to find links to Sustainable Design, and add elements that connect these two topics. Additionally, this project will be evaluated to see how it aligns with the WELL Building Standard.
The concept for 301 Newbury Street Renovation is inspired by the ability for a chef to layer ingredients atop one another, without losing the flavor of each ingredient. This layering effect is interpreted in each space through its furniture, architectural paneling, and various levels of lighting. Designing the space in this manner will allow for universal adaptability, creating a functional space for all user types.
Stress Reduction through Biomimetic Designs in the Interior Architecture of a Dental Office

Candie Wilcken, Saleh Kalantari & Judy Theodorson
Washington State University

ABSTRACT

Research Goals and Background
This design project involves the creation and evaluation of parametrically designed ceiling installations as a means of reducing stress and anxiety in dental examination rooms. The installations take a biomimetic approach, following a trend that has in recent years become a renewed source of inspiration for designers and architects as we seek to apply principles from natural systems to promote human and environmental well-being (Rossin, 2010).

The value of biological research in design is that nature, through necessity and evolution, has already created elegant solutions to many of the same physical and environmental problems that designers encounter during the course of our work (Flint, 2013). In addition, as humans are ourselves the products of natural environments, the design solutions forged through biomimicry tend to have a “natural” and comforting aspect. Some researchers argue that biomimicry is more than just imitating the useful attributes of a natural object or system, and that these approaches have deep-seated connections with human sensibilities and our ecological connections to nature.
(El-Zeiny, 2012). While such viewpoints are inspirational, a rigorous evaluation of biomimetic designs also requires the collection of scientific evidence regarding their effects. In this sense, the trend toward evidence-based design in healthcare is also a guiding principle in this project (Malkin, 2007).

Studies have shown that visits to medical facilities can be quite stressful for patients, and there is a specific association between human stress levels and the physical environment of hospitals (Ulrich, Ximring, Quan, Joseph, & Choudhary, 2004). Many researchers are currently working on ways to ameliorate this concern, but the design of ceilings is one factor that is often overlooked. Ceiling design is particularly important in contexts where patients may often be laying on their backs during exams, looking at the ceiling, as is typically the case in dental offices.

Research Methods
The project consists of three phases: design, fabrication, and evaluation. In the design phase biological research, biomimicry case studies, and computational form generation will be used as a basis for creating a novel ceiling texture. This design will be environmentally responsive, meaning that its form will gradually and dynamically change in a natural fashion.

In the second phase, the ceiling installation will be built using digital fabrication, and it will be assembled and installed on-site at a dental facility. The dental office used in this study has two examination rooms with identical layouts and equipment, as well as nearly identical views to the outside environment. The ceiling installation will be assembled in one of the two rooms, with the other left in its current condition as a control.

In the third phase, the effects of the biomimetic installation will be tested using post-occupancy evaluation techniques, including surveys and observation. Patient stress levels will be measured through both self-reporting and non-invasive physical tests.

Outcomes
The results of this study will contribute to the empirical literature on biomimetic design and will help in the development of more soothing medical examination rooms. The use of evidence-based design to improve healthcare outcomes is currently a very active field of study, but the effect of ceiling textures is a factor that has not been widely examined. The current study will help to fill that gap by gathering evidence that can ultimately lead to better experiences for patients and healthcare workers.

**REFERENCES (APA)**


Interior Design for Informal Science Learning in Community Science Centers

Barb Young & Hyun Joo Kwon
Purdue University

ABSTRACT

Informal science learning is expected to impact interest in science and future innovation in the U.S. According to a report from the National Research Council (NRC) (2008), informal science learning in community science centers is one of the key factors, along with k-12 and higher education. Falk and Dierking (1992) proposed that the experience, and motivation to learn, in informal science environments is affected by personal contexts, social contexts, and the physical context. While frameworks exist that study the personal and social contexts on informal learning in these environments, fewer studies have focused on physical aspects of the environment aside from interactive exhibit design.

Promoting informal science learning through exhibit design has received attention in the literature, but fewer studies give attention to the role of the physical environment, including organization of exhibits within the space (Macleod, 2005; Schwan et al., 2014; Wineman and Peponis, 2010). Building guidelines and standards for museum buildings exist, but the needs of small, community, interactive, centers for informal science learning do not fit the traditional model of museum space.
Specifically, the central mission for interactive learning and play differentiates this type of museum experience. Given the current understanding of informal learning as a self-directed activity compelled by motivation, this poster explores specific elements of interior space which promote a variety of optimal conditions for informal science learning in community science centers. Six factors were compiled from the existing literature pertaining to personal and social context of informal science learning, exhibit design for informal science learning, and museum wayfinding and design: 1) organization and wayfinding, 2) visibility, 3) accessibility, 4) affordances, 5) light levels, and 6) acoustics.

A case study for two science centers, similar in size, mission, and community amenities was developed using the six categories. Notes and sketch diagrams of the user’s interaction with the physical environment are collected with a time-based observation instrument. Visibility is analyzed using space syntax software. After the observation sessions, individual interviews are conducted with the science center staff and visitors. Interviews provide further insight or clarification on observed behavior. Staff and visitors are also asked to share opinions, attitudes, and perceptions related to the six identified categories.

This poster will include a graphic analysis, using space syntax software for analysis of visibility in the spaces. Research notes from observations and interviews with users of the space will also be included. The poster will communicate considerations for promoting positive impacts, and mitigating negative impacts, of designed interior space on informal learning through the six categories. Results of this study can be used as best practices for the design of community science centers and other organizations with a primary mission to promote informal learning.

REFERENCES (APA)


Understanding Perceptual Cues in the Design of Lighting in Biophilic Environments

Tina Sarawgi
The University of North Carolina at Greensboro

ABSTRACT

Since Ulrich’s (1984) seminal work highlighting the connection between biophilia and human well-being, several studies now support the importance of biophilic design, which involves connecting built environment with nature and its representations. Kellert (2008) discusses the importance of biophilic design as a “missing link” in sustainable design, presenting an elaborate list of dimensions, elements and attributes of biophilic design. Under design element of “light and space”, he notes lighting as an important contributor to a biophilic environment identifying six lighting-specific attributes: filtered and diffused light, light pools, natural light, light and shadow, warm light, and light as space and form.

Boyce (2014) remarks that the “luminous environment is the starting point of perception” … and lighting could change the perception of spaces and the objects in them. He categorizes the perceptual aspects of lighting into simple and higher-order perceptions. Simple-order perceptions include lightness, brightness (luminance and brightness, light distribution and brightness, luminaire luminance and brightness, light spectrum and brightness, sparkle); and color appearance.
Higher-order perceptions include evaluative dimension (pleasant-unpleasant scale), perceptual clarity, and spaciousness.

Unfortunately, the discussion of lighting and biophilia has largely been focused on biological and physiological aspects of lighting. While closely linked to the evolutionary theory, it leaves out an important contributor to human response to biophilic environments—perceptual aspects of lighting. This poster will link the perceptual aspects of lighting to biological and physiological rhythms in designing biophilic environments. It will trace the perception and psychology of lighting and connects it to the aforementioned lighting-specific attributes defined by Kellert. Perceptual cues support the function of the visual and the circadian systems (Simeonova, 2004). The perceptual aspects of lighting and their interpretation of the physical world can be used to gain a deeper understanding of the psychological needs behind Kellert’s lighting-specific attributes.

**REFERENCES (APA)**


Finding a Way: Aids to Support Children with Autism Spectrum Disorder (ASD)

Julie E. N. Irish & B. Martinson
University of Minnesota

ABSTRACT
Adults with Autism Spectrum Disorder (ASD) have described the difficulties they had as children finding their way around school. ASD is a lifelong developmental disorder which has risen at a concerning rate to affect 1:68 children (CDC, 2014). To date, research has focused on educational interventions and learning strategies to support children with ASD in school but there has been little research into how the design of the physical environment could support them. Since we know that children with ASD can be especially sensitive to their environment (APA, 2013), this is an overlooked area of study. In addition, existing research is often anecdotal and lacks an evidence basis (Martin, 2014; Shabha & Gaines, 2011). This research took an evidence-based approach to design an exploratory experiment to determine whether the addition of wayfinding aids, (colored doors, colored shapes on floors, and signage), in an elementary school hallway could help children with ASD to find their way to a given destination with minimal assistance and increased independence. This could potentially improve their wayfinding ability, promote their independence, and save the resources of teachers’ aides who frequently escort children with ASD.
Another important aim of the study was to find out what children with ASD who took part thought about their experience wayfinding along the route in the school hallways. Their opinions and perspectives could be valuable to inform designers when they are considering implementing wayfinding aids in schools. The theory behind the research is Person-environment (PE) fit theory which examines what contributes a good fit between an individual and their environment. According to PE fit theory, if a person is well-matched to their environment it can have a positive effect on them (Kristof-Brown & Guay, 2011). This research poster outlines the procedure for setting up and carrying out the experiment. School District and Institutional Review Board approval were required prior to obtaining parental consent. Study logistics were discussed with teaching and facilities management staff and a suitable site identified. A wayfinding route was found that subjects were not familiar with as their prior knowledge could confound the study. Subjects were selected from a convenience sample of children diagnosed with ASD aged 8-11 years old who attended a summer school at an elementary school in the US. Subjects (n=9) were randomly assigned to control or treatment groups. The study route was set up. For both groups, the subject was first given instruction and shown the way from a start point to a given destination by the researcher. Next, he/she was taken back to the start and asked to find the way on his/her own. Subjects in the control group had to find their way using existing cues in the environment. Subjects in the treatment group had to find their way with the addition of colored wayfinding aids applied along the route. A mixed methods approach was taken to data collection. School records were mined for demographic information. Observations and behavioral mapping correlated with video and audio recordings. Environmental data was collected to inform future studies, e.g. light and sound levels, colors, and materials. A post-study interview/questionnaire to all subjects aimed to find out what they felt about their wayfinding experience. Data analysis includes whether the subject successfully reached the destination or not, the time it took them, and whether they reached it directly or indirectly. The amount of assistance and independence is measured by the proximity of the researcher and the number of physical and verbal prompts given. Data from the questionnaire helps us understand the wayfinding experience of children with ASD. By documenting an
evidence-based research process, this exploratory study could act as a model for other designers and researchers to follow and add to the interior design body of knowledge.

REFERENCES (APA)


APPENDIX

Wayfinding Aids for Treatment Group

- Start Point
- "No Entry" barriers in hallway
- Existing doors retained as is
- Aluminium glass doors held open
Physical Environmental Factors for Aging in Place

Seunghae Lee
Oregon State University

ABSTRACT

The population worldwide is aging as lifespans increase while birth rates decrease, resulting in the number of people older than 65 years of age surpassing the number of younger cohorts (United Nations, Department of Economic and Social Affairs, Population Division, 2013). As people age, their physical and cognitive abilities decrease, and it causes a lack of capacity to cope with challenges performing daily activities in their home environment. Although many elderly people move into care facilities when they can no longer sustain their living in their own houses, they may still wish to age in their own places. The topic of aging in place has been attracting scholars’ and researchers’ attention from various sectors. Federal policies incorporate provisions that are inclusive of this local movement of promoting aging in place (Greenfield, 2012). As Greenfield (2012) explained, aging in place is theorized as a person-environment phenomenon in an ecological framework of gerontology.

This study aimed to explore the Person-Environment fit in elderly housing in order to promote aging in place in a home environment. Previous studies have demonstrated that physical environmental intervention is as critical as other interventions such as social and medical (Gitlin, Corcoran, Winter, Boyce, & Hauck, 2001; Robert Wood Johnson Foundation, 2013). Although policies have not yet been implemented to help elderly people age in place with physical environmental support, it is time to explore elderly people’s needs in this area. For this purpose,
the structured interviews were conducted to identify physical environmental factors that elderly people perceive as the areas where improvement is needed. The subjects of this study were 31 older adults recruited through a university’s center for aging research registry; 22 female participants and 9 male participants were interviewed for about an hour per each. Interviews examined areas that older adults felt were difficult to perform Activities of Daily Living (ADL) around their houses. Results showed that elderly people felt most dissatisfied with stairs, while they were highly satisfied with other areas in their home environment. This study also explored physical and spatial characteristics that older adults felt satisfied or dissatisfied with and difficult-to-perform activities in bathroom and kitchen areas. Results revealed that elderly people felt most uncomfortable taking baths (average 1.58; 1 being very uncomfortable and 5 comfortable) while they felt comfortable (average 4 or over) for most of other activities such as using the sink or showering. For the kitchen area, participants felt comfortable for most daily activities in the kitchen. For needs for assistive devices, participants did not feel that they needed assistive devices such as adaptive tableware, touchless faucets, or adjustable-height sinks (averages around 2; 1 being extremely unnecessary). The only exception for needs for assistive devices was that they felt they needed accessible shelving (average 3.77). Interviews with participants showed that while they felt mostly satisfied with current conditions of their home environments, they felt difficulties to perform activities where they needed to deal with heights such as stairs and shelves. Some implications are that manufacturers and designers of products for elderly people may focus on specific products to offer adjustability and accessibility. Future policies for elderly people may need to reflect this finding that physical environmental support is needed for easier access to heights.

REFERENCES (APA)


Greenfield, E. (2012). Using ecological frameworks to advance a field of research, practice, and
policy on aging-in-place initiatives. The Gerontologist, 52(1), 1-12.


Linking Wellness to Design: Creating a Tool for Evaluating User’s Wellness Experience at the Main Lobby of Healthcare Environments

Yongyeon Cho & Jihyun Song
Iowa State University

ABSTRACT

Issue
The design of a healthcare facility’s main entry lobby holds a great potential for user’s health and well-being. The main lobby provides the first impression on the facility to the patients and visitors because it sets expectations for the quality of clinical care (Malkin, 1991). Research findings suggest that healthcare facility design has psychological, physiological and behavioral effects on users’ life satisfaction (Ulrich, 1991; Ananth, 2008). Others presented a wellness-focused model of care as an important consideration in the planning and design of healthcare environments with the evolving concepts of community-centered care, and preventive care rather than treatment (Silvis, 2014; Kraus & Renner, 2016). However, little research has focused on evaluating user’s experience of the main lobby that is evidence-based and associated with a wellness concept in healthcare environments. Therefore, the objectives of this study are: 1) to create user-centered wellness design evaluation criteria to evaluate design of the existing facilities for which future renovation or construction is planned, 2) to examine the importance of design features that are supportive of the physical, emotional, and social experience of users, and 3) to develop and validate design guidelines and a checklist for a main entry lobby that can support design-related decision
making by designers and facility managers.

Process and method
A mixed method of both qualitative and quantitative was used to create a valid set of wellness design evaluation criteria. First, content analysis was conducted to investigate existing evaluation standard and design guidelines (Appendix A). Based on the newly developed design goals, detailed criteria for the 20 wellness design features were identified (Appendix B). Second, an online survey and statistical analysis were used to examine how users might perceive the 20 wellness design features. A total of 275 human subjects were participated in the survey; participants had visited a healthcare facility at least once during the past 12 months in Iowa. The data was analyzed to identify which design features and wellness goals are important, and how the features affected the physical, emotional and social wellness of the participants.

Results
To measure users’ wellness design experience, the mean values of the impact on the three types of wellness were used as criteria for assessing whether or not the user’s experience of the main entry lobby was fulfilled with regard to physical, emotional and social interactions of wellness aspects. Survey results indicate that enhancement of safety and security was the most important aspect of designing a healthcare facility’s main entry lobby. Optimal positive distractions were also noted as a key to enhance users’ perception of and experience in the main lobby. Various visiting patterns and demographics differences had a minor impact on the survey results. Based on analysis of the results, a wellness design evaluation tool (Appendix C) was developed, containing a combination of a design checklist and diagrams to integrate and communicate the evidence-based criteria for designers (Appendix D). The tool was tested at the three different healthcare facilities to identify the errors and difficulties in using the evaluation criteria to assess users’ wellness experience (Appendix E).

Importance of the Topic
This research introduces evidence-based design evaluation criteria for a healthcare facility’s main entry lobby that will support the wellness experience of patients, family members, and staff. Although the survey was conducted with a limited geographical and demographic variation, the
study provides a framework for creating and validating a wellness design evaluation tool for a future research. New insights from this work suggest research possibilities and application of the tool in the field among architects, interior designers, and managers of healthcare facilities.

REFERENCES (APA)


## Appendix A:
A summary of different POE tools and guidelines for evaluating the main entry lobby of a healthcare facility

<table>
<thead>
<tr>
<th>Published organization</th>
<th>Country</th>
<th>Start/ Update</th>
<th>Field of application</th>
<th>Format</th>
<th>Key information</th>
</tr>
</thead>
</table>
| The Center for health design | The United States | 2011/2015  | Healthcare (Intensive care unit patient room) | Score based a POE tool in Microsoft Excel (Checklist) | 1. Structure and format of the POE tool (Category, EBD goals, Score system, and assessment aids)  
2. Applicable healthcare design (patient room)  
3. Focused on quality of care and patient experience |
| The Center for health design | The United States | 2011/2015  | Healthcare (Outpatient clinics)         | Score based a POE tool on PDF (Checklist)   | 1. Structure and format of the POE tool (Principle, Design features, and Score system)  
2. Applicable healthcare design (outpatient clinic)  
3. Focused quality of care and patient experience |
| The Facility Guidelines Institute | The United States | 1947/2014 | Any types of healthcare built environments | Guidelines on paper (Standards)            | 1. Applicable federal guidelines of healthcare facility design  
2. Reviewed different types of healthcare facility |

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<tr>
<th>Published organization</th>
<th>Country</th>
<th>Start/ Update</th>
<th>Field of application</th>
<th>Format</th>
<th>Key information</th>
</tr>
</thead>
</table>
| U.S Green Building Council | The United States | 2009/2014  | Healthcare (sustainable design) | Score based an evaluation tool on paper   | 1. Applicable sustainable design strategy in healthcare design  
2. Architecture and community focused health and wellbeing |
| Building Research & Information | Australia      | 2010/2016  | Any types of built environments         | Multidimensional POE tools                 | 1. General categories for interior space design POE  
2. Applicable outside of the U.S  
3. Closely related to human health and wellbeing |
| Centers for Disease Control and Prevention | The United States | 2008/2014 | Any types of worksite                  | Score based an evaluation tool on paper (Score card) | 1. Applicable other than built environment focused evaluation  
2. Federal level assessment |
## Appendix B:
A summary of design criteria with specific design features (#1-20) and wellness design goals (#1-5)

<table>
<thead>
<tr>
<th>Wellness goals</th>
<th>Design features</th>
<th>Summary of specific design criteria</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>1. Improvement of user's experience</strong></td>
<td>01. Entrance experience</td>
<td>Covered area for vehicle drop off and pick up, proximity of parking lots, pedestrian entrance, clear signage, bicycle lots</td>
</tr>
<tr>
<td></td>
<td>02. Entry vestibule experience</td>
<td>Wheelchair storage area that out of the path of traffic, view of drop off and pick up area, waiting area for discharge</td>
</tr>
<tr>
<td></td>
<td>03. Basic space program</td>
<td>Information center, waiting area, public restrooms for male, female, and family, space for special group of people</td>
</tr>
<tr>
<td></td>
<td>04. Additional space program</td>
<td>Kids area, multi-purpose lactation, place of respite, drinking water, local phone calls, power outlets, wireless connection, clock, waiting monitor, vending area, kiosks or other displays for information, clear signage and landmark for wayfinding</td>
</tr>
<tr>
<td></td>
<td>05. Accessibility to other space</td>
<td>Cafe, gift shop, book store, chapel, business center, family library, exercise facility on-site, convenience store</td>
</tr>
<tr>
<td><strong>2. Optimal positive distraction</strong></td>
<td>06. Nature elements</td>
<td>Skylight, large windows for outside view, accessible gardens, indoor plants, water features</td>
</tr>
<tr>
<td></td>
<td>07. Controlled lighting system</td>
<td>Overall experience of lighting, minimizing glare on the floor, providing efficient lighting for the purpose of circadian rhythm, lighting aesthetic</td>
</tr>
<tr>
<td></td>
<td>08. Visual appeals</td>
<td>Hospital brand, harmonized color, finishes, materials, nature themed artworks</td>
</tr>
<tr>
<td></td>
<td>09. Perception of noise</td>
<td>Noise from equipment, sound of footsteps, murmur of conversation</td>
</tr>
<tr>
<td></td>
<td>10. Positive sound distractions</td>
<td>White noise, access to soothing music, nature sound such as from water feature, or interior healing garden</td>
</tr>
<tr>
<td></td>
<td>11. Air comfort and freshness</td>
<td>Comfortable air temperature, relative humidity, and flow speed, no unpleasant smell, air quality and freshness, appropriate temperature in season</td>
</tr>
<tr>
<td><strong>3. Enhancing user's sense of control</strong></td>
<td>12. Environmental support for physical activities</td>
<td>Highly visible staircase, interior healing garden, meditation garden, indoor climbing wall, space for free body fat assessment</td>
</tr>
<tr>
<td></td>
<td>13. Visual and auditory privacy</td>
<td>Barriers in seating, privacy screens on registration area and/or kiosks</td>
</tr>
<tr>
<td></td>
<td>14. User controlled environments</td>
<td>Adjustable furniture, adequate storage space for personal belongings, manual shading system</td>
</tr>
<tr>
<td></td>
<td>15. Information for healthier life</td>
<td>Brochures, or pamphlets that address the benefits of health eating, overweight, or obese, nutritional information for foods and beverages sold in vending area, local farmers' market information</td>
</tr>
<tr>
<td><strong>4. Aspects of social support</strong></td>
<td>16. Space configuration</td>
<td>Visibility within space, spatial connectivity</td>
</tr>
<tr>
<td></td>
<td>17. Variety of furniture</td>
<td>Variety of seating options for different group sizes, wide age groups and size variations</td>
</tr>
<tr>
<td><strong>5. Enhancement of safety and security</strong></td>
<td>18. Access control system</td>
<td>Protection devices, automatically closed door with alarms, safeguard staff, adequate exterior lighting</td>
</tr>
<tr>
<td></td>
<td>19. Cleanliness and maintenance</td>
<td>Cleanliness of overall waiting area, quality of maintenance, public restroom experience</td>
</tr>
<tr>
<td></td>
<td>20. Infection control system</td>
<td>Plenty of sinks and/or alcohol gel dispensers in visible and accessible locations, separated area for infectious visitors, visual cues as reminders for hand washing/sanitation</td>
</tr>
</tbody>
</table>
Appendix C:
Final template of a wellness design evaluation tool for the main entry lobby of a healthcare facility

<table>
<thead>
<tr>
<th>WELLNESS DESIGN EVALUATION TOOL: the MAIN ENTRY LOBBY of a HEALTHCARE FACILITY</th>
</tr>
</thead>
<tbody>
<tr>
<td>This evaluation tool is designed for an evaluator to assess your wellness experience through design of the main entry lobby of a healthcare facility. Please choose one main entry lobby of a healthcare facility where you have had experience. The purpose of this evaluation tool was to:</td>
</tr>
<tr>
<td>1. Develop and validate interior design checklist to support design decisions making for the main entry lobby of a healthcare facility.</td>
</tr>
<tr>
<td>2. Develop and validate wellness design evaluation criteria that can be used for existing healthcare environment or new construction projects. Please fill out the following information.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Facility name</th>
<th>Evaluation location</th>
<th>Evaluation Date/Time</th>
<th>PW: Physical Well-being</th>
<th>ER: Emotional Health</th>
<th>SI: Social Interaction</th>
</tr>
</thead>
</table>

In the table of the main tab, this tool is organized by 26 Questions in 5 wellness goals. An evaluator can change orders of the questions by either qualifier of user experience, or leave the order by question number. And then you will check each design feature of the design feature in the main entry lobby in your facility. You can skip the question if the design feature does not apply to your main lobby, otherwise please go to the next question. When you click summary of detail of the design feature, you can see a chart and written explanation of the detail. It helps your understanding of the design feature and your evaluation guidelines.

Next to each design feature, there is a list of wellness category that can measure how each design feature fulfill user’s wellness through design. Physical well-being is the ability to maintain a healthy quality of life that allows us to get through daily activities without undue fatigue or physical stress; emotional health in the ability to acknowledge and share feelings of hope, love, joy and happiness in a productive manner; social interaction in the ability to relate to and connect with other people in our word positively.

If the design feature has no impact on physical well-being, check the circle of Not applied. If you find the design feature provide negative impact, check the circle of Bad. If you find the design feature provide positive impact, check Good, or Better by intensity of impact. Good means minor positive impact, Better means strong positive impact. And then go to emotional well-being, and social interaction. The process will be same as gauging Physical well-being. When you check the questions, the score will be automatically calculated.

<table>
<thead>
<tr>
<th>Wellness Design Goals</th>
<th>Design features</th>
<th>Summary of details</th>
<th>How does the design feature in the main entry lobby impact your wellness?</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>□ 1 Entrance experience</td>
<td>Compact area for vehicle drop off and pick up, proximity of public area, public entrance, clear signage, clear lighting.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>□ 2 Entry vestibule experience</td>
<td>Way to public spaces that are not in the path of traffic, vehicular drop off and pick up area, seating area for discharge.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>□ 3 Basic space program</td>
<td>Information center, waiting area, public restrooms for male, female, and family, space for special group of people.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>□ 4 Additional space program</td>
<td>Time new, multi-purpose function, place of people, drinking area, break area, nursing corner, spacious conference, entry, waiting area, hands-on display for information, clear signage and handouts for wayfinding.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>□ 5 Accessibility to other space</td>
<td>Corridor, stairway, desk, bulletin board, family library, reception facility outside, communication area.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>□ 6 Nature elements</td>
<td>Skylight, large windows for outside view, accessible garden, interior plants, water features.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>□ 7 Controlled lighting system</td>
<td>Overall experience of lighting, servicing glare off the floor, provides sufficient lighting for the purpose of creating task, lighting design.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>□ 8 Visual appeal</td>
<td>Hospital branded, humanized color, finishes, material, access, framed artwork.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>□ 9 Perception of space</td>
<td>Views from elevator, sound of footsteps, summer of construction.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>□ 10 Positive sound</td>
<td>None, no access to soothing music, nature sounds such as from water feature, or interior landscaping.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>□ 11 Contact and refreshment</td>
<td>Comfortable temperature, relative humidity, and flow speed, no unpleasant sound, or quality of refreshment, appropriate temperature in women.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>□ 12 Environmental support for physical activities</td>
<td>Highly visible exercise, indoor leisure garden, recreation garden, indoor cycling area, space for the body to maintain.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>□ 13 Visual and auditory privacy</td>
<td>Encourages in seating, privacy screens on separation area and/or walls.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>□ 14 User controlled instruments</td>
<td>Adjustable furniture, adequate storage space for personal belongings, manual day lighting system.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>□ 15 Information for healthcare staff</td>
<td>Brochures in seating, privacy screens on separation area and/or walls.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>□ 16 Space configuration</td>
<td>Visibility within space, spatial connectivity.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>□ 17 Variety of furniture</td>
<td>Variety of seating options for different age groups, wide age groups and size variations.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>□ 18 Access control system</td>
<td>Entrance, or partition that address the needs of health, personal, supervision, or door, hierarchical information for foods and beverages sold in vending area, local direct, carrier, information.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>□ 19 Cleanliness and maintenance</td>
<td>Cleanliness of overall seating area, quality of maintenance, public restrooms experience.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>□ 20 Infection control system</td>
<td>Quality of toilets and sink for improved in touch and accessible location, separated area for infectious virus, visual cues to avoid the risk of hand washing violation.</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Total raw evaluation score: 0.0 0.0 0.0 0.0 0.0

<table>
<thead>
<tr>
<th>PERCENTILE RANKS BASED ON RAW SCORE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Level of Quality</td>
</tr>
<tr>
<td>60 - 0</td>
</tr>
<tr>
<td>70 - 60</td>
</tr>
<tr>
<td>80 - 70</td>
</tr>
<tr>
<td>90 - 80</td>
</tr>
<tr>
<td>100 - 90</td>
</tr>
</tbody>
</table>

Disclaimer: This evaluation tool is based on currently available research evidence and expert opinions therefore may not exhaustively cover all main entry lobby design of a healthcare facility that may impact their health outcomes. The ratings produced by using the tool may vary depending on condition/user. This tool is developed as an individual research study.
Appendix D:
User-centered interface design with details of wellness design evaluation criteria and guidelines

[Image of the main entry lobby of a healthcare facility with a click for details button.]

To improve users' entrance experience, the following design criteria are recommended:

- **Responsive connection:** less than 3 minutes between a parking structure and the main entry lobby is recommended for easy accessibility.
- **Clear signage and wayfinding elements:** for locating and entering the main lobby are necessary.
- **Drop off and pick up areas:** for vehicles should be covered, for protection from harsh weather conditions.
- **Bicycle ports or storage areas:** may encourage visitors' physical activity and community engagement.
- **Crisis separation:** among a pedestrian entrance area for vehicle drop-off, and a bicycle port can prevent injury caused by collisions.

**PERCENTILE RANKS BASED ON CRITERIA**

09: Perception of Noise
14: Flexibility
20: Infection Control System
...
Appendix E:

A case study of using the wellness design evaluation tool for an existing facility (left), and documentation of the site condition (right)
Evidence-based Design Learning: Preparing Students for Careers in Healthcare Design

Taneshia West Albert, Miyoung Hong & Lindsay Tan
Illinois State University

ABSTRACT

This study explores the influence of the healthcare design studio experience on students’ short term professional goals. Here the authors compared healthcare-related certification and employment levels between two student cohorts, each within three months of graduation. The goals of the study were: 1) to increase the number of students who earned Evidence-Based Design Accreditation and Certification (EDAC); and 2) to increase the number of students who secured healthcare-related internship/employment.

Interior Design matters; this is well documented in the healthcare sector. However, it has been the authors’ experience that interior design students do not necessarily perceive the full value of pursing healthcare design practice. At the time of graduation, senior-level undergraduate students are focused on securing their first job (Chuang et al, 2009). Educators often take the broader view of preparing students for life-long careers-this means encouraging the attitudes and values appropriate to a professional, such as the “commitment to provide service to the public that goes beyond the economic welfare of the practitioner” (Sullivan, 2005, p. 36). In fact, students’ values play a crucial role in determining career choices (Riggenbach, 2008) and students may be
more committed to career goals when there is a clear connection between major coursework and professional practice (Leppel, 2001). Consider the possibility that students’ values, attitudes, and beliefs about healthcare design are strongly influenced by their experience in the healthcare design studio.

The authors approached this question from three different perspectives – education, research, and practice – they desire to improve the quality of healthcare design by educating emerging interior designers who are professionally competent, globally aware, and socially engaged. To this end, the team undertook to assess, revise, and realign the curriculum of a capstone undergraduate interior design studio to better prepare students for professional competencies and attitudes related to healthcare design practice. Changes to the curriculum included: requiring students to create a series of full scale testable mockups; creating an in-class discussion of designed spaces critically interconnected to a series of assigned theoretical readings; incorporating in-class discussions of key healthcare related cross disciplinary practice and design goals; and including of guest lecturers who discuss their expertise in the healthcare arena. These changes were implemented with the goal of relating what is learned within the studio course to what is done within healthcare design.

The authors will present the study’s findings along with suggestions for further research. Results include: 1) increasing the number of students who passed the EDAC exam to thirty percent of the class; and 2) increasing the number of students who secured healthcare-related internship/employment from to forty percent of the class. To some extent the course revisions were considered a success; however, further study is needed. The authors intend to undertake a second phase that surveys students’ attitudes, values, and beliefs related to healthcare design practice in order to better understand how the healthcare studio experience influences students’ short term professional goals regarding healthcare-related certification and employment. To that end, the authors will display students’ work highlighting evidence the materials learned from assigned readings thus offering insight into the understanding of evidence-based design. The authors will also share the most notable recurring comments in the course evaluations where the course had broadened student’s appreciation for possible practice relevant to interior design.
REFERENCES (APA)


America (2nd ed.). Son Francisco, CA. Jossey-Bass
APPENDIX

Student Work: Example of research poster presentation. Note use of evidence based design and healthcare practitioner patterns for design justification.
Student Work: Example of research poster presentation. Note use of Evidence Based Design principles for design justification.
Student Work: Example of research poster presentation. Note use of research for design justification.
Biophilic Design Considerations for Creating a Restorative Life Care Community (Adapting patterns of biophilia in senior housing for reducing stress)

Sahar Mihandoust & Michelle Pearson
Texas Tech University

ABSTRACT

A significant portion of the elderly population lives in care environments outside their homes. Homesickness and losing independence happen when elderly leave their homes. This change of environment leads to stress, cognitive impairments, and depression. These alterations can stimulate the production of hormones associated with stress (Ladeira, Gomes da Silva, & Barbosa, 2014). Stress is a forerunner of several diseases; therefore, creating a stress reducing environment is the key concept when designing for the elderly (Stein, Linn, 1983). Biophilic design interventions improve health and well-being in built environment by implementing natural solutions. In this study, firstly the literature review explored the relationship between patterns of Biophilic design with stress reduction. Visual connection with nature, biomorphic forms and patterns, material connection with nature, and complexity and order were the four patterns associated with lowering heart rate, blood pressure, skin conductance level, and brain activity; therefore these patterns were considered restorative and influential for stress reduction.

Secondly, a site in Carillon life care community, Lubbock, TX, was selected for integrating stress
reducing Biophilic design interventions. The dining hall and common space in Carillon care center were analyzed for existing problems. layout and circulation, visual connection with nature, artwork, and dominant colors and materials were the four major problematic categories.

Finally, according to the literature review in the first phase of the study, multiple stress reducing design solutions were suggested for each problem, and best fitting solutions were selected and applied to the Carillon lifecare community design.

REFERENCES (APA)


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 50 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>Biomorphic forms and patterns</td>
<td>Symbolic references to contoured, patterned, textured or numerical arrangements that persist in</td>
<td>Jaye, 2007) (Verset, 2012)</td>
</tr>
<tr>
<td></td>
<td>Positive distraction and restorative effects</td>
<td>Feuerstein, 2002)</td>
</tr>
<tr>
<td>Complexity and order</td>
<td>Views with less graphical complexity create less pleasant mental response</td>
<td>Biederman &amp; Verset, 2006) (S. Kaplan, 1988)</td>
</tr>
<tr>
<td></td>
<td>Rich sensory information that contributes to a spatial hierarchy similar to those encountered in nature. 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. The preferred fractal ratio according to Taylor is D ~ 1.3 - 1.8.</td>
<td>Wise &amp; Rosenberg, 1998) (Taylor, 2006)</td>
</tr>
</tbody>
</table>
Immersive Theater is a relatively new form of performance that relies heavily on the interaction between spectators, actors and a large-scale installed environment. Audience members are mobile throughout, and are encouraged to explore, touch, and interact with the interior elements as a way to enhance their experience with the narrative. “Immersive theatre...makes use of cleverly structured interiors and ingenious invitations for them to explore, addresses their bodily presence in the environment and its effect on sense making, and teases them with the suggestion of further depths just possibly within reach” (White, 2012, p.233).

The rise in popularity for this form of theater has also engaged a new type of audience. A participation study by Markusen & Brown (2014) reveals “that theater-goers increasingly value venues, not just performances, challenging owners and directors to curate settings as part of their offerings” (p. 866). This conclusion brings to question why lesser attention has been paid to the actual design of these alternative venues, as it continues to be proven that strategic design is one of the most critical elements in the success of an immersive theater production.

While little analysis has been done from an interiors perspective, we do recognize the trend away from the traditional theater venue. Industrial sites and large, vacant spaces provide the perfect
template for molding a plot-specific interior. By beginning with a shell of a building, designers have the ability to layer spaces, architectural elements, and design details in order to create an interior narrative complimentary to the story’s plot. This type of layered interior allows a patron to decide their unique path, through which they will follow over the course of the performance. Knowing each spectator will emerge with a different experience, an interior designer is challenged to create an environment with limitless options and intrigue. This thesis will explore the idea of designing a venue that specifically supports an immersive theater production, and considers whether a venue can be created before a narrative is chosen.

Research will involve examining the work of dynamic production companies specializing in immersive theater, with specific attention paid to London-based Punchdrunk. As a pioneer in the field, Punchdrunk has produced numerous theater experiences in which the lines between performer, spectator and space are constantly fluctuating. Projects like The Duchess of Malfi, set in a decommissioned pharmaceutical headquarters in the London’s docklands, and Sleep No More, currently running at the McKittrick Hotel in New York City, will serve as primary projects of reference.

Preliminary results indicate that space and movement become important tools in experiencing immersive theater. “Space functions as a plateau on which spectators become nomadic subjects immersed in its intensity, hence creating the conditions for this space to be perceived as being ‘in motion; as a site that constantly changes character and dynamics” (Papaioannou, 2015, p. 167). Strategic placement of rooms, hallways, detours and design elements allow for a tactile, physical and emotional plot progression for the spectator. The allure of discovery and the fear of a missed observation propels spectators forward, encouraging movement within the space in an attempt to uncover and encounter the next plot twist.

Also clear is the overwhelming success of this theater trend, and the amount of people reached through curiosity and intrigue. “The commercial success of Sleep No More and its infiltration of the zeitgeist have spawned a new wave of productions that find traditionally passive audiences open and even eager for participatory events” (Neher, 2016, p.109). This concept is a powerful opportunity for design, through art, to influence and challenge a new demographic of theater-goers.
REFERENCES (APA)


Mixed-use Building for Office Workers After Hours in the Central Business District of Richmond

Mingming Zhao
Virginia Commonwealth University

ABSTRACT

Work-related stress is an issue of growing concern around the world (Tennant, 2001). The relationship between work stress and individuals’ psychological and physical health is well acknowledged (Leka, Griffiths and Cox, 2004). In the survey of “stress in the workplace” conducted by American Psychological Association in 2012, 41% of employed adults report that they typically feel stressed out during the workday (American Psychological Association, 2012). This percentage is up from 36% in 2011. Historically, Central Business Districts are a focal point of cities, and are occupied by a large group of office buildings and a number of retail spaces. However, in most cities, the design of Central Business Districts often cannot serve office workers very well. According to Elsbach and Bechky (2007), office workers regularly leave their offices in search of more relaxed, creative environments. Hence, focusing on the design of CBDs would positively impact health and wellness of office workers.

However, most of the design research about CBDs has focused on the spaces in which people work during office hours. Consideration for office workers in the CBD after office hours is relatively rare. Hence, I will attempt to consider what else is needed to support the life of the office worker,
and what kind of spaces they are looking for after hours.

Several primary research methods will be adopted. First, survey researching on how the design of traditionally planned CBDs fails to support wellness of office workers. Then, examining what is needed to support the wellness of office workers. My methods will be reviewing a number of relative papers. In addition, in order to make it be specific to the office workers in the CBD of Richmond, I am going to adopt qualitative methodology including interviews and daily video records of the CBD condition, to approach the local living habits. In addition, analyzing the case studies of recently done CBDs that tackle this question. The Shibaura House, designed by Kazuyo Sejima, located in the business district of Tokyo in Japan, will be served as a primary referential project.

There are three objectives in this research. First, designing a series of mixed-use spaces in an existing building in the Central Business District of Richmond to support the life of office workers after office hours. The site building is named Bank of America Center which is located in 1111 East Main Street in Richmond, Virginia. It also aims to improve wellness of the office workers in the CBD of Richmond, and try to define the CBD in a new way. The preliminary results for this research indicate the importance of the concern for office workers after hours. There is a necessity to focus on the practical effect of the mixed-use building on reducing work stress, improving office workers’ health and enhancing wellness of office workers. It could be an excellent resource for office workers. Moreover, the multi-functional building I am going to design could be a significant opportunity to impact the development of the CBD in Richmond in a new way.

REFERENCES (APA)


Well-Being Amenities in the Corporate Urban Campus

Anna Osborne, Amy Huber & Todd Baisch
Florida State University

ABSTRACT

Purpose
To improve employee well-being, reduce healthcare costs, and meet the desires of a younger workforce, this study used frameworks of holistic wellness to help employers identify which well-being amenities and services (i.e. those aimed at encouraging healthy behaviors) are valued by urban campus employees and what influential factors encourage their utilization.

To enhance employee well-being and reduce healthcare costs many companies have adopted wellness programs which incorporate a myriad of programs, services, and amenities for the purpose of improving health. Yet, according to the research organization, RAND (2014), participation rates are low (20% to 40%) while reasons for this remain unclear. Theoretical frameworks and scholarly models commonly categorize wellness into seven categories (Table 1). At the same time, evidence suggests that leading workplace health concerns include obesity, physical activity levels and stress management (Hallal, Andersen, Bull, Guthold & Hanskell, 2012; Makrides, Heath, Farquharson & Veinot, 2007). This comparison suggests that employers would benefit from knowledge of any factors that may impact the utilization of amenities that target physical, emotional and social wellness (Table 2).
At the same time, changing workforce demographics suggest a growing preference towards urban areas that offer access to public amenities, thus leading companies to rethink their office locations in hopes of attracting and retaining talent (Vogelmann, 2016). Yet, despite evidence suggesting the work environment plays an important role in achieving these goals, employers may forfeit desirable amenities when faced with acquiring real estate capable of supporting their staff within desirable, yet costly, urban locations. Consequently, urban campus employees are a demographic of growing importance, as their workplace environment typically offers close proximity to many amenities.

As amenities have come to be viewed as a means to satisfy business objectives, understanding their role and effectiveness within the workplace may play an important role in improving employee wellness, and attracting and retaining talent. However, there is little empirical knowledge regarding which amenities employees’ value or which factors may influence their utilization. While common workplace amenities often include break rooms, multi-purpose spaces, fitness areas, food and beverage services, lactations rooms and lounges (International Facility Management Association, 2012) (Table 3), to date, existing literature has not acquired wellness amenity preferences by asking the employees themselves.

Methods
An electronic survey was distributed to participants working within urban campus environments. Statistical analyses were conducted to search for patterns and trends amongst amenity preferences, factors influencing their utilization, and differences amongst demographics.

Findings & Implications
This presentation will discuss these findings relative to employee preferences for food and refreshments, fitness and recreation, gathering and collaboration, and amenities that support work-life balance. These findings suggest some disconnects between the well-being amenities and services currently offered in corporate urban campuses and the actual desires of employees. From this, one could gather that employers should consider aligning amenities and services offered to their employee demographics.
This study’s findings may potentially increase employee well-being by helping employers prioritize amenities, incorporate factors that potentially increase their utilization, and help determine suitable locations for such amenities within a corporate urban campus.

REFERENCES (APA)


<table>
<thead>
<tr>
<th>FRAMEWORKS</th>
<th>WELLNESS CATEGORIES</th>
<th>Physical</th>
<th>Emotional/Psychological</th>
<th>Social</th>
<th>Intellectual</th>
<th>Spiritual</th>
<th>Occupational</th>
<th>Environmental</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hettler: 6 Dimensions of Wellness</td>
<td>Physical activity; Diet and nutrition; Avoiding tobacco, illicit drugs, and excessive alcohol; Personal responsibility for physical health</td>
<td>Awareness and acceptance of feelings; Effectively coping with stress; Maintains satisfying relationships; Appreciate support</td>
<td>Connecting with community and by building relationships; Appreciate and preserve community; “Wholeness” of groups of people and sense of community.</td>
<td>Intellectual growth and stimulation; Problem-solving and creativity; Exploring personal interests; Reading for worldly updates; Expand knowledge and creativity</td>
<td>Meaning and purpose in human life; Understanding and bringing meaning to ups and downs; Actions consistent with beliefs and values</td>
<td>Personal satisfaction and enrichment through work; Careers that support personal values, interests and beliefs;</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ebert: Subelements of 6 Dimensions (Health Cube)</td>
<td>Functions of body system, fitness level, metabolism, blood chemistry; Presence or absence of disease(s) and predisposing factors; Flexibility, muscle tone; Exposure to alcohol, stress, and radiation</td>
<td>Ability to relate to personal values, self-knowledge, love of self and feelings of self-importance; Express feelings appropriately; Honesty; Empathy; Sexuality</td>
<td>Levels of social skills, comfort being involved with others (social functioning); See oneself as a member of a larger society; Concern for others, respects the differences of others</td>
<td>Intelligence, adaptability, sexuality; Perception of others; Ability in decision-making, coping, relaxing; Tolerance, judgment</td>
<td>Life force (Inspiration); Survival instincts; Enthusiasm/pleasure-seeking; Acceptance of self-limitations (death); Creativity, ethics/integrity/moral code; Ability to love and be loved, trust, feelings of selfishness</td>
<td>Problem-solving, professional advancement, meeting challenges; Financial “success”; Impact of recognition for contributions; Sharing experience with co-workers, service to humankind, goals for “greater good”</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Crose, Nicholas, Gobble &amp; Frank: Multidimensional Assessment Components (adopted from Hettler)</td>
<td>Medical history/medications, reproductive health history; Body awareness/body image; Exercise and eating behaviors; Attitudes toward physical fitness and health care</td>
<td>Psychiatric history/medications; Coping style/patterns; Self-awareness/self-image; Attitudes toward emotional expression/self-disclosure</td>
<td>Psychosocial history/history of significant relationships; Social network/density, Relational style/patterns; Attitudes toward relationships, seeking help from others</td>
<td>Education/learning history; Mental status; Cognitive style/flexibility; Attitudes toward learning</td>
<td>Religious/spiritual history; Life satisfaction, purpose and meaning in life/beliefs about death; Attitudes toward transpersonal aspects of living</td>
<td>Work history; Vocation/avocation/leisure patterns and balance; Vocational goals; Attitudes toward work and leisure</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Adams, Bezen &amp; Steinhardt: Perceived Wellness Survey</td>
<td>Positive perception and expectation of physical health</td>
<td>Emotional: perception of secure self-identity, positive sense of self-regard (self-esteem); Psychological: perception of experiencing positive outcomes to events and circumstances of life</td>
<td>Perception of having support from family or friends in times of need; Perception of being a valued support provider</td>
<td>Perception of being internally energized by an optimal amount of intellectually stimulating activity</td>
<td>Belief in unifying a force, an integrative force between the mind and body, or as a positive perception of life</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Anspaugh, Hamrick &amp; Rosato: 7 Components of Wellness</td>
<td>Ability to carry out tasks, develop cardiorespiratory and muscular fitness, maintain adequate nutrition and a healthy body fat level; Avoids abusing alcohol, drugs or using tobacco products</td>
<td>Ability to control stress and express emotions appropriately; Ability to recognize and accept feelings and not be defeated by setbacks and failures; Cope with life’s ups and downs effectively</td>
<td>Ability to interact successfully with people and personal environment; Ability to develop and maintain intimacy with others; Respect and tolerance for different opinions and beliefs</td>
<td>Ability to learn and use information for development; Growth and learning to manage challenges; Acting on principles of wellness; Responsibility for knowledge and behavior connection; Concepts of focus of control and self-efficacy</td>
<td>Developing strong sense of values, ethics, and morals (Overlaps with the emotional component of wellness)</td>
<td>Ability to achieve a balance between work and leisure time; Attitudes about work, school, and career; Understanding occupational wellness adds focus to your life through work</td>
<td>Ability to promote health measures to improve standard of living and quality of life in community, including laws and agencies to safeguard; Factors include water, food, and air, socioeconomic factors of income, housing, poverty, and education</td>
<td></td>
</tr>
</tbody>
</table>
Table 2

*Relationship between wellness categories, top workplace health concerns and amenity categories*

<table>
<thead>
<tr>
<th>IFMA Amenity Categories</th>
<th><em>Fitness &amp; Recreation</em></th>
<th><em>Work-Life Balance</em></th>
<th><em>Food &amp; Refreshments</em></th>
<th><em>Gathering &amp; Collaboration</em></th>
<th>Commerce</th>
<th>Information Centers</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Wellness Categories</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Primary</td>
<td>Physical</td>
<td>Emotional</td>
<td>Physical Social</td>
<td>Emotional Social Intellectual</td>
<td>Emotional</td>
<td>Intellectual</td>
</tr>
<tr>
<td></td>
<td>Social Spiritual</td>
<td>Emotional Social</td>
<td>Social</td>
<td>Intellectual</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Secondary</td>
<td>Physical</td>
<td></td>
<td>Intellectual</td>
<td>Physical Occupational</td>
<td></td>
<td>Occupational</td>
</tr>
<tr>
<td></td>
<td>Spiritual</td>
<td></td>
<td></td>
<td>Occupational</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Health Concerns</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Addressed by Primary</td>
<td>Obesity</td>
<td>Stress Mgmt.</td>
<td>Obesity</td>
<td>Stress Mgmt.</td>
<td>Stress Mgmt.</td>
<td>Stress Mgmt.</td>
</tr>
<tr>
<td></td>
<td>Lack of PA</td>
<td></td>
<td>Lack of PA</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Addressed by Secondary</td>
<td>Stress Mgmt.</td>
<td>Lack of PA</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Notes. PA = Physical Activity; IFMA = International Facility Management Association; * = Amenities with highest potential to influence healthy behaviors*
Table 3

*Top six amenities in workplace (International Facility Management Association, 2012)*

<table>
<thead>
<tr>
<th>AMENITY</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Break Room</td>
<td>93%</td>
</tr>
<tr>
<td>Multi-Purpose Room</td>
<td>72%</td>
</tr>
<tr>
<td>On-Site Fitness Center</td>
<td>54%</td>
</tr>
<tr>
<td>Food &amp; Beverage Services</td>
<td>52%</td>
</tr>
<tr>
<td>Nursing/Lactation Room</td>
<td>50%</td>
</tr>
<tr>
<td>Lounge</td>
<td>39%</td>
</tr>
</tbody>
</table>
The Effects of Biophilic Design in Interior Environments on Noise Perception: A Case Study of Noise Annoyance Reduction in a Nursing Facility

Jingfen Guo & Jihyun Song
Iowa State University

ABSTRACT

Issue
Research shows that rapid changes in our societal trend, such as urbanization and modern life style, have resulted in isolation of humans from our experience of nature (Nyrud, Bringslimark and Bysheim, 2013). Kellert and Calabrese proposed the concept of biophilia and biophilic design to promise nature’s benefit on health and well-being by fostering a relationship of humans with the nature (Kellert and Calabrese, 2015). The goal of biophilic design is to create a habitat in the built environment that advances people’s health, fitness and well-being. Biophilic design has become a mainstream within the sustainable design community, leading to an opportunity to study its effects on humans in the built environment. However, studies on the psychological effects of biophilic design are limited and relatively new area of research. Psychological effects of biophilic design on noise perception has been primarily focused on the attributes of natural elements in outdoor areas instead of interiors (Gillis and Gatersleben, 2015). Based on the evidence that sound and noise have a significant influence in the well-being and health of older adults, a need to study the application of biophilic design elements particularly in a nursing facility is assured (Gascon et
Therefore, the purpose of this study is twofold. First, this study investigated the effects of biophilic design criteria on the assessment of perceived loudness and noise annoyance. Secondly, this study analyzed how the visual characteristics of an interior space could influence the subjective loudness and annoyance of noise for older adults.

**Process and method**

An audiovisual experiment is used to experiment the perception of sound, including perceived loudness and annoyance in nursing facilities. Visual stimuli were created and presented to the participants by use of computer visualization of three-dimensional models on the screen (Appendix A). Audio stimuli were played on an iPad through localized portable speakers. The decibel level of the audio used in the study was roughly 60.43dB. This benchmark is the mean of average sound level during mealtime at several nursing homes in the Midwest area (Jossee, 2011). Participants were asked to judge the visual stimuli in terms of attractiveness using visual rating scale (Appendix B). Exposed to the visual stimuli, the participants then were asked to listen to the audio stimuli and focus on the sounds. When the sound stopped, the participants were asked to judge exclusively the sounds in terms of perceived loudness and annoyance using the auditory rating scales (Appendix C). A total of thirty-two residents were recruited from two senior living facilities in Polk County and Story County, Iowa. Participants were ranged from 65 to 90 years old representing both genders. The data included demographic information, interview transcript, visual rating scores, and audio rating scores. Both visual and auditory evaluations used 10-point Likert scales. The data were analyzed using content analysis, ANOVA and correlation techniques.

**Results and Importance of the Topic**

The results of the study indicate that biophilic elements have a positive visual impact on interior design. Due to the limitation of study, there was no statistical significance in the influence of visual setting on sound judgments in the given audiovisual indoor environment. However, data suggests that positively rated interior spaces can lead to a lower perceived loudness and annoyance. Especially biophlic design attributes of window views to nature and indoor plants showed stronger effects on modifying the feeling of annoyance. Finally, a set of new design guidelines were proposed to inform design decisions of designers and administrators responsible for designing environments for older adults in long-term care settings. Based on the proposed design guidelines,
redesigning an existing dining space was suggested with design visualizations (Appendix D).

REFERENCES (APA)


APPENDIX A
Images of Visual Stimuli (A, B, C, D)
APPENDIX B
Visual Quality Evaluation

Subject number:
Treatment number:
Treatment visual stimuli order:
Sound Order:

Visual stimulus A
1. Imaging this space is your dining room, please rate how beautiful to you. From 0-10 scale, zero is ugly (not beautiful) and ten is (very) beautiful.

<table>
<thead>
<tr>
<th>Ugly</th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
<th>Beautiful</th>
</tr>
</thead>
</table>

2. What features of the room do you notice the most? Please tell me 2-4 of them. This will be recorded.

Visual stimulus B
1. Imaging this space is your dining room, please rate how beautiful to you. From 0-10 scale, zero is ugly (not beautiful) and ten is (very) beautiful.

<table>
<thead>
<tr>
<th>Ugly</th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
<th>Beautiful</th>
</tr>
</thead>
</table>

2. What features of the room do you notice the most? Please tell me 2-4 of them. This will be recorded.

Visual stimulus C
1. Imaging this space is your dining room, please rate how beautiful to you. From 0-10 scale, zero is ugly (not beautiful) and ten is (very) beautiful.

<table>
<thead>
<tr>
<th>Ugly</th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
<th>Beautiful</th>
</tr>
</thead>
</table>

2. What features of the room do you notice the most? Please tell me 2-4 of them. This will be recorded.

Visual stimulus D
1. Imaging this space is your dining room, please rate how beautiful to you. From 0-10 scale, zero is ugly (not beautiful) and ten is (very) beautiful.

<table>
<thead>
<tr>
<th>Ugly</th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
<th>Beautiful</th>
</tr>
</thead>
</table>

2. What features of the room do you notice the most? Please tell me 2-4 of them. This will be recorded.
APPENDIX C
Rating for (Subjective) loudness and Annoyance (Modified)

Subject number:
Treatment number:
Treatment visual stimuli order:
Sound order:

Imagine you are sitting in this dining space, please rate the sound after you look at the image. The images A, B, C and D will be provided.

<table>
<thead>
<tr>
<th>Loudness</th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
</tr>
</thead>
<tbody>
<tr>
<td>Not Noisy</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Extremely Noisy</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Annoyance</th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
</tr>
</thead>
<tbody>
<tr>
<td>Not Annoying</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Extremely Annoying</td>
</tr>
</tbody>
</table>
APPENDIX D
A Design Proposal: Redesigning the Existing Dinning Space

Based on the proposed design guidelines, redesigning an existing dining space was suggested with design visualizations using two strategies listed below.

**Strategy one: adding barriers**

- This design strategy intends to minimize the noise problems by setting up a buffer zone between noise sources and people. The buffer zone serves as a physical sound and visual barrier. Space is arranged to orient people away from the noise source and towards a focal point.
- The aesthetic of the sound barrier affects the psychological noise loudness and annoyance. This design solution intends to neutralize the visual unattractiveness of the noise sources.

**Strategy two: enhancing visual attractiveness**

- This design strategy intends to reduce noise annoyance by increasing the attractiveness of interior space.
- One way to accomplish this is to incorporate biophilic design features as positive distractions, as well as elements that foster positive feelings. Design interventions include window view to greenery, realistic nature painting, natural lighting and layers of artificial lighting, indoors plants.
Evaluating Older Women’s Preferences of Light Color Temperature and Source Type in regard to Perceived Comfort Level while Reading

Hans-Peter (Hepi) Wachter & Sydney Hallman
University of Oklahoma

ABSTRACT

This study evaluates the impact of light color temperature and light source type on the perceived comfort level and reading ability (measured by reading speed) for women age 65-85 years old. Participants have no self-reported eye disease. Very little research has been performed in regard to light color temperature specific to the design of senior living facilities and the difference in perceived light quality between fluorescent and LED light sources to an older population. A study performed by Park and Farr (2007) determined that older adults in a retail setting perceive light to be warmer than younger adults and that better contrast is reported with cooler color temperatures. The Knez (2001) study evaluated high school students performing a variety of academic tasks under different light color temperatures of light and used surveys to evaluate mood and perceived lighting. Similar to the Knez study, the methodology used in this study aims to determine the preferred color temperatures for reading light to increase contrast and improve user comfortability while reading. However, this study focuses only on an aging population and does not compare the results to a younger population. The Illumination Engineering Society [IES] (2011), describes
the many age-related eye degeneration issues that begin affecting individuals around the age of 40 and significantly impacts vision by the age of 65 in typical older adults. According to Davidson (1991), these issues include decreased capacity to focus, reduced contrast and color saturation, and a reduction in the pupil, which in turn limits the amount of light that reaches the retina. The available information regarding light level recommendations from IES and general lighting design industry standard recommendations for senior living facilities were incorporated in the study design. Light color temperature and the lumen output of the different light sources in this study are reported through the manufacturers’ photometric data and are organized by light source. Units of illumination, measured in fc (foot-candle) were recorded at the reading plane. The reading speed of participants under the various lighting conditions where measured with a digital timing instrument in minutes and seconds. Surveys completed after the reading speed measurements under different light source conditions captured the perception of reading comfort. The participant surveys were analyzed in age groups of 10 years and as a whole to create a pilot study as a model for a larger trial. The poster presentation will discuss details of the study methodology, assumptions, questionnaire responses and the analysis of the qualitative and quantitative data. The results of the study can assist providers of senior living facilities in making better lighting design choices in reading spaces.

