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Theoretical Exploration in Healthcare Design: Can Biophilic Design Help Reduce Nurses Burnout and Stress in ICU?

Rana Bazaid, Texas Tech University
Sharran Parkinson, Texas Tech University
Erin Hamiton, Texas Tech University

Abstract

Purpose: This study used the theoretical pathway to explore the use of biophilia theory (exposure to nature through biophilic design), attention restoration, stress recovery, and stimulation theory to find the relationship between the environmental approach and reducing burnout and stress levels in nurses in the Intensive Care Unit (ICU).

Background: Biophilia is a philosophy that uses natural elements and systems (Gillis & Gatersleben, 2015) to create indoor environments that improve human health and well-being (Coles & Calabrese, 2018). Evidence for this improvement is mostly linked to three overarching mind-body systems: cognitive, psychological, and physiological. These systems have been tested to demonstrate how the built environment affects health and well-being and how the patterns may offer emotional restoration (Browning, Ryan, & Clancy, 2014). Cognitive responses to nature include attention, concentration, emotion, and mood, as well as overall physical comfort, including the influence that nature has upon restoration and stress management (Browning et al., 2014). As such, studies have shown that applying biophilic design indoors can reconnect users with nature (Yale Environment 360, December 2009). Evidence has shown that biophilic

design helps reduce stress levels and increases health and well-being indoors (Totaforti, 2018). However, nurses are still suffering from burnout and one potential solution that might be capable of addressing stress and burnout in nurses is biophilic design, which has been shown in various studies to positively impact stress levels in hospital patients, nurses, and workers or staff members in hospital settings. However, this research has been limited and most often focuses on only two of the design patterns within the biophilic theory. Methods: This study is a part of a large literature review that reviews empirical examination and theoretical literature. The researcher used PubMed, Web of science, and EBSCO database along with google scholar to collect a total of 101 articles. Each article in this study was used to determine either theoretics or application of how biophilic design impacts an individual's burnout or stress level. Result: The finding suggests the physical environments of the ICU nurses' workplaces and break areas may play an important role in enhancing healthcare delivery, patients's health, nurses' health, and the environmental features that may reduce stress levels of nurses and increase satisfaction. Moreover, having outside gardening and green spaces along with the physical design of the ICU unit, workstation, and breakroom could play both a direct and indirect role in influencing nurses' emotions. Conclusions: There exist grounds to affirm a conceivable causal relationship between the physical environment and nurses' burnout and stress, as shown in theoretical assumption and literature review. Using biophilic design by integrating natural aspects and systems into indoor hospital environments to provide ICU nurses exposure to nature, can help to reconnect nurses with nature and receive its benefits. Using biophilia

indoors simulates reality to provide a variety of indoor settings that exposes natural aspects where access to nature may not be possible.

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Table 1:

Evidence of 14 patterns of biophilic design in the literature.