REFERENCES (APA)


ABSTRACT

“I’m working on my crossword puzzle hoping this will keep my mind off the fact that I have cancer. I can hear the woman next to me telling other patients she has 2 to 5 years to live. The gentleman on my right is discussing his constipation with the nurse. I watch the drip from the chemotherapy bag and cannot believe this is happening to me (52-year old breast cancer survivor).”

Cancer is one of the leading causes of death worldwide. Approximately 1 ½ million people are expected to be diagnosed with cancer in 2015, and the lifetime risk of developing cancer is 1 in 2 for men and 1 in 3 for women (Cancer Facts and Figures, 2015). The World Health Organization estimates that the number of new cancer cases will rise by 70% over the next two decades (Cancer Facts and Figures, 2015). There is no doubt that cancer is an emotional and often traumatic experience. In Colleen Dolan Fullbright’s (2015) guide How to Help Your Friend with Cancer, she says, “Few generalities can be made about the cancer experience, except that – for most people – it is the scariest time of their lives. It might be the loneliest time, too (p. ix).”

Despite these trends, little research has been conducted that evaluates the effectiveness of the cancer treatment environment. To illustrate, some centers advocate open-treatment areas that
administer chemotherapy to allow for visual access by nurses and interaction among patients. While comradely among patients is admirable, private conversations, individuals who are sick or who have been diagnosed with Stage 4 cancer are clearly visible which may induce stress. On the other hand, private treatment areas could lead to isolation. Theodorson, Thomas, and Vaux (2014) state the importance of building a sense of community in cancer care, but no one has examined which is the better alternative through research. As noted by Mullaney, Pettersson, Nyholm, and Stolterman (2012), anxiety is a well-documented emotion among individuals diagnosed with cancer and patient perceptions about treatment areas can shape their care experience. Furthermore, medical technologies designed to improve patient health can sometimes result in negative and even traumatic experiences causing a great deal of anxiety (Mullaney et al., 2012). Emotional distress and anxiety due to medical procedures and treatments are particularly common in oncology units where patients can feel disempowered and suffer emotionally, as well as physically (Mullaney et al., 2012).

Boyd, McKernon, Mullin, and Old (2012) used journey mapping, experience-based surveys and co-design workshops to examine patient contacts, emotions, and touch points as they visited The Breast Service Center. Results revealed a great amount of anxiety occurred while waiting, especially if staff did not provide ongoing information, as well as during procedures (mammography and biopsy) and clinic appointments (Boyd et al., 2012). Suggestions by patients included patient information leaflets, a newly designed mammography gown, and journey map explaining the sequencing of treatments; yet, none involved changes to the physical environment. The purpose of this poster session is to present design ideas for cancer treatment facilities that will be critiqued based on the current literature albeit lacking. A case consisting of a 52-year old, female breast-cancer survivor will provide additional insight and critique of the design ideas, and future research questions will be generated. A cancer diagnosis is scary and unfortunately there are a number of existing oncology environments that could be exacerbating this fear. Work needs to be done to identify and eliminate anxiety in these environments and to find successful design solutions.
REFERENCES (APA)

www.cancer.org/research/cancerfactsstatistics/cancerfactsfigures2015/


Large view and daylight for staff leads to increases in job satisfaction and relaxation and decreases in fatigue and mistakes (Ulrich, Zimring, Guan, Joseph, & Choudhary, 2004).

Separate kitchen/nutrition area for patient snacks. As noted by breast cancer survivor, “smells can cause patient nausea.”

Outside space and views of nature lead to less pain and medication use (Ulrich, 1984).

Play therapy for sick children for energy release, creative and dramatic play. Play can help children have a voice.

Little research on treatment areas; private versus open. “Overhearing conversations between nurses and patient can be uncomfortable and stressful” (breast cancer survivor).

Wide range of activities in waiting area. Environment offers options giving control (Bambridge, 2012).

Figure 1. Furniture Plan of Children’s Cancer Treatment Facility (designed by undergraduates Kelsey Ranson and Ariana Baid)

REFERENCES:


Individual treatment areas provide patient privacy. Shades on windows give patients control over view and sunlight. Each treatment area has a TV increasing patient choice.

"When receiving chemo, you lose so much control. Any small features that can provide a sense of autonomy are encouraged" (breast cancer survivor).

Central play area juxtaposed near private areas allows patients to choose from privacy versus social interaction.

References to nature found throughout treatment area speak universally to patients and create a restorative space (Thomas, Theodorson, & Vaux, 2014).

Open nurses station allows visual monitoring and encourages a welcoming atmosphere.

Views to garden and planters reference the healing aspects of nature (Thomas et al., 2014). In Roger Ulrich’s seminal study of post-surgery patients, less pain medication was taken when views of nature were provided (1984).

Open treatment area encourages social interaction between patients; but privacy may become an issue. Future research should examine patient needs when receiving chemotherapy.

While warm, natural and durable finishes are encouraged in healthcare, little research substantiates what to use in oncology units.

Figure 2. Perspective at Treatment Area (designed by undergraduates Kelsey Ronson and Aliana Bora)

REFERENCES:

Figure 3. Cancer Treatment Area (designed by undergraduates Jennifer Patrano and Christine Grimes)

REFERENCES:

Figure 4. Furniture plan of Cancer Treatment (designed by undergraduates Jennifer Fanara and Christine Grimes)

REFERENCE:

Figure 5. Perspective of Reception Area (designed by undergraduates Jennifer Fanara and Christine Grimes)

REFERENCE:
The Integration of Art, Design, and History in Glencolmcille’s Cultural Children’s Cottages

Katherine Ehninger & Jeanneane Wood-Nartker
Central Michigan University

ABSTRACT

The Folk Village in Glencolmcille, Ireland wanted to expand use of their small storage cottages to create learning environments for local and visiting children. With a growing interest in the Donegal tourism industry, Folk Village Director Margaret Cunningham wanted to keep tourists interested in Glencolmcille through the celebration of local history and gearing educational activities towards children, as opportunities were limited prior. At the same time that Margaret was brainstorming how to engage children, a university study abroad course traveled to the village of Glencolmcille in an effort to learn about the role of artisans’ trades within their rich history, and to complete a service learning opportunity within the community. This project focused on celebrating the pilgrimage of St. Columba in Glencolmcille in one of the small cottage available, and local maritime folklore in the second small cottage. The design solutions focused on the integration of the social, religious, economic, historic, artistic, and cultural roots of Glencolmcille.

The village of Glencolmcille in County Donegal has a storied history, and traces its roots back 5000 years to the Stone Age, when farmers and fishermen established themselves in the area. During the Christianity movement through Ireland in the 5th century, St. Columba, one of the three
patron saints of Ireland, traveled to the northern regions of Ireland. St. Columba is the patron saint of Donegal County, and he established a pilgrimage route in Glencolmcille comprised of 15 pilgrimage sites, or turas. The area became impoverished after the Great Famine of 1845 and emigration became very prevalent due to unemployment and ruined farmland. Father James McDyer moved to the area in 1951 and recognized the intrinsic gifts inherent to the people of the region. He worked tirelessly to revitalize every aspect of Glencolmcille in order to bring employment and visitors to the area through community projects. In 1967, Father McDyer helped to create the Glencolmcille Folk Village Museum, as a more permanent way to draw visitors to the northern Donegal village. The museum has expanded throughout the years and now consists of individualized cottages that encourage visitors to experience life during the 1700’s, 1800’s, and 1900’s in Glencolmcille.

The proposed solution of the new children’s cottages was meant to enhance the Folk Village in an effort to revitalize the area again as Father McDyer did in the 1950’s, and display more of Glencolmcille’s storied history to a new audience: children. This particular cottage was designed to celebrate St. Columba’s pilgrimage through Glencolmcille, and the 15 turas, or sites, were displayed in the cottage with large frames on the walls. The locations were placed around the cottage in numerical order, with accenting Gaelic names and site numbers with them, to teach visiting children about the pilgrimage. These framed pictures were placed atop an Irish landscape scene painted by the visiting students. Large rolling hills were painted with some attention to dimensionality, but both the hills and accompanying clouds were stylized to make the cottage feel like an environment meant for children’s learning.

Student leaders organized the design of two cottages for children to learn and play in, with solutions revolving around an understanding of Donegal’s history, culture, and art. The completed research was transformed into a feasible and welcoming design plan to create the Children’s Cultural Center from two small existing storage cottages and a gazebo for parents. Preliminary sketches of ideas were enhanced on the computer to create a three-dimensional feel within the cottage. These plans saw implementation when the study abroad program traveled to Glencolmcille from May 13th through May 16th, 2016. The final completion of the project occurred later in Summer 2016 as the Glencolmcille Folk Village worked to finish the cottages.
after student departure.

REFERENCES (APA)


Appendix 1

Figure 1: Initial Computerized Design for the Glencolmcille Cottage

Figure 2: Exterior View of the Cottages in the Glencolmcille Folk Village

Figure 3: Interior View of the Finished Children’s Cottage
Figure 4: Interior View of the Finished Children’s Cottage

Figure 5: Launch of the Glencolmcille Folk Village Children’s Cottages
First and Third Places in the Oldest Senior Cohousing Community in the United States

Rachel Sample, Mihyun Kang & Melissa Lies
Oklahoma State University

ABSTRACT
There are urgent and growing demands to respond to the aging population. Understanding how older adults use their First and Third Places as they age is crucial to the design of living environments which can enhance their quality of life in later years. The purpose of this study was to examine how older adults utilize First and Third Places in the oldest senior cohousing community in the United States and how these change as they have aged. In this study, individual homes were designated as First Places. Third Places, public places that play host to informal, voluntary, and regular gatherings (Oldenburg, 1989) included the cohousing community and the community of the city they live in. An investigation into how First and Third Places are impacted by more caregiver offerings and technological adaptations as the community aged was also conducted.

Interviews were conducted with current residents of the oldest senior cohousing community in the U.S. Established in 2005; this community in the Western U.S. has substantial experience phasing out residents. When the residents of this community moved in to their eight townhouses there were fourteen residents (Brown, 2006). These demographics have changed as time has progressed. At the time this study was conducted, there were 10 residents living in the community. Five
Residents participated in the study while the remaining five were unavailable due to health, travel, or simply opting out due to being new residents. The ages of the participants ranged from 85 to 90, four were widowed, and one had been remarried. Thirty-minute interviews were conducted and audio recordings of the interviews were used to develop transcripts of the interviews. Transcripts were coded, analyzed, and categorized for comprehension using the software NVIVO, and then themes were identified. Three researchers discussed the emerging themes for consensus.

The residents at this cohousing community all knew each other prior to organizing the community through their church and some religious practices have been incorporated into their organized group activities. Participants derived the most value from their First Places. The privacy offered by the homes as well as the residents’ participation in the design of their homes eleven years prior still provided a sense of perceived autonomy and satisfaction associated with planning, customization, and personalization. Technology adaptations emerged in relation to First Places. Chair lifts on staircases had been installed in their private homes and all residents owned emergency pendants that are kept on their persons so they can call 911 in the event of an emergency. The proximity of the First Places to the Third Places, such as the Common House and Courtyard, provided a sense of security as the residents found comfort in being able to see others from their own homes. The Common House table provided the strongest connection as this was a place to openly discuss the day and current events over dinner. The round table met many of Third Place characteristics developed by Oldenburg (1989), including “neutrality” and “equality and inclusion.” Likewise, the Common House had a “low profile” and offered a “congenial environment” in which the participants described as taking on the quality of a household. Additionally, the Common House offered easy community access, which became a necessity for participants whose mobility had declined as they aged. Third Places around the community of the city provided opportunities for entertainment, and religious activities. Those who were less able to travel to offsite Third Places still had access to sermons as residents who could attend church brought back video recordings to share in the Common House. This study provides insight to the needs of older adults during their transition into the end-of-life phase and what design characteristics of the First and Third Places could benefit their experience in their living environments.
REFERENCES (APA)


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Exploring the Effectiveness of Unassigned Workspace in Alternate Workplace Environment

Çigdem T. Akkurt & Tina Patel
Iowa State University

ABSTRACT

Problem Statement
Workplace environments are ever changing and typically contingent upon various changes that take place in society, including economics, demographic shifts, and technology (Maitland & Thompson, 2011). In last decade, pendulum for workplace environment has gone back and forth from vastly open offices to private arrangements. Another trend that has emerged recently is the Alternate Workplace Strategy (AWS). AWS expands definable work zones beyond the individual assigned or unassigned workspace, creating a combination of elements like workstations, open and collaboration and so on. The core value of a workplace strategy delivered as AWS is to create a workplace that is a stronger tool for people to create business results (Becker & Steele, 1995). An unassigned workspace is where the individual employee has no dedicated personally assigned office, workstation, or desk (Franklin & Steele, 1994).

Most of the research in workplace focuses either on impact of open office space on employee’s well-being, productivity, interaction or issues related to privacy, focus and productivity.
Significant research is not found in the area of unassigned workspaces based on the model of AWS and its relation to employees’ satisfaction and engagement.

Research Question
Grounded in research that include the history of workplace design, issues inherent in organizations, and matters associated with individual productivity within the workplace environment, the purpose of this study is to better understand how unassigned office space in an AWS model translates into an effective workspace. Family and Work Institute (http://www.familiesandwork.org/) categorizes six components for an effective workplace. The six categories are: opportunities for learning, supervisor support for work success, autonomy, culture of trust, work-life fit and satisfaction with earnings, benefits and opportunities for advancement (Families and Work Institute, 2012). For the purpose of this study, only three categories: opportunities of learning, autonomy and culture of trust are taken into consideration.

The primary research questions driving this study is:
What spatial characteristics in an unassigned alternate workplace make them effective workplaces? Do these spatial characteristics contribute positively to employees’ engagement, satisfaction and retention?

Design Research Methodology
This study is researched through the lens of two case studies of firms recently designed on this strategy. Mixed methodology i.e. primarily qualitative with quantitative survey nested into it is used for this study. Grounded theory, one of the strategy of qualitative research methodology is applied to this research as an overarching methodology and as a method for analyzing the data. Five participants from each firm were interviewed to understand the effectiveness of the workplace. Due to the time constraints in interviewing all the employees in both case studies and to capture most all target audience a survey was send to understand the effectiveness of this model. The quantitative data gathered from the survey and results assisted in interpretation of the qualitative findings. The study aimed to reveal the participants perspectives and interpretations of their own actions and their physical environment on effectiveness in relation to the unassigned alternate work environment. The information helped in development of an overarching theoretical scheme for
integrating categories and describing the employees’ experiences of their work environment from the various perspectives.

Outcomes
This study will help bridge that gap and document how the strategy of unassigned workplace can translate into an effective workspace for the employees where they can be engaged, satisfied and plan to stay longer. This study will provide recommendations that could inform design practitioners, educators, and contribute to the overall body of knowledge in this area.

REFERENCES (APA)


### APPENDIX

**The Six Components of an Effective Workplace**

- **Opportunities for Learning**: The importance of the work is clear, that meanings learning and results, and has enough task variety to keep you interested.
- **Supervisor Support for Work Success**: Supervisors who provide you with support and assistance when needed to do your job well and who recognize how important your work is.
- **Autonomy**: The ability to decide or have input into what your job entails, how it is done, and to be free to do what you want.
- **Culture of Trust**: A workplace culture where supervisors are trustworthy, ethical, cast their input to improve performance.
- **Satisfaction with Earnings, Benefits, and Opportunities for Advancement**: High satisfaction with earnings and opportunities for your job and agreeable opportunities for advancement.
- **Work-Life Fit**: Having the support, schedule, and flexibility you need, so that you can manage your work and personal responsibilities.

### Activity Analysis of Firm A and Firm B

<table>
<thead>
<tr>
<th>Category of Effectiveness</th>
<th>Workplace Strategy/Spatial Pattern and Campaign</th>
<th>Space Types and Strategies</th>
<th>Work Outcomes/Employee Attitude</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flexibility</td>
<td>Alternate Workplace Model, Non-traditional workplace, Teamwork and Collaboration</td>
<td>Unassigned workstations, Different types of office seating, Open Office Plan and its Logibility</td>
<td>Engagement, Greater job satisfaction, Greater probability of retention.</td>
</tr>
<tr>
<td>Autonomy</td>
<td>Access, Control, Variety and Choice, Privacy, Personalization, Concentration, Division and Collaboration</td>
<td>Different types of seating, Open Floor Plan, Technology, Unassigned work space, Different types of spaces to interact and collaborate</td>
<td>Engagement, Greater job satisfaction, Greater probability of retention.</td>
</tr>
<tr>
<td>Culture of Trust</td>
<td>Positioning, Transparency, Flexibility, Replenishability, Variety and Choice, Lack of Privacy, Visual and Auditory Lack of personalization</td>
<td>Open Floor Plan, Variety of seating, Invisible and writable walls, No private offices, Various interaction nodes</td>
<td>Greater job satisfaction, Engagement</td>
</tr>
</tbody>
</table>

### Space Utilization

**Space Utilization of Firm A and Firm B**

**Time: 8:30 AM - 9:30 AM**

- 53% Workstations were occupied/ people working and focusing
- 33% The collaborative areas-huddle room
- 25% Interacting, people had stations themselves at workstation but were mingling
- 18% Other seats occupied for focus and collaboration
- 58% Workstations were occupied/ people working and focusing
- 100% The collaborative areas, project rooms, conference room and material library
- 33% Interacting and getting coffee
- 50% Taking phone calls and answering emails

**Time: 8:30 AM - 9:30 AM**

- 53% Workstations were occupied/ people working and focusing
- 33% The collaborative areas-huddle room
- 25% Interacting, people had stations themselves at workstation but were mingling
- 18% Other seats occupied for focus and collaboration

**Integration of Findings**
Enhancing Transition Spaces with the Simple Wayfinding Tools (Signage, Color and Brightness) for People with Autism Spectrum Disorder

Apoorva Rane & Dr. Kristi Gaines
Texas Tech University

ABSTRACT

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 (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. This research poster examines plausible wayfinding solutions that can be incorporated into a universal design for individuals with neurodiversity. Public spaces may be confusing with never-ending corridors resulting in dependency, anxiety, stress and lower confidence levels for a neurodiverse 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. A meta-analysis of research was conducted that included sensory issues, learning techniques and the built educational environment for individuals with ASD. Furthermore, the educational environment was a successful design for children with ASD and more beneficial for children without ASD when further researched. Wayfinding strategies for the general population were also evaluated. The aim/objective was identifying features and tools to aids in wayfinding. This poster illustrates ways to incorporate these features to improve wayfinding for all users.

Method
The literature on physical environment for people ASD takes care of personal territorial spaces (for example home) and semi-personal territorial space (for example classrooms). Therefore, this literature review scrutinizes the available research on 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 sensory design matrix. As the prevailing literature provide 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.

Findings and conclusion
The function of the corridor in the built space is to reach the destination space, comfortable movement towards the exits and every zone. The existing literature shows a clear overlap between the sensory design matrix and tools of wayfinding. This exercise helps to analyze the recommendations for wayfinding for people with and without ASD. A prototype was developed to incorporate wayfinding tools into an existing center for autism education and research.
REFERENCES (APA)


The Evolution and Historical Development of Copper: A Sustainable Perspective

Atefe Hejri & Suchismita Bhattacharjee
University of Oklahoma

ABSTRACT

Employment of metals has been closely associated with the development of societies. Specifically, the massive use of metals had significant effects on emergence of economic growth in developed countries. However, the consequence of uncontrolled usage of natural resources among countries has jeopardized the sustainable use of metals for future generations.

Copper, as luxury metal in interior design has found firm position among sustainable materials. It is important to explore historical progress in the use of copper as one of the oldest metals in the design industry. Copper, as the most significant metallic material for design purpose, has been utilized for a long time. Copper as one of the oldest metal employed in people's lives as early as 7000BP and was one of the main metal used by 3000BP. As a design component, the application of copper was not prominent until the Pantheon in Rome and was further used as roofing materials during the Renaissance. However, the major applications of copper in building industry happened in the twentieth century. This study examines the evolution of copper and its development through the centuries in architecture especially interior design and looks for its environmental benefits.
Since copper has the highest recycling rate of any engineering materials, it needs to be carefully considered in the design industry. Different stages that will be explored in this review are the historical evolution of copper, its unique characteristics applied in interior design, and environmental benefits of implementing this metal in design supported with various case studies.

In the current design environment, designers have a new mantra: “Make it efficient. Make it sustainable. Make it green” (Stelmack, Foster, & Hindman, 2014). As part of a new revision of the professional standards adopted by the Council for Interior Design Accreditation, interior design education has to encompass an understanding of the concept of sustainable building methods and materials. In this regard, future outlook toward implementation of nonrenewable resources needs to be reviewed for further preservation of the natural resources such as copper. Recyclability and long lifespan are key attributes that can help a structure achieve green building certification (Building & Architecture News, Jan2008).

The 2006 Copper Development Association (CDA) market study suggested that at least 70 percent of copper used in US for design purpose is further recycled. Also, copper for design purpose is considered a ‘cradle to cradle’ product (Schade, 2007). Not only does this save resources, moreover, it substantially reduces the energy required to drive material production (Georgiou, 2006). Manufacturing with recycled copper scrap saves 58 percent of the energy needed to make the same amount of copper from copper ore (Jones, 2008). Additionally, the 200 years’ lifespan of coppers, and its zero maintenance requirement due to physical properties lasting for decades and sometimes centuries makes it an appealing material choice for buildings design (Georgiou, 2006). There are a variety of copper usage in interior design as cladding skin, ornamental metalwork to building piping system and electricity wire.

The poster will demonstrate the major applicative forms of copper in the interior design industry through the help of several case studies. The use of copper in several prominent building designs will be exhibited such as Austin City Hall, designed by Antonie Predock; the Canadian War Museum located in Toronto, Ontario; University of Arizona’s Health Science Education Building etc.
REFERENCES (APA)


Art(ing) + Curating + Designing: Toward the Collaborative Creation of Art Exhibition

Joori Suh
Iowa State University

ABSTRACT
The blended nature of contemporary culture promotes dynamic collaboration among different disciplines and practices. In today’s art museums and galleries, the interior designer’s role surpasses the traditional responsibility of providing a neutral backdrop for display of artist’s work. The term, co-creation refers to a collective effort of two or more people in production of creative work (Sanders & Stappers, 2008). Among many benefits of co-creation, a number of researchers highlight the potential of innovation especially because of the process that fosters innovation through dynamic interplay among members of multidisciplinary teams (Meinel & Leifer, 2013). In co-creation of art exhibits, artists often collaborate with software engineers to create digital art; in few cases does an interior designer collaborate with artists in the creation process. The traditional concept of designing interior space has shifted to designing for emotion (Sanders & Stappers, 2008) and interior designers have the potential to play a prominent role in the process of the creation of contemporary collaborative art as well as the design of an exhibition space. In this poster presentation, I propose a process for collaborative creation using computer software that may stimulate active collaboration among artists, curators, and interior designers focusing on exhibition design for art museums and galleries.
The French phenomenological philosopher Merleau-Ponty (1908-1961) stated that experiencing art requires people to use all sensory faculties (Crowther, 2009): Creating the whole spatial phenomenal zone using form, light, shadows, color, texture, body movement, sound, and viewing position is critical in experiencing art. Interior designers as space specialists understand the interplay among all components correlate in creating perceptual characteristics that affect viewers’ appreciation of art. The proposed co-creation process starts with a brainstorming session with an artist, a curator, and an interior designer to discuss the kind of aura in which the exhibit will be delivered and a basic spatial setup that complements the intended aura. Once a preliminary direction of artistic phenomena is set, the collaborative team initiates the creation process using a software system, IGATY (Suh, 2016), developed to aid ideation of museum display aesthetics. The software system especially helps an interior designer suggest various display aesthetics concepts based on museum interior archetypes, such as wunderkammer, poetic light, and spatial drama by visualizing three-dimensional space with default sample objects. The collaborative team can test variations of each archetype and view the display in a virtual environment via a head-mounted display (HMD). The system also allows the team to combine multiple museum archetypes while suggesting variations of selected archetypes. The collaborative team can review, discuss, and test various potential options in a short period of time. During the process an artist can suggest new ideas for different objects, and if a digital example is available, the new objects can be added to the system for visualization. The form can also be manipulated for further exploration. Once a preliminary idea is set, the interior designer saves the initial design as well as the exploration process images for refinement and production of final design.

The examples in the poster presentation will demonstrate how the proposed process and the software could aid interior designers in facilitating collaboration with artists and curators in a way that blurs the boundaries of the traditional definition of art, creation process, and presentation. The proposed process may foster synergetic ideation and innovative creation through a dynamic interplay among the three practices.
REFERENCES (APA)


Design-Build: A Campus Mother's Room

Laura Morthland, Chad Schwartz & Qian Huang
Southern Illinois University

ABSTRACT

The pedagogy of design-build is not uniform, nor is the understanding universal, but involves “…integrative approaches to architecture…” with making (experimental, prototypical, full scale) as a fundamental aspect of the design process (Edman & Weddle, 2002, p. 174). In a 2014 article on interior design education, author M.T. Konkel presented initial classifications for “build-to-learn” experiences; explaining the roots come from architectural and engineering pedagogy along with experiential learning theory. “The tradition of build-to-learn introduces students to the notion that design ideas are often improved when…brought…into the physical reality of material” (p. 1). In contrast, industry understands “design-build” as a project delivery method whereby a “…single contract with the project owner [is used] to provide design and construction services” (DBIA, 2016, para 1). Konkel’s article positions “build-to-learn” experiences and “design-build” methodology as distinct from the construction industry classification. “While…programs may address the professional practice of design-build…design-build studio often refers to students engaged in hands-on experiential learning” (2014, p. 2).

The content presented in this poster builds upon Konkel’s initial research question, “How are design educators employing build-to-learn strategies in interior design curricula?” (p. 5). The
project highlights a design-build experience (design and construction via a single source) involving multiple disciplines, professional consultants and a complex client make-up. The work spans two regular term semesters (spring 2016 and fall 2016) at a public research university. The design-build team includes three faculty members from allied disciplines (architecture, interior design and construction management) along with two students each from the respective disciplines. The first 16 week class focused on design ideas and construction budget estimates to be utilized for a grant proposal seeking project funding. The nine member student/faculty team engaged in client consultation and presentation meetings with staff from Non-Traditional Student Services (originator of the initial design request) as well as administrative staff and leadership from the campus library (proposed build site). Additionally, because the project was conceived at the outset as a possible “design-build” process, coordination with university architectural staff and union contractors was conducted in order to ensure university aesthetic alignment, code compliance and “good faith” relationships. The grant proposal was accepted and fully funded at the close of the spring 2016 term. A second 16 week class has begun this fall in order to finalize design details, complete a full construction document set, order materials and furniture and build full scale “mock-ups” to analyze design, materiality and construction technique. The ultimate goal is a fully constructed “Mothers Room” within the campus library open to the public in the spring of 2017. The poster presentation will encompass images showcasing ideation, schematic and design development phases and build progress. One of the “full scale” mock-up constructions (approximately 3’ by 3’) will also be present as an example of design intent, materiality and construction technique.

REFERENCES (APA)


collaborative design | early ideation and schematic design was a fully integrated experience with faculty and students sharing ideas and sketches with one another in open critique
material + fabrication | design

Ideation refined via fabrication tests analyzing the process (CNC speed, fineness of routing) with materials (Plywood, MDF, Fabric Panels) and color
collaborative meeting | digital renderings, construction drawings and full scale mock ups are all incorporated to allow the client, university architects and union consultants an ability to assess the design and provide input.
mock up | full scale mock up constructions focused on window and corner details
Designing a Friendly Home Environment for Individuals with Autism

Callie Schulke & Jeanneane Wood-Nartker
Central Michigan University

ABSTRACT

Problem Statement/Motivation: At our university, a studio class focusing on the needs of children, older adults and people with disabilities engages interior design students. Within this context, and after learning about building codes and engaging in a series of empathy building assignments targeting the needs of people who are aging and people with disabilities, students design an intergenerational center focusing on the typical needs of children and aging adults. Last semester, a student began to independently research the impact of design on people diagnosed with Autism Spectrum Disorder (ASD). She is committed to this topic due to a brother who is low on the spectrum scale. This semester, she is engaged in independent study to develop a prototype home for an ASD child, which will be sensitive to the changing needs across the lifespan.

Methods
Using Appleton’s conceptual framework of Prospect and Refuge, Human-Environment Interaction from a therapeutic focus, and the Green House philosophy developed by William Thomas, a prototype home environment will be developed and presented in a poster presentation. A premise of prospect and refuge is that humans subconsciously desire the ability to see into a room before
entering it and also desire areas in which to hide inside that room as a means of maximizing control of interaction with others. This is especially helpful to children who have experienced stressful social situations rooted in ASD, because they are particularly sensitive to the built and natural environments due to sensory processing deficits with tendencies toward greater sensitivity to tactile and auditory environmental characteristics than visual (53) – and an even greater difficulty with adaption (41). The therapeutic environment focuses on positive distractions through a sense of control, access to privacy, social support, physical movement, exercise, and access to nature (19). The most difficult aspect of providing these solutions is that no two people with ASD are alike in their ability to adapt to differing symptoms, sensitivities, and levels of functioning (Gaines, Bourne, Pearson, & Kleibrink, 2016). Therefore, environments should not just address the symptoms of a person but prepare them for the challenges of everyday living (McAllister, 2010). A 2D plan and 3D perspective will illustrate practical application of numerous design features which address some of the daily needs that someone with ASD faces. A copy of the characteristics that were integrated, along with a suggested layout for the residential spaces are included in Appendix A.

Analysis of Outcomes
This prototype solution will demonstrate common themes such as predictability, clarity, repetition of form, shape, pattern, and materials used throughout. Included are features such as an upper level balcony with open style railing, floor-to-ceiling windows with transparent window treatments, sidelights beside door, spaces for personal items that are orderly and systematic, sensitivity to acoustics, provision of own bedroom or personal escape space, lighting and control (natural and artificial), wayfinding that provides for clearly defined access and egress (102), orderly/straightforward and purposeful design of spaces (98-99, 103), versatile furniture layouts (alone or in a group) (108), a variety of public and private spaces (with public spaces near the entry and private spaces such as bedrooms farthest from the public spaces), sensitivity to glare, contrasting materials (89), boundary definition (138), as well as characteristics such as color, texture, orientation, sense of enclosure, acoustics, ventilation, etc. (42). One goal of this poster presentation is to receive feedback on this prototype from design professionals/educators, to guide development for a pilot study.
REFERENCES (APA)


**APPENDIX**

**Lighting**
For individuals with Autism Spectrum Disorder lighting can create irritation. Flexible lighting, natural lighting, and avoiding fluorescents are highly recommended.

**Clean**
Chaotic and cluttered spaces can create anxiety in individuals with Autism. Giving ample storage that can be closed off to reduce stimuli in the environment can reduce anxiety.

**Wayfinding**
Wide corridors, soffits, and contrasting trim on doors and at the base of walls can help individuals with Autism to easily navigate the spaces they are in.

**Personal Space**
For individuals with Autism, having a personal space to retreat to can ease overstimulation caused by the environment around them.

**Flexibility**
Flexibility of the space is so important as different people have different stressors. Flexible lighting and temperature are two examples.

**Previewing a Space**
For individuals with ASD it can be stressful to not know what they may be walking into in a space. Having a view of the room before entering gives them control on deciding to enter or not.

**Sound**
For individuals with Autism loud noises can be extremely stressful. Having heavy traffic areas of the home separate from quiet areas such as bedrooms can help alleviate stress.

**Collections**
Many individuals with ASD have some sort of collection. Providing space for them to display their collection and allow for personalization of the space gives them a sense of control.
TECHNO-SPATIAL ENGAGEMENT: An Update from the IDEC Special Projects Grant Award 2016

Ziad Qureshi
University of Houston

ABSTRACT

In a world increasingly defined by technological proficiency and access, the provision of technology-oriented spaces and infrastructures to the broad community is a social and public priority. The growing ubiquity of internet social connectivity, information dissemination, and communication methods means bolstering access and abilities is increasingly challenging to those who are unaccustomed and economically disadvantaged. As technologies encompass everyday life, grave risk remains of leaving those with limited spatial, educational, and economic means behind – alienating them from broader society. Simultaneously, the potential exists to harness the benefits of technology to elevate humanity with new resources. Representative of this prioritization and contemporary relevance, recently major global initiatives such as MIT’s One Laptop per Child program, Facebook’s Internet.org, and Google’s Project Loon have attempted to rectify large-scale technology and internet access issues in the developing world. Closer to home, strong need exists with some of our most vulnerable community members to ensure their continuing technological accessibility and enablement. Currently social isolation among the elderly is estimated to be as
high as 43%, with 1 in 4 older adults in Harris County, TX, living alone,2 demonstrative of its particular relevance to our Senior and economically disadvantaged citizens.

This poster will provide a progress update to the associated project that received the IDEC Special Project Grant Award 2016. The incremental update poster, building towards the 9-month project report that will be delivered in January 2017, will describe the current status of the initiative’s goal to increase the connectivity of Seniors to technology via Interior Design. A summary of the 1-day community workshop event collaboratively joining Interior students and the Seniors of Houston’s Fifth Ward neighborhood will be offered, contributing towards innovative design solutions for a human-scale mobile furniture/installation/station to facilitate improved access to technologies for seniors. The current status of the ongoing project will be offered, responding to the needs of the community and its Seniors, who are among the most challenged in our society by technological proficiency and access. The poster will describe student research into technologies, the continuing collaborative work with community partners, as well as parallel faculty research presented at the recent Association of Collegiate Schools of Architecture (ACSA) 2016 Fall Conference “Building for Health and Well-being” in Health and Vulnerable Populations conducted in affiliation with the Association of Schools and Programs of Public Health (ASPPH). Adding to this progress, the primary product of the workshop will be the exploration, creation, and rapid-prototype/mockup of a collaboratively generated design solution. As a framework, these furniture/installation “technological infrastructures” are intended to emphasize spatial mobility, ergonomics, independence, relevant skills education, and cost-effectiveness at the interior scale with specificity for the unique human needs of their Senior users.

The poster-based update will demonstrate how the work advances the continuing successful collaboration between the students of the Interior Architecture program at the University of Houston, the social advocacy organization Neighborhood Centers Inc., and the John W. Peavy Senior Center in Houston’s Fifth Ward - a predominantly economically-challenged and African-American neighborhood. As an outreach endeavor in service learning and social responsibility, prioritizing the public welfare needs of the community and the seniors, the initiative expects to enable the students to develop real-world professional skills via responsive design investigation, rapid prototyping employing emerging fabrication methodologies, and community-based problem
solving and engagement.

REFERENCES (MLA)

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1 the_Issue

Social Isolation and the Senior Community

Human Health and Well-Being via Socialization

Health and Vulnerable Populations I - Augmenting Against Inequality
2|the_Technological_Trend

Generational Shifts: Age Demographics and Online Social Access – “Grey Gap”

Global Initiatives

Technological and Internet Access as a Human Right?

Health and Vulnerable Populations I - Augmenting Against Inequality
5 | the_Investment

Lasting Legacies: Retro/Active Revitalizations

J.W. Peavy Senior Center: Creative Vision

Health and Vulnerable Populations I - Augmenting Against Inequality
5 | the_Investment

Mining Momentum: Visibility and Funding

J.W. Peavy Senior Center: Creative Vision

Health and Vulnerable Populations I - Augmenting Against Inequality
5 | the_Investment

Social Implications and Applications: **Techno-Spatial Engagement**

**J.W. Peavy Senior Center: Current Initiative**

Health and Vulnerable Populations I - **Augmenting Against Inequality**
Service-Learning Projects as a Tool for Promoting Evidence-Based Design for Special Populations

Tonya Miller
University of Tennessee at Chattanooga

ABSTRACT

Service-learning projects have long been believed to enhance learning outcomes for interior design students by promoting community engagement and professional competence (Zollinger, Guerin, Hadjiyanni, & Martin, 2009; Watson, 2001). These types of projects also support the most common learning style among interior design students which is hands-on (Watson, 2001). However, there are perhaps even further benefits of this learning model beyond those which have been previously explored. This poster illustrates two case study projects that explore how service-learning projects can be used as a tool for promoting evidence-based design solutions.

The Center for Health Design (2016) defines evidence-based design as “the process of basing decisions about the built environment on credible research to achieve the best possible outcomes.” The special physical, intellectual, social, and psychological considerations of the user groups for these projects dictated the enhanced need for design decisions that were based on credible research. In these case studies, the research-based approach is believed to have not only improved learning outcomes but also improved the quality of the design solutions produced for the community partners.
The first case study project paired students with a local non-profit organization aimed at providing assistance to veterans in need. The organization, known as ROVER (Regional Outreach Veterans Engagement Resources), solicited the students’ help in developing design ideas for their new regional facility which will serve as a hub for learning, socializing, and providing physical and psychological care to veterans including those suffering from post-traumatic stress disorder, traumatic brain injury, and a variety of other physical and psychological conditions. Students worked in teams to develop unique, research-based approaches to the design project.

The second case study project involved students designing a multi-sensory environment for the Orange Grove Center, a private non-profit organization that serves adults and children with intellectual disabilities. Students gathered evidence to inform their designs by reviewing existing literature and interviewing occupational therapy consultants. Students designed a space which will not only be used by the Orange Grove Center, but will serve as a research tool and model for the implementation of multi-sensory environments in the public school setting.

In both scenarios, the presence of a “real-life” design problem and the interaction with an actual client provided a level of reality not achievable through fictitious design scenarios. Students expressed an increased motivation to conduct more thorough research in an effort to produce the best possible design solution for these clients to whom many felt personally connected due to their interaction. In order to measure the success of these service-learning projects as a tool for promoting evidence-based design, a student survey has been developed. Findings will reveal student opinions regarding how the service-oriented nature of these projects impacted understanding, motivation, and the quality of outcomes. Preliminary findings indicate a strong connection between the level of reality achieved through the service-learning format and a perceived improvement in learning objectives.

REFERENCES (APA)


Exploring in Community Outreach and Service Learning: Voluntary Design Charrette of Cambodian Community Center

Myoung Joo Chun & Myoung Joo
Endicott College

ABSTRACT

As designers understand the impact of their creative works, it is important for them to develop an ethical stance in which they evaluate not only the aesthetic and economic aspects of their work, but also its implication to society. Socially responsible learning has become important throughout higher education by adopting a service learning (Barber 1992; Cisneros 1995; Coles 1993). In addition, integrating service learning especially in applied disciplines such as architecture and interior design is needed since it affords students opportunities to broaden their conceptual knowledge and skills through developing an operational understating that leads to competency, crucial for professional practice (Roakes and Norris-Tirrell, 2000). Yet, little has been devoted to the discussion of social design in the education of interior designers that might prepare them to the design process and to the service of the community.
This poster presentation utilizes a voluntary-based student design charrette for the Living Fields Organization.

The project involved working with the Living Fields Organization, a nonprofit organization. Approximately, __9__ graduate interior architecture students and _1__Faculty participated in a day charrette during outside of class time to research, analyze, and propose solutions for extending the Living Fields mission by building the Lynn Cambodian Community Center. The students compromised two teams, consisting of four to five students per team. In the kickoff meeting, students learned the information such as demographics, need of clients and design prospect and discussed about the possible suggestions.

The Living Fields provided a half basement space measuring about 1,500 square footage utilized existing opportunities and integrated them into a solution addressing the facets of learning, growing, and joining in a community with one another. The Charrette focused on developing a space for quiet, independent study/learning zone for the youth and another zone for collaboration and social gathering for the Cambodian Community in Lynn, Massachusetts. This design charrette provided students with an opportunity to work as a team, to learn about the design for the outside community in need and about the actual design process from the schematic design and possibly to the construction professionally outside of the classroom. Students learnt to make critical problem solving design decisions within given short time.

This poster presentation advocates for the use of charrette as an instructional method in design education to reinforce the socially responsible design through actual clients in multidimensional needs. It also highlights students’ Design charrette experience that can develop a heightened awareness of social compact design as multidimensional concepts.

REFERENCES (APA)


The Potential of Augmented Reality and Virtual Reality Technologies as Interior Design Visualization and Presentation Tools

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ABSTRACT

Space visualization and design presentations are essential aspects in the interior design industry and education. Virtual Reality technology which refers to a 3D simulation of the human experience within the digital world has been used as a dominant space visualization and presentation method (Helmick, 1993). In the past few years, the architecture, engineering, and construction industry has utilized Augmented Reality technology as an innovative way to improve visualization and building design and construction processes. AR enables people to see the real environment with virtual objects superimposed onto it (Kipper and Rampolla, 2013). In the interior design field, AR has been commonly used in furniture and lighting manufacturer catalog Apps which allow customers view digital 3D products in their real settings using mobile devices. Due to the rising popularity of mobile devices, the widespread use of AR and VR on mobile gadgets has become a growing phenomenon in design fields. However, the interior design education has been slow in coping with the current need for AR and advanced VR integration into the curriculum.
The purpose of this study is to investigate the potential implementation of AR and VR technologies in the interior design education. The target participants were interior design senior students in the southwestern state university. As the first phase, AR technology was introduced and used for students’ thesis projects and portfolios. Students built a 3D virtual model using Revit and then exported it to the Unity program for creation of an AR model. They played an AR model on a screen using a webcam and a target marker with color boards including photo-realistic renderings for thesis project presentations (Figure 1). This group of students created a printed portfolio book and included an AR target marker. Professional interior designers were invited to review their portfolios and they could see student’s AR model using this target maker and a tablet (Figure 2). The online survey questionnaire was developed to ask about how satisfied students are with the use of an AR model for projects and presentations; how they rate the importance of AR technology application across the interior design curriculum; and whether or not they agree that an AR model helps them to emphasize key designs during the presentation. Students showed positive responses to above questions and were satisfied with the use of AR technology. They agreed AR would enable interior design students to have a holistic understanding of the spatial environment and learning this new skill would open new doors for more opportunities. The professional designers showed positive attitudes towards the use of an AR model for students’ portfolios and presentations. They agreed that AR enhanced the interaction between students and reviewers and the integration of AR technology across the interior design education and industry is becoming increasingly important.

As the second phase, this academic year’s senior students are now using the advanced VR technique with a headset and a smartphone (Figure 3). The online manual including video tutorials has been developed and this has helped students better understand the process of AR and advanced VR model creation (Figure 4).

The researcher expects that integrating AR and VR technologies in the interior design curriculum will improve the quality of project visualization and presentation as well as facilitate better spatial cognition and more effective communication. Interior design education by incorporating these advanced technologies will have the potential to produce competitive future interior designers who
can play a significant role within the integrated project team.
The poster including project information, processes of AR and VR model creation, students’ work products, and survey results will be displayed and the presenter will use a mobile device, a target marker, and a headset to demonstrate AR and VR models.

REFERENCES (APA)


Appendix – AR and VR devices, Student Work Product Examples, Online manual

Figure 1. Project presentation with an AR model and color boards

Figure 2. Portfolio book with a target marker and a mobile device (tablet) to play an AR model

Figure 3. VR headsets and a mobile device (smartphone)

Figure 4. Online manual
A Pedagogical Approach: Guiding the Student Design of a Low Security Prison

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Illinois State University

ABSTRACT

This study explores the outcome of design pedagogy in a senior level, commercial interior design studio. The challenge was to have the student create a design for a low security prison in Wyoming, a client population completely unknown to the student designer. Here, the authors discuss the four main strategies in developing the student’s research ability to enhance the programming experience. The instructional strategies were: encouraging the student to choose a client unfamiliar to them; developing the importance of research to enhance the student’s design knowledge; reinforcing the importance of evidence based design (EBD) upon the student in making their design choices; and rooting the tools and techniques used by the professor in established interior design pedagogy.

Individuals in design careers are assumed to have strong cultural consciousness, and it is essential for students to acquire such knowledge so that they may truly be a contributor in their chosen field (Usal & Evcil, 2011). The Council for Interior Design Accreditation (CIDA) places importance on students understanding the role that interior environments play in shaping culture (CIDA
Professional Standards 2017) and so instructors must consider how and when culture can be taught in studio classes (Hadjiyanni, 2013) with the goal of moving the student beyond their customs (Kim, Ju, & Lee, 2015). Using the definition of the word “foreign” as, “belonging to… some place other than the one under consideration” (Merriam-Webster), the prison population is foreign to most interior design students and in particular, the student undertaking this studio project. Thus, the requirement of using EBD to address the student’s lack of knowledge for this client population allowed the instructor to more fully engage the student in the project.

If so many undergraduate students have little interest in taking a research courses (Dickinson, 2009) and a significant number of practitioners seeing the importance of undergraduate students conducting research (Dickinson, Anthony, & Marsden, 2012), it is essential that research is a goal to the student, not just the instructor (Dickinson, Anthony, & Marsden, 2009) in achieving a well-founded design solution. Choosing a client population the student was unfamiliar with allowed the instructor to stress the importance using research to understand the dynamics of human activity (Poldma, 2008) in the prison, from the prisoner’s perspective, and from the warden’s perspective. These shared experiences were analyzed and used to later guide design decisions the student made. Research was also used to understand the general populations’ perspective of prisons and prisoners with regards to what should be designed or allowed. The student was then guided through a qualitative data analysis to better understand and prepare for the cultural complexities this project and many similarly built in this century (Hadjiyanni, 2013). The steps of using research and experiences to inform design decisions also allowed the instructor to stress the importance of EBD as the basis for design choices and as an activity the student will continuously conduct throughout their professional career (Dickinson, et al. 2012). Following the design pedagogy of design education as experimental learning (Konkel, 2014), the instructor guided the student to a design solution rooted in acknowledging the user activity and experience (Resend and Vasconcelos, 2012) as central to design solution. Essentially, the instructor developed tools for critical thinking development (Carmel-Gufilem and Portillo, 2012) and increased design proficiency through and increasingly difficult, complex, and detailed project (Osmond & Tovey, 2015). To this end, the authors will display the student’s work, highlighting the research, analytical tools, and design solutions developed. The authors will also share insight to lessons learned through the project and key steps for further student instruction.
REFERENCES (APA)


APPENDIX

Designing for the Undeserving.

Can the revolving door of recidivism slow down or reduce by human storage evolving into humane storage?

Concept Map

Began with "SOCIAL" or society and searched for commonalities or connections that are highlighted.

Research

Number of daily responses

Research is comprised of interviews, and a 12 question survey analyzing public perception.
**Interview 1 “Red Dog”**

“Imagine locking yourself inside your bathroom...now multiply that day times ten years. WOW!!! Isn’t it.”

What facilities were you housed in?

“Cook County 16 times, Illinois Department of Corrections 4 times. Spent a total of 14 years incarcerated, crime consist of Burglary, Grand Theft and Possession”

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**Interview 2 Warden**

“I do not believe we make a conscious effort to design our facilities with rehabilitation in mind; our dormitory styles are primarily what are found throughout the corrections industry across the nation.”

What does it mean to be a Regional Warden?

“I assist the Regional Director of Institutions in the oversight of 16 state correctional institutions and two privately operated prisons. I ensure routine...”

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**Conclusions**

- 2 man cells
- Typically 24-49 sq. ft. with 8-10 ft. ceilings
- Bolted down furniture
- Stainless steel used
- Militarized culture or references
- Dormitories
  - Large room housing 100 inmates bunked barrack style
  - Houses 144-200 total
- No privacy or little for using the bathroom
- Food tray slots within doors
- Television
- Day room/common area
- Units
- Showers are small like stall

Note: the term “Dormitory” in correctional facility refers to a large room hosting 100 inmates barrack style in stacked in bunks
**Public Perception**

Do a scale of 0-10 Rehabilitation is 1 and Punishment is 0. Is environment for inmates on future should be like?

- Yes: 75%
- No: 25%

Designing for the Undeserving:

The public is in favor of a facility containing a fair balance.

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**Public Perception**

Inmates can watch television on a flat screen that is mounted and protected.

- True: 58%
- False: 42%

Designing for the Undeserving:

Protected flat screen TVs in common areas are present within 100% facilities. The public accepts this statement as true, whether or not knowledgeable on how tax money is spent.

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**Public Perception**

In a one man cell should there be a private bathroom?

- Yes: 34%
- No: 66%

Designing for the Undeserving:

Majority are in favor of a communal bathroom versus private.

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**Public Perception**

In a one man cell should there be a kitchenette?

- Yes: 8%
- No: 92%

Designing for the Undeserving:

Majority disagree with cells containing a kitchenette.
PUBLIC PERCEPTION

Rather than an all-white institutionalized feeling, should cells or units should contain small splashes of calming colors or accent walls?

- Yes: 44%
- No: 56%

Designing for the Undeserving:
This statistic was constantly split, regardless of the numbers of responses. Currently, the majority vote: "yes."

PUBLIC PERCEPTION

Should art be displayed within the facility?

- Yes: 51%
- No: 49%

Designing for the Undeserving:
Majority agree art should be displayed.

PUBLIC PERCEPTION

Inmates should have areas or spaces where they can learn skill building techniques to equip them when released.

- Yes: 95%
- No: 5%

Designing for the Undeserving:
Majority agree inmates should have access to spaces that can facilitate learning.

PUBLIC PERCEPTION

Should there be areas in a correctional facility for hobbies to help facilitate wellness or well-being?

- Yes: 85%
- No: 15%

Designing for the Undeserving:
Majority agree inmates should have access to spaces for hobbies that enable wellness.
**Public Perception**

Are you open to the idea of a facility adopting college dorm-like elements for a humane approach in the US?

- Yes: 60%
- No: 40%

**Designing for the Undeserving:**

Interestingly, majority are in favor of the idea of a facility adopting college dorm-like elements. This statistic also resembles a close divide.

**Site: Wyoming**

- Most Conservative State™ - 2014
- Population of State: 563,626
- Size: 97,733.56 Sq Mi
- Lowest Rate of Recidivism in US
- Proposed City: Pinedale Spider Creek

**Goals**

- Reduce Recidivism
- Sustainability
- Humane
- Practical
- Functional

Facility respects inmates.

Inmates respect facility.

**Designing for the Undeserving.**

The goal was to obtain a diverse demographic as possible out of the 80 responses.
Programmatic Concepts

Safety and Utility
- **Safety**: Materials must be durable and germ resistant to illness
- **Utility**: The overall function of designated areas is to enable or promote the inmate’s wellbeing, and drive a successful rehabilitation rate.

Relationships
- If it promotes the efficiency or effectiveness of people and their activities, this helps inmates feel purposeful by keeping them busy with skill building programs.

Security Controls
- Security is present but seen within the design. The emphasis within the design should reflect the safety of the inmate instead of reminding them of their felony status.

- **Service and Activity Groupings**
  - **Service**: Amenities and services are to be in a centralized location allowing inmates to feel as if they have entered “town center-like” setting.
  - **Activity**: Compartmentalization will be seen within areas are multi-purpose or multifunctional. Integration will be seen with areas for a singular function that offer privacy.

- **Environmental Controls**
  - This is strongly needed since inmates do not have access to fresh air whenever desired. Sound control and natural light is imperative because regular facilities lack this decreasing the inmates mood generating a tense population.

Designing for the Undeserving.
**Areas**

I. Courtyard
II. Small Auditorium
III. Common area/Dayroom
   I. Includes kitchen
   II. Community pet
   III. Meditation room
IV. Art Studio
   I. Includes sound booth for music
V. Rec/Gym
   I. Studio room for classes
   II. Area for free-weights
VI. Retail
   I. Different approach to the traditional commissary
   II. Includes services such as Barber
VII. Visitation
VIII. Library
   I. Two small classrooms
   II. Small computer lab

Designing for the Undeserving.
PRESENTATIONS
CIDA Site Visit: Shifting Toward an Alternative Interior Design Program Evaluation Method

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College of Basic Education, Kuwait

ABSTRACT

Background
The council for Interior Design Accreditation (CIDA) is a non-profit organization in North America that aims to set standards for accredited interior design programs. CIDA aims to bridge the gap between interior design practice and interior design education by preparing proficient entry-level designers to enter the national market. When CIDA judges visit schools to review an interior design program that is seeking accreditation, students’ projects must be presented in order to show evidence of compliance and knowledge with CIDA standards.

Purpose
The purpose of this presentation is to illustrate an alternative method for CIDA program accreditation processes. The presenter will show the advantages and disadvantages of the typical CIDA site visit and will present a new, tested, method for evaluating interior design program outcomes. This methodology has been implemented and tested in a doctoral dissertation (Alansari, 2015).
Methodology
In the aforementioned doctoral dissertation, a quantitative research approach was adopted to examine interior design students' knowledge and skill levels. The methodology for this study consisted of two approaches: measuring students’ knowledge and examining students’ design aptitude. A self-administered questionnaire was distributed to senior interior design students in their classes. The knowledge areas tested in the questionnaire were adapted from a reliable interior design exam that matches with CIDA standards (CIDA, 2014). To examine design students’ skills, interior design projects were collected and evaluated by six professional interior designers who were used as judges to determine the proficiency of the interior design projects. An online survey, using Survey Qualtrics, was administered to collect the required information. Students’ design projects were attached to the survey and participants were asked to evaluate them based on fifteen design guidelines adopted from CIDA standards (CIDA, 2014).

Implementations
The methodology that will be presented was tested as a tool for evaluating interior design programs, similar to those seeking CIDA accreditation. The evaluation method eliminated several challenges, such as human prejudice, site visit time constrains, and overseas travel issues. Typically, CIDA invites three interior design judges to evaluate the outcome of each design program. However, this method provides opportunities for seeking more reviewers, as the site visit challenges are expected to be eliminated. In addition, this methodology will enable expansion of CIDA accreditation to interested overseas institutions without any cost implications.

REFERENCES (APA)

Design Making as a Recruiting Tool:

Body, Space and Experience

Nathan Bicak & Lindsey Bahe
University of Nebraska-Lincoln

ABSTRACT

Problem
In 90 minutes, how does one introduce prospective design students to creative problem-solving whilst addressing the design of the built environment? Can a project be crafted to simulate the design studio experience, from the introduction of core concepts of body, space, and experience; to those of ideation, prototyping, testing and presentation? This design thinking exercise was crafted to engage high school seniors (n=57) visiting a college of architecture for an open house and recruiting event. (Appendix A)

Methods
The exercise asked students to design and build an apparatus that the human body could wear or engage with in order to alter one’s perception or experience of space. First, the students viewed a lecture on ideas of body, proximity, experience and space; the lecture topics included engaging human senses(1), objects as cues for human behavior(2), framing views and design principles as instruments for filtering spatial experiences. (Appendix B) In teams of three, students spent ten
minutes sketching ideas of how their devices were going to interact with the body and alter one’s spatial experience. Next, they merged ideas and spent 45 minutes constructing prototypes.

The objectives of this exercise were that it be: [1] fun, it should excite students about the study of design; [2] collaborative, using teamwork as a learning strategy; [3] informative, as it introduced spatial design principles; and [4] process driven, as it introduced the design process via ideation sketching, representation through making, testing through rapid prototyping and communicating/evaluating through verbal presentation.

Outcomes
This exercise asked students to consider anthropometrics, the body’s interaction with a design proposal, and to purposefully alter how one views a space. Once completed, the teams tested their prototypes and demonstrated their solution. Many strategies implemented mirrors; one in particular was worn on the head and intended to “reveal only someone’s blind spot, as this is an area relative to our bodies in space that we never see.” (Appendix C) Another engaged the existing environment, opening up a discussion of site and host. This prototype was mounted to a wall and occupied from the front, giving the occupant a view of the room behind. (Appendix C)

After the activity, students had the option to complete a survey (n=45) that measured the activity’s impact on their interest in attending the college, asked them to identify aspects of the exercise that expanded their understanding of the process of design and allowed them to comment on the experience. From this survey it was clear that roughly half (25, 56%) were more interested in attending the institution after this exercise, while 17 (38%) opinions remained unchanged. In identifying aspects of the project they felt expanded their learning related to design, 76% said "working in teams," 78% said "working with design process" and 76% said "making something" were valuable knowledge. 62% connected with design’s role in spatial experience while fewer (46%) made connections with understanding the human body’s role in space. Three of the 45 thought the exercise was "unrelated to their interest in coming to the college". The survey provided the instructors with positive feedback relative to the goals of instilling enthusiasm and crafting a project that quickly introduced the core concepts of design and its process. The survey also identified areas that need to be addressed in future project delivery, which include the designer’s
role in spatial experience and understanding the human body’s role in space. It is the intention of the instructors to use this exercise and assessment tool as a one-week introductory project to a first year Design Making Studio in Spring 2017. This presentation will generate excellent discussion on using this project type for recruiting and on introducing core design concepts to prospective students in a short period of time.