Biophilic Elements	Healthcare Setting		Decrease stress	Emotion, Mood & Preference
	Nurse	Patient		
Visual Connection with Nature	Reduce stress (Mihandoust, 2019; Nejati et al., 2016; Pati et al., 2008; Zadeh, Shepley, Williams, & Chung, 2014)	(Karnik et al., 2014; Sahlin et al., 2014; Biederman & Vessel, 2006 ; Ulrich et al., 1993; Ulrich, 1991; Ulrich, 1984)	Lowered blood pressure and heart rate (Brown, Barton & Gladwell, 2013; van den Berg, Hartig, & Staats, 2007; Tsunetsugu & Miyazaki, 2005) reduced stress (Ryan et al., 2014; Felsten, 2009; Kahn et al., 2008; Sop Shin, 2007), increased comfort (Veitch & Newsham,2010)	Positively impacted attitude and overall happiness (Barton & Pretty, 2010)
Non-Visual Connection with Nature		Reduce pain (Kim et al., 2007)	Reduced systolic blood pressure and stress hormones (Park, Tsunetsugu, Kasetani et al., 2009; Hartig, Evans, Jamner et al., 2003; Orsega-Smith, Mowen, Payne et al., 2004; Ulrich, Simons, Losito et al., 1991), enhance performance (Alvarsson et al., 2010; Hunter et al., 2010)	Perceived improvements in mental health and tranquility (Li, Kobayashi, Inagaki et al., 2012; Jahncke, et al., 2011; Tsunetsugu, Park, & Miyazaki, 2010; Kim, Ren, & Fielding, 2007; Stigsdotter & Grahn, 2003)
Non-Rhythmic Sensory Stimuli			Positively impacted on heart rate, systolic blood pressure and sympathetic nervous system activity (Li, 2009; Park et al, 2008; Kahn et al., 2008; Ulrich et al., 1991), decreased psychosocial stress (Li, 2010)	
Thermal & Airflow Variability			Positively impacted comfort, well-being and productivity (Heerwagen, 2006; Tham & Willem, 2005; Wigö, 2005)	Improved perception of temporal and spatial pleasure (alliesthesia) (Parkinson, de Dear & Candido, 2012; Zhang, Arens, Huizenga & Han, 2010; Arens, Zhang & Huizenga, 2006; Zhang, 2003; de Dear & Brager, 2002; Heschong, 1979)
Presence of Water			Reduced stress, increased feelings of tranquility, lower heart rate and blood pressure (Alvarsson, Wiens, & Nilsson, 2010; Pheasant, Fisher, Watts et al., 2010; Biederman & Vessel, 2006)	Observed preferences and positive emotional responses (Windhager, 2011; Barton & Pretty, 2010; White, Smith, Humphryes et al., 2010; Karmanov & Hamel, 2008; Biederman & Vessel, 2006; Heerwagen & Orians, 1993; Ruso & Atzwanger, 2003; Ulrich, 1983

Scholarship of Design Research – Open Track
Presentation

Passthrough Augmented Reality (PAR) Technology Potential to Mitigate Remote Working Issues

Zahra Hosseini, Oklahoma State University

Abstract

Although working remotely has a long history, the Pandemic of Covid-19 caused a historic shift in the nature and type of work in 2020. While Covid-19 pushed companies to offer remote working as a means to protect employees, it is now considered the norm for most businesses. Previously, as remote working began to be recognized in some companies in the last two decades, most individuals used virtual and desktop platforms to communicate with their coworkers. However, today's workplace looks very different from what we could have imagined just a few years ago. Nowadays, there are a lot of applications that support individuals working in an immersive virtual world through the use of virtual reality and augmented reality headsets. These head-mounted displays (HMDs) have emerged as a burgeoning technology that facilitates individuals to conduct serious work tasks within an immersive environment, due to their affordability, availability, and versatility. This study assumes that working remotely in fully immersed and semi-immersed environments can alleviate several of the challenges associated with traditional working from home, such as inadequate equipment, social isolation, and limited dimensional space in houses. This study focused on utilizing passthrough augmented reality (PAR) technology through the Immersed application, which is a virtual reality-based productivity and meeting app that allows individuals to complete

serious job tasks. The purpose of this study is to demonstrate how PAR which is a feature that provides a real-time view of an individual's surroundings augmented with virtual objects can enhance the perception of working remotely compared to a traditional working from home environment. To collect primary data, we surveyed 60 interior and architectural designers who worked remotely even for a short time to determine what kind of equipment, furniture, settings, and dimensions they designated for the space where they worked remotely. Based on the information we gathered in the first phase, the second phase involved creating an actual workspace environment. Then we used the Immersed application, the passthrough option to create the PAR environment and facilitate the actual workspace using virtual devices such as multiple screens, virtual whiteboard, and virtual keyboard. 20 participants were randomly assigned to two groups: the actual environment and the PAR environment. Participants' psychological and psychological responses to six variables were measured, including arousal, pleasure, dominance, satisfaction, productivity, and cognitive load to assess the overall impressions of these two rooms. ECG (Electrocardiogram) sensors, EDA (Electrodermal activity) sensors, fNIR (Functional near-infrared spectroscopy) devices and one self-reported questionnaire were used to collect psychophysiological and psychological data that corroborated subjective survey data on the above variables during a simple design task assigned to the participants. This study demonstrated that implementing PAR in remote offices will improve physiological responses, satisfaction levels, and cognitive measurements compared to traditional actual workspaces used for working remotely. Furthermore, the PAR environment reduced the cognitive load on the