REFERENCES (Chicago)


Appendix A:
High school seniors engaged in an activity asking them to consider how we experience space and how they might alter those experiences though design and its process.
Appendix B:
Excerpts from the presentation given prior to the exercise.

Slides

Slide Notes
Our bodies give us a sense of scale – we understand the size and volume of spaces based upon our body’s occupation of that space. The relative proportion of our bodies to space imply certain activities and human behaviors.

We experience both space and objects through our senses and understand how to behave in space through our sensory interpretations. Spaces are designed for people, and people perceive through their senses.

Our experiences in the built environment are tied to seeing, touching, hearing. Complex spaces are made ‘sensible’ through our perception – so material tactility, light saturation and even smell are strong mechanisms to create senses of place.

As designers we can guide the experience people have in space by considering the measurement of the body, how the space/volume/light, and surfaces are going to affect peoples’ senses. We get to think about the character of the space, we get to consider and locate objects in the space. When we do this, we begin to write a story of atmosphere and experience for people. The different characters of objects in space invite people in to occupy and help guide their experience in the space. The translucent walls on the left direct movement, the undulating wall on the right invites people to rest.

This device allows for a varied filtering of spatial perception – the angled mirrors and windows alter depth perception and redirect views away from directly in front of the user.

Your analog device, when worn [or held, put on, occupied, etc], will alter someone’s perception of space and reality. It is important to start to think of how you will do this by addressing these questions: How will the device we worn or occupied by the body? What will your device do? How will it filter someone’s vision of space?

Activity: Design a spatial filter that one can view through or occupy that will alter the way space is perceived or experienced.

Image Credits:
Slide 1: diagram by former students of the author
Slide 2: Church of Light, Le Corbusier, 3D Stone Art, Francesca Bernardi, Chelsea College of Arts Interior Design
Slide 3: Studio, courtesy students of the college
Slide 4: images and layout by former student of the college
Slide 5: Hands on with Google Cardboard, Jamie and Adam Tait (youtube channel)
Appendix C:
Images of the student-prototyped spatial filtering devices.
The *Blind Spot* apparatus allowed the occupant to view only their blind spots.

The *Site and Host* apparatus redirected the occupants view from forward to behind, left and right.

Several prototypes were made to be worn, and many included an articulating action for the wearer to engage the device.
Current Research Trends in Interior Design and its Influence on Education

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ABSTRACT

The popularity of the profession of Interior Design (ID) could be traced back to over a 100 years, from the time of its origination as the art of decorating. Since its inception as decorating art, the profession has evolved into what we today know as a specialized area of expertise, designing for human behavior and comfort. As interior design projects are becoming more complex, among the various reasons for research in this profession, the primary is to identify the feasibility of the project, client current and future needs and concept development. Traditionally the profession of ID was envisioned as a more craft based discipline, where knowledge was gained by doing. With the inception of the concept of ‘Human Centered Design’ the need for design decisions to be guided through an understanding of research methods and finding is inevitable (CIDA 2014). With the recent shift towards expertized education, more research activities originated which led to the exploration of new design techniques, materials, and methods to advance design, as well as improve ID higher education. Being a developing field, research in ID profession is constantly evolving, and the best actions to take are constantly being challenged. The research efforts in this profession cover a wide range of topics which can be broadly categorized into practice research and academic research. The goal of this study is to explore the trends of research in ID profession.
and how it has been integrated with ID higher education. The result of this study will not only provide the researcher with a base-line understanding of the research done so far, but will assist them to identify the future directions of ID education.

This study adopted the systematic review as a methodological approach to examine the existing research related to the profession of ID. A content analysis method was adopted for the study to analyze the keywords of the individual publications to understand the trends in research. The first three steps aimed to collect enough appropriate related research publication (see attached). Through preliminary search a total of approximately 15 journals and conference proceedings with highest number of papers were identified as target journals or conference proceedings for second search. The results of the second search were used to select literature according to design topics, targeted occupants and targeted building types. The shortlisted papers were then compiled and coded based on seven aspects as listed in Appendix 1. Data analysis was further performed on the basis of the coding results to have an overall understanding about researches focusing on ID. Research gap were further identified to provide a platform to further explore the less-investigated or novel topics.

In excess of 400 papers were identified with the earliest publication date of 1970. The shortlisted papers could be grouped under nine different topics based on the area of focus. The broadly classified topics were business process management, social and individual needs for better design solutions, design and aesthetics, building codes, health and safety, fixtures and furnishing, building materials and finishes, building systems, and pedagogical improvements. Majority of the identified papers focused on social and individual needs followed by business process management, and health and safety. A second categorization of the shortlisted papers was according to targeted building types where health care building was the most focus and the least addressed building type was residential followed by hospitality or restaurant. Selected papers when grouped based on occupant types, demonstrated strong focus on elderly population and disabled population. Least attention was provided to the underage population. The study identified gaps in existing literature based on building types, design topics addressed and population type targeted.
REFERENCES (APA)


APPENDIX 1

- Preliminary search
  - Approx. 15 Journals and Conference Proceedings were identified
- Secondary search
  - Selection based on design topics
  - Selection based on targeted occupants
  - Selection based on building types
  - 1. Research title
  - 2. Journal/Conference name
  - 3. Publication year
  - 4. Country of origin
  - 5. Research topics
  - 6. Targeted occupants
  - 7. Building types
  - Chronological discussions
  - Thematic discussions
  - Research findings
  - Research gaps
- Literature search
- Literature selection
- Literature coding
- Data analysis
- Discussions
Using Immersive Virtual Reality in Design reviews

Tilanka Chandrasekera
Oklahoma State University

ABSTRACT

The use of Virtual Reality (VR) technology in Design and Design education is not new. Since its inception in the 60’s, VR has been employed by designers for communicating their design ideas (Frost & Warren, 2000; Whyte, 2003; Whyte, Bouchlaghem, Thorpe, & McCaffer, 2000). VR can be defined from a technology standpoint (associated hardware) as well as from an experiential standpoint (focusing on experiences such as immersion and presence). On a broader scale, VR is defined as “an alternate world filled with computer generated images that respond to human movements (Greenbaum, 1992, p. 58) or as “three dimensional realities implemented with stereo viewing goggles and reality gloves” (Krueger, 1991, p. xiii). With the advancement of technology, cost effective Virtual Reality has become available to designers and educators.

With these new types of VR Head Mounted Display (HMD) systems as well as with improved tracking systems, a new paradigm in Virtual Reality named “Room Scale Virtual Reality” has extended the possibilities of VR to designers through better immersion. Immersion and Presence are two main topics that have been discussed with regard to how people experience Virtual Environments. According Sanchez-Vives and Slater (2005, p 333) immersion is the technical capability of the system to deliver a surrounding and convincing environment with which the participant can interact and Slater et al (1994) suggests that presence seems to have connotations
of a subjective phenomenon and more related to the personal nature of how one perceived the virtual environment. The main objective of this study is to investigate the use of different types of HMD’s and to assess their immersiveness as well as to investigate the student’s perception of using VR in design education. This study also documents the use of VR in design reviews for early design studios.

In this study 23 students from an early interior design studio in a south western university were provided with a simple design problem of designing a dorm room for two college students. The students were divided in to 6 groups, and were instructed to draw inspiration through a piece selected by the group from a Native American art exhibition that they visited. The students were instructed on using SketchUp and Unity 3D (a gaming engine) to develop an immersive virtual environment. 3 groups developed immersive VR environments for the Oculus Rift DK2 HMD, 2 groups developed immersive VR environments for the Oculus Rift CV1 HMD, and 1 group developed an immersive VR environment for the HTC Vive HMD.

6 reviewers were invited for the design review, of which 3 were interior design faculty members and 3 were faculty members without any design background. The students presented their projects using graphical presentation boards as well as the immersive VR environments. Students were provided with two types of questionnaires: A and B. Questionnaire A was developed to measure the sense of presence experienced by the students, using the IG group’s presence questionnaire (IPQ) and Witmer and Singers presence questionnaire (WS). Questionnaire B was developed to assess the perception of the technology by the students, using the Technology Acceptance Model (TAM) and the Simulator Sickness Questionnaire (SSQ). Reviewers were provided with a questionnaire that assessed the sense of presence as well as if there was any indication of simulator sickness for each group they reviewed.

The results of the study provide information on how students perceived the use of immersive VR in their design process. The results also provided information on the difference in sense of presence provided by different head mounted display systems. The results suggest that in the domain of design, room scale VR provides a powerful medium in design representation, while enhancing the creative design process.
REFERENCES (APA)


Shifting Ideology from Foundations to the Interior Design Studio

Kimberly Burke

University of Cincinnati

ABSTRACT
This paper will discuss the shift in mentality from foundations which focuses on developing design language, process and craft to a holistic approach to the design of the built environment.

Introduction
Students entering design school need time to assimilate not only to college life but to a studio mentality. Undergraduates arrive with a myriad of experiences and skills and, in some cases, no background in art or design. Foundations programs serve to give students a common language and a shared understanding of the basic building blocks of design.

The principles and elements of design can be applied to any and all design problems. The transition from abstract to concrete design application remains a difficult process. Teaching at three different institutions offering interior design found the transition semester to be a constant challenge. How can we help students move forward to applied interior design while capitalizing on their enthusiasm and creativity. How can research become a fundamental and meaningful part of the design process?
Using a “wicked problem” as defined by Rittel and Webber's (1973) gives students a platform to explore and expand their understanding of design.

Methodology
This paper examines a sophomore level studio that bridges the gap between foundations, and co-op. The first in a series of interior design studios combines research and design through a continual and interrelated series of assignments and activities designed to teach student to apply their knowledge of design to defined space. The studio places emphasis on future workplace trends, workspace productivity, and the various physical, environment, and sensual conditions that may support emerging trends. However, instead of a predetermined program the studio poses the following questions: What are the future workplace trends? How will the workplace of the future look and function? What are the fundamental purposes of work?

Projects encourage students to experience the design process with an emphasis on research, programming and planning. Productivity in the workplace can be streamlined or inhibited by an interior architectural designer. Interior designers shape how work is accomplished, and even contribute to human fulfillment that is derived from work. Defining the workplace is a complex endeavor. Work is constantly changing. No single solution can accommodate all aspects work. Also, personal, social, political, economic, and environmental aspects impact the workplace and workplace culture. Therefore, the interior designer is a central player in the creation of work, workplace satisfaction, productivity, and performance. The workplace must holistically address the needs of the business and the employee.

Course Objectives
• Develop a deeper understanding of emerging trends in the concept of “work” and how it influences all aspects of the design of the work environment.
• Integrate research, interior design image, and space programming to design a meaningful and productive workspace of the near future.
• Identify the different steps in design thinking and apply it to an actual design problem
• Exposure to concepts and components involved with the planning and implementation of interior space.
• Develop research skills integrate the information obtained from reference materials (literature reviews), discussions, and survey materials (interviews, observation, and questionnaires).
• Introduction of scenario planning and concept development.
• Develop visual, written, and oral communication skills.

Results
The workplace of the future studio serves as a foundation for process and pedagogy in the upper level studios. It provides a strong foundation for interior design knowledge and skills that prepares students for a work experience. Several student projects have been published in national publications in Office of the Future competitions.

REFERENCES (APA)


Workplaces of the Past

The Birth of the Modern Factory

1900 - 1950

People of the Past

The Birth of the Modern Factory

1900 - 1950
MODERN WORKPLACES

1950s BURGUNDY ORGANIC

1960s ACTION OFFICE

PLACE OF THE FUTURE

Beyond the workplace - new forms of work and living

Growth in numbers of people who work from home

New definitions of work

Travel health hours tech active

Michigan Trip Itinerary

Chicago Trip Itinerary

EVOLVE

NEXUS: The Locomotion of Business

MUSEUM DESIGN

NEXUS

A Synesthetic Approach to Creative Design Thinking –
The Phenomenological Perspective on Multi-Sensory
Spatial Experience

Jain Kwon
University of Georgia

ABSTRACT

Issue
Interior design students often struggle while transforming abstract inspirations to tangible forms and space. Research has suggested that narrative methods may help students use their imagination in such a process, while raising a concern that using the methods may also interfere students' visual presentation of their ideas (Danko, Meneely, & Portillo, 2006). Responding to the concern, this study proposes a framework that involves multi-sensory design thinking and multimodal narrative methods. Based on Merleau-Ponty’s notion of perception (1945), this study explores how a synesthetic approach can inspire students while promoting holistic, multi-sensory design thinking. Synesthesia is “the production of a sense impression relating to one sense or part of the body by stimulation of another sense or part of the body” (Oxford Dictionary, n.d.). Inspired by the concept of synesthesia, this paper presents a design method that can help students successfully visualize the attributes of abstract and non-visual objects.

Method
This study is part of the pedagogical explorations conducted in a conceptual design studio for five consecutive years; the framework of which is based on the fundamentals of phenomenology, lived experience and the first-person perspective:

1. Understanding the meaning of one’s spatial experience
2. Interpreting and visualizing others’ narratives
3. Developing and visualizing abstract concepts
4. Representing one’s experience in spatial composition

Based on the framework, the course projects consist of a warm-up activity and four sequential projects.

Warm-Up:
As an introductory practice, students discuss about their understanding of ‘spatial experience’. The instructor provides visual references, the photos and the videos of several pavilions at the Venice Architecture Biennale to help students learn that different sensory stimuli may affect the intensity and the meanings of individuals’ spatial experience.

Project 1. Video Narrative: What is spatial experience?
The purpose of this project is to help the entry-level students establish the meaning of ‘spatial experience’ from the first-person perspective. A video is a great medium of a multimodal narrative that includes verbal and visual. Students are instructed to integrate the implications of body, time, space, and movement into the contents.

Project 2. Pop-up Book: Visualizing Interpretation
After watching a short film, Design Q & A, students make a pop-up book to visualize their interpretations of Charles Eames’ responses to a series of questions on the concept of design. Designing the contents and the format of the book, students learn how to incorporate implied forms and incidental space in design (Figure 1).

Project 3. Conceptual Composition: Evolving Form and Space
Students develop their own concept based on the given topic and design a three dimensional composition within a cubic foot space, reflecting sense of ‘time’, the fourth dimension. The
configuration must be presentable without a designated bottom (Figure 2), which helps free students’ thinking from ‘gravity-driven’ approach.

Project 4. Experiential Space: Representing Sensory Experience through Design
This cross-disciplinary project, a comprehension of the previously taught contents, is conducted over a three-week period, week 9-11 of the semester. Students design experiential space using music as an abstract inspiration (Figure 3). Students from the School of Music participate in conceptual development.

Outcomes
This study stresses that spatial experience is a comprehensive whole, in which human senses serve as the channels for communication between the space and the occupants. The findings from the post-project surveys have shown that students consider the learning experience as a positive challenge and the cross-disciplinary collaboration as a creative adventure. The instructional details and project outcomes will be presented at the conference.

REFERENCES (APA)


Figure 1. Pop-up Books: Visualizing Interpretation
Figure 2. Conceptual Composition: Evolving Forms and Space
Figure 3. Experiential Space: Representing Sensory Experience Through Design
Ethnographic strategies: framework for sensemaking and creative synthesis in design studio

Genell Ebbini & Kathleen Ryan
Washington State University

ABSTRACT

It is an ongoing challenge, in interior design education, for student designers’ to find meaning and relevance in the complexity of information gathering resulting in novel design solutions. A lack of creative synthesis illustrated a disconnect between the students’ design solution and the information gathering process. Information gathering is an integral component of design thinking, demonstrated by the exploration process of research that evolves to inform the design output. Comprehensive design synthesis methods of “abductive sensemaking process,” of data gathered, are imperative in how designers approach design thinking for creative solutions (Kolko, 2010). Synthesis makes sense of discoveries in the early design process and evolves to creative design. The value of information collected was not evident in students’ work in previous studio courses. This void revealed a missing link between understanding of data gathered and the development of creative outcomes. The complexity of this issue provided a perspective for identifying how to raise the level of students’ cognitive design thinking skills while developing a comprehensive method for information building.

The approach was to evaluate the insular activity of students’ ability to synthesize information to inform design as a result (Kolko, 2010; Guiette & Vandenbempt, 2015). In response, a pedagogical
framework was developed that applied ethnographic strategies to advance interior design students’ competencies in design thinking. The strategies focused on using creative synthesis and inductive reasoning in a holistic sensemaking approach through integrative learning. Integrative learning theory suggests that learners who make connections across disciplinary boundaries successfully synthesize concepts. The course structure included multiple creative activities to create visual artifacts of the internal activity of sensemaking. Several methods of synthesis were introduced. Each of the methods emphasized specific approaches to creative design: discussions with global design practitioners; case study development of precedence; peer sharing work; interviews with global mentors; cultural music exploration; ideation sketches based on topic readings, and development of infographics and videos. Students were able to “forge connections” (Kolko, 2010, p.18) through processes of internalization and externalization for deeper understanding and reflection of information gathered (Cornu, 2009). Students applied these approaches in their studio project.

Creative synthesis is an important part of the design process. The process of synthesis of information is evident in student work showing creative connections made between multiple influences. Given the integrative learning position assumed in this exploration and the nature of the inquiry, ethnographic processes involving participatory design work provided insights for design strategy (Barab, 2004). Sensemaking of ethnographic data were used to innovate new design concepts through cultural variations of discovery. The resulting artifact analysis of participant, ideation sketches, case studies analysis and reporting, resulted in creative outcomes. As a result, students’ designs demonstrated synthesis of ideas through abductive reasoning by the integration of internal and external sensemaking.

REFERENCES (APA)

Education Quarterly ANTHROPOLOGY &amp; EDUCATION QUARTERLY, 35(2), 254-268.

Understanding of the Process of Reflection and Its Role in the Construction of the Self.

Fail Forward: Design from Failure, Design through Failure, Design for Failure

Leah Scolere & Sheila Danko
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ABSTRACT

Design industry leaders have emphasized the importance of failure as central to the design process and key to innovative design solutions. (Brown, 2009; Maeda, 2011). The 2014 CIDA Future Vision Report calls on designers to “engage in risk-taking (and potential failure) to arrive at remarkable solutions” (p.5). While opportunities for risk-taking on small scale hypothetical problems is easy, failure in real life at the scale and complexity of space design is daunting. How then do we incorporate the process of failure – so central to design learning and leadership – into studio education?

To better understand this critical aspect of teaching, this paper presents three cases studies from the “Living Learning Lab” studio project series including a stair sculpture, a media wall and an office for engaged learning (see Appendix). These real projects challenge students to address real issues, clients and time constraints. The cases chosen illustrate several methods to help students experience failure, communicate failure, and think about the role of failure as a way forward. These methods include crowdsourcing studio ideas, advancing key innovations through grouping
and regrouping of project teams, and designing for failure.

Conceptualizing Failure
Failure is less threatening when conceptualized as a continuum of interactions that are scaffolded from low risk to high risk. When we think about opportunities to have students engage with failure, we explored failure as a specific learning outcome from low discomfort to high. The low end of the continuum provides an easier entry point, “a beginner’s level,” to discomfort than the more extreme failure at the other end.

LOW END of Risk Continuum
Design from Failure: Crowdsourcing
Pairs of students contributed to a general pool of ideas from which project teams could choose a “springboard idea” to develop. Individual ideas were simultaneously embraced or discarded in the process. This can happen within a studio and/or it can extend to another group of students outside studio.

MIDDLE of Risk Continuum
Design through Failure: Group/Regroup
Structuring the studio interaction around design elimination or advancement, students competed in teams to propose a big idea of how to approach the design problem. The case illustrates how certain teams failed, but their thinking advanced the guiding principles for the design. Collaborative work occurred when teams that didn’t have the opportunity to advance, learned how to let go of their ideas, and join the advancing team to help move that vision forward.

HIGH END of Risk Continuum
Design for Failure: Micro Failures
Drawing on the engineering approach of anticipating failure in order to ensure successful design (Petroski, 1992), students were challenged to mock-up and prototype a way that their idea could fail. Creating the goal of failure, allowed students to move past the paralysis of potential failure that frequently occurs when they are faced with the pressure of a real client and real project
implementation.

Implications
By structuring design studios with opportunities for students to design from failure, design through
failure, and design for failure, we can start to create studio environments where failure and success
are not binary or hierarchical. Rather failure is one of many tools that can be leveraged as a part
of the design process. These methods of crowdsourcing, group/regroup, and designing for failure
help students face and move through the daunting process of designing real solutions.
Overall, we found that micro-failings can lead to macro level success on real projects. Micro-
failings that are examined, reflected on, and incorporated in the design process help ensure the
strength of the idea and are a form of design research that can help build trust with clients. The
presentation ends with additional implications related to knowledge transfer across student
cohorts, and techniques for using failure to build trust wit

REFERENCES (APA)


the-future-cida-future-vision-results-published/
Failure Continuum

low discomfort
Crowdsourcing
Design Group/Regroup
Design for Failure
high discomfort

Cases

Stairtower
Media Wall & Commons
Engaged Learning Workplace
Case Study 1: Stair Tower Installation ‘Emanate’

Case background.
This Living Learning Lab project focused on the creation of an “infill” sculpture for a newly constructed glass stair tower on campus. An alumni donor, concerned about the six-story void created by the stair tower and the potential risk to students experiencing mental stress, donated funds to the Dean who in turn invited the design studio to explore options.

Client group included the Dean, the Director of Facilities for the college, the Assoc Dean for Undergrad Education and the donor. User groups included students, faculty, staff and visitors to the college.

Real issues included cost, maintenance, vandalism, and the need to respect the light filled nature of the new stairwell.
Materiality Matrix: Designing for Failure

Student developed approach for designing for failure
- Installed and documented failures
- Created a presentation document to communicate design failure findings to client and to move the project forward.
Example Design Failure Study

DICHROIC SHEET

COLORS + LIGHT

Findings:
Dichroic produces interesting effect as its color changes depending on where one stands

Weakness:
Dichroic effect seems to be too intense for the volume of stair tower. Dichroic sheets need to be cut into smaller pieces and be put in tension for further testing

Moving forward:
Test with mirror sheets will be interesting to see how dichroic light effect juxtapose with the reflection of lights.
light studies
Light Maps: A Design Thinking Tool for Integrated Interior Lighting Design

Tina Sarawgi
University of North Carolina at Greensboro

ABSTRACT

Interior design students are expected to learn to be effective design communicators by expressing ideas developed during the design process through ideation drawings and sketches (CIDA, 2016). Many acquire these skills to produce engaging design solutions. However, when it comes to light and lighting in interior spaces, reflected ceiling plans showing circles and squares peppered on ceilings are all too ubiquitous in most projects with the ill-conceived notion that placement of lighting symbols is akin to designing light. Not surprisingly, the resultant projects often lack understanding of what light needs to do and where it ought to be. Additionally, with increasingly robust digital tools available to interior design students, much of the focus in exploring and representing lighting is shifting to photorealistic representation of lighting in interior environments. While reflected ceiling plans and photorealistic renderings hold an important place in design communication during the later stages of the design process, they do not fully support the iterative design process essential for integrated interior lighting design. Fluid ways of imagining light during the design process are needed. This paper focuses on the importance of graphical study and analysis of light, referred to as light maps, to assist in the interior design decision-making process, thus guiding students toward integrated lighting design thinking.
A drawing’s main purpose is to facilitate communication, first between the designer and herself, second between the designer and his or her colleagues, and last between the designer and the client (Rey-Barreau & Whiteside, 1983). Light maps are seen not as a medium for recording preconceived mental images, but as active participants in design thinking; to iteratively generate and interpret new information within the lighting design task. An act of making each mark renews, expands, and redefines the conceptual scope of the lighting design task in progressive responses to the evolving composition on the drawing page (Herbert, 1992). Russell (2012) advocates inculcating a habit of expressing ideas through mapping light to lead toward a thoughtful and responsible path of designing light. Drawing light could enable beginning designers to design light more appropriate to a given design opportunity, thus leading to emergence of more holistic, sustainable, and innovative solutions.

Examples of light mapping during the early stages of the design process situated within a constructivist learning paradigm of learning-by-doing are presented (Figures 1-4). During the programming/research phase, the students map lighting in existing spaces, using annotative diagrams and sketches. They observe the impact of lighting on activities in select spaces, the shape, texture, location, and types of light sources. Then they identify the sources of glare and excessive brightness, the effectiveness of light and shadow patterns and how they can be improved (Figure 1). During the schematic design phase, the students develop annotated light maps layered on the design drawings of the space. They determine the layers of lighting in the space and express patterns of luminances, including reflectances and transmittances of materials used in the space (Figure 2). Examples from the profession are also shared to demonstrate how light mapping is used routinely by professionals during the design process. (Figures 3-4).

Drawings are more than just a convenient strategy for solving design problems; they are the designer’s principal means of thinking (Herbert, 1992). Students can learn to think more clearly about light and lighting and express their thoughts more precisely as they interact with their light maps to generate new information and acquire essential knowledge related to interior lighting design. To a fastidious student, this very act of knowing could also reveal light’s impact on the human perceptual and cognitive systems.
REFERENCES (APA)


Touching Light: Integrating Hands-on Learning and New Technologies in Lighting Education

William Riehm & Robin Carroll
Mississippi State University

ABSTRACT

The Problem
In their influential 2009 article in The Journal of Interior Design, “Perceptions of Light–Space Compositions: Is Light Like Language?” Beever and Blossom lay a framework for understanding lighting design as a method of communication. Like language, light can be an ephemeral and poetic tool, but also like language education (consider grammar and spelling), courses in lighting design can feel like a mire of calculations and tedious technical detail. In the course review here we confront these issues, bridging the perceived gap between technical competency and creative design.

The Course
This course is an exploration in course development and expanding lighting education, and was designed as the second part of a new two part lighting curriculum. Development of this three credit hour, semester long elective was made possible by a grant awarded by the Nuckolls Fund for Lighting Education. In development for two years, this course is envisioned as a future capstone for an interdisciplinary lighting certificate and was developed to coordinate learning outcomes...
(Gordon 2013) (Karlen, Benya, and Spangler 2012) from programs in architecture, industrial engineering, construction science, and interior design. We have successfully offered this course once and this presentation reviews our findings of this experiment in lighting education.

Strategies
The value of hands-on education and technology is a growing topic (So-Yeon 2014) (Crane and Park 2014). While developing this course we established two strategic goals to bridge technical knowledge and hands-on learning. One goal was to create assignments that built on student’s fundamental technical understandings of calculations and lighting technologies through hands-on activities. The other goal was to move away from student’s reliance on digital rendering and designs created solely in building information modeling programs through site analysis of lighting installations and design problems explored on-site and with physical models focused on integrating new technologies into interior architectural solutions.

Outcomes
In an initial assignment, students were asked to choose a range of material (varying in color texture, transparency) and report on the qualities of the materials’ rendering under different lamp combination and types (LED, compact fluorescent, halogen, incandescent). Their work reveals an understanding the fluidity and variation in lighting from lamp type and placement and combination. This assignment, while quite simplistic at one level, revealed the need for a higher level of design thinking in regards to the nature and quality of lighting at a fundamental experiential (not digital) level.

Another hands-on experience was a theatrical and stage lighting presentations. This presentation feathered into an examination of light filters and diffusers in both daylighting and electric lighting situations. The assignment used a series of light boxes both in a controlled lighting lab and outdoors, expanding their study of lamp types and materials.

The course concluded with students examining lighting installations across campus and then design a lighting design solution for the entrance lobby and connected corridor in a utilitarian mid-century building. Student developed their assignments both digitally and with physical models. The assignment begins with the development of minimal interventions and concepts and then
grows to strategizing day and artificial lighting technology applications. Finally, students were asked to combine these ideas into in an integrated architectural solution that addresses user needs, architectural construction and various lighting strategies.

Conclusion
We have found that lighting technologies are best understood through experiential learning. Students, too often bound by digital models and computer renderings, need to balance these technical understanding with hands-on experiences that allow them to see lighting in action.

REFERENCES (Chicago)


Figure one. Hands-on lighting investigation.
Figure two. Theatrical lighting demonstration.
Figure three. Site analysis.
Figure four. Study model images.
Figure five. Final projects.
The Pedagogy of Performances. Reimagining Productions as content in the design studio

Clay Odom
University of Texas

ABSTRACT

Walter Benjamin said. “…film furthers insight into the necessities governing our lives by its use of close-ups, by its accentuation of hidden details in familiar objects, and by its exploration of commonplace milieux through the ingenious guidance of the camera; on the other hand, it manages to assure us of a vast and unsuspected field of action”

This advanced interior design studio, The Phantasm and The Box, was designed to allow interior design and architecture students to develop design systems and processes which explore specific questions regarding the production of spatial, atmospheric and experiential effects within the context of a contemporary or speculative/future oriented cinema/movie theater typology. Broadly, students are asked to use design processes to explore interrelationships between space, sequence, surface, and form, and to interrogate how these processes and systematized relationships produce a range of qualitative effects. Ultimately students are asked whether these effects –such as atmosphere, experience, wonder and delight- should be seen as fundamental disciplinary territories for spatially oriented interior design and architecture practices to rigorously engage and address.

The studio began by posing a set of provocations which were then pushed into the design of an
installation which explored how to produce and generate effects. This project was a competition and resulted in several honorable mentions and the winning proposal which was designed and installed by the winning students.

AREAS OF INTERROGATION, EXPLORATION AND INQUIRY
1. Critical engagement with the question: What is Performance?
2. Consider the relationship between fixed and motivated (both people and use as well as form and surface both dialectics implicated space and atmosphere).
3. What about notions of film and projection as both surface and geometrical explorations?
4. THE PRODUCTION OF WONDER AND DELIGHT AS FUNDAMENTAL RATHER THAN SECONDARY CONCERNS
5. PROGRAM AS HUMAN EXPERIENCE, INTERACTION AND USES (NOT A LIST OF SPACES)
6. THE TENSION BETWEEN SUBJECTIVE AND OBJECTIVE CONDITIONS, BETWEEN INDIVIDUALS AND COLLECTIVES
7. THE GENERATION OF CONTEXTS
8. USING SEQUENCES, SITUATIONS AND SECNARIOS AS DESIGN TOOLS

Once this preliminary project and set of interrogations was complete, the basic project was for students to consider and design what a next generation movie theater might become. The consideration of the projects should be speculative and future focused while also engaging questions of usability and function. Students were asked to push the boundaries by looking different types of spatial and effects based experiences that can be layered into the overall movie going experience in addition to -or beyond- the theater itself. Students were asked to research/survey everything from movies themselves to the theater going experience (from the classic movie palace to drive ins to the dumb suburban box to the new generation of theaters such as the Alamo). In addition, students were asked to engage in larger theoretical questions regarding storytelling and the nature of wonder. Students rigorously outlined and considered basic design issues such as how people get into the lobby for example, spatial and experiential sequences, ticket purchasing or pickup scenarios, drinks/food etc (lounge/bar), and circulation from lobby to theater, in addition to offices, food prep, restrooms and other types of support spaces. Students considered
how new formats and forms of media –including digital space- will impact the movie-going experience moving forward. Finally, students were asked to consider how the theater may support other types of cultural and community events and uses such as festivals and other types of performance. The outcomes of this studio generated new types of spatially oriented projects which signal the potential resonance of a strong disciplinary approach to an interior design studio even within a school of architecture

REFERENCES (APA)

Walter Benjamin ‘Selected Writings Vol. 3, 1935-38’


APPENDIX

Winning student entry of project 01 competition

Example of student honorable mention, project 01 competition
Student final "Pixel Glamour"
Student final "Sensory Cinema"
An Empirical Study of the Relationship Among Self-Regulation, Creative Self-Efficacy, and Product Creativity in Interior Design Performance

Ji Young Cho & Moon-heum Cho
Kyung Hee University

ABSTRACT

Enhancing students’ creativity is an important goal in interior design education. Hargrove (2011) proposed a framework for effective pedagogical practices to enhance students’ creativity and used self-regulation as one means to do so. Self-regulation entails students’ systematic efforts to achieve their learning goals by steering their learning process and metacognition; however, little empirical research has been conducted to determine the relationship between self-regulation and creativity in interior design education or whether one exists at all.

The purpose of this study was to examine this relationship, in particular, how self-regulation plays a role in designers’ creativity in both creative self-efficacy and self-assessed product creativity as well as how novice and advanced students show similarities or differences in such a relationship. Designers’ self-assessed creativity is important in the design process because high self-assessed creativity is known to improve enthusiasm and devotion to work (Norton, 1994). In design studio, students spend the majority of their time solving design problems alone (Casakin & Kreitler, 2006); thus, one’s own assessment of creativity seems to play a significant role in
successful problem solving.

A total of 85 interior design students (50 freshmen and 35 juniors) in one Midwestern university participated in the study. They completed a survey questionnaire measuring (a) their self-regulation pattern in the design process, (b) creative self-efficacy, and (c) the creativity of their studio design projects. At the end of semester, their studio grade and GPA were compared with the scores in the survey questionnaire.

Self-regulation was measured with the Metacognitive Awareness Inventory (MAI) (Schraw & Dennison, 1994), consisting of eight constructs: declarative knowledge, procedural knowledge, conditional knowledge, planning, information management, monitoring, debugging, and evaluation. Creative self-efficacy was measured using five questions by Houghton and DiLiellom (2010). Product creativity was measured with originality and appropriateness: the two representative constructs of product creativity (Runco, 1988).

The results showed that novice students’ self-regulation significantly predicted (a) product creativity with debugging strategy significantly contributing to the prediction and (b) creative self-efficacy with declarative knowledge significantly contributing to the prediction. In contrast, advanced students’ self-regulation significantly predicted product creativity with monitoring and procedural knowledge significantly contributing to the prediction, but it didn’t predict creative self-efficacy. When comparing self-regulation, creative self-efficacy, and product creativity with students’ final studio grades and GPA, novice students’ product creativity correlated with the final grade; furthermore, product creativity, self-efficacy, and two constructs in self-regulation (planning and debugging strategy) correlated with GPA. Advanced students, however, showed no such correlation. The results imply that interior design students’ self-assessed creativity in product and self-efficacy can be cultivated with self-regulation, but the tendency is stronger for novice students than advanced ones. This study also shows that the performance of advanced students requires complexity beyond self-regulation and creativity.

In the IDEC conference, educational implications are discussed for teaching and learning in design studios.
REFERENCES (APA)


Engaging a Client, User and Industry Partner in Innovative, Experiential and Authentic Learning: A Collaborative SoTL Project

Angela McKillip & Kay Cutler
South Dakota State University

ABSTRACT

Problem
The design studio is where students test ideas, apply knowledge and explore solutions (Gurel, 2010). However, in current educational settings, much of this work is completed digitally; creating a gap in learning due to the two-dimensional, primarily representational solution, and a three-dimensional fully manifested creation (Konkel, 2014). Moreover, due to the hypothetical nature of most projects, students miss the opportunity to engage with a client, a driving force in professional practice.

This project supports the process of generating new knowledge and pedagogy, as well as interdisciplinary and multiple perspective practice. The focus question for this discussion is “how clients, users and industry partners coupled with experiential engagement impact student learning”. Sub-discussions emphasize “how inquiry-based experiences impact the college classroom, faculty and students” and expansion of ‘Build-to-Learn’ and ‘Service-Learning’ discourse (Konkel, 2014, Corser and Gore, 2009). This SoTL study measured impacts through a triangulation of reflections, interviews, and survey methods.
Method/Strategy
In collaboration with an on-campus laboratory school (client/user) and an early childhood education product design and manufacturing organization (industry partner), undergraduate students explored, designed, and built prototypes of ‘stools’ for use by teachers and children alike.

This intensive study involved client interaction, user observation and market-relatability in every phase of the design process. Furthermore, an industry partner as referenced indicates an entity integrated into project formation, providing expertise and leading the market-immersion of prototypes constructed in the studio. This type of partnership goes beyond current frameworks to include students in undergraduate participatory research, innovation, patented intellectual property and entrepreneurial endeavors while addressing social responsibility.

Preliminary Data
The preliminary data reveal interesting trends. First, students’ self-reported comfort in the design process went from a 3.8 (on a 5-point scale) to a 3.2. In this process, lab-school teachers sat side by side with students during a rapid prototyping process, wherein the stream of interaction included ongoing elements of the clients’ thoughts and desires. Its plausible students knew less about rapidly interpreting a client’s needs into a design solution than thought by going through the experience. Additionally, students fully manifested their ideas in built form, while considering sustainable and lean manufacturing processes, an unfamiliar process. Conversely, they enthusiastically enjoyed learning about inquiry-based early childhood education, taking on children’s perspectives regarding an object in their environment, and delving into the design of ‘rich-normality’.

Regarding inquiry-based, experiential learning the preliminary results indicated that the students reveled in the opportunity. Students reported that their knowledge and comfort level when from 2.95 to 4 when utilizing power tools, 0 to 3.9 with CNC technology, and 3.5 to 4.5 when developing details. Students also reported high amounts of collaboration with people across campus. It was interesting to note that they did not report collaborating with lab-school teachers. When considering why, it may be that clients are seen in a different light and not as equal
collaborators in the process. This perception may come from a lack of the clients’ involvement in a typical educational setting.

The benefits of interdisciplinary collaboration and full-scale construction to enhance learning outcomes are areas of interest in interior design education. This SoTL project engages strengths of two academic units while connecting industry partner to experience the design process full-scale in a meaningful and very authentic manner. Full results of the study and future directions will be presented.

REFERENCES (APA)


Engaging a Client, User and Industry Partner in Innovative, Experiential and Authentic Learning

A Collaborative SoTL Project

“In what way would processes of learning and teaching be modified and enriched if school culture welcomed the poetic languages and an aesthetic dimension as important elements for building knowledge?”

-Hundred Languages of Children (2011)

Inquiry-Based
Industry Partnership
Reggio Inspired
Participatory Research
Experiential Learning
Furniture Design

In collaboration with an on-campus laboratory school and an early childhood educational products company, students explored, designed, and built prototypes for classroom ‘stools.’

This intensive study has involved client interaction and user observation in every phase of the design process. Furthermore, an industry partner as referenced in this study indicates an entity involved in the project formation, providing expertise, and leading the market-imposition of prototypes constructed in the studio.

This type of partnership goes beyond the current ‘Build-to-Learn’ framework to include students in research, observation, innovation and entrepreneurial endeavors.
Scholarship of Teaching and Learning

Framework 1
In what way do industry partnerships coupled with experiential engagement impact student learning processes?

Framework 2
How do design principles, manifested in an aesthetic dimension, impact the educational setting?

Framework 3
How do inquiry-based experiences impact the college classroom, faculty and students?
Spring 2015Prototype 1

Mon, Mar 14th
Guest lectures from collaborative experts.

Wed, Mar 15th
Engage in a workshop with teachers from the lab school.

Mon, Mar 21st
Construct knowledge base: lessons learned, desired characteristics, begin design concepts.

Mon, Mar 30th
Present initial concepts, gained feedback and insights from teachers and industry partner.

Wed, Apr 1st
Refine concept models, begin building full scale mock-ups.

Mon, Apr 6th
Tour of the wood shop: safety first!

Wed, Apr 8th
CC presentations: Complete with full scale cardboard mock-ups!

Thu, Apr 9th
Observes at the Pitchback Center
Teachers and children interact with the designs.

Wed, Apr 15th
Time to play with the CNC router!

Wed, Apr 22nd
Refining design details.

Fri, Apr 24th
Progress: Progress.

Mon, Apr 27th
Presentation formatting underway, continued construction progress.

Tues, Apr 28th
Final models starting to take shape.

Wed, Apr 29th
Photo documentation of final steel buildout.

Fri, May 1st
Open House
Guests learn about and interact with the designs.

Fri, May 1st
Semester complete.
Hope the children and teachers enjoy the work!
Fall 2015_Spring 2016_Prototype 2

- Fri, July 10th: Local design group hosted a gallery featuring the first prototype.
- Thurs, Aug 6th: Delivered Prototype 1 for testing at a local early childhood center.
- Thurs, Aug 20th: Week 2 of observations and feedback.
- Thurs, Aug 27th: Week 2 of observations and feedback.
- Thurs, Sept 9th: Prototype 2 design considerations conversation with industry partner.
- Mon, Oct 5th: Industry partner exploring the construction sequence of prototype 2.
- Thurs, Oct 8th: Multi-modal marketing material investigations initiated. Present web and social media.
- Thurs, Oct 13th: Third trial: Lab school teachers were engaged to develop provocations.
- Thurs, Oct 22nd: Ranking, marketing materials with the industry partner marketing team.
- Thurs, Nov 12th: Prototype 2 arrived on campus.
- Fri, Nov 13th: Photo session for marketing materials!
- Thurs, Nov 19th: Arrived and preparing for the international expo and debut of the stocks.
- Fri, Nov 25th: Debuted the products with industry partner at national expo.
- February - April: Collaboration research with the national testing sites.
The Library as a Third Place: Designing to Encourage Gathering and Place Attachment

Lisa Waxman, Amy Huber & Yelena McLane
Florida State University

ABSTRACT

Introduction
The new student arriving on a college campus often feels a bit lost and overwhelmed. What can a university do to help that student engage? In what spaces might they forge new connections? Although many campuses are welcoming, the library presents an obvious opportunity for connecting with the campus community. This presentation will present a study on the characteristics of library spaces that help students engage.

Background
With the digitization of information over the last twenty years, libraries have reinvented themselves as places where learners connect (Holland, 2015). For many university libraries, that transformation has meant creating spaces in which students can engage with others as part of a learning community (Bilandzic & Johnson, 2013). These opportunities for connection have made the library an ideal third place, a place for interaction outside of class and work (Waxman, Clemons, Banning, & McKelfresh, 2007). The user experience in learning environments is positively impacted when spaces are physically and psychologically comfortable, they promote a sense of well-being for users (Herman Miller, 2009), and foster student collaboration (Tural, Read, & Lee, 2016).
Method
The study took place on the campus of a large research university in the Southeastern United States in 2015. The site was the first floor of the largest university library, located in the heart of campus. Methodology included 200 hours of observations and interviews with 50 users to gather feedback on the strengths and weaknesses of the design.

Findings
All of the data was coded and themes identified. They key design recommendations include:

• Design with considerations for both daytime and evening users. Daytime users were more likely to stop in for 45 minutes between classes, while evening users visited an average of two hours. Daytime users focused on passing time, getting a beverage, playing on phones, or looking over class notes. Evening users were more likely to spend time studying or collaborating.

• Design with consideration for individuals and groups. During the daytime, 64% of students came to the library alone, 24% with one other person, and 12% with two or more other people. The evening visitors were much more likely to arrive in groups of 2-3. Thus, designers should consider flexible furniture options that work well for one person and for groups. The study found it was common for booth seating, sofas, or collaboration spaces designed for groups to be occupied only by a single individual, thus wasting space.

• Provide a variety of seating types that provide prospect (the ability to see others) and refuge (shelter). The first seats students filled were those along the wall, booth seating, or seating that provided shelter in some way.

• Provide spaces that accommodate quiet, focused work, but also spaces that enhance collaboration. Provide spaces for quiet concentration for heads down work and more lounge-like interactive spaces for collaborative work. Acoustical considerations should be made to keep noise out of the more quiet spaces.

• Select finishes that will accommodate heavy use and high traffic. Students appreciated soft and comfortable seating, but finishes must also stand up to heavy use.

• Wayfinding should be clear. Install signage that is clear and informative. Flooring finish
changes and color changes can also help in wayfinding and designating area. A clear sense of entry and a circulation desk that delineates the services provided was also requested.

- Access to view and natural light. This attribute was frequently listed as missing from the library that was studied. Designers should take care to ensure spaces have views and natural light, as studies have shown that they enhance well-being.

Conclusion

By better understanding the design features that accommodate students on the college campus, designers will be better informed when designing similar spaces.

REFERENCES (APA)


A Case Study Examining LED Lighting Compared to Fluorescent Lighting on Child Engagement Behaviors in a Pre-K Classroom

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ABSTRACT

The objective of this study was to examine if young children’s engagement behavior differed in a classroom lit with fluorescent lighting compared to Light Emitting Diodes (LED) lighting. Most American public school facilities have fluorescent lighting installed due to building age and budget issues. However, due to energy conservation practices, LEDs are becoming popular in commercial facilities. Multiple studies suggest that worker productivity improves with LED lighting in a workplace setting (Kretschmer, Schmidt, & Griefahn, 2012) but the influence of this lighting type on student productivity is unknown.

Due to their smaller body sizes, children respond and react to stimuli differently than do adults (Evans, 2006). We hypothesize that students will display more engagement behaviors under the LED lighting because LED lighting can emit precise correlated color temperature (CCT) levels whereas fluorescent lighting can only emit CCT levels within a certain range of the specified CCT
level. Previous research using fluorescent lighting in a second grade classroom confirmed that students display more on-task behaviors under higher CCT levels of fluorescent lighting around 4100K (Pulay et al., 2016). Student engagement behaviors were gathered for their potential to influence academic success in young children. Engagement behavior is defined as doing the activity asked by the teacher. It is suggested that the more time a student spends engaged with the academic material they are expected to have higher levels of cognitive development (Fisher, Godwin, & Seltman, 2014).

Upon university IRB and parent approval, twenty three students, aged 3-4, were observed in a Child Development Lab (CDL) pre-kindergarten classroom at a land grand university in the Midwest. Utilizing an ABAB design, researchers examined student engagement behaviors under fluorescent lighting conditions as compared to LED lighting conditions in the same classroom for 5 months. New ballast and the control lamp “A” (fluorescent lamps at 4100K CCT) were installed in the classroom the night before the study. Normal class activities continued for two weeks as an adjustment period. The following two weeks, data was collected using non-participant observations (Figures 1 & 2) of student engagement behaviors utilizing the Emergent Academic Snapshot Observational Method. Students received a “1” score if they were engaged in the activity and a “0” if they were not (Early et al., 2005). At the end of the two week period of data collection, LED lamps at 4100K CCT (Lamp “B”) were installed in the classroom during the night. Normal class activities continued for two weeks as an adjustment period. Data collection followed for two weeks. This cycle continued for the duration of the study. Refer to Figures 3, 4, 5, & 6 for photographs of the classroom.

A paired samples t-test compared the mean differences in engagement scores between Lamp A and Lamp B. Results indicate that students displayed more engagement behaviors in the classroom lit with LED lighting than the classroom lit with fluorescent lighting (t = -4.006, p .001). Graphs and line charts (Figure 7) indicated that all male students displayed more engagement behaviors while under the LED lighting and overall they displayed the lowest engagement behaviors under the fluorescent lighting condition. Analysis revealed that students with learning disabilities displayed the most difference in engagement behaviors between the lighting types with more engagement behaviors displayed under the LED lighting condition.
REFERENCES (APA)


APPENDIX

Figure 1: View of Observation Room from inside classroom. (Lamp A)

Figure 2: View of classroom from Observation Room. (Lamp B)
Figure 3: Lamp A Looking Towards Whole Group Area

Figure 4: Lamp B Looking Towards Whole Group Area

Figure 5: Lamp A Looking at Small Group Time Areas
Figure 6: Lamp B Looking at Small Group Time Areas

Figure 7: Line Graph of Individual Student Engagement Behavior under each Light Type
Male Students: 5, 11, 12, 13, 15, 17, 21, 23
Students with Developmental Disabilities: 10, 12, 21, 22, 13
Not Your Mother’s Dorm Room: Making Sense of a Place on Campus

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University of Kentucky

ABSTRACT

Background
Research on place indicates that comfort is directly linked to the amount of perceived control one feels in a space. More importantly, control also gives us the opportunity to limit access to a space, or create privacy (Augustin, 2009; Harris, P. B., Brown, B. B., & Werner, C. M., 1996). For college students living on campus, privacy always comes at a premium. Campus housing can often pair strangers together as roommates, making privacy and self-expression a critical dynamic in small, shared spaces. As an increasing amount of funding and resources is being dedicated to new and refurbished college and university student housing, it is becoming increasingly important to examine how students are adjusting to such spaces.

Purpose
Personalization of space is a means of self-expression and is one way others can learn about us. The ability to achieve desired levels of comfort in a space can in turn be linked to one’s ability to personalize that space (Altman & Werner, 1985; Augustin, 2009; Kopec, 2006). This presentation compares two case studies conducted at two different state institutions focused on understanding the student experience in campus residential experiences. The purpose of comparing these two
The case studies was to determine whether students are able to personalize their public and private spaces and how institutional structures encourage or thwart these endeavors. Furthermore, these studies explore the means by which they are achieving these desired levels of comfort and understanding valuable insights gained to connect research to housing personnel. When students have control over a space to the extent that they may personalize it or define a territory, they have the opportunity to achieve comfort in an unfamiliar space. This study seeks to determine the feasibility of students creating comfort in their college and university housing.

Methodology
The sample groups for this study are two campus residential halls from large, public universities. Questionnaires, surveys, photography of rooms pre- and post-occupancy, and focus groups were a mixed-method approach to understanding how personalization, or lack thereof, of the private and public spaces impact students’ perceptions of the residential experience. To illustrate the findings and compare the studies, a variety of communication techniques will be utilized:

- Images through a regression analysis, to diagram how the changes and personalization techniques employed by students fit into a framework for establishing comfort.
- Diagramming measures of personalization will graphically explore students’ ability to get comfortable in a space.
- Infographics to convey a summary of findings.

Implications
The results from this study could be used to enhance the campus housing experience for students and for universities looking to understand how the built environment impacts student behavior. When staff and administrators better understand the processes by which students acclimate to their place, they can better prepare themselves and their residents for the changes ahead of them. A clearer definition of what comfort means to residents could lead to improved relations between residents, staff and parents, with the ultimate goal of higher rates of recruitment and retention.

REFERENCES (APA)
Augustin, S. 2009, Place advantage: applied psychology for interior architecture, John Wiley &amp; Sons, Hoboken, N.J.


Relph, E.C. 1976, Place and placelessness, Pion, London
The Exploration of Malawian Educational Environments

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Texas Tech University

ABSTRACT

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.
Methodology
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.

Findings/Relevance to Interior Design
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 (APA)


APPENDIX
Wandering Eyes: Using Gaze-Tracking Technology to Capture Eye Fixation in Unfamiliar Indoor Healthcare Environments

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Appalachian State University

ABSTRACT

This study will objectively identify and rank visual environment elements in hospitals that attract gaze fixation during wayfinding. This main objective of this study was to identify elements of the designed environment that attract eye fixation during wayfinding, by objectively tracking eye movements and fixation as healthy subjects navigate through a complex healthcare setting. EyeGuide® - Mobile Tracking Technology was used to capture data on gaze-fixation. Literature shows that disorientation due to wayfinding errors and navigation problems in healthcare facilities produce frustration, irritation, anxiety, and stress (Rousek & Hallbeck, 2011; Cooper, 2008; Grant, 2002). It represents a critical concern for patients, employees, and healthcare organizations, thereby affecting both processes (efficiency and safety) and people. Recently, Pati et al.,(2015), identified environmental attributes that affect wayfinding behavior in navigating healthcare environments. Ghamari et al., (2014) conducted a similar study in an educational facility and using the same sequential navigation task for the human subjects. The current study used eye-tracking
technology, to capture physical design elements attracting human gaze during navigation in Watauga Medical Center. The sequence of the destinations was randomized for participants.

Twenty-four adult subjects in different age groups (20-29, 40-49, and 60-69) and both genders were asked to navigate five different routes. None of the subjects had any prior visit to the building. The eye-fixations on different visual environmental attributes were recorded and measured by Eye-Guide Analyze software. The time durations of each navigation tasks were also measured. Data analyses were conducted by using different descriptive and inferential statistical tools such as T-test, ANOVA, and Friedman test.

The results of this study suggested that identifying signs, architectural features, informational signs, maps, and directional signs constitute the main environmental attributes that attract the attention of users. In total, signs constitute the major environmental information source among all classes of environmental cues, covering 54% of the time subjects sought information from the ambient environment. The results of the study also showed that architectural features (14.2%) and maps (8.4%) were the two other major environmental attributes that attracted gaze fixation. Other design elements (7.9%), interior elements pairing (5.3%), functional clusters (3.4%), and furniture (2.6%) covered the rest of the total time of eye-fixations. Additionally, the results showed that there is a significant difference between males and females on the time of navigation. Males were faster than females in navigation. The results also showed that young age group had the fastest navigation performance among the age groups. The findings provide triangulation data for previous studies, and were consistent with the earlier behavioral studies, thereby contributing to a robust set of empirical findings on wayfinding and building design. This session will present key study findings and discuss its implications for healthcare design.

REFERENCES (APA)


Unfamiliar Environments. Interior Design Educators Council (IDEC), National Conference, Fort Worth, Texas.


A Post-Occupancy Evaluation of Occupants satisfaction: 
A Case Study of Indoor Environmental Quality in Classroom Buildings

Abimbola O. Asojo, Suyeon Bae, Denise Guerin & Caren Martin
University of Minnesota

ABSTRACT

Overview
Post-occupancy evaluations (POEs) have been used to study user satisfaction with the built environment. POEs have been recognized for documenting occupants’ well-being and responses to indoor environmental quality (IEQ) factors such as thermal, lighting, and acoustic conditions. Sustainable post-occupancy evaluation survey (SPOES) developed by a Midwest University interdisciplinary team provides an evidence-based quantitative analysis of occupants’ satisfaction to help direct attention to successful areas and areas that need improvement in buildings. The SPOES questionnaire has several IEQ categories which impact occupant health and well-being. The categories include acoustic conditions, appearance, cleaning and maintenance, daylighting conditions, electric lighting conditions, furnishings, indoor air quality, technology, thermal conditions, vibration and movement, and view conditions. SPOES questionnaire has been tested in office, laboratories, classroom and training center buildings. The authors present a comparison of IEQs in four classroom buildings to highlight their impact on occupants’ health and well-being.

Methodology
SPOES consists of a self-administered, Internet-based, questionnaire completed by building occupants. Participants rate their level of satisfaction on a Likert-type scale from 1 (very dissatisfied) to 7 (very satisfied). They also rate the influence of their physical environment on their perception of their academic performance and health on a scale from 1 (hinders) to 7 (enhances). Building 1 had five new classrooms constructed in 2012-13 and these areas were distributed across one floor of the facility and amounted to 8,290 square-feet (N=49). Building 2 consisted of seven new classrooms, one computer lab, a student lounge, faculty office suite, and conference rooms and amounted to 12,400 square-feet (N=43). Building 3 is a three-story 108,265 square-feet building that included classrooms and offices (N=35). Building 4 consisted of approximately 14,467 square-feet renovation of six classrooms (N=24).

Findings and Discussion
Students responded to questions concerning their perception of their health in relation to the building and primary classrooms, and 11 IEQs. Table 1 shows a summary of the students’ perception of satisfaction, learning experience, and health related to the building, as well as to the primary classroom. Overall, students were satisfied with both the building and primary classroom, and perceived that their learning experience and health were enhanced. Table 2 summarizes the students’ satisfaction related to 11 IEQs, which was reported as satisfactory. Table 3 summarizes correlations among the four buildings and the students’ perception of their health related to the building and primary classroom, and 11 IEQs. The correlations which were statistically significant showed a moderate relationship (r=0.35). Even though there were strong and positive correlations between the students’ perception of building’s impact on their health and of the primary classroom on their health, the primary classroom had more statistically significant associations with 11 IEQs. When 11 IEQs were considered together, to compare them across all buildings, the electric lighting IEQ ranked highest on the impact on health in their primary classrooms. IEQs about furnishing, technology condition, and indoor air quality ranked second, followed by IEQs about view conditions, appearance, daylighting and thermal conditions.

Conclusion
These results show that the 11 IEQs developed by SPOES are highly related to students’ perception of how their primary classroom impact their overall health and well-being. The results
can be used to improve the built environment for students and also provide a benchmark for measuring the success of the improvements. Overall, this study illustrates the importance of POEs as means to obtain evidence-based data to improve occupants’ health and well-being.

REFERENCES (APA)


Appendix A

Table 1. Comparison of students’ perception of satisfaction, learning experience, and health related to the building and primary classroom

<table>
<thead>
<tr>
<th>Mean (SD)</th>
<th>C1 (N=26)</th>
<th>C2 (N=34)</th>
<th>C3 (N=31)</th>
<th>C4 (N=19)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.00 - 3.50 dissatisfied (hinders)</td>
<td>5.73 (1.34)</td>
<td>6.31 (0.31)</td>
<td>5.78 (1.07)</td>
<td>5.42 (0.83)</td>
</tr>
<tr>
<td>3.51 - 4.50 neither dissatisfied (hinders) nor satisfied (enhances)</td>
<td>4.98 (1.56)</td>
<td>5.74 (1.07)</td>
<td>5.47 (1.05)</td>
<td>5.25 (1.03)</td>
</tr>
<tr>
<td>4.51 - 7.00 satisfied (enhances)</td>
<td>4.89 (1.19)</td>
<td>5.36 (1.16)</td>
<td>5.22 (1.26)</td>
<td>4.87 (1.08)</td>
</tr>
</tbody>
</table>

Building (Site, building, and interior)
- Overall satisfaction
- Overall learning experience
- Overall health

Primary Classroom
- Overall satisfaction
- Overall learning experience
- Overall health

Note. C1 – Building 1, C2 – Building 2, C3 – Building 3, C4 – Building 4, SD=Standard Deviation, Value in parentheses under mean are standard deviations.