task, thereby increasing productivity as compared to the actual working remotely environment.

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Developing Empathy Training Protocols Through Gamified Spatial Empathy Experiences

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Abstract

Empathy is defined as the ability to understand how others feel and what they mean, and to convey these emotions to others (Richendoller, & Weaver III, 1994). There is a growing need in developing empathy training programs for work environments. In a recent report (Business Solver, 2021) 90% of the HR professionals and CEO's stated that empathy is important in office environments and 82% of workers stated that they would change jobs to work for a more empathic focussed organization. This shows how important and valued the concept of empathy is in work environments. Studies have shown that empathy can be developed, or learned through training exercises (Teding van Berkhout & Malouff, 2016; Lam, Kolomitro, & Alamparambil, 2011) Spatial empathy is a concept that has been developed to describe how a person feels about the ambience of an environment and how that space relates to their personal identity (Duarte, & Pinheiro, 2016). It can also be explained as how a place feels friendly or how it feels like rejecting. This idea of spatial empathy or the friendliness/rejection by spatial ambience can be associated with the idea of gendered space which suggests that certain spaces are specifically designed to accept particular types of gender expressions (Umiker-Sebeok, 1996). There is a critical need in developing spaces that are more inclusive to all genders to protect their health, safety and wellbeing. There is a

lack of awareness about the daily lives of non-binary people and empathy towards non-traditional representations of gender identity in the workplace.There is a critical need to develop empathy towards people who identify within the spectrum of gender. This study focuses on assisting individuals in developing empathy by gamifying spatial experiences in which the player actively makes choices in relation to their gender identity and their experiences in different environments. A board game was developed with two versions: One, a traditional board game where users interact and progress by answering questions on environmental conditions, and in the second version in addition to the same questions as in the first version, augmented reality spatial experiences were included. A pre-post empathy survey was developed based on several existing instruments and was used in assessing the change in empathy in the two conditions. The NASA TLX questionnaire was used in measuring the cognitive load in the two conditions. The outcomes of this study provides a spatial empathy based training protocol that can be used in office environments to develop empathy.

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Biophilic Design and Its Impact on Stress Levels and Information Retention in Students

Alyssa Oates, Oklahoma State University

Abstract

The design of classrooms can impact student learning. A study found that depression is a significant health concern in university populations (Ibrahim et al., 2013). A positive classroom environment is often associated with warm colors, soft textures and materials, and a home-like feel. Khajavy, MacIntyre and Barabadi (2017) found that a positive classroom environment can encourage students learning a second language to communicate with their peers and teachers. If a student feels safe and welcome in a space, they are more likely to take risks and further their education. Furthermore, a study done by Ramli, Ahmad and Masri, (2013) found that changing the layout and seating arrangements in a classroom will enhance the success of students. In addition to layout, the use of nature-inspired design can be beneficial to students when designing a classroom. This can be achieved through the integration of biophilic design, which seeks to reconnect individuals with the natural environment (Kellert, Heerwagen and Mador, 2008).The use of biophilic design in hospitals, workplaces, and homes has been shown to positively influence the health, wellbeing, and success of the people using those areas. Research on biophilic design in classrooms is still lacking. The purpose of the study was to assess stress levels and information retention in a traditional classroom and a proposed biophilic classroom using virtual reality. The study

was conducted in the Mixed Reality Lab at Oklahoma State University. 22 participants were recruited for the study. For the procedure, a traditional classroom, and a classroom with biophilic elements were designed using the software Sketchup and Enscape so that the classrooms could be experienced virtually by the participants. The order in which the participants experienced each of the classrooms were randomly assigned. Participants were asked to perform reading, writing, and memory recall tasks. In addition, participants were asked to talk-out-loud as they carried out the different tasks. Audio recordings were made as the participants carried out the different tasks. A heart rate monitor was used to measure the heart rate. In addition, a survey instrument with Likert scale questions for perceived stress and information retention was used. A t-test was used for analysis when comparing the two virtual classrooms. The significance level was set at 0.05. A content analysis was used to assess the qualitative data from the audio recordings to produce themes and subthemes as it relates to participants' experiences in the two virtual classroom spaces. The stress levels (p & 0.05) and normalized heart rates (p & 0.05) in participants were found to be lower, while information retention (p & 0.05) and ability to focus (p & 0.05) were higher in the biophilic classroom. In addition, participants expressed more positive words in the biophilic classroom when compared to the traditional classroom. In the future, schools may incorporate more plants, natural light, biomorphic forms and more color (specifically natural-toned colors) in the classrooms to help reduce stress and improve information retention in students.

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Post Evolution: Millennial Travel Behavior, Instragram, and The Hotel & Airbnb Experience

Erin Colwell, University of Oklahoma

Abstract

This research is an examination of hotel design rooted in environment and human behavior theory. The specific intent is to investigate the relationship between Millennial travel behaviors, hotel and Airbnb environments, and social media; specifically interior elements which may strongly influence shared travel experiences on Instagram. Background and Objectives There have been fundamental changes to the way people work and live since 2020. A new normal emerged in the corporate travel world and includes the regular use of Zoom meetings and terminology such as bleisure, and the place between home and office. Remote work has untethered many people with the option to remain that way in lieu of returning to a physical office. Airbnb CEO informs us that we are undergoing the biggest change to travel since the advent of commercial flying. Millennials are now the largest generation and make up the majority of the workforce. Their behaviors are now a concentration for the way we design environments including hotels. Social media, particularly Instagram, is an overlooked dynamic. 97 percent of Millennials share their travel experiences on social media. The hotel design industry must consider this trend in response to recent Airbnb popularity. This research intends to shine a light on the evolution of travel and help the design industry better

understand the phenomenon. The thesis statement of this research declares Millennial travel behavior is affecting the design industry's approach to hotel interiors through Instagram content. The E-B theories of Meaning of Home, Place Attachment, and Choice & Control are foundational for Millennial behavior demarcation. Boutique hotels and Airbnb categories are the units of analysis for evaluation. Human-environment categories are examined with interior elements which influence Millennials to share their travel experiences on Instagram. Research Methods This research is part one of a three-part study examining how travel behaviors and experiences of Millennials are influencing the design of travel accommodations, particularly hotels and Airbnb. Social media posts offer a unique data set to analyze the travel experiences, thoughts and behaviors of these travelers. This research utilizes Parsehub, a web scraping software to extract social media posts from Millennials who report stays at boutique hotels or Airbnb accommodations. A qualitative thematic analysis is employed to summarize the findings and provide a unique way to summarize patterns and trends in data, as well as being able to generate themes regarding travel experiences, preferences for interior elements of design, and behaviors across a large data set. The method provides an inventive way to understand how Millennials use Instagram to determine desired travel accommodations. This research ultimately intends to explore how social media can be used as a tool to influence design education and practice. The digital environment, particularly Instagram imagery, can influence people in a way that can be practically applied, expand current knowledge on the evolution of travel, and propose adaptation techniques for existing hotel brands.