Table 2. Students’ satisfaction related to IEQ criteria

<table>
<thead>
<tr>
<th>Mean (SD)</th>
<th>C1 (N=26)</th>
<th>C2 (N=34)</th>
<th>C3 (N=19)</th>
<th>C4 (N=31)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.00 - 3.50 dissatisfied</td>
<td>5.54 (1.50)</td>
<td>5.47 (1.48)</td>
<td>4.90 (1.83)</td>
<td>4.53 (1.78)</td>
</tr>
<tr>
<td>3.51 - 4.50 neither dissatisfied (hinders) nor satisfied</td>
<td>5.88 (1.07)</td>
<td>5.91 (1.42)</td>
<td>5.42 (1.46)</td>
<td>5.05 (1.47)</td>
</tr>
<tr>
<td>4.51 - 7.00 satisfied</td>
<td>5.65 (1.09)</td>
<td>5.82 (1.19)</td>
<td>5.37 (1.35)</td>
<td>5.11 (1.41)</td>
</tr>
</tbody>
</table>

Overall thermal conditions
Overall indoor air quality
Overall acoustic quality
Overall electric lighting
Overall daylighting
Overall vibration and movement
Overall view conditions
Overall furnishings
Overall Technology
Overall appearance
Overall cleaning and maintenance

Note. C1 – Building 1, C2 – Building 2, C3 – Building 3, C4 – Building 4, SD=Standard Deviation, Value in parentheses under mean are standard deviations.
Table 3. Correlations among four buildings and the students’ perception of their health related to building and primary classroom, and 11 IEQs

<table>
<thead>
<tr>
<th>Affect your health</th>
<th>Building (N=26)</th>
<th>Building (N=34)</th>
<th>Building (N=31)</th>
<th>Building (N=19)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Affect your health</td>
<td>Affect your health</td>
<td>Affect your health</td>
<td>Affect your health</td>
</tr>
<tr>
<td></td>
<td>Building</td>
<td>Primary CR</td>
<td>Building</td>
<td>Primary CR</td>
</tr>
<tr>
<td>Overall thermal conditions</td>
<td>.280</td>
<td>.332</td>
<td>.202</td>
<td>.415*</td>
</tr>
<tr>
<td>Overall indoor air quality</td>
<td>-.116</td>
<td>.428*</td>
<td>.118</td>
<td>.391*</td>
</tr>
<tr>
<td>Overall acoustic quality</td>
<td>.250</td>
<td>.361</td>
<td>.106</td>
<td>.362*</td>
</tr>
<tr>
<td>Overall electric light</td>
<td>-.075</td>
<td>.458*</td>
<td>.324</td>
<td>.467**</td>
</tr>
<tr>
<td>Overall daylighting</td>
<td>.261</td>
<td>.378</td>
<td>.447**</td>
<td>.492**</td>
</tr>
<tr>
<td>Overall vibration and movement</td>
<td>.248</td>
<td>.371</td>
<td>.313</td>
<td>.509**</td>
</tr>
<tr>
<td>Overall view conditions</td>
<td>.310</td>
<td>.670**</td>
<td>.395*</td>
<td>.563**</td>
</tr>
<tr>
<td>Overall furnishings</td>
<td>.321</td>
<td>.637**</td>
<td>.304</td>
<td>.415*</td>
</tr>
<tr>
<td>Overall technology conditions</td>
<td>.340</td>
<td>.541**</td>
<td>.159</td>
<td>.365*</td>
</tr>
<tr>
<td>Overall appearance</td>
<td>.014</td>
<td>.463*</td>
<td>.143</td>
<td>.296</td>
</tr>
<tr>
<td>Overall cleaning and maintenance</td>
<td>-.156</td>
<td>.347</td>
<td>.028</td>
<td>.350*</td>
</tr>
</tbody>
</table>

**. Correlation is significant at the 0.01 level (2-tailed).
* Correlation is significant at the 0.01 level (2-tailed).

**Note.** Primary CR – Primary classroom.
Evaluating an Innovative Use of Color and Graphics for Improving Wayfinding in a Mental Healthcare Facility

Saleh Kalantari & Robin Snell
Washington State University

ABSTRACT

Background and Research Goals
As part of its ongoing evidence-based design initiative, [architectural company eliminated for the purpose of blind review] developed a standardized post-occupancy evaluation (POE) process. The firm’s goal in implementing POEs was to provide hard empirical data to inform the design of future projects, to assess the implementation of client-focused design innovations, and to verify the contribution of the design to the quality of the interior environment. This paper reports the implementation of the POE process for evaluating an innovative new wayfinding strategy that the firm’s designers created for a mental healthcare facility in the province of Ontario, Canada. By sharing the process and results of this evaluation, the researchers hope to promote and inform similar efforts to improve the effectiveness of interior design through the use of POEs.

Design Innovation
The primary goal in the design innovation considered here was to assist with patient and visitor wayfinding in a mental-healthcare facility. By assisting with easy and intuitive movement for those who may have cognitive or information-processing difficulties, the designers hoped to contribute to lowering patient stress and decreasing the potential for patient injury. For this purpose, a distinct
color scheme was used for each patient unit, combined with “super-graphic” pictograms and recognizable icons indicating paths to key destinations. This design innovation was based on previous research suggesting that difficulties in wayfinding are a major source of stress for psychiatric and general-healthcare patients (Ulrich et al., 2008) as well as a significant drain on staff resources and operational efficiency (Peponis, Zimring, & Choi, 1990).

An additional goal in this design was to experiment with the considered use of vibrant colors in mental healthcare facilities. For many years, there has been a stereotype that muted colors and textures are more appropriate for mental healthcare environments, but recent research has challenged this assumption (Dalke et al., 2006; Tofle et al., 2004). The design team relied on this research when carefully selecting color schemes for various parts of the facility, using a diverse palette to reinforce the specific therapeutic goals of various residential and treatment areas.

Research Methods
The POE study employed a multi-method approach, making use of both qualitative and quantitative research methods. The qualitative component (focused interviews with senior-level staff and designers) allowed for a more exploratory and in-depth examination of the research questions, while the quantitative component (surveys) allowed for more exacting measurements of specific hypotheses among a large sample of the facility staff. The interviews and surveys collected detailed data about staff perceptions of the effectiveness of the new designs, in comparison with the previous facility in which they had worked.

Outcomes
This study demonstrates the value of post-occupancy evaluation and provides a model for its implementation, while also contributing to our overall body of knowledge in effective mental healthcare design. The results supported the effectiveness of using color and “super-graphics” to help patients and visitors navigate their way through the facility, and provided specific, detailed conclusions about the implementation of these design innovations.
REFERENCES (APA)


Figure 1. Examples of Design Innovation in Use of Color Scheme and Super-Graphic
Figure 2. Example of Design Innovation in Use of Color Scheme and Super-Graphic
Figure 3. Examples of Design Innovation in Use of Color Scheme and Super-Graphic
Figure 4. Examples of Design Innovation in Use of Color Scheme and Super-Graphic
Table 1. Summary of t-test Analysis of Study Hypotheses

<table>
<thead>
<tr>
<th>Hypothesis</th>
<th>$\rho$ Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>H1a. Guiding patients and families: Patient wayfinding</td>
<td>0.0029 ***</td>
</tr>
<tr>
<td>H1a. Guiding patients and families: Family wayfinding</td>
<td>0.0006 ***</td>
</tr>
<tr>
<td>H1a. Guiding patients and families: Patient stress</td>
<td>0.0006 ***</td>
</tr>
<tr>
<td>H1b. Enhancing patient satisfaction</td>
<td>0.0117 **</td>
</tr>
<tr>
<td>H1c. Enhancing staff satisfaction</td>
<td>0.0001 ***</td>
</tr>
<tr>
<td>H1d. Reducing dependence on the staff for wayfinding</td>
<td>0.0001 ***</td>
</tr>
<tr>
<td>H1e. Improving operational process</td>
<td>0.0006 ***</td>
</tr>
<tr>
<td>H2a. Reducing patient stress</td>
<td>0.0950 *</td>
</tr>
<tr>
<td>H2b. Improving patient rehabilitation and recovery</td>
<td>0.0466 **</td>
</tr>
<tr>
<td>H2c. Improving patient satisfaction</td>
<td>0.5789</td>
</tr>
<tr>
<td>H2d. Improving staff satisfaction</td>
<td>0.0864 *</td>
</tr>
</tbody>
</table>

* $\rho < .10$
** $\rho < .05$
*** $\rho < .01$
Indoor Environmental Quality of Public Space in Healthcare: Developing a Framework for Assessment

Zoohee Choi & Hyun Joo Kwon
Purdue University

ABSTRACT

Indoor environmental quality in healthcare influences patients’ well-being, and staff’s productivity and satisfaction. Several studies have revealed that patients have positive experiences in a quality healthcare environment with sufficient daylighting, pleasant views, elements of nature, calming colors, various stimuli, restful sounds, and a sense of aesthetic (e.g., Rubin, Owens & Golden, 1998). In particular, public spaces in a healthcare facility such as a lobby and waiting areas create the first impression and shape the experience of healthcare. Quality of public space design contributes as a vital player in the healthcare experience by creating a positive and memorable experience even when the hospital climate is characterized by fear, anxiety, stress and uncertainty (Dijkstra, 2009). Evidence indicates that improving indoor environmental quality in the public spaces of healthcare facilities reduces stress and fear in the patients and visitors and positively affects their psychological well-being (e.g., Cortvriend, 2005). Moreover, public space in healthcare is important in enhancing the hospital’s image and is thus a front-page marketing tool. Even though there are several healthcare evaluating systems (e.g., Achieving Excellence Design Evaluation Toolkit) that evaluate indoor environmental quality of major areas of healthcare facilities, no framework has assessed the indoor environmental quality of public spaces in those
facilities. In order to promote healthcare users’ well-being, it is essential to create an indoor environmental quality assessment tool for healthcare public spaces. The purpose of this study is to develop an assessment tool that evaluates indoor environmental quality of a public space in healthcare based on a review of related literature, current certification programs and healthcare organization standards, and reviews of the assessment tool from three healthcare design professionals. The tool has three categories including the visual environment (daylighting, artificial lighting, quality of view, visual stimuli ornaments, architectural structure, color coordination and natural environment), the auditory environment (noise level, environmental surfaces, environmental intervention and background music) and indoor air quality (thermal comfort, CO2 level, odor). The tool includes detailed knowledge, design strategies, back-up calculations and questions in technical language. The framework of the tool is separated into three parts: (1) measurement, (2) observation, and (3) rubric. Each part consists of three categories. This research focuses on the users’ journey from the entrance of a hospital. In terms of environment in healthcare facilities, the research is restricted to main routes and general spaces: (1) entrance, (2) lobby area, (3) reception, (4) elevator lobby, (5) waiting area and (6) cafeteria. The tool bridges a gap between ideal and current healthcare environments; it also is valuable in bringing together healthcare professionals, stakeholders, design firms, local government and others to discuss indoor environmental quality. In addition, healthcare professionals will be able to see the shortcomings of the healthcare environment’s indoor environmental quality. It also can demonstrate how indoor environmental quality can improve the healthcare environment and therefore contribute to the health and wellbeing of patients, staff and visitors. This presentation will share two case studies of indoor environmental quality of healthcare public space evaluation results using the assessment tool.

REFERENCES (APA)


whether the built environment affects patients' medical outcomes. Martinez, CA: The Center for Health Design.
Exploration of Evidence-Based Design (EBD) Project

Approach across the Graduate Curriculum

Caren S. Martin

University of Minnesota

ABSTRACT

In design practice, evidence-based design (EBD) is increasingly discussed though there is little evidence that EBD is applied beyond healthcare design (Martin, 2014). Pressure is mounting on practitioners engaged in multidisciplinary practice to provide evidence that their design solutions will have measurable outcomes. Often clients’ own disciplines use an evidence-based approach in their own work; they expect this from designers. Preparing practitioners requires the academy to educate students about EBD. As many will practice in multidisciplinary, integrative design teams, it’s imperative to model this experience in the classroom.

Interior design is at the forefront of built environment practices’ pursuit of EBD (Nussbaumer, 2009). Educators must present problem-identification, problem-solving, solution generation, and theory testing to prepare students to practice an EBD-approach that results in solutions that support the design/human behavior relationship and demonstrate the value of design (Kopec et al., 2011; Martin, 2014). Value can be shown via productivity increases in workplaces, increased learning for students with disabilities, infection reduction in hospitals, or successful wayfinding through
airports to name a few examples.

In 2009, as the discussion about EBD was reaching the design community’s consciousness, a graduate level, multidisciplinary design seminar was created that focused on application of EBD. Over six years, this author found that the EBD process intrigued, challenged, and alarmed students, some of whom were also practitioners. The goal of the course was to expose students to other professions within and beyond design that rely on an evidence-based approach, understand any progress their own discipline had made towards EBD adoption, determine a personal viewpoint about EBD, and consider the moral responsibility to provide evidence-based design solutions.

Graduate students across design disciplines (e.g., interiors, architecture, landscape architecture, apparel, graphic) and outside design (e.g., manufacturing, housing policy) enrolled in the seminar. Objectives were to understand EBD principles and tools and to apply the EBD process to their own studio projects, policy exploration, or work in their firms from a design/human behavior perspective.

Course assignments were grounded in design discipline-specific readings and others from outside design (e.g., psychology, medicine, business). Research vocabulary and methods were discussed to establish a common language. The purpose, application, benefits/challenges, and operationalization of EBD were explored and grounded in innovation theory as a rubric for adoption of EBD by designers. As EBD is considered a challenge to a prior ‘ways of knowing’ (Pable, 2009), factors were examined from an epistemological perspective. Students were required to identify a theoretical framework to guide development of a design/human behavior focused research proposal that aimed to address a critical issue of interest, developed via an iterative process with their peers (see Appendix). Some utilized this project as the foundation for their capstone/thesis project or preliminary exploration of a dissertation topic.

Project outcomes leveraged students’ experience in identifying the core problem to be solved, the role of the research question, the strength and integrity offered by theory as a framework in identifying key variables, and tangible and practical research and analysis methods—importantly, appropriate for application by a design firm engaged in evidence-based practice. The variety of
disciplines represented in the classroom generated a breadth of perspectives resulting in lively debate, highly engaged collaboration on cross-discipline (mandatory) team work and peer-review assignments—and this unique exchange was repeatedly cited as the reason for the course to be highly rated. The course sequence, teaching tools, and student projects will be presented.

**REFERENCES (APA)**


Appendix 1. Course Assignments

Assignment 1: Use of “Evidence” by Other Professions (Teams)

Assignment Objectives:
1. Identify non-design professions who base their processes, practice, or decision making on “evidence.”
2. Consider the impact of “ways of knowing” (see Pable, 2009) as it pertains to another profession’s (outside of design) work, process, and outcomes.
3. Explore a profession’s use of evidence in context with their body of knowledge (BOK) to determine the influence of/relationship of evidence to their BOK.

Assignment Overview:
The purpose of this assignment is for you to apply some of your knowledge about “evidence” and its role in building a profession’s body of knowledge. Step back and consider a non-design profession and determine if/how its professionals use evidence. Also, determine if you believe that this profession has an established BOK, and if so, is it documented? To augment the academic information you gather, you may also interview a practitioner to enrich your understanding. However, use caution in allowing information gained from the interview to overshadow the documented evidence you gather.

Assignment 2: Referenced Position Paper

Assignment Objectives:
4. Identify the characteristics and components of EBD as it applies/may apply to your design discipline.
5. Determine if a case study you identify presents evidence of an EBD-approach, and if so to what degree.
6. Consider innovation diffusion theory to map/organize your discussion in terms of EBD and adoption of this EBD process/approach by your discipline.
7. Determine the discipline’s stakeholders and how EBD might be promoted to them.
8. Identify your future role regarding integration/use of EBD in a design discipline setting.
9. Apply knowledge gained from the literature, discussion, and guest speaker(s) as the basis of your referenced position paper; cite your sources.

Assignment Overview:
The purpose of this assignment is for you to write a referenced position paper* that investigates your discipline in terms of its adoption of EBD. It also requires you to analyze a case study (or published narrative) about a (design) solution in terms of if and how the practitioners incorporated an EBD-approach. Considering what you learn from this exploration, describe how EBD could be promoted to your (design) discipline in a holistic manner. Also, project what you believe your personal role/contributions could be in this process. Incorporate what you have learned from readings required for this class and additional sources (minimum of 3) you identify as pertinent to these issues to help you frame the major points and details of your position to be presented in an organized, sequential manner. Consider this paper a vehicle meant to educate and persuade, but through logic and presentation of the facts. *Referenced position paper: a study or report that explains, justifies, or defends a particular policy/viewpoint.
Assignment 3: Application of Evidence-Based Approach to a Design Project

Assignment Objectives:
1. Identify a research question relevant to a design project that reflects an important design/human behavior problem or issue.
2. Apply a design theory as a framework for investigation.
3. Formulate a hypothesis to address a design-based resolution to a problem.
4. Identify and apply appropriate EBD tools to a specific project and determine how to test a design-related hypothesis.

Assignment Overview:
The purpose of this assignment is for you to experience engaging in an EBD-approach to “solve” a design issue/problem. The assignment allows you to gain experience in applying what you know about design theories, research methods, and an EBD-approach to a specific project/client. Evaluation will focus on your application of a methodology that is relevant and appropriate based on readings, discussion, and personal exploration of EBD and how it is used by your discipline and related design disciplines. Work is sequenced to allow for several review and refinement opportunities. Peer, instructor, and “client” feedback will inform your decision-making and focus. Use the EBD-Approach Examples and Worksheet handout to help guide you through this process. The process for the project is noted below:

1. Identify a project within the scope of work for your design discipline that focuses on the interaction between design and human behavior; either a “real” client’s project or a prospective project.
2. Document the design/human behavior challenges; draft a problem statement.
3. Conduct an initial review of literature to identify human and design (the physical environment) issues relative to that project type and/or the problem statement.
4. Determine issues/problems/ questions of concern relative to that project type in general and/or that project specifically Refer to the Design Issue/Problem Statement handout to get you started.
5. Draft 3-5 research questions investigate the critical issues/problems previously identified.
6. Considering the research questions, focus on variables that are interacting to help you identify a design theory that might be used to help frame your investigation.
7. With instructor and peer feedback, narrow your questions to 1-2 for further refinement and development. Reference the selected design theory in identifying variables that will be used to test your hypothesis.
8. Write a hypothesis that addresses a possible design-based resolution for the design/human behavior research question(s) identified. Finalize the variables to be addressed (relative to a design/human behavior theory).
9. Draft an outline that identifies your EBD approach to conducting research to address your design hypothesis that includes identification of all critical attributes of your application as indicated on the EBD-Approach Worksheet.

Assignment Deliverables:
Peer review (25 pts)
Prepare a comprehensive, helpful review of your peer’s work. Document your review comments. Evaluation is based on thoroughness of your draft report and depth of your evaluation.

PowerPoint presentation (75 pts)
Take the audience through your process. Present your EBD-approach in a sequential, logical manner. Be prepared to answer questions and consider feedback. As listeners, be prepared to offer constructive feedback.

Final Report (125 pts)
Apply feedback from your PPT presentation to refine to your report. This report should serve as a “roadmap” that documents a beneficial approach for your current and/or future EBD work. You must cite all references in the paper and include a reference list. You must use conventions of good writing addressed in previous work assignments for this class.
# Appendix 2. Assignment 3 Worksheet and Example

**EBD-Approach Worksheet**  
© 2015 Martin (p. 1 of 2)

<table>
<thead>
<tr>
<th><strong>Issue/Problem</strong></th>
<th>[from an observation, experience, colleague, literature]</th>
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<table>
<thead>
<tr>
<th><strong>Research Question(s)</strong></th>
<th>[list 3-5 questions you have about the issue/problem you identified above; focus on why the issue is important]</th>
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</table>

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<tr>
<th><strong>Literature Review</strong></th>
<th>[first, identify possible sources of knowledge; explore and document the body of knowledge that is known as it relates to your research questions; second, document the research methods that might be helpful in your exploration]</th>
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<table>
<thead>
<tr>
<th><strong>Issue:</strong></th>
<th><strong>Findings:</strong></th>
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<tbody>
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<tr>
<th><strong>Research Method(s):</strong></th>
<th></th>
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<table>
<thead>
<tr>
<th><strong>Theoretical Underpinning</strong></th>
<th>[identify a theory that would be helpful in guiding your research; contains variables would help organize your research questions into a hypothesis]</th>
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<tr>
<th><strong>Hypothesis</strong></th>
<th>[an educated guess’ about how the independent variable(s) are influencing the dependent variable(s); keep in mind the knowledge demonstrated by the theory being applied; make the hypothesis specific/concise]</th>
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<tr>
<th><strong>Independent Variable(s)</strong></th>
<th>[element(s) that are influencing, contributing, or causing the dependent variable, i.e., the outcome]</th>
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<tr>
<th><strong>Dependent Variable(s)</strong></th>
<th>[element(s) that are being influenced or caused by the element(s), i.e., the independent variable(s)]</th>
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</table>

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<tr>
<th><strong>Research Method(s):</strong></th>
<th><strong>Data Collection</strong> [types of tools used to gather information; note subjects as well]:</th>
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</table>

<table>
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<tr>
<th><strong>Analysis</strong></th>
<th>[types of tools used to interpret the data; pair the analysis to the collection method]:</th>
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<tr>
<th><strong>Findings</strong></th>
<th>[note what was determined from the study; interpretation, implications, future work]</th>
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<tr>
<th><strong>Stakeholders</strong></th>
<th>[anticipate, later document who will be impacted/influenced by this new knowledge]</th>
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<tr>
<th><strong>Outcome</strong></th>
<th>[document how this new knowledge could be used]</th>
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<tr>
<th><strong>Share/Disseminate</strong></th>
<th>[plan how this knowledge will be disseminated, i.e., peer reviewed journal, Web site; the audience(s)]</th>
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</table>
Example: Productivity in the Workplace (based on Freihoefer, K.)

**Issue/ Problem**
The physical environment as it relates to the workplace surroundings, can greatly influence employees’ job performance, satisfaction, and stress levels. Lack of acoustical privacy in this workplace for state employees is contributing to an inability to focus and is compromising clear communication among workers.

**Research Question(s)**
1. What are employees’ perceptions about acoustical privacy and productivity levels?
2. How can workplace productivity and acoustical privacy be measured?
3. Could improving acoustical privacy within the office environment increase workplace productivity?

**Theoretical Underpinning**
Restorative Environmental Design Theory (seeks harmony between the environment and its inhabitants)

**Hypothesis**
Integration of acoustical privacy design techniques into the redesign of the office will increase workplace productivity.

**Data Collection:**
Pre- and post-renovation data from interviews, observation, and employee journal entries. Acoustical privacy will be measured via decibel level; employees’ perceptions of decibel levels, privacy, and productivity will be measured as the number of tasks completed daily, time not working on tasks, department promotions, and employees’ perceived productivity levels; site observations will record timing, frequency, and traffic patterns within the space.

**Analysis:**
Pre- and post-renovation data will be compared relative to acoustical sensor readings; frequency and duration of traffic patterns via graphic diagrams and stopwatch entries; and self-reported (both journal entries and interview responses) data using descriptive statistics.

**Findings**
[consist of Interpretation of analysis; implications of the findings; plan/suggestion for future work]

**Stakeholders**
Employees of this office, workers in other state offices scheduled for future office renovations/additions, designers of open offices, furniture manufacturers, facility managers and real estate brokers.

**Outcomes**
Prototypical materials used by this state’s agencies can be modified to enhance acoustical privacy and thereby increase workplace productivity and decrease state spending.

**Share/ Disseminate**
Publication in workplace, design, and acoustical refereed journals and trade magazines; dissemination to the state’s facility management and planning department for future reference.
Appendix 3. Examples of Evidence-Based Projects and Disciplines

An Examination of Orthopedic Surgical Apparel Using the Human Ecosystem Theory

Are Some Logos More Memorable Than Others?
Alicia Weller, Graphic Design (2013)

Changing Water Consumption in Buildings through Resource-Use Feedback Models
Molly Eagen, Architecture (2010)

Characteristics of a Healthy Housing Focused on “Nudging” Residents to Live Healthy
Kamana Dhakhwa, Sustainability (2012)

Coffee Shop Chain Interior Redevelopment
Daniel Berg, Interior Design (2009)

Cold Desk Interior Design Studio Study

Correlation between Movement & Interaction in Working Environments
Suyeon Bae, Interior Design (2013)

Creating a Sense of Home in Transitional Housing for the Homeless

Defining and Defending Brand Quality
Randy Pierce, Graphic Design (2013)

Design Thinking: An Approach for Collaborating between Departments in Corporations
Deanna Lund, Liberal Studies (2013)

The Effect of Personality Traits and Territorial Behavior on Job Satisfaction in an Open Office Environment
Maureen Soules, Interior Design (2011)

The Effect of Representational Elements of Nature on Seniors’ Well-Being
Sheena Kieffer, Interior Design (2011)

The Future of Public Library Design
Libby Brown, Architecture (2011)

The Impact of Acoustical Privacy on Worker Productivity in an Office Environment
Kara Freihoefer, Interior Design (2009)

Measuring the Impact of Daylight and Artificial Light Controls on Worker Health
Rick Carter, Sustainability (2009)

The Mentally Ill and Sense of Home
Jodene Riha, Housing Studies (2011)

Recreation on the Mississippi: Designing the Regional Trail on the Riverfront
Rachel Baudler, Landscape Architecture (2010)
Acculturation to Global Consumer Culture Impact on Using Traditional Architectural Elements: A Preliminary Exploration

Yaman Sokienah & Lindsay Tan
Radford University

ABSTRACT

Changes in place identity of a community can be observed through changes in architectural style (1). Architectural style, a part of a place’s identity, has a strong relationship with community culture and values (2; 1).

Emerging architects and designers are being acculturated to the global consumer culture via the internet and during their college years when they learn about global architecture and modern architectural styles. Also, there is little research on the impact of global consumer culture on the use of traditional architectural elements. Therefore, this study is a preliminary investigation of how the level of acculturation of global consumer culture among architecture and interior design students and professional affects their beliefs for using global architectural elements over Jordanian traditional elements.
This study used a survey design method. An online questionnaire was used. The independent variable is the level of acculturation of global consumer culture among architecture and interior design students, which is related to the overall perceived value of global consumer culture. The dependent variable is beliefs about using global architectural elements over Jordanian traditional elements, and the moderating variables are the level of perception of global identity and local identity.

The questionnaire used and modified different existing scales to measure the variables of this study. There is 54 valid responses to the questioner. Correlation analysis was conducted to analysis will be run to establish the relation among variables. There is a balanced gender distribution. However, the majority of the participants were from the interior design discipline.

A Pearson correlation was run to determine the relationship between Acculturation to global consumer culture and Beliefs of using global architectural elements over Jordanian traditional elements. There was a moderate, positive correlation was found, which is statistically significant (r = .423, n = 55, p = .001).

Next, the same correlation analysis was conducted with adding the level of perception of Global Identity vs. Local Identity as a moderator variable. The results showed that the correlations between participants with global identity and Beliefs of using global architectural elements over Jordanian traditional elements was a strong, positive correlation, which was statistically significant (r = .616, n = 22, p = .002).

One the other hand, the results showed that the correlations between participants with local identity and Beliefs of using global architectural elements over Jordanian traditional elements is a weak, positive correlation, which was statistically insignificant (r = .297, n = 32, p = .095).

As stated previously, the results suggest that the more a designer acculturated to global consumer culture the less they are going to use traditional architectural elements, Also, this is positivity correlated with their identification in having a global identity.

An overall conclusion can be drawn based on the available result that there is an impact of the acculturation to global consumer culture on the beliefs and preferences of using global architectural elements over traditional ones. If this attitude toward local and traditional architecture keeps fluctuating will lead to a loss in the local identity. Jordan in this study is one case of many other cases that needs to be studied and analyzed further.
REFERENCES (APA)


APPENDIX

Correlation analysis between AGCC and DV

<table>
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<th>Correlations</th>
<th>DV</th>
<th>AGCC</th>
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<tbody>
<tr>
<td>DV</td>
<td>Pearson Correlation</td>
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</tr>
<tr>
<td></td>
<td>Sig. (2-tailed)</td>
<td>.001</td>
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<td></td>
<td>N</td>
<td>54</td>
</tr>
<tr>
<td>AGCC</td>
<td>Pearson Correlation</td>
<td>.423**</td>
</tr>
<tr>
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<td>Sig. (2-tailed)</td>
<td>.001</td>
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<td></td>
<td>N</td>
<td>54</td>
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**. Correlation is significant at the 0.01 level (2-tailed).

Correlation analysis between AGCC, Moderator (global identity), and DV

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<tr>
<th>Correlations a</th>
<th>DV</th>
<th>AGCC</th>
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<tbody>
<tr>
<td>DV</td>
<td>Pearson Correlation</td>
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<tr>
<td></td>
<td>Sig. (2-tailed)</td>
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<tr>
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<td>N</td>
<td>22</td>
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<tr>
<td>AGCC</td>
<td>Pearson Correlation</td>
<td>.616**</td>
</tr>
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<td>Sig. (2-tailed)</td>
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**. Correlation is significant at the 0.01 level (2-tailed).
a. Perceived as global identity = .00

Correlation analysis between AGCC, Moderator (local identity), and DV.

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<tr>
<th>Correlations a</th>
<th>DV</th>
<th>AGCC</th>
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<tbody>
<tr>
<td>DV</td>
<td>Pearson Correlation</td>
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<td>Sig. (2-tailed)</td>
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<td>N</td>
<td>32</td>
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<tr>
<td>AGCC</td>
<td>Pearson Correlation</td>
<td>.297</td>
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<td></td>
<td>Sig. (2-tailed)</td>
<td>.098</td>
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<td>N</td>
<td>32</td>
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a. Perceived as local identity = 1.00
Intention to Choose Healthy Interior Design Materials of U.S. Single-family Homeowners: An Application of the Health Belief Model

Hyun Joo Kwon & Zoohee Choi

Department of Art and Design, Purdue University

ABSTRACT

Residential interior design and residents’ health are correlated. Poor indoor air quality in a housing unit causes respiratory illness, allergies and fatigue (Balestra & Sultan, 2013). Conversely, healthy housing materials such as low VOCs varnishes and lead free paint contributes to residents’ health and quality of life (Centers for Disease Control and Prevention and U.S. Department of Housing and Urban Development, 2006). There has been increasing attention to the effects of indoor air quality on residents’ health. Federal regulations (e.g., Safe Chemical Act of 2010) enforce codes to use safe materials and several voluntary programs have been initiated (e.g., Green Guard and Green label). In addition, increasing numbers of residents choose healthy materials and the green housing market has doubled (McGraw Hill Construction, 2014). However, obstacles to the use of healthy housing material still exist because of a lack of consumer awareness and knowledge of harmful materials and their impact on health. In order to promote the use of healthy materials in residential interior design, it is important to understand housing consumers’ choice of those
materials. The Health Belief Model (HBM) has been widely used to explain how someone engages in a health-related behavior (Janz & Becker, 1984). The purpose of this study is to identify significant associations between sociodemographic characteristics (age, education, income, and health condition), and health concern and the HBM constructs (knowledge, perceived benefits, barriers, self-efficacy, threats on health and intention to choose healthy housing materials). It also tests significant relationships among health concerns; knowledge, perceived benefits, barriers, self-efficacy and threats on health; and intention to choose healthy housing materials as a dependent variable based on the HBM. The target population was single-family homeowners aged 21 or over in the United States (N = 412). An online survey was conducted in January 2015 using a self-administered questionnaire. Descriptive statistics, correlation, and path model analysis were conducted using SPSS and AMOS. Participants were an average of 48.62 years old (SD=14.87) on average and almost half of the participants had at least a bachelor’s degree. For annual income, 40.3% earned less than $3,999, 29.4% earned $4,000 to $6,999, 12.9% earned $7,000 to $9,999 and 17.5% earned more than $10,000. Participants indicated their health as fairly sensitive to harmful building materials. For health concern, the participants rated an average of 5.32 (SD=1.08) out of 7. For HBM constructs, the participants reported below 5.0 on average out of 7 for knowledge, perceived barrier and threats on health. Other HBM constructs were higher than 5.0. Bivariate analysis results show that age was significantly negatively associated with knowledge, self-efficacy and intention to choose healthy housing materials. Health condition was significantly related with health concern and HBM constructs. A path model revealed that health concern was significantly positively related to knowledge, perceived benefits, self-efficacy and threats on health. The strongest relationship was found between health concern and perceived benefit. There were significantly positive relationships between knowledge, perceived benefits, self-efficacy and threats on health, and intention to choose healthy housing materials. Among them, perceived benefit was the strongest indicator. Older adults were found to lack knowledge and to be less likely to intend to choose healthy housing materials. Since those who perceive benefits of healthy housing materials are more likely to intend to choose them, it is important to promote and educate people who lack knowledge of the benefits of healthy housing materials. Interior designers should inform their clients of healthy housing materials. This study has important implications for residents, interior designers and researchers.
REFERENCES (APA)


The Designers Role in Safety and Security: The Use of Crime Prevention through Environmental Design (CPTED) Principles as Case Study Explorations in Design Studio

Linda O'Shea & ula Awwad-Rafferty
Kean University

ABSTRACT

Context
Concern for safety and effective security in an increasingly complex and uncertain age has reshaped life in the United States and across the globe. Most significant for design implications is the direct impact safety and security have on the built environment. Designers of the 21st century must address safety and security needs throughout the design process and learn how to best integrate security solutions with overall design intent via the integration of security design thinking. A new approach to utilizing security in design thinking in theory and studio applications is needed. Through case study analysis, this presentation will provide educators with teaching tools and strategies to apply the principles of Crime Prevention through Environmental Design (CPTED) to the design process to create new and innovative design security concepts within the studio environment.

Research Question/Theory Explored
The use of CPTED principles is the overarching paradigm for understanding and applying safety
and security precautions within the built environment. CPTED’s mission is “the proper design and effective use of the built environment that can lead to a reduction in the fear, incidence of crime, and an improvement in the quality of life.

CPTED Security Paradigm:

- Natural surveillance: capacity to see what’s occurring without having to take special measures;
- Natural access control: capacity to limit who can gain entry to a facility, and how;
- Territoriality: capacity to establish authority over an environment;
- Maintenance: if a nuisance is allowed to exist unmitigated, it will lead to others;
- Target Hardening: designing a designated part of a building or space to be more difficult to forcibly enter

Conceptually, the five CPTED principles are applied through a 3-D approach, i.e., the three functions or dimensions of human space: designation, definition and design. The 3-D approach is a space assessment and design thinking guide that helps the user to determine the appropriateness of how a space is designed and used.

The 3 “Ds” in application are:

- Designation: what is the purpose or intention of the space?
- Definition: how is the space defined? What are the social, cultural, legal, and psychological ways the space is articulated?
- Design: is the space designed to support prescribed or intended behaviors?

Through case study analysis the authors explore innovative and contextual relevant ways by which design practitioners can access risk, prevent potential security breaches, and mitigate incidents. This presentation will provide recommendations for application in student work that initiates design thinking, and provides project solutions that include safety and security considerations.

Framework of Exploration

Embracing an integrative approach that values physical and psychological security, a model was used to position safety and security within a contextual, sustainable, and user centered systems approach. Facility types selected for investigation were commercial spaces, educational facilities,
and government facilities. Incident reports, expert analysis, and spatial layout were reviewed, focusing on design features that play a role in anticipating, and reducing impact of threats while designing built environments that support human needs. This presentation will provide case study analysis of one educational and one hospital setting as examples of the studio design scenerios that can address safety and security.

Conclusions and Implications
Among those most central to the security dialogue are design professionals responsible for creating healthy, safe, functional, and beautiful environments. Design educators and students of the 21st Century need to be proactive, integrative, and visionary about safety and security and its valuable role in the health, safety and wellbeing of the public.

REFERENCES (APA)

CPTED – Crime Prevention through Environmental Design


Ed Roberts Campus: A Case Study of Social Justice through Universal Design

Kyuho Ahn, Linda Zimmer & Olivia M. Asuncion
University of Oregon

ABSTRACT

Adopted in 1991, the Americans with Disabilities Act (ADA) mandates the accessibility of public buildings. Since its implementation, designers have become adept at following ADA Accessibility Guidelines (ADAAG) in order to achieve compliance. However, multiple studies (Ostroff and Hunter, 2003; Sherman and Sherman, 2012) argue that the majority of public and commercial buildings that comply with ADA regulations fall short of supporting independent use by people with disabilities due to passive and/or shortsighted implementation of ADA regulations. Universal Design exceeds the ADA by conceptualizing that all products, services and environments should be designed for all people, regardless of ability. In this case study, we examine the Ed Roberts Campus (ERC) in Berkeley, California. Designed in 2011 by Leddy Maytum Stacy (LMS) Architects, the ERC is a center for disability rights organizations, and as such, universal access was a driving goal in the design.

The ERC has been widely published and serves as an important example of moving beyond ADA compliance and toward universal design. LMS worked extensively with a large and diverse user group in identifying design goals that include celebrating the diversity of the human condition and providing replicable design solutions. LMS defines replicable solutions as those that can be
implemented by others using available technologies and products. The notoriety of the ERC, makes it important to conduct further research to gauge the success of the ERC in meeting these goals five years into the life of the building.

The case study utilizes three building performance criteria suggested by Presser (1983): Health, safety and security; Functional efficiency and workflow; and Psycho-sociological aspects. We conducted document/archival research, interviews of the architects and four key board members in their offices at the ERC, and analyzed conditions on-site that included a visual-impairment usability simulation, as well as evaluation of traces of use. The collected data were analyzed via architectural mapping.

As a result, several themes emerged that overarch those three building performance criteria: Predictability, Choice, Sensory Equity/Dueling Disabilities and Simplicity/Intuitivism. Predictability, or the user’s confidence in navigating a space without compromising perceived safety, comfort and goal attainment, seems to be the most important issue for people with disabilities in evaluating the quality of building performance and space. Second, Choice and Sensory Equity/Dueling Disabilities, deal with providing multiple ways of accommodating different disability conditions for services and wayfinding. But because accommodating people with one disability could conflict with the needs of those with another disability, providing sensory equity can pose a challenge. Third, Simplicity/Intuitivism can be achieved with multidisciplinary collaboration. For instance, the intuitiveness of an automatic door with sensors can work well with the building’s centralized access to several transportation options, such as a local metro network, paratransit and private cars.

We found that the ERC design demonstrates that Universal Design provokes perception of a welcoming environment among users and enhances building performance aesthetically and functionally. The ERC case study sheds light on the LMS design process and goals, but also on the ongoing operations of the building and use by occupants.

REFERENCES (APA)


Appendix 1. Architectural Mapping

First Floor Level

Exterior
- Entrance/Exit Design
- Exterior Lighting
- Exterior Accessibility

Accessibility:
- Social Spaces: Designate areas with ample seating and accessible restrooms.
- Elevators: Ensure they are easily accessible.
- Wayfinding:
  - Visual: Use contrasting colors for signage.
  - Auditory: Provide audio guides for visually impaired.

Lobby
- Interior: Polished concrete, low lighting levels.
- Furniture: Comfortable seating, ample space for accessibility.

Wayfinding:
- Visual: Use contrasting colors for signage.
- Auditory: Provide audio guides for visually impaired.

Graphics/Wayfinding
- Emergency Signs
- Wayfinding: Use contrasting colors for signage.

Public Spaces/Facilities
- Flexibility: Designate areas for various uses.
- Accessibility: Ensure all areas are accessible.

Cafe and Art Center
- Artwork: Various styles and mediums.
- Seating: Comfortable, accessible seating.

EBC Suites
- User Group Categories
- Categorical Information
- Symbol Key

I/DEC 2017 Annual Conference | Chicago, IL
Beyond the Noise: tackling the meaning of noise and speech privacy among knowledge workers in the open office environment

So-Yeon Yoon & Lily Yuanlingzi Shi
Cornell University

ABSTRACT

How the physical environment supports a variety of work is becoming increasingly important to organizations in new global, digital, and fast-paced business environments. While open-plan offices offer easy interaction between employees, flexible layout, natural light and potential views to nature (Borisuit et al., 2014; World Green Building Council, 2014), there are still significant noise and sound privacy issues. Previous studies confirm that noise distractions and a lack of sound privacy are the main causes of worker dissatisfaction in open-plan offices (Lee et al., 2016; Kim & de Dear, 2013).

The goal of this study is to examine the effects of noise and sound privacy on self-rated job satisfaction, performance, and health among knowledge workers in a 10,000 sqft shared office. A total of 53 out of 65 workers in the library technical support center of an eastern private university participated in the study. Based on the units, job descriptions and qualifications from the managers of the office, five levels were identified according to specialization and complexity of work...
responsibilities (Appendix 1).

Through a questionnaire using measures and questions adapted from previous literatures (Mobley, 1982; Amabile et al., 1996; Burell, 2002), participants reported their satisfaction ratings on various office environment factors in addition to perceived noise level and sound privacy. Workplace outcomes for this study were operationalized as perceived self-performance, turnover intention, general health and stress. To understand the meaning of the workplace in relation to ambient noise level and sound privacy, place attachment scales (Hidalgo & Hernandez, 2001) were also modified and adopted.

In addition to a questionnaire survey, social sensing badges were administered for three weeks. Wearable social sensing badges were used to capture natural social engagement behavior and communication patterns. The social sensing badges use four types of measurements: infrared, bluetooth, microphone, and accelerometer to collect data on body movement, speech activity (to whom and how much people talk with each other), different dimension of exploration (interacting with people in other social groups), cohesion (interacting within the same social group), and activity (body movement). Previous studies using social sensing technology repeatedly report that more encounters are linked to more positive outcomes (Waber et al., 2014).

The badge data and self-reports across the work types were analyzed using a series of statistical procedures including ANOVA and regressions. The results demonstrated that noise disturbance negatively affected self-rated health. Consistent with previous studies (Lee et al., 2016), job satisfaction was not correlated with noise disturbance, but was significantly related to natural/artificial lighting and the comfort of office furnishing. However, after controlling for work types, noise became the most significant factor in predicting job satisfaction. Interestingly, higher levels of worker specialty were directly correlated with lower noise and sound privacy satisfaction scores. It was also found that sound privacy has a significant impact on workers sense of office place attachment. Lower job satisfaction scores were correlated with higher turnover intention. In addition, there were significant interaction effects of sound privacy and work types on performance (perceived productivity) and stress. The badge data indicated that cohesion behaviors significantly predicted job satisfaction and turnover intention. This study provides deeper
understanding of key design factors in open plan office environments with an integrative approach with scientific rigor using both strategic self-reports and behavior data.

REFERENCES (APA)


## APPENDIX

### Table 1. Work types

<table>
<thead>
<tr>
<th>Unit</th>
<th>Key responsibilities [coded specialization levels: 5=highest]</th>
<th>Participants</th>
</tr>
</thead>
<tbody>
<tr>
<td>Receiving and Physical Processing</td>
<td>Adds barcodes to books. Handles incoming physical books [1]</td>
<td>n=9 (6 females)</td>
</tr>
<tr>
<td>Batch Processing</td>
<td>Handles the loading of batches of records. Within the unit the work is tiered according to the complexity of the operation [2]</td>
<td>n=13 (9 females)</td>
</tr>
<tr>
<td>Cataloging</td>
<td>Creates an original record for each received item [3]</td>
<td>n=12 (11 females)</td>
</tr>
<tr>
<td>Database Quality &amp; Metadata</td>
<td>Handles one by one corrections of records. Performs consulting services for the university library. Sometimes directly work with faculty [5]</td>
<td>n=6 (2 females)</td>
</tr>
</tbody>
</table>

### Figure 1. Pictures of the field study site

![Field study site](image1.png)

### Figure 2. Social sensing badge

![Social sensing badge](image2.png)
Homelike environments for adolescents’ psychological well-being in hospital settings

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ABSTRACT

The home provides not only a private physical shelter but also a restorative environment with privacy and comfort for its occupants’ well-being. One of the significant ways that the home can provide restoration is based on individuals’ subjective perception formed by their positive and personal experiences with their homes. Details such as personal possessions and interior decorations within the home communicate residents’ self-identities and self-esteem with oneself and with others (Lawrence, 1987; Marcus, 1995). In particular, familiarity related to physical features of home were identified as a prominent design attribute contributing positive perception of hominess (Marsden, 1999). These positive impacts of homelike ambience on psychological well-being is required for all age groups, but prior research has been focused mainly on the elderly.

Patients in hospitals face physical and psychological challenges due to impaired physical conditions, medical procedures, unfamiliar environments, and isolation from family and friends. If patients feel hospital rooms are like home, they may receive less stress from their surroundings. Recent decades’ efforts on healthcare design and research have taken a patient-centered approach,
focusing on patients’ psychological well-being. Research has suggested enhanced healthcare outcomes from homelike ambiances (Devlin & Arneil, 2003; Hodnett at al, 2005). The potential restorative effect of homelike environments needs to be estimated with various age groups using different hospital settings to cover age-related characteristics and needs. However, adolescent patients who must spend time in unfamiliar hospital environments during this critical stage in life are poorly represented in current research.

The goal of the study is to investigate potential healing design attributes of hospital rooms for adolescent patients and to analyze the significant roles of a homelike ambience in promoting psychological well-being. A total of 106 adolescents, 47 patients and 59 non-patients, aged 14 to 18 years participated in this study. Based on the concept of health-related quality of life (HRQOL), the study evaluated adolescents’ self-reported emotional states and their environmental preference value on hospital rooms (5-point Likert Scale). This study also collected emotional data related to items reminding adolescents of home using open-ended questions. The findings from this study indicated that participating adolescents put the highest priority on the needs of ‘privacy control’ and the least priority on ‘staying in a single-bed room’. The obtained results also suggest that ‘privacy control’ does not necessarily mean “to be alone” but implies adolescents’ needs for privacy and peer connection at the same time. The need for an ‘outside view’ was the second most important preference value in hospital environment; however, ‘outside view’ was less important amongst the items reminding adolescents of a homelike environment. Correlation between emotional states and environmental value indicated that the level of ‘stress’ and ‘comfort’ were the most influential emotional states related to adolescents’ perception of hospital rooms. The items adolescents most strongly associated with feelings of being at home were ‘family or family photos’ and ‘interior colors’. The second most strongly associated items were ‘[their] own beds’ and ‘private (my own) spaces’ along with the description of ‘comfortable’. The results imply that adolescent’s environmental needs in hospital rooms are associated with the core qualities of home.

REFERENCES (APA)


Figure 1. Theoretical Framework: Health-related quality of life

Figure 2. Person – Environments fit model
Figure 3-1. Corrections results among Environmental Preference Values: patient group

Figure 3-2. Corrections results among Environmental Preference Values: non-patient group

Figure 3. Comparison of Environment Values between Adolescent patients and adolescent non-patients
Stalled: The Politics of the Public Toilet

Amber Ortlieb & Natalie Badenduck
Mount Royal University

ABSTRACT

Recent controversy and legislative changes across North America have raised issues of access and discrimination to public washrooms for the lesbian, gay, bisexual, transgendered, intersexed, and queer (LGBTIQ) community. Throughout history, cultural shifts have impacted washroom spaces – germ theory (1880s), “potty parity” laws (1980s-1990s), racial desegregation (1960s), the Restroom Equity Act (1987), and the Americans with Disabilities Act (1990s) (Penner, 2013) with each transition resulting in heated debate. Often raised as a transgender issue, the heteronormative gendering of washrooms impacts a range of individuals including: parents, caregivers, and building managers dealing with inadequate facilities. The transition away from gendered public washrooms is a topical issue that requires the awareness and engagement of designers to enrich the health, safety, and welfare of users. Therefore, this research examined the history and standard practices of binary gender divisions, heteronormative approaches, and expectations within the contemporary washroom.

The division of public washroom spaces are vestiges of the Victorian era (Cavanagh, 2010). Introduced as a means of segregating gender, class, and race while suiting the modesty of the time, washrooms came to shape broader cultural perceptions of “masculine” and “feminine” qualities (Cavanagh, 2010). Furthermore, the public washroom became symbols of modernity, civility, cleanliness, and societal status (Penner, 2013). Today, washrooms continue to reflect the belief of
strict genderization. However, current political trends indicate governments and institutions are shifting towards policies requiring all-gender public washroom options (House of Commons of Canada, 2016; U.S. Department of Justice & Department of Education, 2016), which is a challenge for interior designers.

The phenomena of binary gender washroom was examined using qualitative content analysis to investigate the contemporary public washroom through a comprehensive examination of literature including national and state/provincial laws, journals, books, university policies, advocacy groups and social media. This was achieved in four major themes: 1) history of binary washrooms, 2) politics of exclusivity and inclusivity, 3) user group diversity, and 4) heteronormative approaches and expectations. From the major themes, subdomains were identified to further the analyses 1) rituals of excretion, 2) sexuality, 3) public safety, 4) accessibility, and 5) comfort and privacy.

The final product of the analysis revealed safety as a key issue often raised in the discussion of gendering policies in public washrooms. The most cited concern was the safety of women due to the potential risk of men in their environments. Assumptions and biases about the predatory nature of homosexual or transgendered individuals also dominate this dialogue. A significant number of proposed all-gender design solutions recommend binary gender washroom separation and single washroom space to be utilized by those requiring accommodations. Yet, findings indicate exclusivity creates feelings of isolation, insecurity, and inequality for users.

As the inclusivity of the public washroom issue continues in public and political conversation, the opportunity for interior design to shape understanding and best practices is rich. Inclusive design of washroom spaces should remove barriers of separation and design spaces that provide equal participation for users to be confident and independent (CABE, 2008). Understanding how interior environments transform spatial expectations, norms and relationship to space and gender is fundamental to the interior designer’s education and practice. Space reflects and shapes culture with the most intimate human inhabitation and interaction occurring within public washrooms.

**REFERENCES (APA)**


The Impact of Environmental Stimuli on Neural Activity

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

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ABSTRACT

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.

Methodology
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.

Findings/Relevance to Interior Design
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 (APA)


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.
Case-control study of perceived environmental hazards associated with residents’ fall risks within senior independent living

Daejin Kim & Margaret Portillo
University of Florida

ABSTRACT

The main purpose of this research was to identify the types and locations within in older residents’ living units where perceived environmental hazards increased the risk of falling. The aims of the study were threefold: (1) to explore consequences of falls by analyzing four years of fall history data within an independent senior living facility; (2) to examine significant differences in perceived environmental hazards based on the age and health status of the residents under study; and (3) to compare and contrast the prevalence of environmental hazards between the high fall rate building than in the low fall rate building.

Using a case-control study approach, this research includes both a retrospective analysis of fall incident reports and resident interviews about falling hazards within their units in a senior retirement community located in north central Florida. An analysis of the facilities’ fall history data identified which buildings had the highest and lowest fall rates over a four-year period. After these two unit were identified, the first author conducted on-site interviews with older residents in the building which had the greatest frequency of falls (e.g., 371 falls) and the building with the fewest reported falls (e.g., 104 fall) from 2013 to 2015. The 94 participants, 28 males and 66 females with a mean age of 85.06, participated in the semi-structured interviews. The interviewer
asked residents to: (1) describe environmental hazards that they thought increased the risk of falling in each space within the unit; (2) explain specific locations where they were concerned about falling; and (3) assess fear of their overall falling, perceived mobility level and general quality of health.

Using a keyword-in-context analysis (Leech & Onwuegbuzie, 2007) with 94 resident interviews, the 591 different environmental hazards were collapsed into five design type features: floor (e.g., floor surface, covering, etc.) lighting (night light, dim light, etc.), space and proximity (space size or proximity), furniture (cabinet, storage, etc.), and equipment (grab bar, handrail, etc.). Research findings indicate those who were 85 years old and over perceived more environmental hazards than the younger residents, age 71 to 84. Further, a Pearson correlation coefficient also showed there was a corresponding decrease in the mean of environmental hazards with an increasing level of self-perceived mobility and health as well as decreasing level of fear of falling.

The results of ANCOVA show residents in the high fall rate building were more likely to perceive environmental hazards related to lighting and spatial issues as influencing the rate of fall risks while controlling the following covariates variables: age, mobility, health and fear of falling. This research also identified a significant relationship between the number of perceived environmental hazards and falling locations contributing to severity of injury and fear of falling. The fall history data showed that falls which occurred in the bathroom were more likely to cause severe injuries, and most of the residents across buildings were concerned about falling in the bathroom. From residents’ perception, the bathroom contained the highest number of environmental hazards. Thus, fall prevention design strategies for reducing fall risks in the bathroom is critical to the end users. This research offers insights into potential environmental hazards relating to recorded falls and perceptions of hazards relating to key variables including the building type, resident population factors (e.g., age, mobility, health, and fear of falling as shown in appendix 1.

REFERENCES (APA)

APPENDIX

Variables
- High fall rate building
- 85 and older
- Poor mobility level
- Poor health
- High fear of falling

Design features
- Floor
- Lighting
- Space and proximity
- Furniture
- Equipment

Environmental hazards
- Slippery surfaces in shower or tub in bathroom
- Shower threshold (difficult to get in and out) in bathroom
- Uneven and change in flooring materials in living/dining room
- Throw and small rug and floor mats in living/dining, or bathroom
- Patio/bathtub threshold
- Obstacle in pathway
- Lack of night lights or poor condition of night lights
- Dim lighting or no main lighting in living room
- Consistent light switch location
- Small kitchen
- Poor proximity to bathroom from bedroom
- High and low cabinet and storage
- Lack of storage for walking device aid
- High chair
- Inappropriate height of bed
- High place of microwave & toilet
- Non-existent grab bars near toilet and shower
- Non-existent handrail from bedroom to bathroom
- Narrow doorway
- Heavy door
- Inappropriate emergency button
ABSTRACT

This research explores interior design educator attitudes about Historic Preservation, whether it is being taught in undergraduate interior design programs that are CIDA accredited, and if not what the perceived barriers might be. The researcher also explored whether faculty members thought there were synergies between historic preservation and sustainable design. Previous Master’s theses have looked at the potential synergies between interior design and historic preservation in a limited way either by looking at a specific program or online course content for multiple programs (Hannon, 2011 and Woodcox, 2011). This study builds on previous work by examining the underlying attitudes towards historic preservation among design educators and how programs with historic preservation content are integrating this information.
The building industry in North America has undergone significant changes in recent decades. Recent studies have shown that at least half of the buildings that will be in use in 2050 have already been built (Marnay and Stadler, 2008 and Raman, 2009). As a result, the adaptive reuse of buildings has increased, as has the recondition of a relationship between sustainability and historic preservation. Despite a significant body of literature recognizing the overlap between the two, historic preservation has not been widely embraced in design education. For the purposes of this study, historic buildings are those over 50 years old and having significance at the local, state or national level.

For decades, historians and architects have argued for the inclusion of historic preservation into architecture curricula with limited success. In 1994, an entire issue of The Journal of Architectural Education (Volume 37, No. 4) was devoted to historic preservation and the need to integrate its values and approach into architecture. The reality is that little has changed and historic preservation has retained its status as an add-on to architecture or architectural history without an integrated approach in architecture curricula. Since most adaptive reuse/historic preservation projects deal with interiors, the interior designer is historic preservation’s natural ally.

It can be argued that through historic preservation, this project type provides a way for students to learn about integrated and multi-disciplinary project delivery, industry specific standards, research, social, cultural, and economic factors influencing a project, and many other issues related to the 2017 CIDA standards.

The first phase of this research involved surveying interior design educators about their attitudes towards historic preservation, if and how they are teaching this content, and perceived barriers to its inclusion in an accredited program. Surveys were sent to all CIDA accredited undergraduate programs (165). Ten were immediately returned as undeliverable. The preliminary response rate for the survey was 26% (40 responses).

The majority of respondents (80%) felt that reusing existing buildings was important for the environment and 72.5% agreed that there is a synergy between interior design and historic preservation. The majority also felt that interior design should include an understanding of historic
preservation (57.5% strongly agreed and 35% somewhat agreed) Despite this, only one third (32.5%) of respondents were actively teaching historic preservation and reported that it was offered in less than half the programs (47.5%) most commonly through a studio project. The most frequently cited reason for not including historic preservation content was a lack of space to accommodate this content (66.67%).

Future work from this study will focus on developing a curriculum or series of courses and projects that could demonstrate how to integrate historic preservation into a CIDA accredited undergraduate program as a way to explore synergies with sustainable design, a focus on well-being and capitalizing on the ways interior designers work.

REFERENCES (APA)


National Trust for Historic Preservation (2011). The Greenest Building: Quantifying the
http://www.preservationnation.org/issues/sustainability/green-lab/useful...
Design History and Interior Design: Increasing Application and Relevancy Over Course Types

Diane Al Shihabi & Joori Suh
Iowa State University

ABSTRACT

In design education, precedents or previous knowledge and concepts provide foundational structures and schemes to facilitate the creative generation process (Eilouti 2009; Muller & Pasman 1996). Such prestructures serve as a basis in the creative problem-solving process, and can lead to exploratory, combinational, and transformational types of creativity as defined by Boden (1998). This study addresses how the application of design historical precedents can be coordinated over course types to facilitate creative generation in the interior design developmental process and to increase relevancy of the subject matter to students. It responds to the current state of design history as a core requirement in CIDA-accredited interior design programs, yet also as a subject matter that is not typically or purposely applied across course varieties, and as such, lacks optimal value and germaneness to students.