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Scholarship of Design Research – Practice
Presentation

The Role of Virtual Reality as a Positive Distraction in Healthcare Environments

Michelle Pearson, Texas Tech University

Abstract

Hospitalization can be a stressful event, and the built environment can play a direct role in the experience of the patient. Ulrich's Theory of Supportive Design (1991) states that supportive healthcare environments should provide access to physical features that have stress-reducing influences including access to positive distractions. When hospital environments lack positive distractions, patients have been shown to have a greater focus on the pain that is occurring, worry, or stressful thoughts which have been linked to increased stress. The term positive distraction typically within healthcare environments refers to artwork, window views, etc. but within the last decade, a new form of positive distraction, virtual reality (VR), has been utilized in healthcare environments. This presentation explores the following research questions: 1) How does VR technology impact the user?, 2) How can VR be used as a positive distraction in healthcare environments? To answer these research questions, the researcher conducted a thorough literature review on related topics including healthcare design, virtual restoration, positive distractions, and virtual environments. Because VR technology is rapidly evolving, only articles published between 2010 and 2022 were included in the search to ensure it represented the current technology. Various databases, including Google Scholar, PubMed and EBSCO, were used to gather literature meeting the criteria. Immersive virtual reality usually isolates patients from the

real world, which in this case would be a healthcare environment. The headset that is typically used to deliver VR blocks the patients’ view of the hospital environment and provides a virtual environment to view instead. This allows the patient to “perceptually escape into a pleasant alternative 3D world (Hoffman et al., 2011, p. 184). The logic for how VR works is as follows. Pain requires attention (Eccleston & Crombez, 2000, Eccleston, 2016), and humans have limited attentional capacity (Kahneman, 1973). Interacting with virtual reality uses a substantial amount of the patient's limited controlled attentional resources. Consequently, when in VR, the patient has less attention available to process incoming signals. Research has indicated that VR can be used as a powerful tool for positive distraction in healthcare environments. For example, researchers (Patterson et al., 2022) found that during wound debridement, participants reported significantly less pain intensity when distracted with VR than in standard wound care without distraction. Another study (Anderson et al., 2017) exposed adult patients to VR-presented natural settings and control scenes. Researchers found that participants who viewed the nature scenes had a more improved mood and perception of scene quality (Anderson et al, 2017) than those that viewed the control. VR has also been linked to positive impacts on the physiological and psychological processes of patients including blood pressure, heart rate, and mood (Vincent et al., 2010). These findings, among others, will be discussed throughout the presentation. While VR is a common tool in architecture and interior design, it will likely continue to become an increasingly viable option for positive distractions within healthcare environments. This research provides context and understanding of how VR can positively impact the patient experience and healthcare environments.

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A Mixed-Methods Study: Investigating the Role of Environment- Behavior (E-B) Attributes Upon Faculty

Natalie Ellis, University of North Texas
Ammara Faisal, University of Oklahoma

Abstract

Purpose. The sole purpose of design research involves reducing uncertainty when designing environments and facilitating crucial design decisions. Background. With increasing educational costs and declining student retention and graduation rates, higher education institutions explore innovative classroom designs to enhance creative instructional approaches. The presented research gathered and synthesized the current body of literature and evaluated the existing higher education learning spaces from the perspective of one of the primary users of the space, such as instructors. Furthermore, since the learning space's interior design influences instructors' instructional methodologies, special attention has been given to furniture arrangement and furnishing of the classroom spaces for the overall academic performance and related behaviors (Gifford, Steg & Reser, 2011). Therefore, it was hypothesized that there is an association between the classroom design and the instructors' instructional methodology. Methods. Through a convergent parallel mixed-methods design, the current research strived to examine the role of physical design attributes of traditional and active learning classroom designs on instructors' instructional methodologies. Eighty-three participants responded to the survey, and Sixty participants completed the

survey whereas nine follow-up structured interviews were conducted to collect data.

Results. Data analysis revealed an association between the classroom design and

instructors' instructional approach. The study also investigated if there is a difference

between the traditional and active learning classroom design regarding perception and

values. Contrary to previous literature, the quantitative data revealed no difference

between the traditional and active learning classroom design regarding perception and

values. However, findings from the qualitative data analysis revealed that there is a

significant difference. Conclusions. The emphasis of this academic environment's post-

occupancy evaluations was to assess user needs, experience, and values concerning

these environments' physical attributes (Tookaloo & Smith, 2015). Thus, the

information collected from the post-occupancy evaluations of educational settings

informed planning, design, and pedagogical practices throughout the evaluation process

(Scott-Webber et al., 2018).