The paper’s methodology examines the sequential integration and application of design historical knowledge in course types and levels across a CIDA accredited program. Specifically, the study evaluates 1) explorations in introductory lectures, 2) assignments and presentations in
foundational history courses, 3) projects in intermediate-level studio classes, and 4) discussions and conceptualizations in advanced seminars and lecture courses. It evaluates how design history can function as a means of creative production and as a vehicle for cultural inclusiveness. It evaluates how lecture content, discussions, assignments and projects were modified over time to help students better understand the past through gestural action and creatively address contemporary problems through study and application of historical concepts, ideologies, and forms. It appraises how thoughtful project descriptions can facilitate notions of cultural inclusiveness among diverse student populations.

The study finds that coordinated, thoughtful, and purposeful integrations of design history in interior design lectures, studios, and seminars not only facilitates creativity and innovation in design solutions, but also enhances understanding of the relevance of design historical concepts in solving contemporary design problems. In addition, it illuminates and expands notions of career foci and opportunities for careers within the field of Interior Design. Further, when design history is used to address contemporary social issues in projects, including cultural identity and cultural diversity, it fosters an inclusive environment that improves tolerance and teamwork.

Importantly, this study demonstrates a feasible developmental process for ideation based on design historical precedents that continues to evolve over the course of an interior design program. It broadens contemporary understanding of precedent studies that stimulate creativity in that it successfully reconnects design historical origin to innovation. It also demonstrates how the application of interior design history within and beyond core courses can increase the germaneness and value of the subject matter to today’s students. The information is useful for academicians seeking innovative ways to integrate design history over course types to better prepare students for global practice and multicultural teams. It also broadens Eilouti and Muller & Pasman’s idea of precedents in design education by extending them to design history. Further, it extends Boden’s development of creativity types to historical precedents and innovation in the design process.

**REFERENCES (Chicago)**


APPENDIX

Student Assignment Egyptian Precedent, History I (2014)
SOCIAL ZONES

1: LIVING ROOM VIEW FROM FOYER

2: MAIN HALLWAY VIEW

LONGITUDINAL SECTION

A: KITCHEN ELEVATION

B: LIVING ROOM ELEVATION

LASALLE RESIDENCE

Student Project Byzantine Precedent, Residential Studio (2016)
INVERTED REFLECTION

The contemporary design embraces the ideals of the Minoan Civilization. Creating layers for hidden new experiences mimics the Minoan positive culture of embracing what is beyond the horizon. Sea inspired curved lines create a fluid-like rhythm and movement throughout the space. The earth derived colors reflect the love the Minoan people had for their environment. The colors allow the art within the home to stand as accents to the whole.

Student Project Minoan Precedent, Residential Studio (2015)
Student Project Roman Precedent, Residential Design Studio (2015)
CONCEPT: KALEIDOSCOPE

KALEIDOSCOPE of collaboration is what will inspire the space for the students of NEXT University. Students from all different majors, cultures, and learning styles will come together in a space to collaborate and learn from each other. The students will work together as unique individuals in a larger context, providing various areas for students to collaborate their thoughts individually or together with others. This building will bring life and creativity back into the students' lives by the influence of the retro mod Pop Art movement that will be incorporated throughout the patterns and colors.

NEXT University is a cutting-edge learning institution located in Norfolk, Virginia. The primary goal of the university is to develop students that will be future leaders and innovators. SMALL is a private, liberal arts institution with less than 2,000 students. The faculty at NEXT have exceptional professional backgrounds but are most known for their dedication to their students in helping them develop their best work. The founders of NEXT University believed in changing the paradigm of student learning. As a result, they want to utilize new approaches and push the boundaries with the design of their new academic building to allow learning to happen everywhere. Additionally, a key goal for the project is to increase student engagement and learning retention as a result of the new environment.

Student Project Cubist Precedent, Educational Facility Design Studio (2014)
Design Pedagogy and Preservation Education: Advancing a Conservation Ethic Across Interior Design Curricula

Diane Al Shihab
Iowa State University

ABSTRACT

Recent changes by accreditation boards indicate a move towards integration of historic preservation content in individual design disciplines. The Council for Interior Design Accreditation’s (CIDA’s) Professional Standards 2017 incorporate the term ‘preservation’ under guidance in Standard 10 History and Theory, while the National Architectural Accrediting Board’s (NAAB’s) 2014 Conditions for Accreditation address historical fabric, environmental impact and reuse under “Realm B: Building Practices, Technical Skills and Knowledge” (NAAB 2014). The shifts in accreditation standards mirror changes in design practice, which continues to evolve, in part, with the expansion of the federal Historic Tax Credit (HTC) program, designed to catalyze economic development through preservation. Since inception (1978), HTC has over $100 billion in preservation related activities and created 2.36 million jobs, resulting in increases in property values, heritage tourism, and tax revenues (Rutgers University and National Park Service 2016). Compliance with the HTC program necessitates specialized design practitioners, who are equally competent in contemporary practice and preservation guidelines. As a result, Historic Preservation is evolving as a critical specialization within individual design disciplines.
The American Institute of Architects Guide to Historic Preservation (2001, 7), lists the “Historic Interiors Specialist” as a type of trained professional working in preservation and focusing on historic furnishings, lighting, and decorative finishes of building interiors. A current problem in the field of Interior Design is that the discipline does not offer widespread training for such a specialist. Thus, this study asks how historic preservation could be integrated across Interior Design curricula to support the evolving design specialization and to protect cultural heritage through interiors. Applying federal standards of rehabilitation warrants a nuanced and comprehensive understanding of preservation; hence, the educational process would require systematic training that combines contemporary design knowledge and technological skills with historic preservation theories and methods. This study contends that appropriate training requires sequential applications, increasing in rigor, over multiple course levels.

The paper’s research methodology examines disciplinary and interdisciplinary applications of historic preservation content in a CIDA accredited program’s foundational design history lectures, intermediate level historic preservation seminars, and senior interdisciplinary historic preservation studios. Through pedagogical objectives and course lectures, assignments, projects, and fieldwork, it analyzes potential benefits and illuminates key challenges in the inculcation of historic preservation training across Interior Design course types and programs.

Significantly, the study finds that consistent integration of historic preservation content and methods across Interior Design curricula not only generates awareness of the interior designer’s role in historic preservation, but also nurtures a nascent preservation ethic in the field of Interior Design that enhances cultural heritage conservation through interiors by those trained to interpret the holistic interior environment. In addition, the preservation education process serves global practice by increasing cultural sensitivity, multicultural teamwork, and appreciation of cultural diversity. Further, the integration of historic preservation education offers a viable career option for interior design students.

REFERENCES (APA)


APPENDIX

HISTORIC PRESERVATION AND INTERIOR DESIGN:
ENGAGING AVANT-GARDE TECHNOLOGY TO REINSTATE HISTORIC INTEGRITY

INTRODUCTION

In 2015, student project for Historic Preservation of Interiors Course (2015)

EVALUATING SIGNIFICANCE

In 2015, student project for Historic Preservation of Interiors Course (2015)

BIBLIOGRAPHY

Student Project: Historic Preservation of Interiors Course (2015)
APPENDIX

CONCEPT STATEMENT

Our rehabilitation design seeks to better integrate contemporary needs while maintaining the historical integrity of the space. The design incorporates the preservation of original elements that give the space its historical character. Features such as the bookcases, windows, doors, fixtures, and architectural components such as the columns, moldings and ceiling details will be restored. The design decisions are reversible and comply with the Secretary of Interior’s Standards for Rehabilitation. Overall, the space will be functional and flexible to encourage modern day use of the library while reinstating the historic integrity through the unity of finishes and furnishings within the space.

Student Project, Historic Preservation of Interiors Course (2015)
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Historic Report Table of Contents

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Chronology of Development and Use

Physical Description

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Work Recommendations and Alternatives

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Creating Home in Minidoka: Furniture Making in a Japanese American Internment Camp

Shauna Corry
University of Idaho

ABSTRACT
The design of beautiful vernacular artifacts is a hallmark of, and a testament to, the gracious spirit of the over 140,000 Americans of Japanese descent who were incarcerated by the United States Government in internment camps during World War II (Hirasuna, 2005). This presentation focuses on the design and construction of handmade furniture and interior spaces in Minidoka, a Japanese American Internment Camp located in southeastern Idaho. It is part of an ongoing material culture research project exploring how internees created “home” in hostile camp environments (Corry, 2008). In Minidoka, handmade furniture crafted by internees from all walks of life exemplified the vernacular ideal, and contrasted with the work of fellow internee and professional furniture designer, George Nakashima and his mentor, master carpenter, Gentaro Hikogawa (Nakashima, 1981).

A content analysis of 150 interior photographs, combined with a review of historical interviews, personal histories, and biographies in relationship to the development of interior spaces and furnishings provided the data set for this study. The findings celebrate the creativity and ingenuity of Japanese American internees in designing and constructing furnishings to develop and enhance supportive living environments. Minidoka internees created necessary furnishings, along with art pieces, from scrap lumber and greasewood to make life easier, and perhaps more bearable in the
camps (Dusselier, 2008). Further, this study compares and contrasts vernacular designs with furniture and interiors designed and constructed in Minidoka by George Nakashima. Although, Nakashima had designed furniture before being interned, it was in the camp he learned traditional Japanese joinery methods and the proper use of tools from master carpenter, Gentaro Hikogawa (Lackey, 2014). The partnership of Nakashima and Hikogawa enhanced the quality of furnishings made, and the development of interior living spaces in Minidoka, culminating with the design of a model apartment to highlight the use of scrap lumber.

As in all the camps, Minidoka internees were only allowed to bring what they could carry from their homes. Upon arrival they found unfinished barrack apartments furnished only with cots and coal stoves. Archived photographs of Minidoka show these barracks transformed into livable apartments. Apartments that, although were behind barbed wire and under guard, contributed to the creation of “home” through the design and construction of handmade furniture by the internees themselves.

REFERENCES (APA)


Mark Hinchman

University of Nebraska

ABSTRACT

BACKGROUND: The Kellers are American interior designers who graduated from the Univ. of Washington. Dale (1929-2016) credits UW with setting them on the path that led to Asia. While hardly unknown, they lack the prominence they deserve, for their 100s of projects lie outside of the US. At their height, they ran offices in Athens, Hong Kong, London, and New York. From the 60s - 80s, they led the world’s leading design firm that specialized in hospitality (Fragrant Hill Hotel, Beijing; Kuala Lumpur Hilton).

Prof. Hope Foote (1897-1983) suggested that Dale read Okakura’s The Book of Tea. Entranced, he studied Japanese, and started a furniture export business in Tokyo. Patricia (b. 1926) had worked for Boeing and Raymond Loewy. Meeting in Tokyo, they became personal and professional partners. A commission for the Marunouchi Hotel, Tokyo, 1961 led to the Hong Kong Hilton, 1963 and cemented the firm’s direction. The proposed presentation has two foci: the Kellers’ means of relating international style hotel interiors to place, an examination which leads to the conclusion that modern interiors were not an extension of architectural modernism, but were conceptually different; and an unanticipated component of the information gathering which stems
from an email conversation with Dale.

QUESTION & THEORIES: 1) modern era interiors are often presented as though they are consistent with modernist architectural principles – that interior designers worked similarly, albeit at a different scale. This research questions that supposition, and posits that modern interiors operated differently than their architectural cohort.

2) It is a sine qua non that design should relate to place. This research adds to the place-making literature from the lens of the Kellers’ work.

METHODS: The mixed-methods analytical arm of the project starts with a) a review of their work in the press, professional (Arch. Digest) and popular (The Singapore Straits Times). b) It includes on-site documentation of projects in Malaysia, Sri Lanka, and Thailand; c) research conducted with the Foote archives at UW; d) and finally, a 21st cent. oral history. In undertaking this project, a surprising situation befell me. After months of attempting to initiate contact with the Kellers, I eventually located them in their grand assisted living facility outside of Seattle. As I prepared a proper oral history project, with release form, recordings, etc. Dale happily embarked on near daily email exchanges in which I peppered him with questions: oral history in the digital age.

DISCUSSION & CONCLUSIONS: The research concludes that interiors, especially hotel interiors, have a unique place in 20th century modernism. The hotels of the Kellers avoided the criticism of much global architecture. Critics decried the international style that they felt made Manila resemble Manhattan, yet often praised modern interiors. The research argues for the field of historical interiors as not an extension of architecture, but as its own discipline albeit with links to architecture. As an adjunct, the study argues that the formal procedures of oral history need to recognize digital forms of communication. Social media and email are useful for their immediacy, but present their own pitfalls for historical research.

The completed project presents the Keller’s method of connecting their designs to the Asian countries in which they worked. The global topic of place-making often presents it as an intractable impossibility, but in interviews, the duo outlined their methods, chiefly work with local artisans in country after country. And finally, the research argues that Dale and Patricia Keller belong in the pantheon of the most influential interior designs of the second half of the 20th century. They headed the most important interior design firm specializing in hotel interiors. Also to their credit:
the most expensive residence of the 20th century, the palace for the Sultan of Brunei.

REFERENCES (APA)


Keller, Dale. “From the Bali Hyatt to the Damascus Sheraton”. Interiors 135 (1975); 88-91.


Referencing Cultural Context: The President Hotel by

William Pahlmann

Morris Hylton III & Nam-kyu Park

University of Florida

ABSTRACT

William Carroll Pahlmann (1900-1987) was a prolific and acclaimed interior designer during the postwar period. Eschewing a strictly traditional or modern style, Pahlmann developed an eclectic approach to interiors that mixed furnishings, decorative objects, and fine art from different periods and cultures. In describing the cultural references in his work, Pahlmann said, “Decoration today is a veritable United Nations of Art. It is a wedding of ideas and an exchange of ideas from many countries and many sources.” The focus on other cultures may have derived in part from Pahlmann’s understanding of the American context during the decades that followed the Second World War, particularly the economic prosperity that allowed for greater home ownership and increased travel. “A contemporary house,” he offered, “may have styles from diverse periods and places…travels are definitely influencing our styles of architecture and decoration.”

Pahlmann’s referencing of past and other cultures while creating interiors tailored to contemporary lifestyles resonated with corporate as well as residential clients. In the 1950s and 1960s, Pahlmann would complete some 20 hotel projects. One of his largest commissions was the 19-story, 800-
This presentation shares the results of a case study analysis of the interiors of the President Hotel. The content of primary source materials was examined including rendered perspectives and drawings, specifications, correspondence, historic images, and the designer’s own writings. The President Hotel example provides insight into Pahlmann’s design strategy. Chinese culture is integrated through color palettes, decorative arts and antiques, and ornamental elements. Many of the fabrics and some of the furniture were sourced locally despite sanctions by the United States. At a moment of burgeoning globalization, William Pahlmann offered an alternative direction by contextualizing his interior designs through cultural references.

REFERENCES (APA)


William Pahlmann papers (Accession 2388), Hagley Museum and Library, Wilmington, DE 19807 (http://findingaids.hagley.org/xtf/view?docId=ead/2388.xml)

The Empathy-Embedded Studio: A Human-Centered Approach to Healthcare Design

Lindsey Fay & Allison Carll-White
University of Kentucky

ABSTRACT

The Council for Interior Design Accreditation’s (CIDA) Future Vision report (2014) identifies human-centered design as a key theme for interior design education and practice and has included it as a new standard beginning in 2017 (CIDA, 2017). The Future Vision report calls on designers to use evidence-based design to inform design thinking, explore ideas in collaboration with others, and test new approaches in the design process. The end goal is to help students develop a “comprehensive understanding of the human experience” and empathy towards others (p. 6). Empathy plays a significant role in human-centered design and focuses on the people for whom we are designing by constructing ideas that are both emotionally meaningful and functional (+Acumen, 2014). According to Zoltowski, Oakes, and Cardella (2012), “Human-centered design involves and values stakeholders throughout the design process rather than checking for ‘user-friendliness’ at the end of the process” (p. 29).

To illustrate the integration of empathetic design into the classroom, students participating in an annual healthcare design studio were engaged in a series of experiences to help meet this CIDA future objective. These experiences were integrated through various stages of the semester and informed the design of a pediatric cardiology unit. The project resulted from a multi-disciplinary
pre-/post-occupancy evaluation of a cardiovascular unit that has brought together team members from the design, communication, and healthcare fields. Student participation in this collaborative project stimulated their innovative thinking and allowed them to draw from multiple perspectives to support design solutions. This presentation will describe the processes used, including empathy icebreakers, site visits, observations, stakeholder engagement, end-user interviews, and personal reflections to gain understanding.

To better understand the effectiveness of the experiences as empathy builders, qualitative and quantitative measures were captured by student reflections in both written and verbal formats, student surveys, and an assessment of the ability of the final design solution to respond to user needs. As noted by Carmel-Gilfilen and Portillo (2016), “When students began to put themselves in the position of the patients, staff, and family members, truly understanding what they thought, felt, and saw, they were able to connect on a deep level (p. 137). Reflecting on the observational experiences, one student noted, “Getting to watch how nurses, doctors, and techs interacted within their environments helped me understand why what we are doing is so important, and how we can better design these spaces.” (Funke, personal reflection, October 2014). To further demonstrate these connections, students annotated their final designs to illustrate how their numerous forms of research were integrated into the solution and responded to the people for whom they were designing. In the student survey, 75% indicated that they strongly agreed or agreed that the studio experience had helped them gain empathy.

In the future, the profession will seek designers with a more inclusive understanding of the human experience and who are skilled in new approaches to design. Empathetic design provides the framework in which a more personal analysis of user needs can be achieved while still considering the functional and technical aspects of the built environment. Students fully engaging in empathetic design gain a connection with end users rather than basing designs on preconceived ideas or assumptions (Zoltowski, 2012). The integration of empathy-building experiences across the semester offers students a deeper connection with the design process and a more comprehensive understanding of human-centered design.
REFERENCES (APA)


APPENDIX

Student Transcript: Empathy Building Icebreaker Exercise

Student Response:
Madison and her mother found themselves at the pediatric unit of the hospital. Both of them nervous to what the day of testing might entail, arrived an hour early so they had time to grab a bite to eat and fill out paperwork.

As they walked into the lobby, they really didn't know where to go. They approached one of the workers to ask for directions to the café. The worker pointed down a hallway and explained “Go down the hallway – take a right – go up a flight of stairs – loop around – touch the ground – boom, bam you’re there!”

Madison and her mother walked away even more confused. They tried to follow directions but eventually asked another worker for directions. The worker replied “Go over there – take a left – go down the stairs – three steps right – boom, bam you’re there!”

Well...Madison and her mother were even more confused. They settled for a nearby vending machine and nervously awaited their looming appointment.
Immersive Observations:
Student Transcript: Research Reflections

1. Describe the usefulness of the observation to your overall understanding of healthcare design:

Getting to watch how nurses, doctors, and techs interacted within their environments helped me understand why what we are doing is so important, and how we can better design these spaces. In the patient room we mainly focused on patient and family design, but for the rest of the project we will have a larger opportunity to focus on the caregivers spaces. Seeing how they work is invaluable to the design process. Most of us have had experiences in hospital rooms as a patient or a family member, so we can relate to the patient’s experience. None of us have ever worked in a hospital, so to get the perspective of a caregiver is so helpful in the design process. Marrying the patient/family space with the caregiver space is a unique challenge, but I believe now that I have observed I can make educated decisions about the design.

2. In a few sentences, demonstrate how your design project might be impacted by your observation:

The observation will impact my design heavily in the hallways. Providing enough space for doctors and med students to meet in the hallway without creating a traffic jam will streamline the hallways. Creating an aesthetically pleasing walking path with help patients gain confidence in their walking right after surgery. Providing a walking path that avoids the open doors of other patient rooms, especially patients who are in poor condition will help keep their spirits up. This also supported my decision of creating decentralized nursing stations with a small central reception desk and additional station because of the amount of distance put between the nurses/techs and the patients. In 6 East, the nurse and tech stations are in converted patient rooms so they have no visibility to their patients. This resulted in long lag times between the patients pressing their nurse call button, and a nurse/tech coming to help them.

3. Based on your knowledge of evidence-based design, what aspects of this unit design could be enhanced for a better user experience?

Providing visibility and windows not just in patient rooms, but also in the corridors is a small thing that would make a huge impact. Sitting there from 8am to 12 pm it was hard to tell what time it was other than the small glow of light coming from the patient’s frosted window. Some of the rooms were double occupancy rooms, and we know from evidence-based design that there are so many problems with those.

4. Lastly, reflect on how this process helped you to more systematically gain appreciation for your surroundings. What aspects of this exercise might you use outside of this environment? Did anything you learned surprise you?

I appreciate my spaces so much more now. I may complain about classrooms or studio space that is not the greatest, but none of problems with those spaces could compare to working for 12 hours in that grim hospital.
wing. I was so ready to leave after 4 hours; I could not imagine staying there all day breathing in the dank air. I think that I will try to help nurses and caregivers in my everyday life because they work so hard, and often get yelled at by patients or families. I was also surprised to see just how hard the techs worked. They checked on patients more frequently that the nurses did and were constantly running from room to room. I think it’s important to design a space for the techs to enjoy as well.

Student Transcript: End-User Interviews

Interview with Nurse Practitioner:
Through interviewing a Nurse Practitioner whom formerly worked in cardiology, I was able to get a better sense of not only what the patients and their families need, in a hospital setting but what the hospital staff also requires to function as well. The NP has assisted children with cardio electrical abnormalities, congenital issues, as well as pacemakers.

In each patient room they must have a Telemetry Monitor, an IV Pump, a bed and so on, but what each room really needs is a distraction of some sort. According to NP, one of her toughest jobs is being able to discuss serious medical issues with parents, while trying to keep the child entertained in some way as well. She said the information that she must share with parents must be fully understood and absorbed by the parent. When parents are halfway listening and halfway trying to appease their child it makes for a tough communication process she says. She has even resorted to turning you tube on her laptop, and letting the child watch cartoons, while she discusses the treatment course with the parents. So some sort of in room distraction technique would be optimal. NP also suggested that play areas as well as patient rooms house some sort of infection control. To better prevent Nosocomial infections in the hospital setting. This form of germ spread can be minimized she suggested with having adequate space and contact precautions. The space issue she refers to is the allotted space for soiled linens, trash, potty chairs, biohazard, and other hospital waste being far enough away from the “clean zone”. She said that carpeting should never be used and suggested I further research the JCI standards. She said that they have UV Radiation robots that kill germs as well as many types of building materials that are made from antimicrobial, and antibacterial components.

She also said that the children really respond well to art, and music. She said that it would be great if they could even be able to do this in the patient rooms as well as in a group space. Many children have immune system issues and must be isolated at times and cannot be in community areas, for fear of infection. Some toys she has seen to work well in a hospital setting are legos, they can be soaked in bleach regularly for disinfection purposes. Some equipment in a children’s cardiovascular hospital she said was important included, a Pyxis, which is an automated medication cart, telemetry heart monitoring systems, code cart, and resuscitative equipment. She also suggested having a procedure room. This is done so children do not identify pain with their living spaces. The best thing that can be done for the children in a hospital setting is to make them feel like they are not in a hospital all the time, says the NP. She suggested again the use of distraction techniques, play areas, family areas, classroom areas, speech and occupational therapy areas, all could play an integral part in the recovery and wellbeing of the child and their family.

Interview with parent of child with a Congenital Heart Defect:
When interviewing the mother, she told me that her family has spent a lot of time in hospitals all over the country while seeking care for their now 12-year-old son. She said that the best luxury to her would be a comfortable place for her to sleep in her son’s room. Many hospitals that she has visited offer sleeping areas for parents separate from the child’s room, but not many offer more than a chair that reclines in the child’s room. She also suggested if possible for a place for the immediate family to stay on site such as a family lounge with activates for siblings.
In this family lounge she suggested there be individual refrigerators for families to use as well as a kitchenette so they are able eat together as well. She said that a play area for the siblings would be wonderful so they can visit with the parents whom often are basically living at the hospital with their sick child. She would also like a place to do her own laundry without having to leave the hospital. She really responded to the idea of having a “food court” in close proximity and her biggest pet peeve is the clinical smell of the toiletries.

Example Student Design Outcome
Follow the Green Path: The Experiences of Children with Autism Spectrum Disorder (ASD) in a Wayfinding Study

Julie E. N. Irish & B. Martinson
University of Minnesota

ABSTRACT

“Why do you get lost so often? . . . I think it’s this: we don’t really know where we ought to be.” This 13–year-old boy describes the difficulties that he and many others with Autism Spectrum Disorder (ASD) face daily (Higashada, 2013, p.93). Adults with ASD also describe how they got lost at school causing them anxiety and emphasizing that they were different compared to their peers. This exploratory research study applied the principles of evidence-based design to test a wayfinding solution using children with ASD. The outcomes could help designers make better informed design decisions. ASD is a developmental disorder affecting a child’s ability to communicate and behave in a socially acceptable manner. Many are over sensitive to their environment so that noise, lights, or smells can disturb them (APA, 2013). Although this sensitivity to the environment can impact their performance at school, to date there has been little research in this area (Khare & Mullick, 2011; Martin, 2014). This research is needed because of the increasing number of children diagnosed with ASD, currently 1:68 (CDC, 2014). The ability to wayfind is important in a school, particularly at transition times when children have to move quickly between classrooms.
Wayfinding describes how humans use sensory clues from the environment to find their way around. Person-environment fit theory grounds this study and has been cited in previous research examining how children with ASD can be enabled by a suitable interior (Khare & Mullick, 2011). The research question examined was: What do children with ASD think about their experience wayfinding along the hallways in the school environment? This population is not often asked their opinion and it would be valuable knowledge for designers in their decision making process when planning wayfinding strategies in the school environment. Subjects (n=9) were a convenience sample of children with ASD aged 8-11 who attended a summer program at an elementary school in the Midwest. Subjects were randomly assigned to control and treatment groups in an experimental design. Subjects were tested whether they could find their way along an unfamiliar route in the school hallway from a set start point to a given destination. In the treatment group, subjects were tested on their ability to find their way with the assistance of wayfinding aids (colored doors, colored shapes on the floor, and signage) applied to the hallways. In Stage 1 the researcher led the subject along the route pointing out the wayfinding aids. In Stage 2 the subject was asked to lead the researcher along the route. The control group carried out the same wayfinding task along the same route but there were no wayfinding aids applied. Instead, the researcher pointed out existing features in the hallway. Since this population varies in individual characteristics it was also considered important to ask each subject, via an interview/questionnaire, how they felt about their wayfinding experience. A mixed methods approach to data collection increased validity of findings, including observation, behavioral mapping, video and audio recordings, and questionnaires.

Findings were that subjects in the treatment group were able to discriminate colors of wayfinding aids, and remembered shapes on the floor and signage, to a greater extent than subjects in the control group. Some subjects remembered surprising details in the environment, in accordance with psychology literature that describes how children with ASD fail to see the “big picture” but focus on small details. By engaging children with ASD who do not always have a voice, this evidence-based research found out what they felt about their experience wayfinding in a school hallway. Although the findings are not generalizable they could be replicated in a larger study. The results could help designers learn more about the wayfinding needs of this population to help them implement suitable design solutions.
REFERENCES (APA)


Appendix

Examples of Control Route and Treatment Route with Wayfinding Aids

Control route doors

Treatment route doors

Control route floors

Treatment route shapes on floors

Control route signage

Treatment route signage
Key considerations when specifying light quality for classroom lighting

Sogol Salary, Hans-Peter (Hepi) Wachter, Marguerite Keesee
& Lisa Holliday
University of Oklahoma

ABSTRACT

An important feature to be considered in school facility design is meeting lighting standards. Although there are several publications on lighting standards available, it is not clear which standard should be predominantly used. The authors investigate healthy and safety school building features as part of a publicly funded grant (EPA Environmental Protection Agency, Healthy Schools Project). While the selection and inclusion process of building features for healthy school design is not part of this paper, the challenge arises selecting adequate lighting standards in school types, namely elementary, middle, and high school. Considering lighting as building feature, different associations focus on lighting as necessary requirements from different perspectives such as light level, energy consumption, and illumination. (Table.1).

Learning activities in school facilities may require a wide range of lighting standards as different activities require different levels of light (NOAO 2015). Generally, activities in school facilities
may require differing ranges of illumination especially in active learning spaces such as classrooms. According to levels established by the IESNA (The Illumination Engineering Association of North of America) lighting levels required and necessary for schools are between 30-75 fc depending on the form of instruction that is being used in the space. Furthermore, a guide published by the Virginia Department of Education (2013) clarifies different light levels for different available tasks in a school building. As mentioned in this guideline, educational spaces such as general classrooms need lighting level of 55-60 fc (foot-candle), computer labs need 30 fc, and gymnasiums requires 30-50 fc with a focus on range within tasks and not school type (Table.2).

The Lighting Design Lab (2013) predominately differentiates between school type within task type. According to their Foot Candle Light Guide (2013) illumination level standards required for the same type of classroom in a High school and Elementary School are different. For instance, the amount of light considered for a Gymnasium in High schools should be 50 fc while in an Elementary school should meet 30 fc.

While reviewing standards of illumination, the research team developed a taxonomy of light level standards with association to school types and learning activities, to better understand desired lighting levels for schools considered for inclusion into a healthy and safety building features handbook for school designs. This research presentation will report on the procedures taken to identify lighting as a building feature for the design of healthy schools and how light level requirements and measurements defined in a range were selected and applied in a building features list, guiding visual school building inspection protocols and a school building plan and specification review tool.

REFERENCES (APA)


APPENDIX

<table>
<thead>
<tr>
<th>Name of Association</th>
<th>Lighting Requirement Perspectives</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Lighting Level</td>
</tr>
<tr>
<td>IESNA (Illumination Engineering Society of North of America)</td>
<td>X</td>
</tr>
<tr>
<td>DOE (Department of Energy)</td>
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</tr>
<tr>
<td>ASHRAE (American Society of Heating, Refrigeration, and Air Conditioning Engineers)</td>
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<tr>
<td>OSHA (Occupational Safety and Health Administration)</td>
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<td>Lighting Design Lab</td>
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<tr>
<td>Energy Trust of Oregon</td>
<td>X</td>
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<tr>
<td>Virginia Department of Education</td>
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<tr>
<td>Lighting Research Center of Rensselaer Polytechnic Institutes</td>
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<td>Center for Climate and Energy Solution</td>
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Table 1. Associations focuses on different lighting requirement perspectives

<table>
<thead>
<tr>
<th>Name of Association</th>
<th>Classroom Activities</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Classroom (Handwritten Task)</td>
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<tr>
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<tr>
<td>Virginia Department of Education</td>
<td>55-60</td>
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<tr>
<td>Lighting Design Lab</td>
<td>-</td>
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</table>

Note: (a) Elementary school recommendation; (b) High school recommendation

Table 2. Lighting levels (fc) specified for different classroom types with different activities
Enhancing Transition Spaces with the Simple Wayfinding Tools (Signage, Color and Brightness) for People with Autism Spectrum Disorder

Apoorva Rane & Kristi Gaines
Texas Tech University

ABSTRACT

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 (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. This research presentation examines plausible wayfinding solutions that can be incorporated into to a universal design for individuals with neurodiversity.

Public spaces may be confusing with never-ending corridors resulting in dependency, anxiety, stress and lower confidence levels for a neurodiverse 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. A meta-analysis of research was conducted that included sensory issues, learning techniques and the built educational environment for individuals with ASD. Furthermore, the educational environment was a successful design for children with ASD and more beneficial for children without ASD when further researched. Wayfinding strategies for the general population were also evaluated. The aim/objective was identifying features and tools to aids in wayfinding. This presentation illustrates ways to incorporate these features to improve wayfinding for all users.

Method
The literature on physical environment for people ASD takes care of personal territorial spaces (for example home) and semi-personal territorial space (for example classrooms). Therefore, this literature review scrutinizes the available research on 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 sensory design matrix. As the prevailing literature provide 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.
This exploratory research concentrates on the use of simple tools of wayfinding like signage, color, and brightness. The presentation provide an overview of a case study analysis at a center for autism education and research.

Findings and conclusion
The function of the corridor in the built space is to reach the destination space, comfortable movement towards the exits and every zone. The existing literature shows a clear overlap between the sensory design matrix and tools of wayfinding. This exercise helps to analyze the recommendations for wayfinding for people with and without ASD. A prototype was developed to incorporate wayfinding tools into an existing center for autism education and research.
REFERENCES (APA)


A Case Study Exploring the Daily Learning Environment 
Experiences of a High School Student with Attention-Deficit/Hyperactivity Disorder (ADHD)

Julie Emminger 
University of Florida

ABSTRACT

Schools today are educating approximately eight million students that have Attention-Deficit/Hyperactivity Disorder (ADHD). Twenty-five percent of these students will grown up and continue to struggle in higher education or in the workforce. As a result, twenty-two days of productivity will be lost each year due employees with ADHD affecting co-workers and employers. Early interventions in high school can positively influence these outcomes. However, only one study has empirically examined the effect of classrooms environments on students with ADHD. While, the study considered the perspectives of teachers, aides, and professionals—voices of the students were not included. Therefore, this single case study follows the daily life of a high school student with ADHD exploring the question: What physical attributes in the environment are perceived as having a negative or positive influence over the student’s learning experiences? At the center of this study is Ben. As early as first grade, his teachers frequently reported him having high energy levels and being easily distracted. While in middle school he was diagnosed with ADHD. Ben takes medication to help control the disorder and has an Individualized Education Plan (IEP) to accommodate additional needs. His plan includes extra testing time and permission to do classwork in the school’s library. Yet, as found in the study his Research and
Clinical studies don’t live in the real world but Ben does. Furthermore, those with ADHD commonly experience temporal myopia where they exist only within the present situation. In other words, every moment can be significantly different where even the most trivial change can have a significant effect on future mindset and actions. To delve into these moment-to-moments, a web-based smartphone app, the Mobile Learning Environment Tool (MLET), was developed to enable Ben to quantitatively report his perceptions of his learning environments in his world in real time. Moreover, the app data was enriched through interviews, photographs, onsite observations, and cognitive maps. Ben’s perspectives was paired with views from his parent and a licensed school psychologist. Findings suggest that certain design elements such as furniture, noise, technology, and peripheral views impact the student’s daily school life. The presence of technology and noise in the classroom was found to be a significant distraction thus supporting current research. Two design patterns emerged; Boundary and Brain-space, which further elucidate subtle differences of environment perception and experience not fully examined in the literature. Boundary is pattern set designed to remove distractions from within the visual and audio fields without a complete separation from the classroom. The primary design principle is seating location and incorporates fixed or temporary screen and noise-cancelling headphones to diffuse distractions yet is still accessible by Furthermore, establishing Boundary affords the second design pattern set, Brain-space. Current research of ADHD behaviors indicates free movement can be beneficial. However, not only is physical movement needed but the environment should serve as a physical extension of their brain’s working memory. In other words, a student with ADHD needs much more physical workspace than typical students. The Brain-space pattern set includes using whiteboards, various seating, multiple desk spaces, and storage. Both pattern sets can be established with use of temporary or permanent equipment, providing feasible and scalable options for implementation in schools. These recommendations can additional provisions that enhance current individual educational plans. Use of the pattern sets may empower students, educators, and administrators with more choice and action ability. Most importantly, future research may show that implementing such elements may help foster self-advocacy among these students, as the environment is adaptable to their needs.
REFERENCES (APA)


The Impact of Lighting Design on Consumer Preferences and Store Image

Nam-Kyu Park
University of Florida

ABSTRACT

In the field of retail marketing, it is proved that the atmospherics of the shopping environment have a strong influence on consumers’ buying behaviors (Turley & Milliman, 2000). Atmospherics include ambient cues such as color, lighting, music, smell, temperature, and textures, as well as architectural and artifactual elements in a retail setting (Donovan et. al., 1994). Lighting as a key interior design element can create a unique atmosphere conducive to a positive consumer experience (Tantantewin & Inkarojrit, 2016) and convey a brand image to a target market (Schielke & Leudesdorff, 2015). Despite the effects of lighting design have been investigated in retail environmental studies, the knowledge of the impacts of lighting uniformity on consumer responses and brand perceptions is scarce. Applying the environmental preference theory developed by Kaplan and Kaplan (1989), this study examined the effects of lighting uniformity on consumers’ perceptions and preferences, behavioral intentions, and perceived store image within retail environments.

An experiment was conducted in a three-dimensional simulated store in which two different lighting conditions (non-uniform light or uniform light), corresponding to the settings of two
different retail clothing stores (formal wear or casual wear), were implemented. The sample consisted of a total of 192 participants (male = 44, female = 148), ranging from ages 18-35 years. All participants reported zero vision deficiencies and had no prior knowledge of lighting and design. Participants were asked to view one of the four randomly assigned store scenes and complete a self-administered questionnaire. A between subjects analysis of variance (ANONA) was conducted to examine dependent variables including the perceptions of coherence, legibility, complexity, and mystery, lighting preferences, shopping behaviors, and store image.

The results revealed that lighting uniformity in both clothing stores (formal wear and casual wear) had significant effects on Kaplan and Kaplan’s four perceptual dimensions (coherence, legibility, complexity, and mystery) as predictors of store lighting preferences. In both stores, the uniform lighting was perceived as more coherent and legible while the non-uniform lighting was perceived as more complex and mysterious. Overall, the uniform lighting condition was more preferred, and therefore was more favorable for shopping, spending money, and staying in both stores. In addition, the study confirmed that associations exist between lighting uniformity and perceived store image. These findings provide further insight on the effects of lighting design, particularly lighting uniformity, in a retail environment. It can enhance a retailer’s branding to set the store apart from its competitors in a positive way.

REFERENCES (APA)


The Impact of Noise on Customer Emotions and Repatronage Intentions in a Food Service Environment: A field study of a popular restaurant in a college town

So-Yeon Yoon, Helen Chun & Kate Min
Cornell University

ABSTRACT

The goal of the study is to understand how loud noise effects customer experience in a crowded food service environment. From a theoretical and practical perspective, ambient factors play a significant role in food service environments. For example, noise is one of the most common complaints of restaurant-goers (Zagat, 2015). However, little research has empirically studied how noise and crowding influence customer experience. This study evaluated how loud ambient noises impact customer dining experiences by conducting a field study with noise reduction intervention in a popular and crowded Vietnamese restaurant in Upstate New York. The selected restaurant serves 250-300 customers daily and receives 4.5/5.0 star ratings on tripAdvisor and Yelp. Given that prior research has acknowledged the negative customer experience in loud restaurants (Anderson, 2008; Clark, 2014), this study attempts to expand the literature with a better understanding of the effects of perceived noisiness and sound pressure levels in multiple aspects of customer dining experience including service quality, food quality, ambience, emotions and intentions to revisit and recommend.
The field study was conducted in two phases, before and after the noise reduction intervention. For both phases, surveys were conducted during the dining hours, 5:30-9:30pm, on two Friday nights. High performance noise absorbing panels (NRC= .85) were installed throughout the restaurant ceiling a week after the first survey. Two weeks later, the second survey was completed on a Friday. All customers who entered the restaurant during that day’s dinner hours were asked by a research assistant to participate in our study immediately before they received the meal check from the waiter. Each participant received a $3.00 discount off the meal check if they agreed to complete the survey. Sound pressure levels were recorded both Fridays. A total of 286 customer responses were analyzed, 144 of which were from the pre intervention phase, while 142 were from the post intervention phase. The average noise level dropped from 81 dB-A to 72 dB-A after the intervention. Questionnaire results indicated a statistically significant difference in customers perceived noise levels pre and post intervention.

Hypotheses were formulated to test the relationships between noise, emotions, and perceived food and service quality, as well as how customer’s demographic factors were associated with behavioral intentions. Customer experience was measured using a self-report 7 point Likert scale. The analysis results show significantly higher ratings in food taste, interior design ratings, and repatronage intention during the post-intervention phase. In both phases, it was found that the self-rated noisiness of the restaurant and the ease of conversation significantly influenced the perceived taste of the food; noisiness was negatively associated with perceived food quality, and ease of conversation was positively associated with perceived food quality and positive emotions. Ease of conversation significantly influenced customers’ service quality perception and repatronage intention, whereas perceived noisiness did not reach a statistically significant level. Ease of conversation was found to be a more sensitive measure for subjective experience of ambient noise in this context. Repatronage intention was mediated by positive emotions associated with ease of conversation.

In the presentation, effects of customer group characteristics as well as individual characteristics on dining experience will be discussed. Findings of this study provides the basis for subsequent major studies on the effects of ambient noise on customer experience and behavior in a variety of
environments. This study propose practical design and managerial implications associated with the design intervention.

REFERENCES (APA)


Appendix

Figure 1. The restaurant floor and ceiling plan

Figure 2. Pre and post ceiling intervention
Examining High-Impact Practices (HIP) in Interior Design Education
— Leading Campus Initiatives to Support Student Success

Stephanie Clemons & Laura Malinin
Colorado State University

ABSTRACT

Institutions of higher education are struggling under combined pressures of reduced funding and strategies for educating increasingly diverse student populations (Humphreys, 2012). Revenue shifts from state coffers to tuition have colleges and universities encouraging faculty to adopt High Impact Practices (HIP), aimed at attracting and retaining students through enhanced educational experiences (Jaschik, 2015). As campus members, how do interior design programs contribute to these efforts? Our research examines relationships between HIP and interior design education and suggests interior design programs are uniquely positioned to lead campus initiative for HIP.

University “student success” metrics include increasing 1) student retention past freshman level, 2) persistence through sophomore year and 3) improved graduation rates (Seidman, 2005). Research shows success is significantly related to student engagement, especially among under-represented groups. “Deeper” learning helps students manage complexity, ambiguity, and collaboration with others holding different viewpoints (Kuh, 2008). A form of engagement, HIPs improve student mastery of content knowledge, skills and critical thinking critical for positive community engagement and professional goals. HIPs include first-year seminars, writing-
intensive courses, service learning, internships, and capstone projects. Evidence indicates participation in HIPs directly improves student learning and grades, which indirectly increase retention and degree completion (Kuh, 2008).

Interior design programs have long required experiences that look similar to HIPs to effectively prepare students for professional practice. Experts recommend all students participate in at least two high-impact practices before graduation; one in the first year and another in their academic major (Brownell & Swaner, 2009). The AAC&U indicates a second HIP be in the senior year, ideally within a capstone course. Statistics reveal first-year students and seniors who participate in learning communities, study abroad, student-faculty research, and service learning report stronger learning outcomes and personal development (Brownell & Swaner, 2009). Our research examines interior design education to assess whether (and to what degree) current practices align with HIP recommendations.

This exploratory study analyzed multiple data sources to understand relationships between HIP, interior design curriculum, and educational practices. First, we examined the intersection of HIPs with curricular content areas described in CIDA 2017 standards. Next, we investigated the range of HIP educational practices adopted in interior design programs through content analysis of IDEC conference abstracts from 2007-2016. Finally, we used case study methods to analyze qualitative and quantitative data from a CIDA-accredited undergraduate program to understand the breadth and depth of HIP integration. We found 8 of 10 HIPs are well represented in interior design education, with deep integration of primary activities supporting HIP across all four years of the curriculum. This suggests interior design educators have expertise benefiting campus initiatives formalizing adoption of HIP.

In conclusion, we suggest interior design programs significantly incorporate a wide range of HIPs in undergraduate experiences. Findings, summarized in a framework linking HIP and interior design education, are organized with respect to Kolb’s model of experiential learning to appreciate why HIPs enhance student learning. We use the framework to lead discussion about opportunities and challenges for interior design educators to inform initiatives for HIP adoption and suggest for areas of future research. Ultimately, we posit the interior design discipline is uniquely positioned
to increase its programmatic visibility on campuses and argue the time may be ideal for faculty to lead student success initiatives.

REFERENCES (APA)


### Table 1: Suggested High Impact Practices

<table>
<thead>
<tr>
<th>Category</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>First Year Seminars and</strong></td>
<td>Small groups of students that meet with faculty on a regular basis. Strong emphasis placed on skills that develop students’ intellectual and practical competencies such as: critical inquiry, frequent writing, information literacy, and collaborative learning.</td>
</tr>
<tr>
<td><strong>Experiences</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Common Intellectual Experiences.</strong></td>
<td>Set of required common courses that include advanced integrative studies and/or require participation in a learning community.</td>
</tr>
<tr>
<td><strong>Learning Communities</strong></td>
<td>Communities that encourage integration of learning across courses and engage students with “big questions” that matter beyond the classroom. Student cohort groups work take two or more linked courses as a group; working closely with one another and professors. Explore common topics/and/or common readings through lenses of different disciplines.</td>
</tr>
<tr>
<td><strong>Writing-Intensive Courses</strong></td>
<td>Courses that emphasize writing during all four years of the educational experience; including final-year projects. Effectiveness of this repeated practice “across the curriculum” can result in enhanced quantitative reasoning, oral communication, information literacy, and ethical inquiry.</td>
</tr>
<tr>
<td><strong>Collaborative Assignments</strong></td>
<td>Two goals: learning to work and solve problems in the company of others and enhance understanding by listening seriously to insights of peers – especially those with different backgrounds and life experiences. Assignments and projects might include study groups, team-based assignments and writing, and cooperative projects + research.</td>
</tr>
<tr>
<td><strong>and Projects</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Undergraduate Research</strong></td>
<td>While undergraduate research has been most prominently used in science disciplines, other disciplines are becoming more involved in providing such research opportunities for their students. The goal is to involve students with actively contested questions, empirical observation, cutting-edge technologies, and sense of excitement from working on important questions.</td>
</tr>
<tr>
<td><strong>Diversity/Global Learning</strong></td>
<td>Courses and programs that help students explore cultures, life experiences, and world views different from their own. These studies explore “difficult differences” such as racial, ethnic, and gender inequality as well as continuing struggles around the globe for human rights, freedom, and power. Intercultural studies can also include experiential learning in the community and</td>
</tr>
<tr>
<td>Service Learning, Community-Based Approaches</td>
<td>Field-based, experiential learning with community partners. Students receive direct experience with issues they are studying in the curriculum. Application of classroom learning to real-world problems. Reflection and analysis are critical components to this experience.</td>
</tr>
<tr>
<td>Internships</td>
<td>Experiential learning involving a direct experience in a work setting – usually related to career interests. Supervision and coaching from professionals in their field. If taken for course credit, students complete a project and/or paper.</td>
</tr>
<tr>
<td>Capstone Courses and Projects</td>
<td>Culminating experiences that require students nearing end of college education to create a project that integrates and applies what they have learned. The project might be a research paper, performance, portfolio, or an exhibit.</td>
</tr>
</tbody>
</table>


Table 2. What Makes a Practice a High Impact Practice (HIP)?

<table>
<thead>
<tr>
<th>expectations set at appropriately high levels</th>
</tr>
</thead>
<tbody>
<tr>
<td>significant investment of time and effort</td>
</tr>
<tr>
<td>interactions with faculty and peers</td>
</tr>
<tr>
<td>experiences with diversity</td>
</tr>
<tr>
<td>frequent and constructive feedback</td>
</tr>
<tr>
<td>periodic and structured opportunities for reflection</td>
</tr>
<tr>
<td>relevance through real-world applications</td>
</tr>
<tr>
<td>public demonstration of competence</td>
</tr>
</tbody>
</table>

### Table 3. Outcomes and Benefits of High Impact Practices

<table>
<thead>
<tr>
<th>Persistence and Grade Point Average (GPA)</th>
<th>Higher GPA/grades</th>
</tr>
</thead>
<tbody>
<tr>
<td>“Deep approaches to learning”</td>
<td>Gains in writing, critical thinking, reading, integrative thinking, research skills</td>
</tr>
<tr>
<td>Higher rates of student-faculty interaction</td>
<td>Higher rate of civic engagement, gains in commitment to social justice, multicultural awareness</td>
</tr>
<tr>
<td>Increases in critical thinking and writing skills</td>
<td>Increased retention and persistence – Ease of college transition</td>
</tr>
<tr>
<td>Greater appreciation for diversity</td>
<td>Higher rate of graduate school</td>
</tr>
<tr>
<td>Higher student engagement overall, and “compensatory effects”</td>
<td></td>
</tr>
</tbody>
</table>


Where Am I? Using Students to Gauge Perceived Institutional Identity and Propose Effective Environmental Elucidations

Emily McLaughlin
Indiana University-Purdue University Indianapolis

ABSTRACT

Content Areas: Institutional, Design Process, Service Learning/Social Responsibility

Higher education institutions are involved in an ongoing rivalry. It is an enduring competition to entice international talent to attend OUR institutions for the purpose of advancing program reputation, gaining notoriety, and progressing research in our respective disciplines with highly qualified scholars. As a result, creating institutional environments which retain a strong sense of place where students feel comfortable, supported, and inspired to engage in active learning is critical for recruitment and retention in higher education. It is these objectives which make it decisively important for interior design scholars to ascertain the methods for effectively exploring and realizing the factors which make college spaces both attractive and highly functional, while imparting a strong sense of pride and identity in ones alma mater.

While the need to integrate branding into institutional design facilities is unmistakable, a limited
number of studies for this assimilation have been previously evaluated (Dawidziuk, 2012; Iqbal et al, 2012; Joseph et al, 2012). In this case, the pedagogical goal of exposing interior design students to the importance of successful programming and inquiry was essential; therefore a junior-level undergraduate studio course was solicited to examine user perceptions relative to a sorely neglected common corridor at a research institution in the Midwest. After receiving IRB approval, the students administered a self-created questionnaire to 107 end users of the space which examined the acuities of these users relative to both aesthetics and function. The survey asked users to describe how the space made them feel about their institution, as well as identify environments on campus which they feel idealize the vibe of the college. In addition, the university website was examined and campus administrators were interviewed in an effort to gain additional perspective relative to the mission and branding of the institution. The results of these efforts were examined and analyzed, and used as a basis for proposed interior design solutions.

The observed results of this exploratory study are significant. First, exposing students directly to the experiential process of probing a multitude of key informants and end users was reported as extremely useful by the junior-level students. Strong endorsements from course participants indicate robust validation for using this first-hand methodology, and the majority expressed excitement that the inquiry methods provided a framework for future, real-world programming activities which they will undertake as professional designers.

Second, critique of the student design solutions by a panel of University administrators and design professionals suggests that valuable proficiencies were gained in translating an identified institutional culture and brand into aesthetic environments which provides a sense of place while supporting the research-based mission of the institution. Key attributes reflective of the demographic and intrinsic nature of the University were apparent and successfully used in the delivered work.

Finally, it was observed that students who were able to fully understand how institutional building occupants felt about their spatial environment were better able to layer functional solutions throughout the design in an effort to enhance quality of life. Students were able to identify distinct elements which end users at this institution valued, and were therefore able to respond with
practical solutions.

The use of applied inquest methods relative to information gathering in interior design education retains great value (Cherry, 1999; Preiser, 2015). This approach should resonate with design educators, as the byproduct of such activities is students who gain a better sense of their own learning and mastery of inquiry techniques used to create successful solutions.

REFERENCES (APA)


APPENDIX

IMAGE OF CORRIDOR SPACE USED IN THE STUDY

RESEARCH INNOVATION CORRIDOR PROJECT – USER PERCEPTION SURVEY

A study is being conducted relative to user perceptions of this corridor. Your participation in the study is voluntary, and no personal identifying information will be collected. The results will be used to propose environmental changes to the space by interior design students at this University.

1. How often do you walk through this corridor?
   Daily, Once or more each week, A few times each month, Rarely/Never

2. What is the primary reason that you walk through this corridor?
   To go to the library, To go to a class or office, To avoid the outdoor weather, Other: ______________

3. Rate your perception of the existing corridor in the following areas:
   Usability: Terrible, Weak, Average, Very Good, Excellent
   Design Aesthetic: Terrible, Weak, Average, Very Good, Excellent
   Lighting: Terrible, Weak, Average, Very Good, Excellent
   Cleanliness: Terrible, Weak, Average, Very Good, Excellent

4. How does this corridor make you feel?

5. What does this corridor say about our institution?

6. Name a space/environment on campus that you feel strongly resonates with our institution.
   Why does the space resonate with our institution?

7. How could this corridor be improved to support the awareness of our institutions research focus?

8. Which school on campus do you most closely associate with?
   Dentistry, Informatics & Computing, Nursing
   Education, Business, Physical Education & Tourism Mgmt.
   Engineering/Technology, Liberal Arts, Public & Environmental Affairs
   Social Work, Philosophy, Public Health
   Honors College, Law, Science
   University College, Medicine, Health and Rehabilitation Sciences
   Other: ______________

9. Which of the following describes your status on campus?
   Administrator, Faculty, Staff, Student, Visitor, Other: ______________
SURVEY RESULTS

What is the primary reason that you walk through this corridor?

- To go to the Library
- To go to Class or Office
- To Avoid Outdoor Weather

Which of the following describes your status on campus?

- Administrator
- Faculty
- Staff
- Student

Rate your perception of the existing corridor.

- Usability
- Design Aesthetic
- Lighting
- Cleanliness

How does this corridor make your feel?

- Nothing/No idea/Not sure
- Sad/Bland/Cold/Lonely/Empty
- Like a Passenger/Transient
- Great/Happy/Motivated
- Good/OK/Fine
- Bored
- Inspired by Daylight
- Safe
- Comfortable/Calm
- Stressed/Tired
- Hot/Stuffy
- Unsafe
- Disappointed
- Not Good

IDE 2017 Annual Conference | Chicago, IL
Which school do you associate with?

- Dentistry
- Education
- Engineering/Technology
- Social Work
- Herron
- Honors College
- University College
- Informatics & Computing
- Business
- Liberal Arts
- Philanthropy
- Law
- Medicine
- Nursing
- Physical Education & Tourism
- Public & Environmental Affairs
- Public Health
- Science
- Health & Rehabilitation Sciences
- Psychology

What does this corridor say about our institution?

- Says Nothing/Needs help or Renovation
- Convenient/Easy to navigate/Accessible/Connected
- We are Boring/Lack a sense of community
- We don’t care about our looks
- We are Modern/Open
- We have a good urban view/Visible exterior
- Low budget/Where is our money going?
- Lots of things to get involved with
- They want us to use the library/Student focused
- We care about safety
- We have nothing to show off
- We like wasted space
Why does this space resonate with you?

Responses for Campus Center
Location is at the heart of campus
Contemporary, modern, urban
Daylight
Variety of seating options
Food availability
Welcoming
Has the mascot everywhere
Writing boards let students express themselves
All the services/activities that take place there.
Glass, Escalators, Color!
Availability of Information
Can be myself there/ Lots of people/Students can connect
Diversity
Innovative and progressive
International flags make everyone feel welcome

How could this corridor be improved to support the awareness of our institution’s research focus?

Add Posters/Information/Display
Add color/Renovate/Artwork
Add new furniture/Study space
I don’t know
Add computers/technology to the space
Open up doors more often/Use Outdoor space
Make it interactive/Useful
Host more research studies/events in the space
It already does/Fine as is
Our institution doesn’t do much research
STUDENT WORK SOLUTIONS

THE WELCOME CORRIDOR

OUR CONCEPT

The corridor is a light, bright, and comfortable space designed to provide a welcoming and inviting atmosphere for students. The design is focused on creating a sense of community and socialization, encouraging students to interact and collaborate. The corridor features a variety of seating options, including individual chairs and group seating areas, as well as a variety of architectural elements, such as the use of natural materials and the inclusion of greenery. The design also incorporates technology, with the use of digital displays and interactive elements to create an engaging and dynamic environment.

AXIS

FEATURING SEATING  

PAINT  

LAMINATES  

FLOORING  

FABRICS  

581
Touch vs. Sight: Sensorial Influences in the Perception of Materiality

Lisa Phillips
Philadelphia University

ABSTRACT

Interior designers often encounter clients who not only note the number of rooms they require but also speak of a range of emotional descriptors as well. Adjectives such as calming, welcoming, or masculine are used to describe how a new design should ‘feel’. While it is true that many factors are responsible for affecting human behavior and perception, finish materials are undeniably a key consideration as well. Without altering the physical configuration of a room, materials can aid in transforming a cold room into a warm room or a static space into one that is energizing.

It is essential, more than ever, that interior designers are equipped with knowledge concerning how their decisions affect the users of their designs. Unfortunately, there is marginal research available concerning the psychology of materiality, which is surprising, as material psychology is a well-documented subject in other related professions. In the field of product design, for example, there have been multiple studies concerning the association of material selections and their influence on the purchase and use of products.
Research regarding color, and its association with behaviors and adjectives, also abounds. While the psychology of color has earned respect, however, the psychology of interior finishes remains vastly unexplored. Although there are more variables inherent in material selections, one wonders if there are areas of consistency that can be isolated and used as a reference for designers as well. Recent work, specific to the built environment, provides some initial evidence to confirm this theory. In her book Place Advantage, Sally Augustine explains that “… when viewed, a shiny surface is invigorating while a matte finish is relaxing”. 2 There have been connections made as well between physical contact with materials and how they can influence a user’s mood and wellbeing. It has been noted that people walking barefoot on large smooth stones, like cobblestones, feel tranquil and energized at the same time.3

Building on this initial evidence, I sought to determine if additional associations were present as well. In 2014 two online surveys polled over one hundred individuals to examine images of six materials: wood, stone, metal, glass, plastic and concrete. The results revealed that many materials were consistently linked with specific emotions. Wood for example, was seen to be peaceful, natural, strong, warm and raw while plastic was shown to be clean, hip, happy, artificial, lively, modern and hi-tech.

Interest in these preliminary findings was evident as I was welcomed to present at the 12th Annual Hawaii International Conference on Arts & Humanities and the Interior Design Educator’s Council East Regional Conference, both in 2014. A paper based on this study was also published in 2016 in the International Journal of Interior Architecture + Spatial Design.

The purpose of this proposed presentation would be to discuss my latest research, which focuses on determining if texture or pattern play a stronger role in the associations users make between materials and emotions. Both senses were isolated in this on-site experiment which required participants to either touch or view materials, but never both. For each material a short survey, utilizing bipolar adjective pairs on a six-point Likert rating scale, was provided asking the participants to rate their emotional state as it applied to each material.

Several valuable insights were noted. As an example, it was determined that by sight alone, metal
was characteristically masculine, however the smooth surface, upon touch, was predominately feminine. By understanding these and other differences, we can continue to increase our competency in selecting appropriate materials for design projects. The results of this research can add an additional and valuable resource to guide future material selection decisions.

REFERENCES (APA)

Elvin Karana, "How Do Materials Obtain Their Meanings?" Middle East Technical University Journal of the Faculty of Architecture 2, no. 27 (2010): p. 273

APPENDIX

1st Material (of 6) You are Viewing

* 2. Please write below the number noted on the material in front of you.

Number

* 3.

Consider the material in front of you and indicate the answer that is most appropriate for each of the questions below. It is understood that both positive and negative traits may apply to the same material so review each choice carefully.

Would you say that the material is more warm or cold?

<table>
<thead>
<tr>
<th>extremely warm</th>
<th>warm</th>
<th>slightly warm</th>
<th>slightly cold</th>
<th>cold</th>
<th>extremely cold</th>
</tr>
</thead>
</table>

* 4.

Is the material more dirty or clean?

<table>
<thead>
<tr>
<th>extremely dirty</th>
<th>dirty</th>
<th>slightly dirty</th>
<th>slightly clean</th>
<th>clean</th>
<th>extremely clean</th>
</tr>
</thead>
</table>

* 5.

Is the material more calm or energizing?

<table>
<thead>
<tr>
<th>extremely calm</th>
<th>calm</th>
<th>slightly calm</th>
<th>slightly energizing</th>
<th>energizing</th>
<th>extremely energizing</th>
</tr>
</thead>
</table>

* 6.

Is the material more strong or weak?

<table>
<thead>
<tr>
<th>extremely strong</th>
<th>strong</th>
<th>slightly strong</th>
<th>slightly weak</th>
<th>weak</th>
<th>extremely weak</th>
</tr>
</thead>
</table>
Graphic Materiality: Teaching Graphic Design as Building Element

Roberto Ventura, Virginia Commonwealth University

Susie Tibbitts, Utah State University

ABSTRACT

Motivation
Graphic materiality describes the hybrid design work that fuses graphic design with building elements. Like traditional building materials, graphic materiality embraces module, honesty and metaphysical connection. Rather than applying a graphic simply for the visual benefit, graphic materiality informs and communicates, therefore enlightening the viewer by providing a connection between the graphic and the space. The practitioners exploring it, such as Eva Maddox, Rem Koolhaas and Bruce Mau, develop spaces where the graphic quality of the environment is inseparable from the experience of place. Incorporating this distinction into interior design curriculum allows students to explore ways to integrate graphic materiality in projects, strengthening their design outcomes.

Problem
Students typically introduce the application of a graphic as an aesthetic solution near the end of the design process. This type of application is often an afterthought which causes disjointed outcomes, but more than a physical material, graphic materiality should be integrated into the built
environment to provide a gestalt-like connection. Teaching students to utilize graphics as an integrated material rather than a surface application in the built environment provides them with essential skills influential in today's practice. While both forms of graphic application have a place in interior design education and the profession, distinguishing between an aesthetic application and graphic materiality provides different outcomes.

Method
Educators at two schools sought to address the distinction between the aesthetic, surface oriented graphic application and an integrated, materiality application within design curricula. The potential application for graphic materiality is present in most studio design projects and was therefore easy to integrate. Students were given projects that explored the connection between graphic design and interior design. Educators provided a broad spectrum of two and three-dimensional work to allow students to become well-versed in the design process.

Beginning design students are excellent at grasping the concepts of graphic materiality because they have yet to form habits as a designer. Introductory projects that are well-structured allow students to make necessary connections between the process and the outcome. For example, a second-year studio project introduced students to graphic materiality through a series of incremental steps. The students began abstracting objects or concepts resulting in a variety of sketches. The abstractions, once developed, translated into axonometric drawings with numerous volumetric variations. The final outcome resulted in presentation drawings, construction drawings, an architectural model, and poster. The best projects presented an integrated whole, where the two-dimensional graphic informed the design throughout the process. As students progress in a design program, the complexities of the process increase, yielding more integrated and sophisticated design communication.

Results/conclusion
Teaching students to utilize graphics as an integrated material rather than a surface application in the built environment provides them with essential skills influential in today's practice. Learning to distinguish between the basic application of a graphic versus the integration of graphic allows them to see the benefits of bringing graphic design into interior design education. Providing
students with opportunities to practice this integrated process prepares them for the multidisciplinary nature of the profession. The introduction of this concept into studio courses resulted in sophisticated student work, and the significance of graphics in the space increased when using an integrated system. Evidence of understanding this distinction manifested in verbal presentations of student work and the presence of the graphic concepts throughout the design process.

REFERENCES (APA)


Figure 9: Second-year studio project, corporate lobby branding exercise
Figure 8: Fourth-year studio project focusing on political branding
Graphic Materiality: Teaching Graphic Design as Building Element

Figure 7: Building elements inspired by traditional Islamic screening
Figure 4: Abstraction process sketches (Glasswing Butterfly)

The design for Nymphalidae is inspired by the structure and anatomy of a glasswing butterfly. The particular species, more technically known as *Greta Oto*, belongs to the family Nymphalidae, which inspired the house's name. The glasswing butterfly always intrigued me because of its characteristic transparent wings, and I wanted to capture its delicate, yet structured, form.

Figure 5: Integration of graphic elements into architecture

Figure 6: Second-year studio project incorporating graphic as a building element
Figure 1: Cardboard model of light shade

Figure 2: Abstraction process sketches incorporating adjectives

Figure 3: Presentation drawings of light shade based on the adjective escalate
Six Principles of Inclusive Tactile Design

Kristi Gaines, Michelle Pearson, Su-Jeong Hwang Shin,

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Texas Tech University

ABSTRACT

Introduction

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. (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) and Montagu (1986) 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.
Method
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.

Findings/Relevance to Interior Design
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. The information gained was developed into Six Principles of Inclusive Tactile Design.

The results from this study further led to collaboration with apparel design in 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 explain each principle and provide practical examples for integration into interior spaces.

REFERENCES (APA)
between touch and vision. Current Biology, 19(9), 745-750.


APPENDIX

The Six Principles of Inclusive Tactile Design
Personal Space Zones (Adapted from Hall’s Theory of Proxemics)
Hall’s Personal Space Zones vs. Tactile Defensive Zones.
Examples of Interior Design Features for Tactile Sensitivity
Examples of Research-based sensory clothing developed from this study
Servicescape and Student Engagement Level: For Students, By Students

Rula Awwad-Rafferty, Michael McCollough, Alyssa Andersen, Erica Albertson, Micah Johnson & Courtney Tanner

University of Idaho

ABSTRACT

Problem
Interior design education thrives with opportunities that engage students in real world, interdisciplinary, service learning experiences. Such opportunities enrich programmatic capacities and engender a collaborative team approach to meeting complex problems. There is an exciting increase in interior design program participation in these types of projects, as evidenced by the CIDA standards (2016). Pedagogical approaches used may become stagnant, and not stand up to the potentials to expand growth in new and innovative ways inherent in these situations. How do we engage in breaking beyond internally and externally imposed paradigms and allow for depth and breadth of learning from and with interdisciplinary service learning situations? How do we assess risks and support for such pursuits? How do we measure the learning that occurred? This collaborative presentation features a case study of a yearlong engaged participatory, interdisciplinary service learning project at a land grant institution, facilitated by two professors, one in interior design and one in marketing.
Method/Strategy

The term Servicescape is used in marketing and business in reference to the tangible environment, “The environment in which the service is delivered and where the firm and the customer interact, and any tangible commodities that facilitate performance or communication of the service.” (Zeitham, Bitner; 2013). This “tangibilizing” of a service is made through both the physical space that carries with it an identity, an expectation, and a presence; i.e. design. Clue management is another marketing term, it refers to the process of clearly identifying and managing all the various clues that customers use to form their impressions and feelings about the company. These terms were introduced in a two-semester long interior design special topics course in community based studio, and started a journey of discovery and innovation. In a collaborative endeavor between two professors, blending of language, process of discovery and making, and theories generated an engaged and fluid learning space while meeting a redesign challenge for student engagement level in the college of business and economics. The following points highlight key hallmarks for the strategy engaged in this partnership:

• The project evolved through pedagogical design and management and became a project for the students by the students; faculty were continually aware of positionality and power; they served as facilitators and advisors.
• Breaking barriers, overcoming stereotypes and learning a new language, constructs elaborated, commonalities found, differences utilized to prompt questions and moving beyond the expected
• Evidence based interdisciplinary decision making was key as business and design practice.
• Prompt and informed stakeholder engagement: continual, strategic, informative, and with transparent feedback loop
• A characteristic hallmark was the broadening sphere of stakeholders. Students participated in entrepreneurship elevator pitch competitions, investing what they won in fund raising campaign for the project
• For a project to become real, it must meet standards and necessary approvals. Engaging with facilities and university purchasing representative was critical, and empowering
Advisory board members are key stakeholders who provided insights and support to bring the project into life.

Conclusion and Implications

Students provided significant feedback in 360 evaluation conducted at the conclusion of the year. The number one comment was “this project is real”! Students compared their efforts here with other service learning projects and found a great difference in their roles and outputs. Students felt “empowered” and ready to be “in the world”. The project afforded an interdisciplinary, hands on opportunity to investigate, envision, and create a tangible servicescape third place for student engagement and learning, while growing as citizens.

REFERENCES (APA)

APPENDIX

Fig 1: Student report to CBE advisory board, features brief, goals, process, research (qualitative, quantitative and case studies), design, cost estimates, consultations, and collaborations.

Fig 2: Existing plan and collaboratively generated problem statement; quantitative use data was generated through surveys and observations.
Key Points
- Collaborative Environment
- Transparency
- Bright Colors

Makers

Makers was one of the few locations visited with no natural light; similar to the way the basement is set up. The lighting in this area had the most noticeable effect on the atmosphere. Makers utilized attractive, hanging chandeliers that did not use fluorescent bulbs, making the lighting in the room seem warmer and generally more pleasant. There were also strands of lights hanging in the hallways. These lights worked well for the space because they were able to be strung through pipes and ventilation that were also hanging from the ceiling. The lighting was supplemented by the use of clear glass doors and partially frosted glass partitions; these design elements gave the interior workspace a more open feel and allowed light to spread around the space more effectively.

movement that came out of Seattle. They also had a giant mural of a sasquatch in relation to Sasquatch! Music Festival held annually in Washington. These features make each WeWork unique, but also give clients an element of novelty and perhaps even pride, by simply being there. Each WeWork incorporates trendy and modern aspects that make people want to be there past the normal workday.

Fig 3: Qualitative research team site visit to servicescapes
**Stakeholder Input**

**Career Center**

The Career Center Room is absent from the final floorplan because they have decided to move upstairs to be closer to the students. Their current plan is to move into the conference room on the ground floor of the Albertson Building, but that plan is subject to change. Half of that space will be part of the new Accounting Lab and the rest will be opened up to the main area.

"The layout of the student level could be dramatically improved to utilize all the available space and create an environment that is more conducive to collaboration and learning."

- Student Survey Response

**Accounting Lab**

During the planning stages of the project, a team was assembled to determine the accounting lab wants and needs. The team met with accounting faculty, graduate students who are the main tutors, and members of the Beta Alpha Psi Accounting club whom volunteer in the lab. In the meetings we gathered feedback regarding any improvements or changes they would like to see, and listened to any concerns that they had regarding the remodel. We wanted to keep all of their comments and concerns in mind when creating the final plan, while simultaneously keeping the overall student body’s best interest in mind.

Fig. 4:  Sample stakeholders input

![Sample stakeholders input](image)

Fig 5:  generated alternative receives review, input is negotiated, addressed, and design revised; a cycle of interpretation and evolution of co-authored team design.
Fig 6: Particular insights into program needs and space available

Fig 7: And we are on the way; facilities input engages administrators and advisory board, students, alumni, and board drive fund raising campaign.
We Can Work It Out: A Gentle Immersion Framework

Rebekah Ison Radtke, Lindsey Fay & Patrick Lee Lucas

University of Kentucky

ABSTRACT

Interior design practitioners and faculty authors of the 2014 CIDA Future Vision Report agreed that “a more diverse range of mentorship models will define interaction between entry-level and more senior designers in the future” (p. 5). In most schools, exposure to the profession occurs in a single internship experience or through occasional classroom visits by professionals and opportunities to observe designers in the field. In higher education, this scattershot approach might be countered by a scaffolded curriculum, with each experience building on the last culminating in a capstone project (Kuh, 2008). In this presentation we discuss the implications of a scaffolded approach to design education that focuses on intentionally embedded professional experiences across the breadth of the program. By explicitly setting forth this strategy, students in our program recognize the value of their emerging professional network inside and outside the school, where “everyone becomes a resource to each other and we all learn from each other on a daily basis.” (Mason, 2015). This approach emulates the innovative, multi-faceted, and nuanced ways in which designers work in school and in the profession (CIDA Future Vision Report, 2014).

Carefully examining our curriculum, we re-shaped how we approached pathways to the profession through a gentle immersion framework. Within this framework, we connect and integrate experiences throughout a curriculum organized around a seminal experience in each year nested within curricular and co-curricular opportunities (see appendix). Of the 22 required courses in
the CIDA-accredited program, 17 now intentionally embed aspects of professional development, a significant change in approach resulting from the implementation of the framework.

Immersed in experiences within the school and outside of it, first-year students learn about divergent pathways for design in introductory courses, design chats and workshops, culminating with a professional interview. In second year, students activate their design voice during a design charrette weekend with working professionals. Third-year students leap into the field with a shadowing experience over spring break, leveraging their personal brand as developed in a branded identities course. During fourth year, students bring professional experience from internships to a professional practice course and a thesis of their own devising. This innovative framework results in a connected curriculum, meaningful mentorships, experiential education, and a strong sense of community.

To better understand the effectiveness of the framework we collected qualitative measures including personal narratives, analytical reflections, and testimonials from practitioners, students, and faculty to analyze the totality of the impact. Quantitative data collection encompassed surveys, job placement data, and course evidence with evaluations. Through rigorous analysis, this mixed methods approach yielded tremendous results. Young alumni indicated connections between these experiences and success in the profession, including the acquisition of entry-level positions with firms where they shadowed or interned.

Because of our gentle immersion framework piloted in 2014, our students have been able to effectively link academic experiences to the profession while transforming the culture of design. Based on data collected, retention rates from first to second year increased 16.1% after the roll out of the framework as an early indicator of success. The totality of these experiences are carefully structured with intention to maximize impact and to realize connection, balance, and community. The impact of this model has impacted a broader population by linking together a vast array of alumni and friends of the 40+ year old program to shape the professional network which will enable our students to transition from school to work.
REFERENCES (APA)


### CURRICULUM SEQUENCE

#### COMMUNITY EVENTS

- **FALL SEMESTER**
  - **STUDIO**
    - ID121: Interiors Plan/Program 1 (extensions)
  - **NON-STUDIO**
    - ID101: Intro to Interiors
  - **SEMINAL EXPERIENCE**
    - ID161: History/Theory of Interior Environments 1

#### ALL SCHOOL DESIGN CHARRETTE

- **FALL SEMESTER**
  - **STUDIO**
    - ID221: Interiors Studio 1 (residential)
  - **NON-STUDIO**
    - ID263: Digital Design
  - **SEMINAL EXPERIENCE**
    - ID275: Interior Construction 1

#### GROUP ADVISING

- **FALL SEMESTER**
  - **STUDIO**
    - ID321: Integrated Studio 1 (mixed use)
  - **NON-STUDIO**
    - ID346: Pro Practice Preparation
  - **SEMINAL EXPERIENCE**
    - ID365: Interior Materials

- **SPRING SEMESTER**
  - **STUDIO**
    - ID421: Thesis Studio 1 (health care)
  - **NON-STUDIO**
    - ID466: Professional Practice
  - **SEMINAL EXPERIENCE**
    - ID466: Professional Practice

- **SPRING SEMESTER**
  - **STUDIO**
    - ID122: Interiors Plan/Program 2 (residential)
  - **NON-STUDIO**
    - ID102: Interiors Proficiency
  - **SEMINAL EXPERIENCE**
    - ID162: History/Theory of Interior Environments 2

- **SPRING SEMESTER**
  - **STUDIO**
    - ID222: Interiors Studio 2 (education)
  - **NON-STUDIO**
    - ID264: Color Theory
  - **SEMINAL EXPERIENCE**
    - ID234: Environmental Theory

- **SPRING SEMESTER**
  - **STUDIO**
    - ID322: Integrated Studio 2 (work place)
  - **NON-STUDIO**
    - ID375: Interior Construction 2
  - **SEMINAL EXPERIENCE**
    - ID366: Lighting

- **SPRING SEMESTER**
  - **STUDIO**
    - ID422: Thesis Studio 2 (thesis)
CHARRETTE WEEKEND
Practitioner information behaviors: Research utilization and information seeking

Amy Huber
Florida State University

ABSTRACT

“Assailed on all sides by information” were the words used by design scholar David Kernohan (1991, p. 322) to characterize the predicament faced by many design professionals. Twenty-five years later, problems surrounding the application of information may be even more prevalent. While design discourse continues to emphasize the role of research in fostering design innovation, enhancing project outcomes, and increasing a firm’s competitive stance, evidence suggests a persistent gap between research findings and design practitioner expectations. Environmental and design scholars have long lamented the lack of research utilization by practitioners while, at the same time, designers may deride the efforts of those researchers, citing findings as ill-suited for their use (Huber 2016a). Yet, if research findings remain unknown to practitioners, the information stands little chance of improving design processes and outcomes. Consequently, scholars have outlined strategies to increase practitioners’ utilization of research, but these were mostly based on anecdotal evidence or small scale studies. Little is known about practitioner motivations for seeking information, and specifics regarding how they review research documents.
This exploratory study aimed to develop a baseline understanding of practitioner motivations for seeking information through frameworks of research utilization strategies (Pelz, 1978) and information-seeking behaviors (Hëinstrom, 2006). Such information may help design researchers better communicate with those practitioners who may leverage research findings when making decisions about the built environment.

Framework
Research utilization is commonly classified into three strategies: (1) instrumental, pursuing knowledge to resolve a specific problem or issue; (2) conceptual, knowledge used for general enlightenment; and (3) symbolic, knowledge used to legitimize predetermined notions (Pelz, 1978). However, Hëinstrom (2006) attributed information-seeking behaviors to one of three approaches: (1) fast surfing, taking a cursory approach; (2) broad scanning, reviewing information from a variety of sources; (3) and deep diving, taking part in a purposeful quality-driven pursuit. According to Hëinstrom (2006), fast seekers are less concerned with information depth and quality, preferring instead to judge documents by appearance, type, and information availability, while deep divers and broad scanners are more likely to embark on a more critical examination.

Methods
Survey responses from 97 mid- and senior-level interior designers were statistically analyzed. Multiple questions probed both preferred research strategies and information-seeking behaviors, and reliability measurements were obtained using Cronbach’s alpha. While the researcher targeted designers with practice experience, survey participants represented various market sectors, education levels, and age ranges (See Table 1).

Findings
Nearly half (48%) of behaviors noted by participants could be categorized as conceptual research utilization strategies, thus suggesting that designers seek information to satisfy their curiosity or for intellectual stimulation (See Tables 2 & 3). However, when respondents evaluated their typical behaviors using a slide bar scaled from 0 to 100, ANOVA post hoc tests revealed a statistically significantly higher mean for fast seeking $\mu_{61.39}$ and broad scanning $\mu_{56.8}$ over deep diving $\mu_{40.7}$ (See Tables 4 & 5).
Implications
These findings support earlier studies that suggested time constraints and document composition may influence how designers evaluate and review information (Huber, 2016b) while building knowledge by suggesting that interior design practitioners are eager to learn new information, albeit dedicating little time to its comprehension. This apparent dichotomy suggests design scholars should consider how practitioner-orientated research documents should differ from those prepared for academics.

REFERENCES (APA)


Table 4
Aggregated mean scores of information-seeking behaviors

*Fast seekers  *Broad scanners  Deep Divers

*Indicates statistically significantly higher mean than deep divers, significance at p=.05

Table 5
Comparison of mean scores for specific information-seeking behaviors (scored 0-100)

<table>
<thead>
<tr>
<th>Variable</th>
<th>Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>Seek information as quickly as possible (FS)</td>
<td>61.08</td>
</tr>
<tr>
<td>Have difficulty in determining how information applies to my projects (FS)</td>
<td>60.39</td>
</tr>
<tr>
<td>Find information from a wide variety of sources (BS)</td>
<td>60.09</td>
</tr>
<tr>
<td>Am satisfied after I find one source that answers my question (FS)</td>
<td>59.75</td>
</tr>
<tr>
<td>Find information from areas outside of design (i.e. business, sciences, etc.) (BS)</td>
<td>56.14</td>
</tr>
<tr>
<td>Read an entire document to fully understand what it is about (DD)</td>
<td>53.63</td>
</tr>
<tr>
<td>Find information from unexpected places (BS)</td>
<td>51.63</td>
</tr>
<tr>
<td>Have a plan for how to find project information (DD)</td>
<td>42.5</td>
</tr>
<tr>
<td>Have been told I am diligent and conscientious (DD)</td>
<td>35.83</td>
</tr>
<tr>
<td>Am more concerned with the quality of information over quantity (DD)</td>
<td>29.39</td>
</tr>
</tbody>
</table>

*Note  FS indicates Fast Seekers, BS indicates Broad scanners, DD indicates Deep Divers
Table 2
Aggregated frequency of research strategy responses (given in percentages)

Table 3
Comparison of specific research strategy responses (given in percentages)
Appendix

Table 1
Participant Characteristics

<table>
<thead>
<tr>
<th>Variable</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Current age</td>
<td></td>
</tr>
<tr>
<td>20-30 years</td>
<td>20.3</td>
</tr>
<tr>
<td>31-50 years</td>
<td>48</td>
</tr>
<tr>
<td>51-65 years</td>
<td>29.7</td>
</tr>
<tr>
<td>Over 65 years</td>
<td>1</td>
</tr>
<tr>
<td>Years of experience</td>
<td></td>
</tr>
<tr>
<td>Less than 1</td>
<td>1</td>
</tr>
<tr>
<td>1-5</td>
<td>20.5</td>
</tr>
<tr>
<td>6-10</td>
<td>4.7</td>
</tr>
<tr>
<td>11-20</td>
<td>27</td>
</tr>
<tr>
<td>Over 20</td>
<td>46.4</td>
</tr>
</tbody>
</table>

*Note* the researcher recruited participants who were referenced on the websites of design firms either listed among the 2015 100 Giants by Interior Design Magazine, or were noted as regional ASID or IIDA design competition winners from 2015 or 2014. As such, these participants were more likely to be firm leaders with significant design experience.

Primary Market Sector

<table>
<thead>
<tr>
<th>Market Sector</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Commercial/Corporate Interiors</td>
<td>49.4</td>
</tr>
<tr>
<td>Facilities Management</td>
<td>1</td>
</tr>
<tr>
<td>Government/Institutional</td>
<td>8.4</td>
</tr>
<tr>
<td>Health/Wellness/Senior Living</td>
<td>11</td>
</tr>
<tr>
<td>Residential</td>
<td>5</td>
</tr>
<tr>
<td>Retail</td>
<td>6</td>
</tr>
<tr>
<td>Restaurant/Hospitality</td>
<td>7</td>
</tr>
<tr>
<td>*Other</td>
<td>12</td>
</tr>
</tbody>
</table>

*Other market sectors included public libraries, and high education.

Level of Education (n=352)

<table>
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<tr>
<th>Degree</th>
<th>%</th>
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<tbody>
<tr>
<td>Associates Degree</td>
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</tr>
<tr>
<td>Bachelor's Degree</td>
<td>59</td>
</tr>
<tr>
<td>Master's Degree</td>
<td>35</td>
</tr>
<tr>
<td>Ph.D.</td>
<td>-</td>
</tr>
</tbody>
</table>
U.S. Older Adults’ Attitudes, Knowledge, and Behaviors in Relation to Energy-efficient Homes

Hyun Joo Kwon, Purdue University
Mira Ahn, Texas State University
Suk-Kyung Kim, Michigan State University
Sung-Jin Lee, North Carolina Agricultural and Technical State University

ABSTRACT

Introduction
People over 55 spend 8.1% of their annual expenditure on energy; this percentage rises as income falls (Cashin, 2006). Since most seniors desire to remain in their home as long as possible, a home that uses less energy to provide the same service (i.e., energy-efficiency) will both reduce greenhouse gas emission and permit older people to age affordably in place (Maqbool, Viveiros, & Ault, 2015). However, many older adults in the US live in old and less energy-efficient homes (U.S. Energy Information Administration, 2013). To encourage older adults to make their homes energy-efficient and to provide knowledge about potential clients’ perceptions on energy-efficient homes to interior designers, it is important to understand how older adults make those decisions. The goal of this study is to examine older adults’ decision making process of choosing energy-efficient home though their attitudes and subjective knowledge based on the theory of planned behavior (TPB)(Ajzen, 1991). This study incorporates subjective knowledge of energy-efficient...
home into the classic attitudinal constructs (attitudes, subjective norm, and perceived behavioral control) in the TPB model as predictors of choosing an energy-efficient home (intention to choose, and actual behavior to choose an energy-efficient home).

Methods
The target population was homeowners aged 55 and over (N = 328). A self-administered questionnaire was developed and data were collected through online survey in 2015. Descriptive statistics, factor analysis, and path analysis were used. SPSS and AMOS were used to analyze data.

Results
Average age of the respondents was 65.75 (SD=6.85). Almost half were male and half were female. Path analysis results show that participants had positive attitudes towards energy-efficient homes, intended to choose an energy-efficient home, and reported a moderate-to-high actual behavior to choose an energy-efficient home (M=5.53 out of 7); however, scores for subjective norm and perceived behavioral control were relatively low and subjective knowledge showed the lowest score (M=5.00 out of 7). A path model revealed that attitudes, subjective norm, and subjective knowledge were significantly positively related to intention to choose an energy-efficient home. Among them, subjective knowledge was the strongest indicator of intention to choose an energy-efficient home. In addition, significant relationships between subjective knowledge and actual behavior to choose energy-efficient home were found. As hypothesized in the TPB, significant relationship between intention to choose an energy-efficient home and actual behavior to choose an energy-efficient home were confirmed. However, there was no significant relationship between perceived behavioral control and intention to choose energy-efficient home.

Conclusion
This study partially supports the theory of planned behavior by confirming the relationships between the attitudinal constructs (attitudes and subjective norm) and behaviors (intention and actual behavior of choosing energy-efficient home). Older adults who have more positive attitudes and stronger social norm towards an energy-efficient home are more likely to intend to and then choose the house. One of the notable findings is the role of subjective knowledge and perceived
behavioral control. Even though subjective knowledge was the strongest indicator of intention and actual behavior of choosing an energy-efficient house, its score was lower than that of others. Regarding the insignificant impact of perceived control to the intention, we might claim current house conditions or financial status of participants. Thus, in future studies, adding variables such as housing unit quality or income, to the proposed model is recommended to understand older adults’ decision to live in an energy-efficient home. This study has important implications for interior designers, and interior design educators and researchers.

REFERENCES (APA)


Challenging Disciplinary Comfort Zones: A Study Abroad Studio

Peter Greenberg
Wentworth Institute of Technology

ABSTRACT

The paper presents the outcomes of a studio course taken by students in Interior Design and Industrial Design that had been structured to achieve effective collaboration and inventive solutions by asking students to work outside of their disciplinary comfort zones. In order to create parity between interdisciplinary teams on a study-abroad semester, a studio project was designed to challenge the presumed orthodoxy of each discipline: Industrial students were asked to design objects for a particular site and Interiors students could not use traditional strategies of fixed space division since the program called for conflicting uses for the same space. This unfamiliar territory was not limited to the studio project alone: many aspects of the experience were designed to introduce a context of innovative collaboration: students worked in interdisciplinary teams, professors team-taught between disciplines, some faculty were professionals who had never taught at all in any capacity, all in a context of considerable distraction – a study-abroad program for American students in Berlin. Working in unfamiliar territory presented opportunities for fresh and unconventional solutions that have been linked to more effective learning and teaching (Smith & McCann, 2001 and Chandramohan & Fallows, 2009).
The problem being addressed by this paper is how to structure an interdisciplinary studio project so that students of each design discipline feel equally empowered to collaborate on a common goal. A particular challenge for interdisciplinary studios can be that one discipline of students feels they are in a supportive mode, rather than sensing that the exercise is central to their own concerns (Costantino, 2007). While there may be many strategies for encouraging effective collaboration between closely allied disciplines, including taking turns with discipline-specific knowledge (Full, 2015) or acting as expert consultants (Kara and Georgoullas, 2012), the strategy being tested in this course was to ask students to work outside of their comfort zone to find common ground in team-based solutions – in this case in the scale of furniture. The evidence of student work and feedback provides data for an analysis of the outcomes.

There are several preliminary conclusions to be drawn from the experiment. First, the most successful student projects proposed designs that successfully integrated the expertise of both disciplines - solutions that depend on site-specific, furniture-based strategies that act in dialogue with a complex and demanding site. Students may not have envisioned these solutions without the challenge of working outside of disciplinary comfort zones or by finding common ground at the scale of furniture. Second, many students reported that they learned about the methods of the other discipline which may give them strategies in the future for working at various scale. Third, many industrial students found it more challenging to work in a specific context than the interiors students found it to work with custom furniture solutions. While interior designers may frequently solve design problems with furniture or other industrially-scaled objects, this group of Industrial students and faculty found it difficult to accept the terms of designing within the context of a dialogue with found conditions. It remains for future versions of this course to determine whether this was a condition of a particularly demanding site or whether disciplinary faculty presumptions were transferred to the students.

As Jorge Silvetti has observed about interdisciplinary projects, ““as we take on new partners we must consciously and purposely strengthen our own identity by coming prepared with our own riches” (Silvetti, 2102). As evidenced by the work of the student teams, the structure of the studio assignment presents a strategy to reinforce these disciplinary riches as well as to tread on
unfamiliar territory.

REFERENCES (MLA)


APPENDIX:
CHALLENGING DISCIPLINARY COMFORT ZONES: A STUDY-ABROAD STUDIO

Figure 1: Site Context for Studio Work

Below:
Students from the Departments of Interior Design and Industrial Design worked in interdisciplinary teams and traveled together on their semester abroad semester.

Above and Below:
The project was located within a specific site, the Haus Lademann, an historic Nineteenth century interior in Berlin, Germany, the city where the study-abroad studio was located. The site offered considerable textural, material and spatial cues to prospective designs. Industrial Design students had never worked in dialogue with a specific site before.
Figure 2: Preliminary Research Projects for Team-Building and Shared Vocabulary

Below:
Teams were asked to create studies of the nuanced meaning of the word “flexibility” in order to prepare thematically for the site-specific interdisciplinary studio project.
Figure 3: Project Statements

Written assignment handouts emphasized thematic principles as a framework for design tasks without designating disciplinary territoriality. Student teams were collectively responsible for all work and how they divided their tasks was up to them.

In order to create parity between interdisciplinary teams on a study-abroad semester, a studio project was designed to challenge the presumed orthodoxy of each discipline. Industrial students were asked to design objects for a particular site and Interior students could not use traditional strategies of fixed space division since the program called for conflicting uses for the same space.

WORKPLACE FOR THE URBAN NOMAD / THE MOBILE OFFICE

Globalism and the mobility of technology have challenged the idea of how we work, particularly how we work together. In the twentieth century the "office" was conceived as a place where workers were tethered to their desks doing repetitive work. In the twenty-first century, work is more flexible - spatially and temporally, but we still need spaces to work with other people and, in particular, to share resources. Though twenty-first century workers have much more freedom to work wherever we choose, not all of the work that we do can be done alone on our laptop. If it is true that your "office is where you are," what tools do we need to do our work in addition to our laptop and our phone? How many spaces do we need to do our work? How can we create a micro-architecture that accommodates our work needs to maintain flexibility in work process and lifestyle?

In this studio, we will investigate the urban nomad workspace. Imagine the needs of a graphic design firm that has international clients. What would an office be like if there were no single headquarters but a number of networked global locations? And what would the Berlin office be like? What tools would they need? What kind of furniture would they need? What kind of spaces would they need? How can that office use the available urban settings found in Berlin (cafés, restaurants, parks, beer gardens, etc.) to complement their "office"? How is the "owned" workspace part of a network of available "shared" work spaces around the city and around the world? How is the office more like a lounge in an airport than a factory? What kind of tools does such an office need to have?

PROBLEM STATEMENT: AN OFFICE FOR B

YOUR CLIENT
For the Semester Studio project you will be designing a workspace for a specific client named B. The employees for B are urban nomads as the firm has satellite offices in a few other cities (including Boston, Barcelona and Basel). The firm is an interdisciplinary design firm and their clients include projects that are both graphic and two dimensional (print, online media) as well as physical and spatial (furniture, exhibitions, exhibit design). As part of their outreach, the firm invites the design community into its space for monthly curated events that vary from exhibits to lectures and films. B has specific needs and you will need to design a space and work tools so that they can accomplish these needs.

Not all of the employees for B will be onsite in the Berlin office at the same time: sometimes there will be 40 people there but most of the time much less. They have asked you to design the office to optimize the site for the amount of people there at any given time. They want it to feel good for 10, 20, 30 and 40.

B is an international practice but specifically what should the Berlin office be like? What tools would they need? What kind of furniture would they need? What kind of spaces would they need? How can that office use the available urban settings found in Berlin (cafés, restaurants, parks, beer gardens, etc.) to complement their "office"? How is the "owned" workspace part of a network of available "shared" work spaces around the city and around the world? What kind of tools does such an office need to have, in particular for the kind of work that they do?

YOUR SITE
B has leased a unique space for their Berlin office: the ground floor salon of the historic Haus Lademann on Wallstrasse 84-85. The space was not originally built as an office for B, of course, so one of the key challenges the exercise will be to explore what potential design strategies can be found by having a dialogue with a site that is deeply textured. Part of the challenge of the exercise will be to negotiate ways to address the variable needs of the users.

YOUR CLIENT ASPIRATIONS
They have hired you, teams of interdisciplinary designers in fields of inquiry that are different than their own, to resolve constraints that are complex and sometimes conflicting:

- they want a place that is efficient for work but also one that is fun to be in
- they want a place to work on computers digitally but also a place to prototype and mock-up actual things
- they want a sense of openness, rooms with views, but they also want to be able to have some privacy
- they want a place where people can be loud but a place where people can concentrate
- they want tools that represent their company and help them be more effective
- they want tools that support their variable uses (think furniture, lighting, space division, etc.) that allow for formal and informal ways to conduct business on a day-to-day basis
- they want a design that takes best advantage of the space they have leased but they want it to be based on the work that they do
- they want a place for the outside community to gather for events but they don't want it to sit empty between events
- they want a place where 40 people can get together but for it not to feel empty when only 10 are there
- they want you to ensure flexibility because employees are on more than one project at a time but they want the ability for people to sit together when they are working on a particular project
- they want employees to be in control of where they work but they want the office to ensure information persistence
Figure 4: Examples of Student Outcomes

Student Team Presentation Example 1

This student team proposed a solution that is based on common ground between Industrial Design and Interior Design strategies. They assessed that the client need for the space was too extensive for the available space so they proposed a series of furniture-scaled work tools that expanded and nested to transform the space to different needs.
Figure 5: Examples of Student Outcomes

Student Team Presentation Example 2

This student team proposed a solution that is based on a piece of furniture that is scaled to the interior architecture. Rather than assuming that the users would reconfigure the space for different uses, this proposal puts forth the radically simple idea that the fixed furniture is designed to meet all program needs. The innovation of designing furniture at the scale of architecture may have resulted from designing outside of usual disciplinary comfort zones.

Student Team Presentation Example 3

This student team capitalized on a strong planning idea that was supported by moveable panels that divided space and provided vertical work surfaces, finding supporting common ground between the disciplines.
Come Together: Introducing Collaborative Skills in the Design Studio

Roberto Ventura
Virginia Commonwealth University

ABSTRACT

Motivation
In Section II, Standard 5 of the 2017 Professional Standards, the Council for Interior Design Accreditation cites collaboration as an important skill for design students (CIDA, 2016). In the classroom, collaborative work generally generates greater amounts of information, stimulates creativity, heightens retention, inspires more satisfaction, and provides for greater self-reflection among students (Burke, 2011). Good collaborators are also highly sought after by employers (Blowers, 2000) who list strong collaborative skills among the most desirable traits in potential hires (Graduate Outlook Survey, 2010). As design practices like the Rockwell Group, Ghislaine Vinas, and INNOCAD continue to integrate disciplines, the ability of interior designers to collaborate across areas of expertise is increasing in importance.

Question
Given the collaborative nature of interior design, educators should look to develop students well-
versed in it. However, scholarship about how to explicitly teach collaboration skills is almost nonexistent in the Journal of Interior Design. This absence implies that educators assume these skills are innate, thereby leaving interior design students to figure them out on their own. Since collaborative skills are not intuitive, students should benefit from directed instruction of best practices.

Methods
Collaborative skills were explicitly introduced to interior design students in an upper level studio in a two-part, five week sequence.
In Part I, students participated in an improvisational workshop which interactively introduced collaborative basics. Subsequent studio classes began with exercises reinforcing improvisational principles, which were then supported with readings on best practices for collaboration. During in-class think-pair-share discussions, students cross-referenced these articles with their own experiences with group work, developing a common list of constructive and destructive traits.
In parallel with these discussions, students embarked on a two-phase charrette. Students first developed individual 1”=1’-0” scale models of objects designed to support four individuals facing opposite directions. The studio then collaboratively organized the sixteen models and designed new pieces that linked the disparate objects, transforming the individual positions into ones supportive of groups. This initial charrette served to metaphorically and explicitly illustrate collaborative practices and their inherent challenges.
In Part II, students self-selected into small groups and participated in a two-week competition charrette sponsored by the Interior Design Educator’s Council. The collaborative instruction introduced in Part I was implicitly and explicitly reinforced in these team projects.

Results & Reflections
In Part I, students exhibited enthusiasm for the improvisational exercises and the collective organization aspect of the project. During class discussions, student attitudes towards collaboration mirrored research findings. The second phase of the charrette was less successful in terms of output, perhaps due to overly prescriptive project parameters and an aggressive timetable, but beneficial in that it underscored collaborative pitfalls associated with poor communication.
In Part II, the collaborations yielded largely positive project outcomes. Two of the six groups
exhibited some dysfunction related to accountability and requested guidance from the instructor. However, the accountability measures implemented overall were widely regarded as useful in mediating this.

After this instruction, students self-reported greater confidence in their collaborative skills, and they regarded their overall experience and their design project results as better than in previous group efforts.

REFERENCES (APA)


Council for Interior Design Accreditation Professional Standards. 2014


PART I: individual objects (phase 1, left) were connected by linking pieces in phase 2 (right)
PART I: Phase 2 was most successful when students critically assessed project parameters to engage their colleagues’ work.
PART II: students drew upon collaborative lessons as they worked together on the 2015-16 IDEC Student Design Competition
COME TOGETHER: INTRODUCING COLLABORATIVE SKILLS IN THE DESIGN STUDIO

PART II: students drew upon collaborative lessons as they worked together on the 2015-16 IDEC Student Design Competition
Emotional Intelligence and Peer Perceptions within Interior Design Teams

Steven Webber
Florida State University

ABSTRACT

Introduction and Research Questions
Emotional intelligence (EI), cognitive ability, and personality measures such as the Five Factor Model have been found to be helpful predictors of professional outcomes, including leadership (O’Boyle et al., 2011) with some researchers even stating that EI can provide additional predictive reliability beyond cognition and personality trait measures (Joseph and Newman, 2010). While cognitive ability is still considered the best predictor of individual professional performance (Schmidt et al., 2008), EI can also contribute to performance, particularly in collaborative group work in college students (Offermann et al., 2004). In the context of interior design education, student collaboration is a requirement for CIDA accreditation, and demonstrates preparation for practice as the interior design profession is a highly collaborative field.

This study examined the possible connection between EI, using the Assessing Emotions Scale (AES) (Schutte et al., 1998), and individual performance based on peer perception during a design
charrette at an U.S. university. The research addressed the question, “Is there a connection between individual’s EI and outcomes in peer evaluations in context with team-based design projects?” Findings could shed light on internal team dynamics of student design teams, some of the possible conflicts that can arise in design teams for individuals with particular EI traits, and how educators can better prepare students to be thriving future design professionals.

Methodology
Student participation in the test was voluntary, and was offered to the students prior to taking part in a department-wide, highly complex design charrette limited to four days in duration. The complex scenario required the team members to rely on one another in order to meet the requirements of the project in the short time frame. This combination of circumstances created an environment where tension could run high between team members. Each team was comprised of four to five individuals spanning the second through fourth year studios. Confidential peer evaluation forms were used to gauge the level and quality of contribution from each individual team member.

Findings
123 students took part in the charrette and completed the AES yielding a mean score of 131.16 out of 165 points possible (SD=11.44). Students receiving perfect peer evaluations from all of their team members (m=132.85; n=84; s=11.44) were compared to those receiving less than perfect peer evaluations (m=127.54; n=39; s=9.89) in terms of their overall AES score. A t-test showed the difference between these scores to be statistically significant (t(121)=2.44, p=.016). Drilling down further, the “managing one’s own emotions” category (45 of the 165 points possible) within the overall AES shows that the students with perfect peer evaluations (m=37.04; n=84; s=3.9) score significantly higher than the those with less than perfect peer evaluations (m=35.38; n=39; s=3.85) (t(121)=2.21, p=.029).

These findings indicate that those who are viewed favorably by team members while engaging in a complex design scenario tend to have higher EI and also tend to be better at managing their own emotions. As students seek to prepare for a profession that demands them to work well in teams, they should seek to evaluate their own EI traits. Interior design educators have a tremendous
opportunity to be a catalyst in increasing the awareness of the importance of EI in the interior design context.

REFERENCES (APA)


Appendix A:

Mean AES Score of I.D. Students Based on Peer Evaluation Results
This table shows the AES of interior design students who participated in a team-based design charrette divided into two groups: those receiving all perfect peer evaluations (5/5 points) from their team members and those receiving less than perfect peer evaluations.

<table>
<thead>
<tr>
<th>Population</th>
<th>n</th>
<th>Mean</th>
<th>S.D.</th>
<th>t</th>
<th>P</th>
<th>d</th>
</tr>
</thead>
<tbody>
<tr>
<td>Students with Peer Evaluation of 5</td>
<td>84</td>
<td>132.85</td>
<td>11.77</td>
<td>2.44</td>
<td>0.016</td>
<td>0.49</td>
</tr>
<tr>
<td>Students with Peer Evaluation of &lt;5</td>
<td>39</td>
<td>127.54</td>
<td>9.89</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Variable Window Shading Strategies and Occupant Impressions of Thermal Comfort, Visual Comfort and Productivity

Julia Day
Kansas State University

ABSTRACT

Relevance / Problem / Context

High-performance building strategies have the potential to greatly reduce energy use and positively impact building occupants (Edwards & Torcellini, 2002). For example, daylighting has been found to increase occupant productivity, increase overall satisfaction, and to ultimately, save energy costs associated with electric lighting use. Many studies have also shown how occupant performance can be affected by the quality of light in a space, and occupants with access to natural daylight perform better when compared to those who only have access to electric light (Heerwagen, 2000; Heschong et al., 2002). In addition, access to natural daylight within the office space has been proven as advantageous to building occupants’ psychological and physiological health (Heschong, 2002).

However, sustainable design strategies, such as daylighting, can also lead to negative effects with regard to building occupants if they are not thoughtfully designed. Daylight is a dynamic light source that changes on a daily basis, so an understanding of daylight controls, shading options, and seasonal and diurnal patterns of the sun are crucial to its overall success (Day, Theodorson, &
If daylighting designs are poorly conceived (or if control is not provided) it may lead to issues such as glare, headaches, eye strain or migraines.

**Method / Findings**

This research presents the results of a large-scale NSF study, which included both field measurements and surveys of three large commercial office buildings in Charlotte, North Carolina. Each building had a different type of shading strategy: roller shades, automated blinds, and electrochromic glazing, respectively. Physical data collection included temperature, relative humidity, light measurements, and high dynamic range (HDR) photography. Results indicated that some of the shading strategies worked better for controlling glare than others.

In addition, online surveys were sent to each of the buildings to assess occupant’s subjective thermal and visual comfort perceptions. In total, 5,031 surveys were sent to the three buildings, and 1,068 occupants participated in the survey for a response rate of 21.2%. The survey was open for two weeks, and two reminders were sent to participants, in addition to the initial survey deployment. This presentation will primarily focus on the survey responses, which include both closed-ended and open-ended questions. The open-ended survey responses revealed many of the reasons why occupants were satisfied (or not satisfied) with their interior environments. For example, responses included statements such as: “Although in a cube, just being close to a large window helps keep me connected to the world outside. I can look outside to clear my mind or relieve tension. In the past, only officers had windows so this makes me feel special and happy when I come in,” and “I don't sit near windows due to the glare on the computer screen, and eye strain if facing windows. In fact, I sit as far away and parallel to any windows for that reason).” Similar to the literature, many occupants enjoyed the daylighting for reasons such as the connection with the outdoors, while others disliked the daylight in the space due to glare and poor control options. Other complaints were related to the thermal performance of the various shading options rather than visual comfort.

**Advancement of design knowledge**

Thermal and visual comfort are issues that arise repeatedly in a wide array of multi-disciplinary research and literature, and the findings of this study echo much of the literature: (1) it is difficult
to provide comfort to all occupants, (2) an integrated design process is important, and (3) designers need to better understand how design moves affect building occupants. It is important that interior designers understand daylighting strategies, shading, and corresponding human perceptions of comfort.

REFERENCES (APA)


Framing Experience: Exploring Student Photography to understand Youth Experiences in Green School Interiors

Laura Cole & Elke Altenburger
University of Missouri

ABSTRACT

The modern green building movement looks to green buildings for more than technical environmental performance. Increasingly, scholars and practitioners are asking how green buildings can support human health, wellbeing, and culture change. Among the many possible psycho-social dynamics occurring within green buildings, this work looks specifically at the potential for green buildings to be educational, or “3-Dimensional Textbooks” for environmental sustainability (Nair & Fielding, 2005; Taylor, 1993). Schools, where there is already a mission to educate, provide ideal venues for exploring the intersection of design and environmental education. Further, the LEED for Schools rating systems award credit for the use of the school building as a “teaching tool” for sustainability education (United States Green Building Council, 2008). We have much to learn, however, about the prospects for green buildings to foster “Green Building Literacy,” a term that is used to describe the attitudes, knowledge, and behaviors associated with green building design (Cole, 2015).

This study is part of a larger mixed-methods study that involved survey research, student
photography, interviews, and focus groups in multiple school settings. This presentation will focus specifically on the results of the photography project and semi-structured interviews (n=29), which explored what students think and know about their green campus buildings. The photography project was modeled after Photovoice methods used in a variety of disciplines to encourage research participants to frame the conversation from their unique points of view (e.g., Strack, 2004). The research took place in three unique green school settings that are on a spectrum of more to less “green,” where each school is given a pseudonym that evokes its core mission. The Ethics School has a well-established green campus and sustainability is deeply woven into the school mission. The Arts School has a new construction green building and a minimal sustainability mission. The College Preparatory School has no sustainability mission and a partial green building renovation. The question central to this arm of the study is: Do students who experience a total green environment versus a partial green environment have better outcomes for environmental education generally, and Green Building Literacy specifically?

A grounded coding process with photography and interview transcripts yielded several key themes. The most prominent finding is that strong sustainability missions at the administrative level appear to make a difference for student environmental education outcomes. The study further illuminates the ways in which a school’s philosophy of sustainability becomes crystallized in the interior design of the school and shapes student learning. This research additionally reveals the missed curricular opportunities, even on the greenest campus, to tie the green building into classroom learning. These findings are further buttressed by results of the quantitative survey research that revealed significant differences in Green Building Literacy across schools. Taken together, these results make a case for pulling sustainability deeper into a school’s mission, cultural practices, and curriculum to more fully realize the potential of teaching through green building design. The results further inform interior designers interested in the interiors of educational spaces, and the design strategies that can be used inside schools to deepen sustainability education.

REFERENCES (APA)


Views of sustainable design leaders: are entry-level interior designers prepared for sustainable practice?

Jill DeMarotta, Candy Carmel-Gilfilen & Nam-Kyu Park

Brenau University

ABSTRACT

Purpose
Whether it is the need to protect our planet’s resources, the increasing market for sustainable design, or abiding by interior design professional standards, interior designers are increasingly expected to design with consideration to sustainability. Little to no empirical research has been conducted that focuses on the knowledge areas that should be emphasized, much less prioritized, within sustainable interior design education. This study aimed to bridge the knowledge gap between interior design education and practice by examining practitioners’ perceptions of entry-level interior designers’ knowledge in regard to sustainability.

Method
The study utilized a 15 question online survey with 47 practitioners at large interior design firms specializing in sustainable design (each firm defined by over 100 million dollars in design fees and recognized as leaders in practice in regard to sustainability as ranked by Interior Design magazine’s lists ‘Top 100 Giants with at least 50% of Projects Following LEED Guidelines’ and
‘Top 100 Giants with at least 50% of Space Designed sustainably’ (Leung, 2013)). The survey takers’ years of professional experience ranged from eight months to 37 years. The number of sustainable third-party certified projects each respondent had worked on ranged up to 100+. Survey respondents were located in offices in: Atlanta, Chicago, Coral Gables, Durham, Houston, Miami, Minneapolis, New York, San Francisco, Seattle, Tampa, and Washington DC. Further, five in-depth private interviews were conducted with selected practitioners from the aforementioned firms to gain additional insight into the survey results.

Findings and Conclusions

Four research questions were posed: (1) Do practitioners feel that entry-level interior designers are prepared to work on sustainably focused projects? (2) What sustainable interior design knowledge do practitioners deem to be the most important for entry-level designers? (3) What sustainable interior design knowledge do practitioners deem most important within design education? (4) Do practitioners feel that entry-level interior designers are prepared to work collaboratively with other allied profession team members to get their sustainable interior design ideas implemented?

Findings indicated that less than half of the practitioners surveyed thought that entry-level interior designers were prepared for sustainable practice. One practitioner stated “…most of the people I see coming in at the entry-level don’t necessarily know enough to ask the right questions.” Having the knowledge to evaluate items such as: life-cycle analysis, chemical ingredients within materials, material impacts on human-health, carbon footprints, and health product declarations were examples cited as important knowledge for an entry-level interior designer. Practitioners indicated that material and resource selection knowledge was the most important sustainable interior design knowledge for entry-level interior designers to know, and likewise the most important sustainable interior design knowledge to teach within sustainable interior design education. Half of the practitioners surveyed felt that entry-level interior designers were not prepared to address the inter-disciplinary effort of teams working on sustainably focused buildings.

At the presentation, specific learning outcomes will be described, and resources listed to aid
educators in the instruction and curriculum of sustainable interior design. This may provide direction and aid interior design educators who, as research by Crane and Waxman (2011) supports, are often uncertain of what, when, and how to teach sustainability.

**REFERENCES (APA)**


Integral Theory as a Holistic Analysis Framework for Sustainable Design

Saglinda Roberts
Kean University

ABSTRACT

Theory:
Expanding the goals and directives of the design profession through the use of an Integral Theory based analysis methodology will enable the creation of more holistic sustainable design solutions, which in turn will effect wellbeing, increase energy efficiency, support cultural connections, and restore the eco-system.

Framework:
Integral Theory is a holistic, integral analysis process which identifies the deeper issues within design questions, allowing a synthesis of the dynamic goals of aesthetics, function, sustainability, systematic functioning, and cultural connections. Integral Theory states that all human understanding and perception can be broadly categorized into four main area: Experience or Beauty, Behavioral or Function, Cultural Connections, and Systems or Ecological Perspectives. Integrating this holistic analysis at the beginning of the design process creates a in-depth and holistic understanding of the client, occupant, societal, ecological and cultural needs before initial design process begins.
To explore the validity, applicability, and feasibility of applying integral theory to a sustainable design project, Integral Theory as applied by Mark DeKay in his book "Integral Sustainable Design" was used as a basis for the design of a single family residential project within a historic district of Philadelphia, PA. A brief outline of the research and guiding principles used to transfer the abstract ideologies of DeKay's "Integral Sustainable Design" into a physical design will be highlighted. This presentation will explore the validity of the process through the creation of four designs, each focusing exclusively on one of DeKay's four quadrants: Experience or Beauty, Behavioral or Function, Cultural Connections, and Systems or Ecological Perspective. To complete the process, a fifth design was then created which considered the requirements of all four quadrants simultaneously. In addition this presentation will discuss how Integral Theory could be integrated into a studio or professional setting.

Conclusions:
By including an Integral Theory based analysis method the resulting designs show aesthetic, functional, cultural, and ecological improvements within the design process. Feedback from students and professionals using this process show: a better understanding of the project type; satisfaction with design solution; changed view and approach to design; and a broader scope of focus toward future projects. If design directives are expanded to include all levels of human perception then design solutions will be able to address social equity issues, the health safety and welfare of occupants, and experiential in more meaningful ways.

REFERENCES (APA)


From Silos to Synergies: Creating Scaffolding Opportunities for Increased Student Learning

Lisa Waxman, Steve Webber, Jill Pable & Amy Huber
Florida State University

ABSTRACT

The Problem
The challenge for interior design educators is to develop innovative projects that enhance student learning while meeting standards established by the Council for Interior Design Accreditation (CIDA, 2016). Kolb, Boyatzis, and Mainemelis (2001) review a variety of learning styles that distinguish between how people think, solve problems, and recall information. These styles include: Concrete Experience (CE), Reflective Observation (RO), Abstract Conceptualization (AC) or Active Experimentation (AE). Instructors need to consider how students learn and include a variety of instructional strategies (Ankerson & Pable, 2008). Bringing faculty with diverse teaching strategies together on one multifaceted project can accommodate a variety of learning styles.

The Strategy
This abstract presents a positive outcome that was achieved by an interior design program to break down the walls between classes and provide opportunities for students to directly apply theories
and concepts to studio, sustainability, lighting, and computer-aided design classes—all on one project and with a variety of teaching approaches. The third-year workplace studio was positioned at the center of this curriculum design with the major office project serving as the repository for applying learning from the other classes. To bring the four courses together, faculty committed to spending additional time in planning the course schedules, supporting key milestones during the semester, and engaging in the critique process. The classes supported each other in the following ways:

Studio: The workplace design studio utilizes a specific location each semester with the express purpose to stitch students’ interior projects into the urban fabric with particular attention on outdoor amenities, mass transit, and access to daylight and views. In combination with a unique client assignment for each student, the location data serves to produce a variety of project outcomes diverse in how they apply sustainable practices and lighting design throughout the design.

Sustainability: The sustainability class syncs with the studio class in that students take what they are learning about LEED and sustainability and apply it to the studio project. Students must achieve a Gold LEED certification on the project. Deliverables include a fully developed LEED notebook with all points documented, as well as a visual project calling out all of the sustainable features on the project.

Lighting: Students engage in a series of exercises and projects that support the studio workplace project. They learn about architectural lighting techniques by creating a ‘shoebox’ vignette with actual lighting that mocks up a feature within the office design, such as a reception desk with feature wall or similar element. As the office plan emerges, students create light map diagrams to help develop their daylighting and interior lighting to suit the project’s goals. The students develop specifications, reflected ceiling plans and perform lighting calculations for quantity and placement.

Advanced Computer-Aided Design: The first project focuses on the design and modeling of a custom light fixture for the studio client. Students load their light fixtures into a file that has been
modeled to match the design of a conference room within their studio space. The students complete photo realistic renderings and luminance maps in order to estimate the light output of the fixture.

The Outcome
This collaborative project has been in place for three years and continues to evolve. Students are able to see how their learning can be applied in an interior through lighting calculations, illumination maps, LEED documentation, and the final visual communication of the project. Faculty members note greater retention of knowledge, more attention to detail, and greater ease in integrating lighting and sustainability than in the past.

REFERENCES (APA)


**Construction Indoor Air Quality Management Plan**


**Indoor air quality assessment.**

**Option 1: Flush-out**

New filtration media will be installed and a building flush-out will be performed by supplying a total air volume of 14,000 cubic feet of outdoor air per square foot (426,140 liters of outdoor air per square meter) of gross floor area while maintaining an internal temperature of at least 60°F (16°C) and no higher than 80°F (27°C) and relative humidity no higher than 60%.

**Thermal Comfort**

Heating, ventilating, and air-conditioning (HVAC) systems will be designed to meet the requirements of ASHRAE Standard 55-2010, Thermal Comfort Conditions for Human Occupancy, with errata or a local equivalent.
Fundamental Commission and Verification
In order to meet this prerequisite, I will hire a mechanical engineer to conduct fundamental commissioning for the building.

Minimum Energy Compliance
In order to meet this prerequisite, I will hire a mechanical engineer with knowledge of HVAC to conduct fundamental commissioning for the building.

Fundamental Refrigerant Management
Chlorofluorocarbon (CFC)-based refrigerants in new heating, ventilating, air-conditioning, and refrigeration (HVAC&R) systems will not be used in this building.

Enhanced Commissioning
Through this credit, the contractor submittals will be reviewed and the construction documents will include educational materials. Systems manual requirements will be included and operator and occupant training requirements.

Optimize Energy Performance
The following materials comply according to base building type and climate zone: roofs, walls, floors, slabs, doors, vestibules, continuous air barriers, vertical fenestration, connected lighting power density will be reduced 28%. Daylight-responsive controls will be installed within 15 feet of windows for at least 25% of the connected lighting load, and 90% of Energy Star appliances will be used in order to meet the energy and equipment credit compliance.

Construction and Demolition Waste Management Planning
Construction and demolition waste will be mixed and taken to Go Green Warehouse at 1000 S. Wadsworth blvd, Denver, Colorado.

Long term commitment
Tokaido Karate has signed a lease contract to remain in their Denver office for at least 10 years.

Minimum indoor air quality performance
The minimum outdoor air intake for mechanical ventilation systems will be determined using the ventilation rate procedure from ASHRAE Standard 62.1-2010 and meet the minimum requirements.

Environmental Tobacco Smoke (ETS) Control
Smoking areas will be 25 feet from all entries, outdoor air intake, and operable windows. Signage for no smoking will be posted within 10 feet of all entries.

Enhanced Indoor Air Quality Strategies
Increase breathing zone outdoor air ventilation rates to all occupied spaces by at least 30% above the minimum rates as determined in EQ Prerequisite Minimum Indoor Air Quality Performance.
LEED PROJECT: VISUAL SUMMARY
Office Building
Denver, Colorado

Exterior and Surrounding Area Credits

- Rainwater catchment system for water use reduction
- Short term bike storage and shower rooms
- South Facing windows with adjustable shades
- Fundamental refrigeration management
- Tenant Space Long term commitment

Eight diverse uses within 1/2 mile radius.

<table>
<thead>
<tr>
<th>SYMBOL</th>
<th>CATEGORY</th>
<th>TYPE</th>
<th>NAME</th>
<th>DISTANCE</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Food/Retail</td>
<td>Supermarket</td>
<td>Natural Grocers</td>
<td>0.01 mi</td>
</tr>
<tr>
<td>B</td>
<td>Community</td>
<td>Farmers Market</td>
<td>Highland Farmers</td>
<td>0.4 mi</td>
</tr>
<tr>
<td>C</td>
<td>Community</td>
<td>Convenience Store</td>
<td>Rabbit Dispensary</td>
<td>0.2 mi</td>
</tr>
<tr>
<td>D</td>
<td>Community</td>
<td>Hardware Store</td>
<td>Leaven Bullets</td>
<td>0.3 mi</td>
</tr>
<tr>
<td>E</td>
<td>Community</td>
<td>Pharmacy</td>
<td>Breakthrough UrgentRX</td>
<td>0.6 mi</td>
</tr>
<tr>
<td>F</td>
<td>Services</td>
<td>GYM/Fitness</td>
<td>Kindness Yoga</td>
<td>1.6 mi</td>
</tr>
<tr>
<td>G</td>
<td>Services</td>
<td>Family Entertainment</td>
<td>Downtown Aquatics</td>
<td>0.4 mi</td>
</tr>
<tr>
<td>H</td>
<td>Community</td>
<td>Housing</td>
<td>Confluence Park Arts</td>
<td>0.1 mi</td>
</tr>
</tbody>
</table>

Shower rooms on first floor with low flow toilet fixtures and urinals
Entryway system improves indoor air quality
LEED PROJECT: VISUAL SUMMARY
Office Building
Denver, Colorado

Interior, Floor Plan Credits

- Green wall improves indoor air quality
- Light controls in multiple zones to maximize occupant control
- Locally sourced materials
- Occupancy sensors to reduce light pollution
- LED task lighting to maximize occupant control and quality of light
- Light sources with 80 CRI
- Quality Views/Daylight
- Low-emitting adhesives and sealants
- Low-emitting paints and coatings
- Recycled content carpet
- Storage/Collections of recyclables
- Reconfigurable wall systems allow for flexibility
- Locally sourced materials
GOALS MET:
- Design with emotional intelligence
- Promote activity
- Increase Interaction
- Create an uplifting space
- Variety of textures
A Studio Experience of Integrating Adaptive Systems and Data in Interactive Interior Design

Saleh Kalantari, Mona Ghandi

Washington State University

ABSTRACT

Background and Research Goals
Advancements in information technology and mechanical components offer incredible new possibilities for innovation in architecture. Many aspects of our physical environment are now being fitted with active sensors and merged with information systems, a phenomenon that has been referred to as the “Internet of Things” (Gubbi et al., 2013; Vermesan & Friess, 2014). The emerging IoT can be seen in many places, including homes, industrial workplaces, hospitals, energy grids, and traffic management systems (Bellavista et al., 2013). These “smart environments,” when appropriately implemented, can make our lives more convenient. They also have the potential to be more flexible and responsive than traditional design, thereby expanding the range of our freedom and creativity (Batty et al., 2012). This project used a studio experience to investigate the role of the interior designer in this new data-rich technological context. The implications and applications of the IoT are far-reaching, and students who are learning about design in today’s environment have a bewildering array of new tools available for their exploration. This paper presents an overview of several areas in which interior design is being
influenced by contemporary data systems, and demonstrates the way in which such approaches to
design can be integrated into pedagogical frameworks to help students explore their creative
capacities.

Method
In a studio class that the authors have developed based around the use of adaptive systems, students
explore methods of designing amid responsive environments in the era of informational–physical
interconnectivity. In the first phase of the studio students learn about various aspects of the IoT
and its design implications, primarily through conducting literature reviews and summarizing their
findings in the form of info-graphics. They also investigate how naturally occurring adaptive
systems can serve as the inspiration for programmable built environments. In the second phase of
the studio the students begin to experiment with physical spaces, observing how built
environments can be designed to gradually change based on various environmental and user
inputs. They design and fabricate a kinetic mechanism to explore the implementation of the data-
oriented adaptive systems that they have learned about. In the final phase, using the knowledge
gained through their previous explorations, students produce innovative designs for a new building
on their campus.

Outcome
The field of interior design has much to gain by drawing from developments in computer science
and other related fields. Examining the research process that these students undertook
demonstrates the exciting possibilities that emerge when designing amid the IoT. By showcasing
the application of data-driven design strategies within a pedagogical context, this paper indicates
some of the exciting innovations in interior design that have been made possible by our current
technological environment.

REFERENCES (APA)

Bellavista, P., Cardone, G., Corradi, A., & Foschini, L. (2013). Convergence of MANET and

Batty, M., Axhausen, K. W., Giannotti, F., Pozdnoukhov, A., Bazzani, A., Wachowicz, M.,


APPENDIX

Figure 1. Info-Graphic showing the potential between Kinetic Design and Internet of Things and the potential of integrating machine-to-machine data in architecture and its applications.

Figure 2. Info-Graphic showing the potential of integrating machine-to-machine data in architecture and its applications. It explores data input, data gatherings technologies, data output and its impact on the build environment.
Figure 3. Info-Graphic showing the potential between Kinetic Design and Internet of Things. It demonstrates the potential of real-time data to create higher quality and more user interactive architecture.
Figure 4. Morphology of Kineticanopy adaptive system.

Figure 5. Students experimenting with an adaptive structure that connects the outside environment with the interior space using real-time environmental and human data. They focused on the structure encompasses two opposite systems that could respond to two different actuators and a set of data independently. The idea is tested by designing a flexible panel that has six wings that can move independently in two directions. These panels are controlled by sensors that respond to movement, sound, temperature, and light. Through exploration, the decision to automate by servos and motion sensors would become the best choice for individual movement whether by human or environment source for Tensilbility.
Figure 6. For thermal data interaction, the Mood Ring material is used. As temperature increases or decreases, the crystals absorb different portions of visible light and reflect a different part of the color spectrum. User and environment interaction will affect the color change in this installation of Tensibility.
Figure 7. The Responsile design process is framed around translating human movement into the kinetic design. The human skeleton with nodes at each joint is tracked by the Xbox’s Kinect. Students used displacements between the nodes themselves and their surroundings to co-relate human movement with the movement of the design. To manifest this movement, this project used Arduino hardware with rotating motors. Experiments with fabric were done to test space making and environmental control capabilities of the material. The inherent qualities of fabric, its fluid, and smooth motion work best to reflect human movement.
Figure 8. The system responds to movement with a rotation independently. This creates an intuitively operable system, that can alter the opacity of light and orientation of airflow.

Figure 9. The Kineticanopy design proposal; Integrating Adaptive Systems with Data
Figure 10. The Kineticanopy design proposal; showing the potential of integrating machine-to-machine data in the project, Integrating Adaptive Systems with Data
Figure 11. The Tensilbility design proposal; Integrating Adaptive Systems with Data
**Figure 12.** The GREEN VISITOR CENTER design proposal; Integrating Adaptive Systems with Data

**Figure 13.** The GREEN VISITOR CENTER design proposal; these infographics illustrate different scenarios that could happen through user and environmental data collection and how proposed building can react to those data and adjust itself using integrated adaptive systems. Integrating Adaptive Systems with Data
Figure 14. The GREEN VISITOR CENTER design proposal; Radiation Analysis. Building adaptation based on radiation analysis to absorb maximum sunlight for algae. Integrating Adaptive Systems with Data.
‘Shop Talk: Placing Photoshop in the Interior Design Curriculum

Susie Tibbitts, Utah State University

Roberto Ventura, Virginia Commonwealth University

ABSTRACT

Motivation
As interior design becomes increasingly interdisciplinary, Adobe Photoshop has become an important tool for many practitioners (“What is happening…,” 2015). Because of its complex range of image manipulation capabilities, Photoshop is used in disciplines from photography to graphic design.

In interior design specifically, Photoshop is valued among students and professionals for its ability to modify, intensify, and hybridize design communication. As far back as 2003, Watson, et al, noted the importance of Photoshop and other secondary softwares in interior design practice. A 2012 survey of seventy current and recent graduates in interior design indicate they value Photoshop as highly as they do AutoCAD, SketchUp, and BIM during early design phases.

Problem
Despite this value, scholarship on how Photoshop might be integrated into interior design curricula
is non-existent. A survey of the archives of the Journal of Interior Design revealed no articles discussing how to integrate Photoshop into Interior Design studies. Over 1300 abstracts have been included in the Proceedings from IDEC Annual Conferences since 2000, but none addressed the integration or establishment of an interior design-specific Photoshop curriculum.

For interior design educators, the question becomes how to introduce a maddeningly complex, ever-evolving and rich software in such a way that is valuable to interior design students. In order to maximize the time and investment for students and faculty, this introduction must be surgical. If students can learn the basics of Photoshop in context of the interior design discipline, then two learning goals can be achieved. First, students would be able to manipulate Photoshop to serve their goal to become better designers. Second, students with this knowledge could then use it as a gateway into deeper, more independent, and more sophisticated explorations of Photoshop.

Method
Educators at two schools sought to tackle this dilemma by reverse-engineering a curriculum for Photoshop based on common professional uses. Through professional experience within collaborative practice environments, the educators identified some of the most common Photoshop operations used by professional designers: orthographic and three-dimensional renderings; entourage preparation and integration; refinement of manual and/or digital renderings from other platforms; hybridization of visual communication; texture mapping; lighting corrections; image preparation & adjustment; photo compositing; and color palette development.

From this point, the educators identified the methods, algorithms and best practices associated with these typical uses. Among the critical topics were: file management; file types; resolution and image size/quality; layer operations; selection methods; transparency; gradients; transformations; brushwork; tool constraints; pattern editing; and filters.

Chapters presenting these Photoshop practices were designed and integrated into introductory graphics sequences at two universities. Photoshop learning activities included the development of collective entourage and pattern class resource files, renderings; and hybrid visual communication.

Results + Conclusion
Educators have documentation from beginning students to senior design work confirming a significant increase in dexterity and confidence in graphic communication. Testimonial evidence indicated that students were able to bring technical expertise into their professional experiences by demonstrating new means and methods to established practitioners. Independent experimentation and hybridization using Photoshop was observed in upper level studio projects where Photoshop was not mandated by project requirements. In addition, students independently developed and shared techniques and innovations with each other. Therefore, incorporating Photoshop learning specific to interior design in curriculum is effective, important, and highly beneficial.

REFERENCES (APA)


Shop Talk: Placing Photoshop in the Interior Design Curriculum

entourage editing tools, layer management, and brushing exercises yields a class resource file
'Shop Talk Placing Photoshop in the Interior Design Curriculum

swatch patterns students practice editing and creating patterns while developing a class library of material swatches
‘Shop Talk Placing Photoshop in the Interior Design Curriculum

baselines students practice fundamentals in context of studio explorations
knowing the strengths instruction stresses using Photoshop for light and shadow, entourage photocomposites, and texture development.
hybridization as students develop confidence, they experiment organically with mixing media
Using Visibility Graph Analysis in Interior Design Professional Practice

Linda Nubani
Michigan State University

ABSTRACT

Previous literature on space syntax showed how workspace layout generated boundaries that created relationships of accessibility and visibility. Space syntax is a group of theories founded by Hillier and Hanson that examine the effect of the environment on human behavior (Hillier and Hanson, 1984). A set of techniques and programs have been developed since 1960s that can assist architects, planners, and interior designers to evaluate the implications certain properties of the environment on psychosocial constructs. However, there is a little research that documents whether these techniques are implemented in professional practice. Within this presentation, the author discusses and compares the visual properties of eight different semi-government and private offices in Dubai regarding their terms of intelligibility and their expected level of face-to-face communication among employees. The author provides a comparison between these offices and mainstream workplace concepts using visibility graph analysis, one of the space syntax techniques. The goal of using these techniques is to establish a systematic and an objective way in describing the relationship between organizational constructs and office layouts. These techniques could be in turn used by professionals in their practice to explore different behavioral
outcomes with their clients during the design phase.

REFERENCES (APA)


BIM, Visualization, and VR, Oh My! Aligning Professional Technologies with Academic Rigor by Implementing BIM and Virtual Reality into a Lower Level Design and Construction Technology Course

Lyndsey Miller
Mississippi State University

ABSTRACT

Beginning in the 18th century, the world experienced the first industrial revolution, where the impacts of steam, water, and mechanical production equipment changed the overall processes of industry. By the late 19th century, a second industrial revolution expounded on the first by using electricity to pioneer mass production. In contrasting forms, the third industrial revolution, beginning in the mid-twentieth century, relied heavily on digital and computational medium, leading to more automated processes. Now, in 2016, as described by Klaus Schwab, of the World Economic Forum, “we stand on the brink of a technological revolution that will fundamentally alter the way we live, work, and relate to one another.” Furthermore, he states, “the speed of current breakthroughs has no historical precedent.” The fourth industrial revolution is upon us and it is marked by the fusion of physical, digital, and biological worlds and will likely effect all forms of industry. Terms such as augmented reality, additive processing, virtual reality, and the like
are rapidly encroaching on our daily vocabularies. This is and will continue to have a tremendous impact on students seeking interior design degrees. They will no longer be able to rest on the specific knowledge being attained in courses. Rather, they must be enthusiastic about constantly learning new things, flexible in the tools used to complete a task, and motivated to shift with the rapidly changing technologies that will support their future professions, all while investing in collaborative efforts both globally and across disciplines. This presentation will discuss results from an interdisciplinary project with lower level design and construction students in a course that focuses on BIM and related software.

At the start of the 2.5 week project, interdisciplinary teams of between 5-7 students were formed. Each team was tasked with researching a technology related Kickstarter campaign for which they would collectively develop the design for a starter office, located in a larger business incubator. Each team presented their research to the class. The next stage was to develop design and construction components using Autodesk Revit and Navisworks, Microsoft Project, and Assemble Systems. The final output included a variety of technical drawings, simulations, and data. Each group was also tasked with producing three visual representations of their design, including a perspective computer-generated rendering for viewing using traditional medium, a panoramic rendering for viewing on a computer screen, and a stereo-panoramic rendering for viewing using virtual reality headsets. On the final day of class, each student was issued a different form of consumer-based virtual reality equipment that each was able to keep. They then circulated the studio, evaluating other teams’ projects and writing an assessment of the experience using the 3 varying forms of media.

In this project, students were charged with overcoming situations that will undoubtedly affect them in their professional careers. It required that they invest in the technology, be flexible with its implementation, and be ready to shift from one tool to the next all while using the technology to communicate within interdisciplinary teams. Using the software and hardware as a platform, student communications were streamlined. The project encouraged collaborative information pursuits in order to engage the variety of technologies being implemented for the final project assessment. Students will inevitably be faced with the ‘digital skills gap’ over time, an issue that is currently costing the U.S. economy roughly $1 trillion a year in lost productivity. However, by
equipping them with the skills to engage technology, without fear, in a fast and efficient way, they will continue to be sought after employees in this ever-changing, unpredictably evolving global society.

REFERENCES (APA)


PROJECT SHEET

FINAL PROJECT: AN INTERDISCIPLINARY EXPLORATION IN TRADITIONAL AND VIRTUAL REALITY

Introduction: Fields of architecture, interior design, contracting and construction are experiencing a shift in processes largely because of the influx of technologies that directly impact the efficiency of the aforementioned disciplines. With the advent of BIM, communications between design and construction professionals improved, leading to more streamlined procedures. In addition, physical devices, such as 3D Printers, drones, and, more recently, Virtual Reality Headsets, are providing yet another element for better communications, not only between professionals, but also with clients.

This assignment seeks to implement BIM technologies to open communications between construction and design students. Using a collaborative design process, teams will develop a design of an interior build-out, and from that design, develop supporting documentation that will be evaluated through traditional and virtual reality methods.

PHASE I: The Project Client and Company

PART I: Company Development

Each team will begin by developing a name to represent the group, henceforth referred to as a "company". Each company will signify a team of design and construction professionals that have been selected to plan and construct a space for a startup client. The space will be located in a larger building that is new construction.

PART II: Client Selection

Each company is challenged with selecting a client from Kickstarter that is running a campaign for technology development. (Go to kickstarter.com, Discover, and Technology) The assumption is that the client you select has had their project fully funded and the space you are designing/constructing will serve as their new startup headquarters.

PART III: Research

Research your client extensively. Determine the focus of their product development. Review the current branding that is being used for the product. From that, research imagery that represents the appropriate design style for the client. Work as a team to brainstorm ideas about how the space will promote further success for your client.

PART IV: Presentation

Develop a PowerPoint (or Prezi) presentation that introduces your client to the class. Discuss the product and branding, as well as the design style and preliminary ideas that your company has determined. Be prepared to present to the class Wednesday, April 13, 2016.

Phase I will complete Wednesday, April 13, at the beginning of class.

PHASE II: Design Development and Building Shell Evaluation

DESIGN STUDENTS: Develop a space plan that will include an office space, conferencing area, private ADA restroom, and a storage closet. (It will be assumed that production for the product that has been funded will be located on the second level of the building, meaning that the space you are designing is the "storefront" and the actual manufacturing is in close proximity.)

- The office space should include: A U-shaped Executive desk (custom component), at least 2 2-drawer lateral files, shelving for product display, and 2 guest chairs
- The conference space should include: A round or rectangular table and 6 chairs with a decorative pendant light fixture above (custom component)
- The ADA restroom should include: Wet Wall, wall hung toilet, ADA compliant wall-mounted lavatory, and grab bars (show clearances and turning circle)
- The storage closet should include: 4 linear feet of hanging space and shelving

The space should be designed to appropriately represent the company and its products. A majority of the elements included in the 3-dimensional space should be custom developed using either “Model-in-Place Components or new Family”. Be sure to include ceiling details, lighting, custom materials, and detail elements, such as cove base. The more detailed the design, the more robust the renderings and virtual reality experience will be.

Input "INFORMATION" for each element/material used in the design. This component will be critical for BCS students to extract necessary data.

CONSTRUCTION STUDENTS: Develop a WALL SECTION of an exterior wall of the building that includes a window & a door. Using Assemble Systems, complete a 50 quantity takeoff (QTO) of the shell of the building you are given at the start of the project. Communicate with the design students in your company as they work through the design. Develop QTO at the midpoint of the design of the interior space.

Phase II will complete by the beginning of class April 20, 2016.

PHASE III: Visual Outputs and Data Evaluations

DESIGN STUDENTS: Develop 4 perspective views to render at HIGH quality. Consider composition, content, lighting quality, and material quality. Develop both a Panorama and a Stereo Panorama that showcases your design in a photorealistic way. Adjust lighting and materials as needed.
Appendix 2

Develop a set of 6 Sheet Files [ARCH D Sheet] that include:
- Sheet A0 - Cover – Include exterior rendering of building and Sheet List
- Sheet A100 - Color-coded floor plan of entire building (3/16"=1'-0" scale)
- Sheet A101 - Color-coded floor plan of interior space; room legend; include dimensions and elevation markers (3/8"=1'-0" scale)
- Sheet A102 - Reflected ceiling plan of interior space only (3/8"=1'-0" scale)
- Sheet A103-4 Interior Elevations of main space, including dimensions and annotations; 4 interior elevations of ADA restroom walls, including dimensions and annotations (1/2"=1'-0" scale)
- Sheet A104-4 perspective renderings completed in previous step

Print all sheets to a single PDF file labeled YOURNAME_FINALSHEETSET.PDF

CONSTRUCTION STUDENTS: Develop data evaluation measures outlined below

- Complete a wall section of the “wet-wall” of the bathroom that your team modeled as part of the interior space plan
- Identify all finish materials associated with the interior space designed by your design partners
- Develop an MS Project schedule of your entire building including the interior space designed by your design partners (activities & durations will be provided to you)
- Complete a 3D simulation of your entire building using Navisworks Manage
- Complete a design coordination review of your project using clash detection in Navisworks Manage and provide information explaining how this review helped improve your team’s design.
- Using Assemble Systems, complete a 3D quantity takeoff (QTO) of your entire building at the completed stage of design development (when the project is ready to be submitted)

Phase III will be completed and ready to submit on a flash drive by the beginning of class April 27, 2016.

PHASE IV: Project Analysis using Traditional Methods

Each student will complete an evaluation of the project using traditional methods (computer screen and printed formats)

Phase IV will be completed in class April 27, 2016.

PHASE V: Project Analysis using Virtual Reality

Each student will be supplied with his/her own consumer-based VR headset. Each will complete an evaluation of the project using three methods: 1) perspective rendering of selected space using traditional media [printed format at 11 x 17] 2) panoramic rendering of lobby space using computer screen and mouse controls 3) stereo-panoramic rendering of lobby space using VR headset [must supply QR Code]

Peer Evaluation of team members will be completed.

Phase V will be completed during examination period, May 5, from 12:00-3:00.

In this project, BCS students will need to demonstrate development of the following competencies:
1. Identification of the makeup of building materials and assemblies as a means to develop 4D & 5D BIM information.
2. Basic and intermediate skills of Building Information Modeling through the application of BIM related software.
3. The application of appropriate software to generate 3D, 4D, & 5D BIM.
4. Teamwork and communication skills that support productive influence toward understanding, development, and completion of all elements of the project (this includes construction related and design related elements)

Successful demonstration of the above competencies will involve effective completion of required measures outlined in the above PHASES.

In this project, Interior Design and Architecture students will need to demonstrate development of the following competencies:
1. Basic and intermediate skills of Building Information Modeling; use of software to develop aesthetically sufficient interior space that functions appropriately and serves to identify and represent the selected client
2. Development of custom design details using Revit (Model-in-Place Components and New Family)
3. Development of design visuals that showcase a deep understanding of 3-dimensional modeling; inclusion of “information” for materials and interior elements.
4. Development of basic Construction Document Sheets
5. Teamwork and communication skills that support productive influence toward understanding, development, and completion of all elements of the project (This includes construction and design related elements).

SUPPORTING MATERIAL

Consumer-based virtual reality headset types:

1. I am Cardboard DSCVR Headset
2. eFanr 3D VR CASE
3. Popl Cardboard 2.5
4. I am Cardboard VR Cardboard Kit
5. View-Master Virtual Reality Headset
6. Google Cardboard
7. Powis ViewR 2.0
Student Responses from Final Assessments:

[PANORAMA]
In viewing the rendered panorama using a computer screen, describe your overall impression of this viewing experience.
- I liked being able to look around the room and get different ideas of what a space looks like besides just the view from a still.
- I enjoyed getting to see the project in more than just a floor plan view or a still image of our renderings. It made it feel like a real space and not just a project.

Explain how this method of viewing enables a better understanding of design processes, spatial proportions, form, and relationships, and correlation between the design and construction processes, if at all.
- Being able to look in a 3D movable view is so much better for an impression of a space rather than just a still image. The spatial proportions and relationships can be much easier to determine by being able to move around in a room.
- The process allowed me to see who was and was not utilizing their space to its maximum potential. This could be useful throughout design processes and with final presentation of work.
- I feel like I am more in the space. I can feel space proportions better by circling around the space and looking at all of it in one view. The relationships between the different spaces can be seen easier in the panorama view as well.

What, if any, are the provided benefits of having this method of viewing for communicating with 1) other disciplines and 2) clients?
- This can allow other disciplines and clients to see how the actual space is being developed throughout the design process. It can allow for better collaboration on a more regular basis as well.
- It will help in seeing the flaws in the design with other disciplines, and it will help communicate the space better to clients.
- This shows the BCS students what and how we design spaces. This is helpful for clients so that they can see the space as realistic instead of just floor plans that they may not be able to understand as well.

[STEREO PANORAMA]
In viewing the rendered stereo panorama using the virtual reality headset, describe your overall impression of this viewing experience.
- My overall experience was great when viewing our design and other’s designs. It was really cool to feel like you were literally walking around and through the space. This was a very impressive experience.
- I was amazing. The depth of field was so much better than just viewing it in the regular panorama, and the details were so much clearer. The view was also brighter due to the backlight of the phone which enhanced the colors and textures in general.
- This was amazing! I never thought I would be able to see my design in virtual reality. It’s something new, and something that is going to help the industry a lot.
- It was cool to see how you can use one piece of equipment to show a client how they would feel in the space. They can easily walk around the space and see everything in it. They can mentally feel how it would be in the space if it was their actual office space.

Explain how this method of viewing enables a better understanding of design processes, spatial proportions, forms, and relationships, and correlation between the design and construction processes.
- Using VR, in my opinion, is the absolute best way to show how the overall design will actually feel and look. With it, you can easily understand the relationships of the rooms in the space, the furniture, details, and much more.
- It brought problem areas to my attention and would allow me to make appropriate modifications.
- This process allows one to appreciate the details of the design and see every intricate element that comprise the overall outcome. The ability to look in a 360 way gives one the feeling that they are truly standing in the space and are a part of the space themselves.
- The virtual reality headsets make you feel like you’re really there, immersed in the possible environment rather than just looking at a computer rendering of it. The spatial proportions and design process was beyond incredible and much more realistic than the regular panorama. The design construction process could be much more easily understood through the use of headsets.
- The designer may be able to see flaws not previously seen in a regular 2D experience.
- Virtual reality allows the method of spatial proportions to come alive in front of our eyes. It is much easier to show clients how to work around in the space and see the relationships between design and construction through the virtual reality headsets.

What, if any, are the provided benefits of having this method [VR] of viewing for communicating with 1) other disciplines and 2) clients?
- Other disciplines can show me what they are talking about. I am a visual learner so this will help me. My client can see exactly what I am talking about and this can help avoid a set back later in the process.
- This form of viewing allows one discipline to truly see into the minds of the other professionals in other disciplines as they are working alongside. This technology will make communication easier so that the various professionals can work together to create a finished product. This has helped the BCS students further appreciate all that goes into the design process and has helped them see the vision that the design students have come up with. Likewise, potential clients can see what the designer has in mind for them and allows them to have a say in the design because they can have a realistic visual from the start.
- If the panorama was an effective tool for clients/disciplines, the stereo panorama ups that effectiveness by 100%. The VR headsets make everything much clearer and easier to communicate every element of the design.
- Clients will be able to easily view the space and understand the concept without the designer explaining a lot to them. This gives the client more of a voice and makes them feel like they are in more control.

What, if any, are the provided benefits of having the two methods [panorama/stereo panorama] of viewing for educational purposes in an academic environment?
- This portion of the project brought everything together and really shows the viewing possibilities available to present a project to clients, groups, project partners, other disciplines, etc. As an educational tool, it makes us think harder about what we put into our project and work out the details which prepares us for “real-world” design.
- Some students have trouble seeing 3D spaces in their heads. I think this could help those students get a better idea of 3D visualization.
- I think it is beneficial for us to understand modern technology that firms will most likely be using. I also think that it is a very cool way for us to show other students our design work.

Provide additional feedback on this exercise not already covered in the previous questions.
- This was a great exam! I really loved getting to explore the different technologies out there that can help us later in life.
- This technology opens up the design process and breaks down boundaries of a designer’s mind and the client’s expectations.
- The VR headsets made the final part of this project so incredibly enjoyable and interesting.
- This was super fun! It was exciting to get to experience this.

Student Project Outcomes (interior design student::sophomore level)
Effective Ways of using Mobile Applications in Design Education

Junghwa Suh

Chaminade University

ABSTRACT

The purpose of this paper is to explore ways to use mobile applications that expand learning within and beyond the formal classroom. The study particularly examines the effective use of social-networking mobile application as a tool in design education. A classroom is usually a confined space which limits an in-situ part of the learning in design. In order to promote versatility and flexibility of learning in various interior contexts, students should have opportunities to explore and analyze key design components in authentic physical interior spaces. The learning activity using mobile application is introduced in Introduction to Lighting Design course. This study uses a mobile photo/text/video-sharing application called Instagram as a platform to enable students to easily share visual- and text-analysis of lighting design elements and principles of interior spaces. Their visual analysis is then shared with an instructor every week through a course-restricted mobile account.

The study is divided into three phases (01, 02, and 03) to assess the effective use of a mobile tool in this course activity. In phase 01, the mobile learning weekly assignment was presented to students on the first day of the class, asking students to share photos and provide a short description
of capturing the effectiveness of lighting design in various interior spaces. In phase 02, an exemplary Instagram post was presented to students per the discussion between students and the instructor. It demonstrated identification of key lighting design components and analysis of lighting design in relation to interior space by answering six specific questions. In phase 03, visually descriptive & point-system rubric has been developed for the students. This rubric presented three major categories of lighting design, and the six questions from phase 02 have been reorganized into these categories:

1. Lighting + Space (L+S)
2. Lighting + Color (L+C)
3. Lighting + Aesthetics (L+A)

A point system was integrated to identify hierarchy of information and evaluate their analysis in systematic way. These categories were presented in a graphic format that identifies and describes effect of lighting design components in interior space. Students were encouraged to create their own analysis based on the rubric.

Pattern study of students' analysis in each phase shows that the visual rubric is critical to provide the necessary cues and hierarchy of design information that were needed for successful design analysis. The outcomes of the study also show that the instructor cannot assume students know the direction of how to do the analysis. Students may be an expert in using the mobile application but specific intention and guide of using mobile device in learning should be communicated thoroughly. Since students are required to communicate in a visually concentrated digital platform, rubric should correspond to the appropriate format for providing clear direction on how to do in-depth design analysis using a mobile device. The integration of the mobile device presents creative ways to expand design learning in real-world settings, outside of a confined classroom.

REFERENCES (APA)


Dunleavy, M., & Dede, C. (2014). Augmented reality teaching and learning. In M. J. Bishop & J. Elen (Eds.), Handbook of research on educational communications and


APPENDIX

Figure 1.
Result of phase 01
Figure 2.
Result of phase 02
Figure 3.
Visually Descriptive & Point-system Rubric

**EID 325: Lighting Design Analysis Rubric**

- 20 points total for each analysis

1. **Lighting + Space (L+S):**
   IMPRESSION of the space through lighting design
   (based on John Flynn’s study)
   - General Evaluation (GE): including illuminance level (1 - 2pt)
   - Perceptual Clarity (PC) (1 - 3pt)
   - Spatial Complexity (SC) (1 - 3pt)
   - Spaciousness (S) (1 - 3pt)
   - Formality (F) (1 - 3pt)
   14 points available

2. **Lighting + Color (L+C):**
   VISUAL FUNCTIONALITY of the space through lighting design
   - Overall Chromaticity w/ interior materials (1 - 2pt)
   - GBI (1pt)
   - Appropriateness of Luminaire locations (1pt)
   4 points available

3. **Lighting + Aesthetics (L+A):**
   ENHANCE AESTHETICS of the space through lighting design
   - Choice/Design of Luminaires (1pt)
   - Design of Apertures (1pt)
   2 points available

**Analysis Evaluation Measure**

<table>
<thead>
<tr>
<th>POINT</th>
<th>QUALITY</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>POOR: not addressed</td>
</tr>
<tr>
<td>1</td>
<td>LIMITED: Identify just stating the fact; e.g. space is spacious.</td>
</tr>
<tr>
<td>2</td>
<td>GOOD: stating the reason; e.g. space appears to be spacious because of brightness of lighting.</td>
</tr>
<tr>
<td>3</td>
<td>GREAT: articulating the relationship between lighting and interior components; e.g. because of uniform peripheral lighting on all walls and brighter ceiling, the space appears to be spacious.</td>
</tr>
</tbody>
</table>

Attribute bar by Infimum Architects
Figure 4.
Result of phase 03
Figure 5.
Overview of Pattern Study
Crossing Borders in Real Time: Utilizing Readily Available Technology to Create an Immersive Multi-Cultural Design Experience

Michael Dudek, Hyung Chan Kim & Ji Won Paik

Kansas State University

ABSTRACT

INTRODUCTION
While the jet-age of the 1950’s and 60’s allowed some architects and designers to capitalize on and expand their international reach, globalization and its impact on the building design and construction industry has expedited a shift in the marketing, procurement, and delivery of design services (Adam 2012, McNeill 2009). Currently, the internet, by way of the convergence of voice, video and information transfer technology enables the creation of cyber “third places” in which virtually corporeal communication can occur across the world in real time (Baker-Eveleth, Eveleth, Sarker, 2005) thereby resulting in a global range of readily accessible opportunities for designers. Consequently, globalization is now forcing a paradigm shift in how we educate interior designers. Design educators are endeavoring to address the need for technically savvy designers who also have a wider global perspective and an appreciation for the new world order (Pettipas, Ledoux & Ledoux, 2010).
BACKGROUND
The Council for Interior Design Accreditation (CIDA), has been on the forefront of these shifting and broadening expectations of emerging Interior Design professionals. Beginning with its 1996 standards the Foundation for Interior Design Education and Research (now CIDA) began implementing professional standards that assessed an Interior Design program’s success in conveying “global and multi-cultural issues”.

One author of this presentation has developed and continues to administer a successful ongoing international project in his senior Interior Design studio that engages an East Asian partner university in a collaborative design project. Although this project has been successful in exposing several cohorts of Interior Design students to trans-cultural experiences the interaction is limited due to differences in academic calendars across numerous time zones.

METHOD
The authors approached development of this collaborative multi-cultural experience by creating three areas of focus, the evidence based design process, cross cultural engagement and virtual communication technology. In order for this collaborative design project to be truly effective the course was held entirely on-line in real time.

Due to a 15-hour time difference the U.S. based program held their class 6:00-10:00 PM and the East Asian class met 9:00-12:00 noon the next day. This was a significant learning experience for the students as they dealt with such a wide difference in schedules. Students utilized video conference technology for the entire class period working in a blend of literal and virtual reality for the duration of the course. Finally, in order to maximize cross cultural collaboration, the students performed all work in blended teams of four students, two from each participating institution.

OUTCOMES
The measured learning outcomes focused on student awareness of cross cultural design communication and the adaptability of students to utilize available technology to facilitate full time virtual engagement.

Ultimately this course provided designs students on opposite sides of the globe with an immersive multi-cultural experience with no additional cost other than tuition.
It is the authors belief that this project model could be easily implemented in other design education venues. The main components need only be two culturally divergent academic programs with similar objectives and a mutual desire to immerse their students in a real-time cross cultural design experience.

REFERENCES (APA)


Appendices

Appendix 1: Project Information: statement of project information

ID XXX-Project Description TOP/ADV. Interior Design Theory
Winter, 2016 3 credit hours

CONTEXT:
XXX University XXX-XXX Hospital first opened in 1979 with a capacity of 820 beds and operates 31 clinical department and more than 30 specialized centers & special clinics. Located in the southeast portion of XXXX, as one of the largest privately run hospitals, XXX-XXX Hospital is playing a leading role in the XXXX-XXXXXX area. In the fields of brain and cardiac diseases, the advanced medical technology of the hospital is first among other XXXXX university hospitals. XXX-XXX Hospital has been operating the specialized centers for digestive and hepatobiliary system, cancer in adult & child, rheumatoid disease, diabetes mellitus and uncommon intractable disease. XXX-XXX Hospital was selected as the local clinical trial center by the Ministry of Health and Welfare in 2004.

PROJECT SCOPE/DESIGN CHALLENGE:
The primary patient reception/registration area at XXX-XXX Hospital is the initial control point for access to non-emergency hospital services and is open from 8:00-5:00. Currently this area is extremely busy, overly congested with 130+ seats and does not support a welcoming and comfortable initial experience with the hospital. Due to departmental reorganization seating requirements for this area will be reduced to 75 maximum. Your challenge is to identify the spatial, functional, contextual, and environmental problems that exist in this space today.
You will then investigate current research and best-practices that will help inform your solutions to these design challenges. Finally you will create design solutions to each of the design challenges.
Refer to project floor plans for orientation and architectural context.

PROJECT OBJECTIVES:
• Understand functional and physical contextual issues present in the project scope
• Understand the cultural and human behavioral issues that affect the users of this space
• Analyze, identify and communicate design problems present in space
• Identify current/relevant research that will inform design solutions to design problem(s) and create report of applicable evidence to be considered
• Refine design program and design problem as project develops
• Develop conceptual solutions to design problems
• Refine conceptual solution(s)
• Develop final design solutions
• Present final design solutions

PROCESS:
This is a team based project. Teams will consist of a mix of US and Asian based design students. Each team will be responsible for mutually identifying the design problem(s), addressing the project objectives, and submitting assignments and final project materials collaboratively.
Teams will determine best approaches to produce expected work assignments over the course of the Intersession period. Online collaboration will be an integral part of this course. Students are expected to be fully engaged for the entire class period (5:30-9:00 P.M. US Central Time & 8:30-12:00 A.M. Asian Time).
Students must be mindful of time differences and should schedule individual/team work accordingly.
The entire process will be framed as such;
(P)= Problem Identification
(A)= Analysis
(TH)= Application of evidence based theories
(WAY)= Final design solution
DELIVERABLES/EXPECTATIONS:
The final design solutions will be presented to the entire class. Given the nature of the course, a variety of skill and knowledge levels, and the time frame the actual format and content of the final design presentations will be determined during the course with student input.

INITIAL REFERENCES:
3. Design that cares: planning health facilities for patients and visitors. Author: Janet Reizensten Carpman 1951-Myron A. Grant 1949, Publisher: Chicago, Ill. : American Hospital Pub.
5. Evidence based design: a process for research and writing, David Alan. Kopec Edith L. A.Sinclair; Bruce Matthes 2012
6. Wayfinding for health care: best practices for today's facilities, Randy Cooper 1953- 2010

Appendix 2: Class Activities: daily class activity with video conference

Appendix 3: Pin-up discussion:
Appendix 4: Example of process

**P.A.04 ACCESSIBILITY**

- **ADA clearances**
  1. pathways
  2. between chairs

- **Bumper guards have inappropriate height**
  It makes inconvenient situation for patient and hospital equipment.

- **Ramp has inappropriate height**
  ramp has quite high slope

**THEORY 4-1 ACCESSIBILITY**

1. **ADA Clearance**

   Hospital is consist of a various of inspecting room and consulting room. The circulation system is very complex. Therefore many people feel uncomfortable to move in.

   - Ease of access to the elements of the space usage patterns are affected by the direction change significantly than the physical distance.
   - The appropriate distribution of the area of the user should avoid congestion, such as cross-circulation.
   - In the case of a medical facility and corridor width should be at least 1.8M (If the layer is less than sum of the floor area of over 500m² 1000m²).

**Evidence**

   Complex systems are made uncertain the waiting room, in result, conflicts with medical equipment were increasingly higher. The wheelchair space to the standby is not existence.
THEORY 4-2, 4-3
ACCESSIBILITY

2.3. Bumper Guard & Ramp
- The bumper handrail height is between 800mm -900mm, and the bumper guard height is 20mm above the baseboard.
- When the object to be moved and properly serves as a bumper.
- According to South Korea’s detailed standards for facilities, the slope of the ramp should be less than 1/12.

Evidence

Furniture

WAY 04
ACCESSIBILITY

1. Adjust the height of the stairs
- Hall internal slope is not made from stair.

2. Free movement
- Reducing the number of chair.
  Widened the movement passage width.

3. Effective prevention
- Scratches, caused by moving, about 800mm from the ground, use a bumper handrail.
  Wall protection, also used as a handle, bumper guard is attached on the baseboard from 20mm.
  Scratch protection due to the wheel.
### Appendix 5: Final Presentation with video conference

![Images of a presentation with video conference]

### Appendix 6: Assessment

<table>
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<th>NAMES:</th>
<th>D</th>
<th>D+/C-</th>
<th>C</th>
<th>C+/B-</th>
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<td>16</td>
<td>17</td>
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<tr>
<td>Team identified relevant design problems located in the project space.</td>
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<td>PROBLEM ANALYSIS</td>
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<td>Team provided clear description (graphic &amp; verbal) of identified design problems.</td>
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<td>IDENTIFICATION OF APPROPRIATE THEORY</td>
<td>13</td>
<td>14</td>
<td>15</td>
<td>40</td>
<td>17</td>
<td>18</td>
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<td>20</td>
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<tr>
<td>Team identified and communicated principles on which a solution to the design problems are based includes research and investigation of relevant precedent and/or scholarly evidence.</td>
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<tr>
<td>DEFINED WAYS FORWARD</td>
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<td>30</td>
<td>32</td>
<td>34</td>
<td>36</td>
<td>38</td>
<td>40</td>
</tr>
<tr>
<td>Team developed and communicated (graphically &amp; verbally) design solutions for each design problem identified. Design solutions demonstrate understanding and incorporation of theoretical framework. Individuals contributed equally and effectively to result in good team effort.</td>
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**TOTAL**

IDEC 2017 Annual Conference | Chicago, IL | 710 | C+/B- | 80 | B | 85 | B+/A- | 90 | A | >95 | A+ | 100 Pts.
Implication of Brand Identity on Starbucks Architectural Environments

Kyoung-Im Park

Valdosta State University

ABSTRACT

Recent decades have witnessed a significant success of Starbucks. There are over 21,000 stores globally and over 70 million customers visit the stores weekly (Basulto, 2015). Starbucks dominates the coffee shop market worldwide. What aspects of Starbucks’ brand image promote this success and customers’ loyalty? This question has generated to start this research and to study Starbucks stores’ architectural environments as a tool for marketing communication.

Designing retail interiors is need to consider many aspects. The first process of design of the retail store is analysis of a brand and identity (Mesher 2010). Schielke and Leudesdorff (2014) explained that the identical image helps companies to build and communicate clear brand identity to the consumer. The combination of branding and interior design in retail stores has been discussed by books and journals (Mesher, 2010; Park, M., Lee, Y., & Lim, H., 2012; Schielke & Leudesdorff, 2015). Scholars studying the relevance of brand identity and interior design report that companies use interior design and symbols to enhance their brand identity (Schielke & Leudesdorff, 2015).
The purpose is to explore brand identity, its impact of architectural environments associated with physical symbols or features such as logo, color, brand name, slogan, image, etc. This study focuses on understanding how customers perceive brand identity within architectural environments. In order to analyze the concept of brand identity of Starbucks, Kapferer’s brand identity prism (2012) is used as a framework. This study has been designed to answer the following research questions based on the brand identity prism (see Figure 1):

1. Physique: What are features of the architectural environments associated with the brand to describe?
   What architectural environments attract customers to visit and revisit?

2. Personality: What color schemes are used to vitalize the brand?

3. Culture: What aspects of value or vision of the brand are conveyed to customer to differentiate the brand?

4. Relationship: What is service level including staffs and general??

5. Reflection: Are there differences in communication of the brand identity between different types of costumers based on gender, age, or frequency of visits? What is an objective to visit?

6. Self-Image: How do customers identify the brand image within architectural environments?

The overall process for this study included the following methods: 1) the collection of information on the physical characteristics of architectural and design attributes in stores, 2) literature review, 3) explore Starbucks’s website, 4) survey, 5) the analyses of collected data, website information, and architectural elements.

I analyzed the physique, personality, relationship, and self-image by investigating the architectural environments including the interior space design, ceiling design, ceiling height, luminaire, colors, finish materials, furniture, bathroom design, location of electrical outlets, and any remarkable characteristics. The culture is an intangible facet of the brand which is engaged in ideas, ideals, and values (Kapferer, 2012). I analyzed this facet by focusing on the literature review and Starbucks’s homepage investigation. For comprehending the relationship, I evaluated how space design influences costumer’s level of satisfaction of brand and service. I also considered the staff service quality. Findings indicated the principal elements of brand identity and revealed the relationship among interior design and brand identity (see Figure 2). This study will contribute
to the knowledge of the brand identity prism model, which can be utilized as a strong tool to assess the application of brand identity on the design frameworks for coffee shops. Furthermore, this study will serve as a prototype for studies examining the brand identity’s potential influence on the coffee shop design.

REFERENCES (APA)


APPENDIX

Figure 1. Brand Identity Prism (Kapferer, 2012)

Figure 2. Starbucks Brand Identity Prism
Facebook, the great good place: Exploring how virtual "places" relate to interior design

Dana Vaux & Michael R. Langlais
University of Nebraska - Kearney

ABSTRACT

Relevance/Problem
This study analyzes the social media website Facebook and its relationship to interior design through the lens of social community literature and theories. Theories of social capital and sense of community fail to recognize or address current socializing trends occurring on the internet and need to be updated to represent the way people connect in twenty-first century culture (Soukup, 2006). Interior designers need to understand the impact of virtual spaces on the physical environments they design and how to better design for the potential interface of virtual spaces and physical places.

Context
Oldenburg (1989) argues that public gathering places are essential elements of social communities. "Great good places," as he refers to them, are necessary to nourish relationships and diversity in human connection and are lacking in present day American society. Looking to those social spaces successful in past generations, he argues that creating similar contemporary environments provides a viable present-day solution to loss of social connection. Despite the emerging
technological facets of American culture, Oldenburg's theory harkens back to historic places of gathering as ideal third places such as the French Café and the English Pub, arguing that technology interferes with social connectivity. However, twenty-first century social gathering places appear to be multi-purpose with many activities, including access to and interaction with technology. Additionally, today’s social spaces appear to be appropriate for both socializing as well as being alone in a crowd, potentially to use social media networks like Facebook (Vaux, 2015).

Method
This study employed qualitative and quantitative methods of analysis through three theoretical frameworks that serve as samples of social connection and community: Oldenburg's third place theory (Oldenburg, 1989), social capital theory per Putnam and Feldstein (2003), and sense of community (McMillan & Chavis, 1986). The researchers collected and analyzed the data through observations, surveying, and conducting mean differences tests. Mean differences of motivations for using Facebook were calculated using repeated measures ANOVAs. Quantitative data for this study comes from 308 participants, ages 14 to 36 (65% female) and illustrated that the top three reasons individuals reported used Facebook was to seek information from one’s social network, to establish a sense of connection with others, and to communicate with others. The researchers then compared this data to established measures of social capital, third places, and sense of community.

Outcomes
Findings indicate that Facebook serves as a virtual third place for building social capital and a sense of community, a "place of sociability." This study reinforces the idea that present-day socializing trends represent a different paradigm than existing theories may suggest and highlights that in designing spaces for social gathering, interior designers may need to consider technology users of virtual third places as a factor.

Advancement of Design Knowledge
The results of this study suggest that technology plays an important role in twenty-first century socializing, and therefore access to technology may be an important criterion of contemporary
third places. This research further raises the question of what new prescriptions or models interior
designers might innovate as virtual space becomes further integrated into the realm of the material,
man-made world and the fabric of place. This paper culminates with recommendations based on
prototypes in existing interior design literature in light of the study findings. Future studies are
needed to further explore these possibilities as well as connections between virtual and physical
third places.

REFERENCES (APA)


Are Unpaid Internships Discriminatory?

Kenan Fishburne & Steve Webber
Florida State University

ABSTRACT

Background
The debate about unpaid vs. paid internships has changed since the resolution of the economic downturn. Interior Design Internship programs must retain good internships, yet research shows that 50% of internships are still unpaid. This paper addresses several concerns related to the discriminatory nature of unpaid internships.

Methodology
This research began with literature review of internship definitions and practices, a review of current labor law, and survey results from internship providers specifically addressing aspects of unpaid internships.

Findings
The National Association of Colleges and Employers has crafted a definition of internship yet does not include a concurrent statement concerning payment. In 2014, the National Society for Experiential Education produced a white paper advocating paid internship, stating that unpaid
internship effectively discriminates against low income students who must work while in college. Recent commentary by labor activists compares unpaid internship to other types of unpaid work (one interesting comparison is to housework). They state that work is provided for financial reward and when unpaid work is expected based on gender or other non-leveling criteria, such as student status, it becomes exploitation (Swartz, 2013). In 2010 Intern Bridge, Inc. reported national survey results of 5,735 students that showed women are more likely to participate in unpaid internships, particularly in the arts. Economists refer to this as “feminizing influence” in the workplace since women are traditionally thought of as complacent and agreeable. Parallels have been drawn to unpaid internship where the intern is seen as a noncontributing member of the firm, an invisible non-employee whose job is to be agreeable, and who understands payment is not available for “learning” (Swartz, 2013).

Litigation has revealed a predatory practice towards unpaid interns, and professionals have advised students not to give work away as this cheapens the profession (Czarnecki, 2014). Some internship programs, NYU and Columbia for example, have removed credit for internships to keep locations from claiming that credited internships do not require payment (The New York Times, 2014).

Outdated labor policies mandating unpaid internship include this U. S. Department of Labor internship test criteria, developed in 1947 to determine illegal use of interns: “The employer and the intern understand that the intern is not entitled to wages for the time spent in the internship” (U.S. Department of Labor, 2010). Recently, three federal judges questioned this test as too restrictive and not viable in today's’ economy.

In 2014 the Brookings Institute published survey results of 43,000 graduating seniors from 700 universities showing 61% of them had participated in internship and of those internships, 53.5 % were unpaid (Venator and Reeves, 2015). A survey sample showed fifty percent of interior design internship providers still offer only unpaid internships, despite acknowledging the value students provide (Author, in press). At the same time studies have shown that paid internships are more valuable to providers and interns both, because when interns must add financial value to their firms they are given more significant tasks (Pologeorgis, 2015).
Conclusion
A 2012 survey of 50,000 HR professionals commissioned by the Chronicles of Higher Education found that internship is the most highly ranked criteria an employer uses in hiring (Venator and Reeves, 2015). If the interior design profession values paid internship we must emphasize the importance of payment so all can participate. To insure the legality of paid internships we must collaborate with other disciplines to work politically to delete references to no wages for internship from federal labor guidelines. Finally we must market the value paid internships provide to our internship providers.

REFERENCES (APA)


INSIDE Utopia

Nerea Feliz

University of Texas at Austin

ABSTRACT

“The design of imaginary, conceptual or radical buildings is as old as the practice of architecture itself. Whether to explore new spatial or philosophical possibilities, or to test our understanding of built form, architects have for centuries drawn on their abilities to produce breath-taking works of the imagination.” Neil Speiller

Over the last decades, utopian and experimental projects, often unbuilt and sometimes unbuildable, have fuelled the architectural imagination and later influenced professional practice. Partially due to the recent history of the Interior Design discipline, most of these speculative proposals have rarely come from within Interior design scholarship or practice. The seminar titled “Inside Utopia” offered in the Spring 2016 semester, sought to envision how the interior realm may play a critical role in an expanded conceptual and speculative design context. Students in this seminar hypothesized how a series of utopian buildings may be experienced and inhabited. What is it like to be inside Utopia?

The advanced-level course was offered to a total of 8 upper-level undergraduate and graduate students, from both the Interior Design and the Architecture program. Via readings, lectures and in class discussions, students were introduced to seminal experimental projects from the last
decades including: “Alterations to a suburban House” by Dan Graham (1978); ”The peak” Leisure Park by Zaha Hadid Architects (1982-83); “Slow House” by Diller + Scofidio (1992-93); “Virtual House” by FOA (1996); “Veg. House” by Peter Cook; and “Windtrap” by Philippe Rahm (2009).

During the semester, both writing and drawing were treated as generative design tools and instruments of individual investigation and experimentation. Students were asked to develop a personal spatial narrative based on the ideas posed by the precedent study of their choice. In parallel, students explored the conceptual visualization of their spatial narrative engaging in a process of spatial and graphic inquiry of the interior realm.

The studio was a unique learning experience for the students as it allowed them to examine the following issues that are ordinarily not central to our interior design curriculum:

1. The study of significant unbuilt projects to critically examine and comprehend their conceptual foundation. To develop a critical understanding of design in relation to a conceptual framework.

2. To develop the ability to raise questions and use abstract ideas to generate spatial proposals.

3. To interrogate interior inhabitation practices. To consider diverse points of view, research well-reasoned conclusions, and test alternative outcomes against relevant criteria and standards.

4. To explore drawing as a generative design tool. To foster graphic representation as a vehicle to communicate ideas and design aspirations.

REFERENCES (APA)


Hybrid Histories

Christoph Korner

Woodbury University

ABSTRACT
The use of hybrid class structure in a Contemporary Interior Architecture History course at graduate level

In a traditional interior history course, be it undergraduate or graduate level, we usually spend the time in class with lectures. Images of interior spaces, furniture and other related items are shown and explained. In addition some of the time in the classroom might be spend with group discussions of readings and the material presented. This results in two problems:

Problem 1: Most of the class time in History courses is used for lectures, which is a passive mode of learning.

Problem 2: Interiors have to be experienced. Images, text and stories are not sufficient, in order to understand the space in its full complexity.

The combination of the physical experience of instructor and classmates in the classroom and the virtual experience of the interiors on the screen makes it hard for the students to develop a close
understanding of the value of our work.

This class uses a different mode of course delivery, the method and strategy of the hybrid class. In this approach 50% of the classes are replaced by online lectures, while 50% are fieldtrips, in order to experience actual spaces.

Online lectures: the traditional lecture consists of a series of slides with a commentary by the instructor. In many cases students have to rush, in order to take notes and at the same time pay attention to the images. Trying to actually sketch some of them is a challenge. By transferring the lectures to an online site the students can look at them repeatedly at their own leisure. At the same time the structure of the lectures has been transformed into the format of a blog, a presentation of content that the generation of our students is very familiar with. Short introductory texts are provided and link together video clips from different sources. The videos can include lectures by various designers and critiques, as well as actual footage of the space, which allows to experience the project in motion. In addition, links are provided for readings, drawings and additional material. Material can be added as well, in order to provide an expanded context of the projects and its time. These can be longer documentaries or feature movies.

Fieldtrips: The fieldtrip component allows the students to visit the actual interiors and experience them as a group, under the guidance of the instructor. At the beginning of the class the group meets and a short introduction is given, as well as assignments for sketching and diagramming. The majority of the time is spent moving through the space. The travel budget is of course limited; therefore the original masterpieces from the lecture component cannot be visited. Projects that are conceptually or aesthetically related can be used.

Outcome: Similar to the use of the blog as the structure for lectures, also the deliverables in the class are done in the format of a blog. The students can comment on parts of the lecture, ask questions and either answer each other, or are being answered by the instructor. The students are required to leave comments about the readings. They can also access the comments by other students, which results in a discussion between them. Again, this is a format many students are very familiar with and results in interesting interactions. They start to work on an academic paper,
without realizing it. Also the diagrams and sketches from the fieldtrip are uploaded and accessible for everyone. Here the instructor starts with comments on them, which are picked up by the students and begin a dialog about more successful ways to represent the projects.

This inversion of the class structure allows for the actual physical experience of projects, while the virtual experience of the instructor and the group through blogs creates a new form of discussion and delivery of outcome.

After the first year of this new concept of course delivery a survey was performed, allowi

REFERENCES (APA)


Hybrid Histories
The use of a hybrid class structure in a Contemporary Interior Architecture History course, graduate level

Criticism 3: Rewriting the Canon

CATALOG / COURSE DESCRIPTION

This course builds on and blends the content of Criticism 2 with interests arising from Emerging Ideas 1-3, using theory and criticism to reinterpret and expand the discipline. Students will work to culminate their efforts in the form of a research salon, symposium, and publication.

This course will explore ideas about built form, human experience, and social constructions, as well as other issues that influence design principles, practical needs and integration of the practical and the theoretical. By the end of the semester students will not only analyze and read current design and architectural theories but they will also synthesize these assigned and self-discovered readings into a theoretical framework that works with their own design ideas. This course situates a diversity of critical and generative approaches to late twentieth century design while introducing current themes in contemporary design practice, and is structured around the exploration of contemporary theories as they have developed over the past 50 years.

REALM DESCRIPTION

As the linchpin of the program, the criticism track is invested in the creation of disciplinary content, which reflects the historical and theoretical frameworks within, and outside of, the terrain of interior architecture, striving to develop a strong body of literature that reflects the specific theoretical concerns of the interior environment and human habitation.

PROCESSES, ACTIVITIES, AND ASSIGNMENTS

This course will explore current architecture and design theories through several different modes of learning, including: readings, class discussions, out-of-class individual student research, and student essays and diagrams. This is a reading and writing intensive course broken into seven topical Modules plus a Conclusion. Each Module consists of a minimum of four readings. The readings are from both theoretical and literary sources. Assignments accompanying some of the writings are meant to help the students comprehend and work through the theoretical articles. Students complete the following types of learning activities:

Hackpad and Moodle:
Moodle will be used to post syllabus, schedule, readings and grades. All other work will be posted and performed on the webpage 'hackpad'. You will receive an invitation by the instructor, so you can join the class’s page. It is your responsibility to join the group and check the class page on a regular basis.
ANOTATED SCHEDULE

CLASS 01
Thursday, August 27
Introduction
Location: On Campus

Topics:
#Structuralism #PostStructuralism #QuantumPhysics

Readings:

CLASS 02
Thursday, September 3
Metabolism
Location: Online

Projects: Kisho Kurokawa, Nakagin Capsule Tower, Tokyo, Japan, 1972

Topics:
#Metabolism #Structuralism #Binary #KenzoTange #TokyoOlympics #OsakaExpo #Godzilla

Readings:
Due: WeDiscuss 1
CLASS 03
Thursday, September 10

Metabolism
Location: Fieldtrip - Bonaventure

Project: John Portman, Bonaventure Hotel, Los Angeles, 1976
Topics: #Superstructure #Capitalism #Microprocessor

Readings:
Due: WeDiscuss 2

CLASS 04
Thursday, September 17

Pop
Location: Online

Project: Verner Panton, Visiona 2, Cologne, Germany 1970
Topics: #PopArt #Consumerism #Archigram #Superstudio #Nomads #ConstantNieuwenhuys #FreiOtto #habitat67 #Montreal67

Readings:
Due: WeDiscuss 3
CLASS 05
Thursday, September 24
Critical Regionalism
Location: Online

Project: Luis Barragan House and Studio, Mexico City, 1947
Topics: #AlvarAalto #Fathy #LuisBarragan #TadaoAndo #AldoRossi #Alessi

Readings:
Due: WeComment 1

CLASS 06
Thursday, October 1
Critical Regionalism
Location: Fieldtrip - Moneo Cathedral

Project: Rafael Moneo, Cathedral of Our Lady of the Angels, Los Angeles, 2002
Topics: #EverydayUrbanism #CarloScarpa #Peter Zumthor

Readings:
Due: WeComment 2
We are all familiar with the innovative and futuristic designs of the Danish designer Verner Panton. He used colorful plastics to create new icons, like the Panton Chair.

Panton Chair

Project: Verner Panton, Visiona 2, Cologne, Germany 1970
https://www.youtube.com/watch?v=E9LL6vB2ET4
http://www.verner-panton.com/spaces/archive/121/

Many of his designs are still in production today and have not lost any of their appeal. From today's point of view he might look like a beacon of playfulness, happiness and fun, but he was in fact part of a much larger group of very diverse thinkers and designers around the world.

While the avant-garde in Japan discussed the rebuilding of the country after the war and tried to combine new technology with ancient ideals, another avant-garde started to form itself in Europe.

It was on one hand a reaction to the work and writings of Team X, which had developed out of the modernist CIAM.
http://www.team10online.org

It was inspired by the originally American movement of Pop Art. Andy Warhol, the most famous artist in this area, took images and materials from American Consumerism and translated them into artwork that was on at the same time critical of capitalism and the celebration of consumer goods, but at the same time easy to consume by the public.
https://www.youtube.com/watch?v=IHBm8_ooPVo

The British architecture critique Reyner Banham was fascinated by the American culture and started to look at Los Angeles as the new utopia. He reinterprets the concept of the city in his book Los Angeles: The Architecture of Four Ecologies.
https://www.youtube.com/watch?v=WIZ0Nbc-YDo

One idea he shared with Metabolism was the fascination with infrastructure. The usually hidden, technical cores would become the actual building.


Archigram, initially not a group, but a magazine, expanded on these ideas. The main members of the group were Peter Cook, Warren Chalk, Ron Herron, Dennis Crompton, Michael Webb and David Greene. They created fantastic vision for the future nomad.
https://www.youtube.com/watch?v=IMQGrF06uz8

Superstudio, a firm founded in 1966 in Florence, was even more radical in their approach. Their visionary designs
https://www.youtube.com/watch?v=d44i3QBr2TeM
Design Elements: Shaping Design Pedagogy at the Time of Global Economy

Anna Gitelman
Suffolk University

ABSTRACT

It is a belief of our university that focusing teaching and research on problems in the real world best fosters professional competence. Our international faculties focus their projects and assignments on problems that reflect changes in economic and political situations not only in the US, but also in the world. These projects enable students to actively participate in the topic research through their involvement in the studios, workshops, conferences, exhibits, and other exchanges.

A central aspect of all our efforts is collaboration—among diverse range of design programs, and with public and private institutions in the US and abroad. Our faculty and students are engaged in the problems facing countries at all stages of development, taking part in the public discussion of issues on a global scale, studying, developing and applying the best practices all around the world. In this presentation, I would like to discuss international program that we launched in the Summer of 2015. It was designed for graduate students that are striving to get a global perspective on the current economic developments in the world, and position themself in the global market. This program took place in Spain, and was conducted in collaboration with faculties from one of the
premier Architectural Schools in Madrid. This two courses 6 credits program included a seminar on contemporary Spanish Architecture and a Design Studio. In the theoretical part of the program, students were introduced to contemporary issues of Spanish architecture as they reflected on the current economical and political situation. Students discussed the development of the contemporary language of Spanish architecture, which came as a response to the precarious conditions in Spain including cultural isolation and the delay in industrial and economic development after the Civil War. This language developed from an unorthodox awareness and a tendency towards experimentation built up by pragmatism and the ability to consider hybrid techniques and alternative tectonic solutions and material use. As a result, the number of projects that were presented in this course had a temporary nature due to the constantly changing economic landscape.

After a careful review of these projects, students were presented with a design problem that addressed the same issue. For their studio project, they were asked to develop a design for an interior space that would have the ability to transform and accommodate alternative needs, but at the same time emphasize the dialogue between material culture and temporary nature of construction. The site that was chosen for this project was a flexible space located on the ground level of the architectural and design hub located in the heart of Madrid. Students had to develop a program for an international student center that would function as a temporary space until the more permanent location was found.

In this presentation, I would like to share evolution of student research and design processes and teaching methodologies that were used during project development. The project theme "Elements" encouraged students to look beyond the “normal parameters” of design elements and see them in relationship to the context. Students were able to use case studies that were presented during seminar discussions to start developing individual approaches to the problem. It also prompted students to take the research to the next level and start looking into “elemental” relationships within the contexts of the student hub, a social and creative space. Student’s research speculates that creative work and those who undertake it prosper far more in environments that appear a little un-designed or unfinished. These assumptions were inspired by extensive travel and site visits where students could see the works of architects and designers that had to find a balance
between having a tight budget while creating an exciting design.

REFERENCES (APA)


APPENDIX
Pecha Kucha
Multimodal Critique: VoiceThread as an online, mobile alternative to the revered design critique

Jody Lawrence & Stephanie Zollinger

University of Minnesota

ABSTRACT

Critique is an essential form of assessment for design education, activating a dynamic exchange of ideas and facilitate student growth. The benefits of fluid, descriptive dialogue are clear. However, maintaining the fluidity of such exchanges beyond studio can be a challenge, and often defers to email. This method is problematic because the exchanges lack the dynamic reciprocity of dialogue that Schön (1987) describes as fundamental elements that facilitate practice-based learning.

Schön’s model of “reflection-in-action” stresses that mutual discourse in design is essential, and should “take place in the context of the student’s attempts to design” and use “actions as well as words.” This suggests the the learning experience should promote and support multivariate interactions, namely in-person. Traditional design critiques do this, and have become formalized as a cornerstone of the studio experience.

Most educators agree with Schön, that in-person critiques are the best way to communicate with and mentor students because they are natural and dynamic. Davies (2007) examined the
A descriptive nature of verbalized assessment and suggests when “descriptive feedback is increased, students learn more.” Davies contends that formative assessment that does this “feeds forward,” supporting conditions that optimize student growth and the development of ideas. Ice et al. (2007) suggest that verbalized feedback conveys more nuance, and that expressive communication makes learners more likely to use the feedback to develop their work. Their investigation of asynchronous audio feedback implies that these benefits are preserved using non-direct methods, and add that students perceive the feedback as more personalized and caring.

To explore how online technology can facilitate verbalized feedback outside of an interior design studio, the authors integrated VoiceThread as a multimodal critiquing platform. VoiceThread is an online discussion space and smartphone application that allows participants to give feedback on the image-rich content of a “thread” at any time or from anywhere. When participants leave verbalized comments, it also records them sketching on the images with the drawing tool. The threads are accretive, built upon over time, and can be exported as digital video files.

The authors identified VoiceThread as a multimodal, tech-savvy means to organize peer critiques. The discussions that ensued were productive and richly descriptive. Students enjoyed the experience because it provided “space” outside of studio to share and discuss their work, and presented an alternative to the usual review process. As a plus, monitoring the threads allowed the authors to assess the application of knowledge demonstrated by each student critic, and to mediate or prompt when necessary.

The asynchronous attributes of VoiceThread made it easy to include outside professionals, thus simulating a formalized, traditional critique. Architects and interior designers from all over the world were invited to threads featuring student projects, activating rich discussions about refining and actualizing the designs. A survey revealed that students carefully considered the feedback, liked that the discussions were not isolated to a single afternoon, and that the experience made them feel connected to industry. The professionals appreciated the online method and the utility of the smartphone application because they could participate without the demands of time and geography. The critics deemed it an engaging and smart strategy to dress up the revered critique: an online alternative with equal rigor.
This presentation shares how VoiceThread facilitated multimodal critiques that increased the frequency of verbalized communication, transformed how students solicit and access feedback, and cultivated the fluidity of dialogue paramount to Schön’s model. The authors present this as an alternative to the revered design critique.

REFERENCES (APA)

APPENDIX

Image/slide sample 1

Image/slide sample 2

Image/slide sample 3
Grasping the Intangible

Juan Roldán

American University of Sharjah

ABSTRACT

“Grasping the intangible” is a reflection of the first stages of Interior Design education in three stages of a propaedeutic learning process prior to Design Studio courses, using drawing and light courses as a field of experimentation.

Stage 1. Drawing as Analysis
This first module is based on drawing techniques coined as “imaginary triggers”(1). The purpose of this set of techniques and assignments is to assist students to move from a very expressive and abstract graphic approach into a more controlled way of representing their own ideas within a real and existing space.
The core value of the course is for students to learn how to draw and control a given space, moving from abstraction towards expression.
As a first immersion into the world of drawing, students are pushed to work into a first batch of assignments working with “non visual references” odors, sounds and readings. After a first listening or reading, students are encouraged to verbalize and generate a list of nouns, adjectives or verbs which are inherent to the listened or read piece: an objective list of characteristic between the piece and their future abstract drawings.
It’s then, when first spatial and light structures begin to appear in their drawings. A second discussion is opened as the results begin to match and refer to the non-visual reference using –in an intuitive way– design strategies and concepts(2) as structure, depth, density, balance, contrast, hierarchy, linearity, continuity, transition, etc.

Stage 2. Drawing as Speculative Process
The exercises introduced in following courses (Descriptive Drawing II and Light Design) have to do with the potential and control that students have upon an existing space and light as a matter, medium and mean. In a first stage, students deal with a real environment, natural light and the possibilities of transforming introducing changes of scale and or introducing new elements. This exercise consists on a first analysis, survey and in-depth understanding of an existing space in order to be able to operate and transform it.

Stage 3. Atmospheres
Having a basic understanding on how to operate within a given space and evolve the process into a next stage of space making, the student is now ready to operate with real elements like space plus natural and artificial light. In this case, and following a logic course sequence, students taking a Light Course are able to analyze and operate with light as a technological mean. The presentation will focus on a conceptual approach to space design with light in the field of creation of atmospheres, always with a compromise with the understanding of the scale and size of a given space, where students are encouraged to work with analogue and digital tools and build their own full scale prototypes such as light devices, lamps, or light installations.

Students are then, capable to transform spaces using natural or artificial light, knowing its behavior and its inherent relationship with space. It’s time to generate new spaces, new moods, and new atmospheres.
After a theoretical introduction –which follows and replicates the structure from abstract to figurative lighting systems, from the world of art to the technical lighting fixtures and spec sheets– students are capable to understand light as an entity which behaves as a fluid or as a solid, an element that can reveal, conceal, hide, place emphasis, focus, camouflage, point out, flood, distort, frame and even lie.
REFERENCES (Chicago)

Not My Typology: A Thematic Approach to Interior Design Education

Alan Antioquia & Natalie Badenduck
Mount Royal University

ABSTRACT

The teaching of Interior Design is traditionally formulated around specific building typologies generally beginning with residential and ending with complex commercial spaces. In the process of developing a more experiential teaching model, we questioned the pedagogical value of typology-based teaching and its connection to contemporary interiors. With a focus on how students experience the world as well as build awareness of and competency in interiors practices, we implemented a thematic teaching approach. We developed a curriculum based on a set of enduring understandings and essential themes ranging from simple to complex. We created course projects wherein students explore aspects of interior design without typological constraints. Our presentation focuses on the structure, implementation, and resulting benefits from Inhabitation Studio during Year 1 Semester 2 of a four-year Bachelor of Interior Design program.

In Inhabitation Studio, students explore the occupation of space and the direct relationship between the human body and spatial experience. Through a series of exercises and assignments, students investigate human dimensions, proxemics, and ergonomics, expanding their awareness of embodied interior experiences. They examine the scale of interior environments, the limitations of the human form, and the impact of the human body in motion when performing a task.
Inhabitation Studio consists of five projects increasing in scale and complexity: 1) Wearable Architecture, 2) Refuge, 3) Task, 4) Multi-task, and 5) Archetype. Inhabitation Studio explorations begin with the scale of the body and the most intimate space it occupies – our clothing. In the Wearable Architecture project, students create a garment that transforms from public to private mode. They investigate the constraints of clothing, its positive and negative benefits to thermal comfort, and the notions of a protective second skin as a foundational understanding of inhabitation. Our goal in Wearable Architecture is to help students understand issues relating to privacy and containment within interior spaces. In the second project Refuge, we expand the thematic scale to the design of a temporary emergency shelter that accommodates a given user in three static positions: standing, sitting, and lying down. In the third project Task, students investigate how systems and standards that define human dimensions are quantified for individual tasks, therein exploring the key notions of ergonomics in design. Students examine how simple body movements and performance tasks inform the creation of environments. The fourth project Multi-Task involves exploration of how a single space can be responsive to multiple tasks with increased complexity in a program. Students design a retail kiosk, exploring how design elements in spaces can accommodate various functions in a single area. The final Inhabitation Studio project Archetype combines a series of individual spaces. Students examine the human body in the highly programmed and functional spaces of a kitchen and bathroom.

We can report that thematic teaching models successfully achieve intended outcomes related to the integration of course content and information delivery. This approach to curriculum design and delivery creates a supportive framework for students in their understanding of spatial inhabitation within individual spaces/volumes. As a result of this thematic teaching model, students experience, understand, and engage with the theme of inhabitation through progressive explorations. They bring confidence and expanded understanding of inhabitation to subsequent semesters. Having witnessed the value of a thematic teaching approach, we look forward to further development and investigation into thematic teaching, its versatility in applications from simple to complex design, and its role in educating future generations of Interior Designers.
Pecha Kucha

Nailing the Creative Concept Statement

Diana Allison & Darla Green

University of the Incarnate Word

ABSTRACT

Concept Statements are crucial for interior design students to understand and one of the most difficult to teach. A concept is the over-arching idea that drives a project creating an explanation for each design decision (Eakins, 2005). There are many types of concept statements from thematic to functional. Sometimes the functional project statements are called concept statements. However, the strongest concept statements are creative, relate to the context, evoke emotion, and are used to guide the project.

There are several established methods to help the student understand how to create concept statements. Eakins’ (2005) description of the basic elements in a design statement, idea generators, form-givers, and application, has proven useful. While in agreement with Eakins’ process, it is still too abstract for students to understand. Often, when the written concept is turned in, it is descriptive, but is not a refined meaningful concept. The student’s concept is a string of ideas that do not connect with the project.

Research has shown students actively engaged, hands on, with their learning tend to understand the information in a deeper manner than those who are passive (Ankerson & Pable, 2008; Wlodkowski, 2008). A tangible, “hands on” activity was needed to allow these students a path to understand the creation of an abstract idea and then processes by which to relate it back to a project.
The challenge was to create a concrete example of an abstract idea, from beginning to end, without being intimidating and then to implement it. A parallel method to Eakins’ (2005) basic steps was employed along with an in-class activity to make it meaningful. The three components of the concept statement were described as finding something inspirational, determining the tools (found within the principles and elements of design), and determining what feelings and emotions were to be evoked from the design.

The developed activity pushes students out of their comfort zone to help them think beyond their limitations and to show them how to employ similes, metaphors, and analogies in communicating their vision as expressed in a strong concept statement. After a brief lecture about concept statements, students divide a paper into 4 quadrants using a black marker. They draw a plan view, elevation view, and perspective of an object provided by the instructor. They are instructed to draw an abstract of this object and to use adjectives to describe the line, shape, form, and texture. While only considering the adjectives, students considered what else this could describe that is NOT design-related. Once they had identified this something else, they were told to create a metaphor. After massaging the metaphor, the abstract idea emerged from a tangible object. While some students still struggle with concept generation, this activity helps connect abstract ideas with the tangible. It gives them a mind loosening technique to use as they begin the concept exploration process.

The final step that can bring this abstraction to life occurs when a tangible product has to be created. In a course covering building systems, students were to create a dog house to be entered into a local organization’s fundraiser. After explaining the concept statement and taking the students through the concept statement exercise, students were put into teams and told to determine their concept statement for the project. As the students found their own key inspirational piece, determined the form givers (Eakins, 2005) and the emotions to be evoked, they created concept statements that were stronger and more over-arching than before the exercises. The students were able to stay focused on the specific style and the finished dog houses were true to their original concept. The physical space they built created the connection that drove home the point of the concept statement.
REFERENCES (APA)


Inspired by Salvador "Dali" abstract and off-centered forms, create an innovative and quirky design that caters to every dog through functional versatility. Fun perspective, the perfect for your furry friend!
Inspired by a diamond, a woman’s best friend, faceted shapes and unique angles are used to created an exquisite abode for man’s best friend.
Drone-Based Autonomous Interior Fabrication Tool

Saleh Kalantari & Ahmadi Poustinchi

Washington State University

ABSTRACT

This paper presents the initial results of a research project that involves the use of unmanned aerial vehicles (drones) to construct an interior design pattern. The purpose of the project is to create an automated system that uses sensor data to analyze human behavior within a building, generates architectural forms based on the results of that data, and then fabricates an optimal interior design for facilitating the observed human behaviors. The Drone-based Autonomous Interior Fabricator juxtaposes key characteristics of biological design (modularity, robustness, homeostasis, and adaptation) with the use of smart technologies.

Today’s engineering industry has been revolutionized by the use of additive manufacturing. In this process, 3D printers are employed to produce geometrically complex mechanical parts quickly and precisely. Currently, however, these printers are significantly limited in the size of the objects that they can create. This project conceptualizes a different approach to additive manufacturing, inspired by animal behaviors in the natural world. It points toward a future fabrication technique in which drones are used to assemble materials in response to human needs, and thereby build interior spaces quickly, with better coordination and responsiveness, and with an extremely high level of precision. The Drone-Based Autonomous Interior Fabricator incorporates and expands
upon earlier work in which researchers attempted to generate interior spaces to satisfy specific movement-based behavior scenarios (Lindsey et al., 2011; Augugliaro et al., 2014; Latteur et al., 2015). In this case, however, the computer models formed through observations of human behavior are enriched by adding new computational rules and information to connect the desired internal structures with the overall geometry of the interior space, and then drones are used to actually help shape that space.

The Drone-based Autonomous Interior Fabricator is an aggregated system that relies on intelligent sensors embedded within the environment to extract data about human behaviors. This behavioral data is then used to design a parametric pattern. At this stage in the research, the aerial vehicle (quadcopter) is used to carry a spool of string and weave the desired spatial pattern within the interior space. A motion-capture system monitors the position of the drone and provides feedback to a control module, which drives the vehicle along the specific paths described by the parametric form design. The quadcopter fabricates the pattern in ten different layers to make a three-dimensional spatial representation.

It is likely that the construction industry will undergo a drastic transformation in upcoming decades due to incredible and ongoing advances in drone technology, which will open many new vistas for innovative building techniques. This research contributes to this process by combing drone-based fabrication with a behavior-analysis approach to interior design. The spatial designs produced by the Drone-Based Autonomous Interior Fabricator are intended to build real-time interior patterns based on dynamic human behaviors within a given space. This process is quite cost-effective, and in its current form can already be used as a tool for interior-design optimization. On a broader level, this research helps to establish bridges between the areas of digital fabrication, design computation, and evidence-based design.

REFERENCES (APA)

DRONE-BASED AUTONOMOUS INTERIOR FABRICATION TOOL

Form Generation

Photo by Katy Silberger.
http://www.flickriver.com/photos/katysilbs/2828806475/
DRONE-BASED AUTONOMOUS INTERIOR FABRICATION TOOL

Form-generation computational process
DRONE-BASED AUTONOMOUS INTERIOR FABRICATION TOOL

Form-generation computational process

Logic of creating a linear translation of the curve

Analyzing human motion in space
DRONE-BASED AUTONOMOUS INTERIOR FABRICATION TOOL

Handle detail showing the Quadcopter flying level and the fabrication level.
DRONE-BASED AUTONOMOUS INTERIOR FABRICATION TOOL

Handle rotation detail for adding the next layer
DRONE-BASED AUTONOMOUS INTERIOR FABRICATION TOOL

Virtual rendering of a spatial design weave
DRONE-BASED AUTONOMOUS INTERIOR FABRICATION TOOL

Virtual rendering of a spatial design weave
DRONE-BASED AUTONOMOUS INTERIOR FABRICATION TOOL

Virtual rendering of a spatial design weave
Special Topic
ABSTRACT

Integration of design/build as a pedagogical tool has existed for decades. However, a recent reemergence of its application is largely due to the value of integrating physical exploration and fabrication. Design/build facilitates experience-based applied creative thinking that extends beyond the capabilities of computer-aided design and traditional 2-D visualization techniques. Furthering this concept is a framework that couples design/build pedagogy with extracurricular activities to create a hybrid experience that balances theory and practice in interior design education. The objective of this paper is to examine the current discourse of how design/build can be explored through full-scale installations and to present a design/build model that utilizes professional partnerships to fund extracurricular projects. The primary case study is a recently completed installation that partnered with several Zones. Zones are on-campus incubators that support experiential learning and entrepreneurship through extracurricular activities in various topic areas (e.g. Design Fabrication Zone, Digital Media Zone). This paper will present the project origins, roles of the faculty advisor, student, and partner, and a critical examination of the overall design and its current state.

The intent of the design/build and professional partnership charged students with designing and
fabricating an installation that had the ability to showcase the nine Zones on campus while providing a place for students to lounge. Eight students developed two schematic designs and presented to an external jury composed of industry professionals and clients. Ultimately, the client selected one scheme to be prototyped, built and installed in predominant space on campus. The chosen design draws from the conceptual grounding which Snohetta intended for the building where the installation would be housed. The design consists of topographical elements that play off pre-existing features and uses raised plinths to provide a place for work, exhibition and social collaboration. Ten weeks during the summer were spent on design development and fabrication of the final installation. A series of hands-on workshops helped students implement craft techniques for plywood applications, development of structural and durable designs, jig making, and incorporating CNC technology into the design/build workflow. Throughout the process, students were tasked with conducting precedent studies to understand principles of form and function related to furniture/installation design, technical analysis of material applications and constraints, a full set of construction documents, material take-offs, detailed budgets, schedules, and fabrication processes that advance ideas through making.

This design/build project served as a platform for dialogue between students and industry professionals while exposing students to various making processes, scheduling, budgets, and design. The presented case study will detail how this project required students to apply theory to methods of construction and to realize the potential use of analog and digital fabrication techniques in the application of both installations and interiors.
Extracurricular Design/Build + Professional Partnerships. IDEC 2017
The Interior Curtain Wall

San Fratello
San Jose State University

ABSTRACT

Students in the digital design build seminar at ___ have been asked to design and fabricate interior curtain walls for site specific locations on campus. The purpose of the curtain wall is to protect the adjacent interior spaces from too much direct light and heat gain, to permit desirable views of the exterior and to enhance the appearance of the space within which the curtain is located. One of the problems this assignment addresses is that students of interior design are often not concerned with the effect of the exterior climate and solar orientation on the interior of the building. This assignment teaches future interior designers how to passively control the climate of a room using a curtain or screen, which means less demand on the HVAC systems and reduced consumption of fossil fuels – that means reduced greenhouse gases decreasing pollution and global warming.

The method by which students are asked to address this problem is to analyze a window that they have been assigned. Students document and measure the amount of natural light coming in at different times of day over a period of time and simulate the solar conditions over the course of the year. Additionally, they document and analyze the programmatic functions that take place directly adjacent to the window – for example: projection, computer use, reading, sleeping… etc.
The second problem this project seeks to address is that many interior design students are not exposed to hands-on material manipulation and fabrication processes during their education. The method by which this problem is addressed is to ask students to experiment with novel materials and fabrication techniques. For example, one group of students investigated how a paper curtain might be fabricated using a Laminated Object Manufacturer (LOM) by Mcor Technologies. Another group experimented with the high performance, stretchy, silicone based material Dragon Skin. Extruded ceramics made with local clays, mylar, and recycled paint samples collected from local interior design firms are all materials that different students have attempted to manipulate in order to design and build custom screens and curtains. Working in groups, students explore their chosen materials potential and develop a material strategy by making samples and mock ups. For example, the Dragon Skin group was asked to consider possible thickness, thinness, elasticity, color additives, different techniques for mold making, etc.

Finally, students consider connections and methods of aggregation. The curtains range in size from 4’ x 8’ to 16’ x 8’. In groups, the students collaborate to fabricate the curtains and prototype a design based on their collective research. The design concepts are evaluated through professional practice peer review during the semester and through computational simulation.

The students understand that the curtains they design are targeted at the construction and design industry and will be evaluated in the context of manufacturing, energy conservation, thermal performance, structural strength, durability, construction assembly, end use and disposal. All curtains have been installed in various sites around campus where students themselves and their peers have the opportunity to evaluate and measure the functional, mechanical, structural, temporal, solar and optical properties over time.

The positive outcomes of this ongoing design build project have been to encourage the use of fabrication methods that minimize waste and engage in environmentally conscious manufacturing and often uses recycled or recyclable materials, serving to preserve the planet’s natural resources. The curtain designs also serve to reduce the need for expensive and energy consumptive heating and air conditioning thereby reducing our reliance on fossil fuels and reducing the amount of pollution produced to make energy.
REFERENCES (APA)


Laser cut mylar screen
Extruded ceramic screen
Dragonskin screen
Recycled paint sample screen
Knitted Rooms

Annie Coggan
Pratt Institute

ABSTRACT

In the spring of 2016, Interior Design Graduate Students were asked to create a knitted room in their Design Options Lab: Soft Construction, a three credit seminar. The only programmatic constraint: the room had to be of a dimension that one person could walk into and stand. With such a simple rule, it was up to the students to define the terms for the meaning of a knitted room.

Each room was to be fabricated using panels knit on a Shima Seiki knitting machine, a computer numeric controlled (CNC) flat knitting machine with a 54” bed typically used in fashion and automotive design. This opportunity to use the Shima Seiki generated an amazing series of questions and experimentations resulting in an archive of samples and ultimately spaces that illustrate an ideal of a knitted room.

The goals for this collaboration between the students and the fabricators/programmers were a series of challenges presented by the use of the CNC knitting machine. The machine had never produced at an architectural scale and the students had limited experience in full scale work or interaction with textiles beyond concepts.

Students had one week for the conceptual design of the knitted room. Using 3D modeling to shape
the spaces, students were able to calculate the square footage of the material necessary for each room. The students’ drawings were patterns which made up the technical specifications for the CNC programmers.

Responding to the multiplicity of textures, patterns and transparencies possible with the Shima Seiki, the students worked with the knitwear director to develop a series of texture palettes that would suit the proposal for each space. The initial sketches were planar and architectural in nature; they belied a very minimalist, platonic ideal. Drawn to the most intricate knit samples of which the machine was capable, the three teams developed rooms that explored ideas of layering pattern, adjusting opacities, and manipulating shadows. This attraction to the quiet patterning of the knitted yardage rather than the potential for formal exuberance was the most surprising aspect of the process. Students responded to the deep materiality of the yarn and construction of the knitted planes and went to great lengths to celebrate this.

After the calculations were made for the quantity of material (yarn) needed, a month-long process of sampling and prototyping began. A composition of wool and cotton was required to make a featherweight textile that had enough stiffness and rigidity to create the architectural language to which the students aspired—the wool being soft, and the cotton having a higher tensile strength thus less sag. Each textile composition was calibrated to accommodate the large expanses of knitted yardage.

The installation of the knitted rooms was first in a classroom on campus, but then the students were invited to participate in an exhibition of student textile work. The first installation showed the rooms as separate ideas; the second venue, more imitate, created a conversation between the three rooms thus created an immersive environment.

The learning outcomes of this project are illuminating. Textiles are difficult materials to anticipate. The students initially conceived the projects as rigid planes; their drawings could not foreshadow the complexity of the soft material. It was necessary to grapple with finishing issues that are often not thought through in traditional construction classes or design studios. A skill set of traditional sewing techniques—hemming, whip stitching, machine sewing, knot-craft, as well as cutting,
bending, drilling, gluing, and other fabrication techniques were introduced. The students learned
about working with fabricators; the machine was booked for other clients well into the spring, so
the students had a limited production and had to make decisions quickly when problems arrived.

APPENDIX

SOFT CONSTRUCTION - KNITTED ROOMS

The three projects that the students produced were as follows:
- Head Space was a maze for your head only, one was to walk through the knitted spaces perusing the intricacies of the
  multi cable knit patterns;
- BK Bedouin, a series of three layers of knit, grew denser in opacity from inside to out, the students envision a meditative
  temple bathed in light;
- Three Minutes was an homage to the artist Ruth Asawa and her modernist shaped hanging sculpture. Students were
  obsessed by an idea that you can actually see a silhouette of a shape in a more pronounced way behind black surface
  rather than white. The sculptural shape is housed in a black knitted cylinder blanket.
An Interdisciplinary Design Build Installation for a Landmark Shoe Museum

Lois Weinthal, Ala Roushan & Vincent Hui

Ryerson University

ABSTRACT

A landmark shoe museum in a major North American city invited two design programs at a university to collaborate on the design and fabrication of a street front window installation that wraps a significant city corner to celebrate the museum’s twentieth anniversary. The museum engages the public with its street front gallery window as it runs along a major east-west and north-south corridor. Negotiations began at the administrative level from the museum team with the director, founder, board members and media representatives; and the university team with deans and chairs of programs. The discussions resulted in a contract between the museum and two of the university’s programs, Interior Design and Architectural Science, to invite students from each to work with faculty mentors and receive credit in the university’s unique learning innovation module.

The design team was a collaboration of eight students, four from Interior Design and four from Architectural Science, and each received a course credit under a university-wide curriculum model that does not culminate in a degree but recognition on transcript of participating in a learning module with learning objectives that place emphasis on experiential learning, innovation, external
partnerships and technology. This program module is unique to this university, which receives government funding for students to pursue these projects. The students do not pay for the course credit, and are given free access to analog and digital tools, assistance from a technologist, and faculty mentors. The museum provided funding for the project, guidance, and media representation for the project.

The launch of the project began with an introduction to the museum by the director, curator and an assigned board member to inform students of the museum’s mission so that it could be integrated into the student’s design proposal. This included a tour of the museum, video stories produced by the museum about significant shoes in the collection, and time spent in the museum’s archives to gain first-hand experience with the content. The curated installations highlight shoes from numerous regions of the world, and represent countless periods in history. The museum founder is sensitive to cultural issues and has the largest Inuit shoe collection worldwide so that visitors may learn their stories and challenges facing this community.

The design team translated the historical shoes into a contemporary language using digital tools. This included a translation of shoe profiles using parametric modeling and fabrication software. The result was a composition that spanned 25 meters using over 13,000 dowels in varying lengths to establish shoe profiles representative of different eras and cultures. The parametric increase and decrease of each dowel along a flat datum allowed the surface to gain spatial depth within the limits of the street front gallery. From a distance, the dowels resembled images of moving feet wearing iconic shoes from the museum’s collection. At this scale, the installation expresses a highly dynamic optic experience, where the eye is drawn to the dramatic undulations of the dowels rhythmically rising up and disappearing again into the field. LED lights illuminate the display at night to add depth of the overall display, as well as reveal the various pocketed intrusions embedded within the panel material. In the neutral areas of the topography, video monitors were located in the installation with footage that reinforced the Shoe Museum’s mandate of highlighting these everyday objects. The concept of topography was central in drawing together a set of tangent but related elements resulting in the Shoe Museum installation.

Student team: Michelle Ashurov, Naveed Khan, Sarah Lipsit, Victoria Mann, Shane Morris, Sally
Pollock, Katelyn Funnall, Filip Tisler. Faculty advisors: Vincent Hui, Ala Roushan, Lois Weinthal
This design build project for the twentieth anniversary of a landmark shoe museum began with students and faculty advisors learning about the museum’s collection. The collection spans objects from the 1400s to the present with the largest collection of Inuit shoes. The founder of the museum views shoes through an anthropological lens to reveal culture and history.

The image above is one of four early proposals by the students presented to the museum team in a formal review. The design proposals spoke to issues of technology, culture and global topics in response to guided tours of the archives by the museum curator.

Shoe Museum Installation

Example of shoes in the archive collection
Topography is understood in the context of landscape, where measurement informs mapping, resulting in an abstract but objective view. At the same time, the ground underfoot provides a direct understanding of topography at the scale of the individual. These two concepts informed the project where the centerline of the shoe became a datum line turned vertical plane, whereby the topography of the shoe elevations were gauged against this new datum. The shoe profile was translated as a displacement vector field that corresponded to a set of measured dowels of varying lengths to reconstruct the profile at the scale of the gallery windows.

A series of LED lights illuminate the display at night to add to the abstraction and depth of the overall display, as well as play with the various pocketed intrusions embedded within the panel material.

Shoe Museum Installation
The panoramic view above shows the placement of 4'x8' panels installed around a curved wall in the museum. The adjacent windows run parallel to the intersection of two major streets that meet at the corner of the street front window. The adjacent windows are covered with craft paper until the unveiling at the twentieth anniversary event for the museum.

Shoe Museum Installation
From a distance, the dowels resemble images of moving feet wearing iconic shoes represented within the museum. These images become abstracted when viewed from close up, revealing the detailing and fabrication methods utilized to create the topographic installation.

Shoe Museum Installation
Design Diversity · Special Topic

The Burden of Difference: Anthropometry and the ‘Scientific’ Body

Ronn Daniel & Vicki Daniel
James Madison University

ABSTRACT

While attempts to describe the human body through idealized geometry are ancient, the “scientific” practice of precisely measuring and quantifying human anatomical diversity – anthropometry – is a product of the 19th and 20th centuries. Designers who rely on anthropometric data, which has been included in the authoritative "Architectural Graphic Standards" since 1941, and in Panero and Zelnik’s "Human Dimension and Interior Space" in 1979, typically do not consider the historical complexities from which it arises. Anthropometry is a diverse discipline, uniting the work of physical anthropologists, physicians, urban social reformers, industrial capitalists, and military planners. Over the last 150 years, human bodies have been measured to explain colonial empires, identify urban criminals, standardize office furniture, justify racial oppression, circumscribe social deviancy, tailor uniforms, amplify the labor of industrial workers, and project military power.

Using primary materials from the history of science, architectural anthropometry catalogs, industrial engineering, and cold-war era military studies, this paper will unpack the complex
ideological and technical histories of anthropometry. It will demonstrate how, through the promulgation of measurements for standard, normal, and adequate bodies, other bodies were necessarily left to carry the burden of difference. It will discuss how the reliance on numerical anthropometry, in lieu of other possible discourses or descriptors, concealed political and cultural conflicts about bodies behind veneers of technocratic objectivity. The paper will argue that numerical accounts of human morphological diversity are, inescapably, ideologically constituted.

REFERENCES (APA)


Face-to-Wajjah: Collaborating Across Diverse Cultures
Via Social Media

Roberto Ventura
Virginia Commonwealth University

ABSTRACT

Motivation
Designers often work within unfamiliar contexts. Clients may be industry specialists or foreign nationals operating in globalized marketplaces. In “Ten Faces of Innovation,” IDEO founder Tom Kelley, characterizes successful designers as having the ability to step outside their own experience to collaborate with people from different cultural and professional backgrounds. Kelley observes that good design often stems from an understanding of the subject and the context within which it operates.

Goal
Second-year interior design faculty from sibling campuses of the same university developed a project linking their studio sections with the goal of nurturing their students’ abilities to understand, communicate, and collaborate with a culture different than their own. Sharing the same curriculum and philosophy but separated by seven time zones, the two campuses occupy very different cultural contexts. Over six weeks, students designed Mobile Cultural Exhibitions, vehicles for understanding and valuing cultural differences. Each MOBEX presented
unique aspects of their sibling campus as a text-free, three-dimensional abstraction of place and identity.

Approach

“Collaborative learning” results during naturally occurring social interactions (Cohen, et al, 1996), so faculty mandated Facebook, the medium through which most students communicate and interact (Sánchez, et al, 2014), as the primary collaborative platform for the studio project. Students engaged in “exclusive collaboration,” where partners worked individually and relied on others as advisors (Yee, et al, 2009). Students established intercampus Facebook groups and used them to share and discuss research about each other’s culture. They augmented this communication with weekly Skype sessions.

From this foundation, students then developed individual projects. Shifting from generative to critical, the collaboration utilized Facebook as the medium over which design process was shared. Overseas colleagues reciprocated cultural and design guidance by “tagging” work with feedback.

Reflections

Social media facilitated immediate investigations of cultural differences and design ideation. Students answered evocative and pointed cultural questions by exchanging comments, article links, and contextual images “face-to-digital face,” where their relative naivete could be quickly addressed. Perhaps due to the remoteness, Facebook allowed for more objective cultural understanding and design criticism than might have resulted in person, where students might be overly concerned about offending others.

Student communication diverged from instructor implemented systems, echoing Cohen in that effective collaboration paths often spontaneously evolve (1996). This improvisation manifested itself primarily through Facebook chats, which proved more useful and reliable than Skype. Students intuited less collaborative utility to social media and exhibited less dexterity with Facebook than faculty had assumed. The ubiquity of social media may provide a low-friction entry point into collaborative technology, but its common casual usage may camouflage its organizational power. Future collaborations with Facebook may prove more fruitful if faculty explicitly demonstrate how to use this informal medium in more directed ways. It is noteworthy that some students prefer utilizing a separate 'stand-alone' repository - e.g., a blog - for their school
work rather than their social network.

The experience demonstrated potential for future collaborations across different cultures using social media, primarily due to the global use and familiarity of the platform. Emergent developments like Facebook Live could provide even richer communication. To facilitate team-building, faculty may wish to establish student social media connections with each other earlier in the calendar in order to provide more opportunity for them to learn informally about and from each other.

**REFERENCES (APA)**


PROCESS development informed through cross-continental collaboration
MOBEX individual projects informed by cultural sharing
MOBEX students explored media independently
PROCESS cultural exchange influenced form and expression
MOBEX students adapted design presentations to the demands of the communication medium.
Radical Reshaping: Public Interiority in Protest Camps

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ABSTRACT

Civil disobedience is the active rejection of an authority or government. Demonstrations and protests throughout history have questioned the role of the trained designer and brought forth provisional, vernacular protest structures. This presentation will document and analyze temporary constructions and temporal interventions of protest camps. I suggest that protest camps are fundamentally comprised of semi-public interior conditions, due to their overall organizational structure, their relationship to the surrounding context, and their conditions of public-interiority, which permit secluded moments of subjectivity in otherwise public, exterior spaces.

To begin, I will analyze a taxonomy of various protest camp types. Firstly, these types can be categorized within three perspectives: urban-rural, parasitic-independent, and transitory-longstanding. For example, the recent Dakota Access Pipeline (DAP) protesters currently have several different encampments near Cannonball, North Dakota. While these are not a part of an urban setting, they do have interior conditions and an overall organization structure integrated within the context of federal lands and the Sioux Tribe’s communal lands in the Standing Rock Reservation. On the other hand, the Minneapolis community aligned with the Black Lives Matter (BLM) movement established an encampment outside the 4th precinct police station where Jamar
Clark was shot and killed. The protest camp is at the very site of the authority which they are rejecting, while the DAP protest camp is at the site of the disputed pipeline. The majority of demonstrations within the BLM movement have been brief political rallies and street marches in swift response to police violence against people of color. So, these shelters are unusual in that the encampment was active for about five weeks during the winter of 2015. The BLM organization created tensile structures which were fastened directly to the police station facade and partially blocking the entryway. In a similar manner to BLM, Occupy Wall Street (OWS) improvised makeshift shelters in a highly visible urban setting. As documented by Jonathan Massey and Brett Snyder, the OWS camp delivered protection from the weather and established a provisional community during their demonstrations. Unlike the BLM approach, OWS’s choice of Zuccotti Park, a privately-owned public plaza, provided separation from law enforcement enabled the encampment to survive for several months in 2012. In 2013, Turkish architects, Herkes İçin Mimarlık (Architecture for All) documented temporary structures during the Occupy Gezi Park (OGP) movement. They created orthographic drawings of the camp to define informal spatial configurations and enclosures made from appropriated materials found in the streets, an architecture that is formed “when architecture is removed from architects.” The long duration of the OWS and OGP camps encouraged clearer definition of public-private inversion, a reversal that is sometimes compared with the Parisian resistance of von Haussmann’s era and the barricades constructed during the Parisian May ‘68 events, which were largely focused on public access to the city and protesters erected barricades in the streets and razed interior zones in buildings to create passageways, inserting the public territory into these voided interiors.

This focus on the dialectic between interior-exterior and houses-streets is the core of the subjective, short-lived conditional interiority found in protest architecture. These temporary constructions and temporal interventions created a vernacular architecture, amateur and improvisational. Their provisional nature strengthens the claim that everyday design is a human right. The protesters, through the manipulation of civic spaces, advocate for their own collective values, reveal the how the city and protesters jointly act as agents in the radical reshaping of space, blurring the boundary between interiority and exteriority.
REFERENCES (APA)


POPS: Spaces of Appearance and Performance

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ABSTRACT

At first glance, the terms “public” and “interior” suggest an essential opposition. Any bounded space must have a set of conditions or rules for entry and create categories of those who are in or out, but there is a complex relationship between physical space and its social reality. Public interiors require careful scrutiny to assess them as such. This presentation proposes to examine the physical characteristics of such spaces and their viability to support gradations of appearance and performance.

Hannah Arendt defined the term “the space of appearance” as generated by the action and speech of free citizens. “The Human Condition”, published in 1958, was a philosophical study that investigated the fundamental categories of the “vita active”, its participants free to act and speak and be seen in public. A public life is inextricably tied to the development of one’s identity, a chance to distinguish oneself and influence civic life. Contemporary theories of performativity reverse a critical feature, suggesting that identity is instead constructed by actions, speech and behaviors. Both modalities requires opportunities for unmediated communication, spaces where our actions (speech included) are observed, judged and reacted to by one’s fellow citizens.
In the 1960’s, New York City introduced a zoning resolution (aka incentive zoning) that offered private developers the ability to add area and height to building projects in exchange for space given back to its citizens. Between 1961 and 2000, millions of square feet were constructed in exchange for over 500 public spaces. These spaces are now known as POPS (privately owned public spaces)- owned, managed and maintained by the developer or building owner, open for use by the public. POPS include plazas, arcades and remarkably, many interior spaces. The original resolution emphasized access as the most critical aspect. Amended over time, the language of the resolution expanded to include very specific physical characteristics. Early versions included specifications for level changes, relationship to the ground plane and visibility. Later, language was added to include requirements for specific features such as seating and landscaping. While not always explicitly programmed, these amenities helped support—indeed to curate—specific modes of occupation. The specific configurations of those interiors can reinforce existing social conventions and distinctions, or to invite more personal interpretations regarding use.

The life of these spaces has been exhaustively documented over time by Jerold S. Kayden, a professor at Harvard University and founder of “Advocates for Privately Owned Public Space”. His research included field surveys conducted in the late 90’s that revealed roughly 50 percent of all POPS did not conform to the applicable guidelines defining publicness. Kayden’s analysis emphasized access, with features that are attractive, usable, and egalitarian. These are a critical mix of opportunities and incentives. However, it is possible to reexamine this analysis to find specific attributes that afford the communion and communication prerequisite to spaces of appearance and performance. For example, 10 East 53rd Street includes an internal corridor connecting exterior public ways. Its primary function is to simply permit motion. This may satisfy the parameters of ostensibly universal access, but it provides no opportunity or cue for any other forms of occupation and thus misses an opportunity to generate experiential meaning independent of that function.

The things and spaces we make structure our relationships. Arendt offers the example of a table around which we may stand; in seeing it together the table and we are confirmed. These relationships form both collective experience and individual identity, made up of our ability to make decisions about our environment and about each other.
The Layered Experience of Public Space: A Study of the New York Public Library

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ABSTRACT

Public space is often represented and interpreted in a binary way: solid/void, public/private. This paper attempts to articulate the lived experience of space as more nuanced and heterogeneous. Space is encoded with multiple layers of architectural, social, and psychological markers that make for varying degrees, expressions, and feelings of “public.”

Grounded in a case study of the New York Public Library, the layered character of inhabitable space is theorized in three related registers. The first looks at boundaries and thresholds, as both architectural elements and social configurations to recognize how and where these features are deployed to distinguish spaces and experiences. The second approach takes up the theoretical distinction between “space” and “place” to understand that the concept of space tends toward universality and abstraction, thereby reducing or erasing the specific conditions and nuanced character of place. The third draws upon Lefebvre’s tripartite scheme to argue that in reducing discourse to a public/private binary, the top-down representations of space are privileged over the lived conditions of spatial practice or the transformative potential of representational spaces.
Building from this theoretical work, the paper engages the notion of “found” or “loose” public space proposed by Karen Franck and Leanne Rivlin, specifically as they articulate the conditions at the New York Public Library. Franck and Rivlin suggest that the library steps can be considered a found space because they provide a range of options for use varying from anonymous, impersonal behavior to people watching to active engagement with entertainers, vendors, or other persons. They argue that the looseness of the library steps maximizes the choices and freedoms of people in public space. While they recognize the variegated experience of public space, to some extent they miss the ways in which these experiences are structured through boundaries and thresholds. The design of this environment affords specific degrees of privacy and types of public engagement within the continuum of built public space.

Study of the main branch building of the New York Public Library, designed by the firm of Carrere and Hastings and completed in 1911, is instrumental in understanding the diverse character of public space. Through a series of analytical drawings, this presentation demonstrates that the space around and inside the New York Public Library is a highly articulated and intentional layering of architectural space that allows for a range of uses and conditions of “public.” Through documented site observations as well as analysis of archival drawings and project notes, research shows the specific characteristics of the spaces of the NYPL are achieved through a series of boundaries and thresholds that constitute the degree to which the spaces are public. The sequence of spaces—from sidewalk to reading room—produces a continuum of experiences between public to private. Individual moments or spaces within this continuum can be further analyzed to understand the specific features that inform the character of the place and the opportunities or constraints on lived experience.

The method of analysis employed is intentionally simple: demarcation of the architectural thresholds and boundaries of social activity. But in so doing, the shifting character of the spaces reveals that “public” is a varied experience and does not exist as a binary condition with “private”. The simplicity of the methodology also suggests that it could be readily applied as a way of interpreting a range of spaces to more fully understand the notion of the public interior.
REFERENCES (APA)

The design of the New York Public Library by John Carrere and Thomas Hastings was “guided by the idea that the architectural progression of the spaces should follow a logical, hierarchical sequence from the most easily accessible and public spaces, to the most removed, scholarly retreats...Today most visitors begin a tour of the Library by proceeding through a series of ever more enclosed spaces: from the exterior steps, past the lions, through the sheltering portico, and into the gracious space of Astor Hall.”

The term public interiors conjures up images of public spaces, shared spaces, the crossing of lives, paths, the new and old, familiar and unfamiliar. As cities evolved and modernity ensued, space, along with its uses and practices, loosened its boundaries to become amorphous, evolving along with society. In particular cafés are an excellent example of how public and private spaces intersect spatially, formally and in practice. Their history is embedded in urban development with certain cities taking on café culture as part of their identity. Paris, Vienna and Milan in particular were impacted by urban planning and social change creating an environment that would not only create café culture, but sustain it. Whether Haussmann’s Parisian boulevards, the Viennese Ringstrasse or the gallerias of Milan each café culture reflected these larger changes that would become ubiquitous to its culture.

The idea of an indoor/outdoor, public yet familiar space has crossed the boundaries of use, interiority and practice to not only define cities, but alter social expectations and define cultures. Particular styles of furniture, layout and materials have become ubiquitous with Paris, Vienna or Milan. Cafés in these cities have historical relevance in terms of its visual and social culture. In the United States the eighteenth century coffee houses of revolution eventually disappeared until
they late twentieth century with the inception of Starbucks coffee chains. Now cities often have national and local chains, as well as individually owned coffee shops. They have altered consumption and social practices along with expectation of urban spaces just as occurred in Paris, Vienna and Milan; yet, these are a different set of experiences and impacts. As Ashby notes café life allowed modernity to creep into the city (2009, 29), this leads to the question—to what extent in the twentieth century does the private move into the public as place and practice, and what is the role of a city in defining their specific modernity? This research will analyze the historic developments and differences in city café cultures and look at that of New Haven, Connecticut—considered to be the cultural capital of the state, largely due the influence of Yale University.

In this presentation the historical development of European cafés in relationship to urban growth will be considered along with an analysis of the city of New Haven and its recent café evolution specifically related to their impact on urban spaces and the public and private practices. It will examine the changing expectation that citizens have of their cities in relation to public/private space, the boundaries of these spaces and the ‘flipping’ of interior objects into public arenas. Also investigated is the impact of social practices in these spaces. The relationship of public and private interior is central here not just in terms of the domestic/commercial—but the individual with society at large.

REFERENCES (APA)

Validation or Neutralization: Public Memory and Identity in the Adaptive-Reuse of Downtown Retail Interiors

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University of Houston

ABSTRACT

The historical presence of downtown retail environments has been essential in the establishment of public life and memory in North America, and in the face of ongoing urban and social transformation they continue to offer unique design opportunities via their adaptive reuse at the interior scale. Theorists such as Koolhaas and Gruen have identified the vital nature of retail and commercial spaces to civic and urban experiences, stating that shopping itself came to constitute urbanity and that by the end of the 20th century it has defined the primary experience of the city. Despite this critical value, in the contemporary moment the decline of brick-and-mortar retail environments is well-documented, particularly in the context of the traditional suburban shopping mall. In light of this retail decline and subsequent impact on space, the reconsideration and adaptation of downtown retail interior environments is both an ongoing phenomenon as well as a valuable potential opportunity for the future - particularly with reference to their previous essential value to the civic life and memory of the city. Can the adaptive reuse of former retail downtown urban interiors ensure the contemporary viability of their urban redevelopment, while still retaining a continuity of civic and urban value in the public realm? Via their adaptive reuse to new
spatial programs, how can former retail interior environments in the downtown context position themselves with regard to their previous lives and identities, and continue to find public relevancy while enabling new functionalities?

This presentation posits how the adaptive-reuse of former downtown retail environments has pursued a variegated agenda of continuity with public relevance and memory, particularly via design at the interior scale that either features or excludes the identity and presence of previous spatial lives. The investigation will center on comparative exemplars of this condition of interior selective validation or neutralization, demonstrating how interior design decisions have impacted memory, identity, and public continuity and broader issues of preservation. Comparative and contrastive, the discussion includes the ongoing downtown retail adaptive reuse of the Victor Gruen-designed Dayton’s Department Store in St. Paul, Minnesota (1963/2017) as a mixed-use facility for urban revitalization; the Thomas Stanley designed Sanger-Harris flagship store in Dallas, Texas (1965/1990) and its iconographic arches and mural; and the reuse of the celebrated Daniel Burnham-designed Filene’s Department Store in Boston, Massachusetts (1912/2015) by Ireland-based retailer Primark. The research provides a means of understanding the historical value and present potential of downtown retail environments for broader urban life, as well as enables insight into future considerations for interior-scale design decisions relative to public identity and memory.

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Contextualizing the Importance of the Urban Public Interior Within Istanbul’s Complex Culture

Alison B. Snyder
Pratt institute

ABSTRACT
The mega-city of Istanbul, Turkey has a diverse set of cultures that stem from the intermingling of local and global factors and a composite of traditions and customs built up over millennia. This city continues to transform, and visualizing the urban complexities and paradoxes are clear when contrasting Istanbul’s ancient Old City with the strikingly modern district of Beyoglu—long famous for its progressive and international inclusiveness that began when it was settled as a merchant colony in the 14th century (Mansel: 1998). As Beyoglu expanded, its openness to other cultures and ideas grew, and at the height of its real estate development in the late 19th to mid 20th centuries, the many attitudes were readily expressed through designs that incorporated new external and internal architectural technologies and spatial innovation expressed through eclectic styles. These contributed to Istanbul’s secularization of public spaces.

A multi-use building type constructed of up to eight stories located on irregular and narrow parcels of land dominated the development, and became known as a "passage." This spatial type drew from both the ancient eastern cellular-formed markets or suqs, and the western early 19th century glazed shopping arcades that began in Paris (Geist: 1983). Yet, the Turkish passage became an
unusual urban public interior that ingeniously links avenue to side street by forming a third internal street space (Goad: 1906; Pinon: 1997; Author: 2011). Distinguishing the Turkish passage, further are the varied spatial arrangements that hold and support a wide array of Beyoglu’s activities including many scales of commerce, galleries, cinema, theatres, offices, residences and cafes. These passages may be understood as a series of destinations offering respite from the city, as well as a set of liminal and anonymous spaces and experiences that signify individual and collective freedoms (Benjamin: 1940/1999; de Certeau: 1984). Yet, their use and distinction in the district, have been affected by social, economic and political issues (Aksoy/Enlil: 2010; Adanali: 2011; Author: 2015).

In this paper, the author argues that the Beyoglu passage has become a key indicator of the cultural shifts taking place in the city today. Surrounding the mile long Istiklal Avenue (the pedestrian spine of Beyoglu) are approximately twenty-one passages in various states of use and adaptive reuse, as well as disuse and closure. They are the subject of a decade long field work study that documents these structures as well as chronicles their change, while the city also changes. To understand these interior-oriented places and their part in defining the contemporary city, reading the work of social theorists, historians, urbanists, philosophers and designers becomes useful since Istanbul and its spaces, defies typical descriptions. Edward Soja’s (2000) term the “post-metropolis,” is helpful as his “thirddspace” concept says cities must be studied from a “simultaneously spatial, social, and historical perspective” (p. xiv). And, philosopher Jean Baudrillard with architect Jean Nouvel (2002) discussed “a building serves as a witness to a bygone era...[it] has reached this dimension of “bearing witness” (p. 65). In this paper, a small case-study of four passages will show how this public interior is an indicator of both local and international growth, yet may also be a dying public space, at the same time.

REFERENCES (APA)