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Refugee Housing: Role of Interior Designer in Wellbeing and Social Welfare

Suchismita Bhattacharjee, University of Oklahoma

Abstract

Housing as a critical infrastructure, should facilitate caregiving and care receiving from individuals, households, and society. Refugees face various challenges during settlement in a new country including financial instability that make the process of finding adequate housing a challenge. They can experience several obstacles in the process of cultural accommodation to community life in the U.S. and therefore they can benefit from considerable support for resettlement (Yamaki, 2009). In addition to the issues arising from a foreign environment and lack of place attachment, the refugee families face several additional challenges related to housing. Housing should not only be a safe and private space close to the area of employment, but for the refugee immigrants, it is typically characterized by being in stigmatized areas and decrepit conditions (Abramsson et.al. 2002). Murdie (2002) claimed that affordability should not be the only consideration for refugee housing and should also focus on the home's and the surrounding community's socio-cultural and psychophysical aspects. With this theoretical underpins, researchers rarely explore the Care infrastructure concept, which includes the policies, resources, and services necessary to help communities/ refuges meet their caregiving needs, including psychophysical well-being. This study explores

the role of designers in addressing challenges related to housing during the resettlement process and how it has been addressed over the past decade. Past research conducted across the world emphasized the importance of social education in the design field. Though design based educational programs have started incorporating social education in their design curriculum, yet there is no agreement on what constitutes the body of knowledge and how to deliver it. This study further explores past literature to identify how social welfare is introduced in design curriculum and compares them with standards listed in CIDA accreditation guidelines. The study adopted systematic review methodological approach to investigate past literature related to designers' role in refugee housing and social welfare. Through content analysis a thorough keyword search of exisiting literature was conducted to understand the trends. Through this preliminary search a total of approximately 20 scholarly publication sources of target journals or conference proceedings were identified for second round of search. The results of the second search were used to select literature according to topic, occupants, and building types. The shortlisted articles were compiled and coded based on the primary aspects of wellbeing and care giving. Data analysis was performed based on coding results to identify the focus area. Findings revealed that the concept of care-giving is not considered for refugee housing. Additionally, refugee housing itself is considered as shelter only with no focus on well-being and psychosocial aspect. The crucial concept of place attachment is also neglected during refugees' housing selection process. This study contributes to a growing body of knowledge and practice about care giving and receiving in housing planning especially in refugee contexts, while addressing its usually overlooked spatial dimensions.

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Scholarship of Teaching & Learning – Diversity, Equity, and Inclusion
Presentation

Classroom Experience: Understanding Inclusive Design as Professional Best Practice

Jeannine Vail, University of North Texas

Abstract

This presentation explores how a CIDA-accredited Interior Design program can incorporate experiences that consider pluralistic, diverse societies, that are inclusive and equitable (Phielipp, 2022) into the classroom through evidence-based design methods and design thinking processes. An exercise led by the presenter involves a senior seminar, applied studies on business principles and procedures, professional responsibility and teamwork, to examine the role of inclusive design as utilized in practice (Piotrowski, 2014). The classroom project was based on a University initiative to acknowledge students' identities and create a physical manifestation of their presence. It exposed the need for a new Multicultural Center to foster the success and awareness of historically underrepresented populations. The assignment emulated the University's criteria-driven implementation of a Request for Qualifications (RFQ) process to develop a program for the facility. Acknowledging that students learn in different ways. Offering various paths to understanding may bring more learners along (Ankerson and Pable, 2008), multiple learning strategies were implemented to structure learning outcomes and facilitate understanding of diversity and inclusiveness in the design process. Lectures explained the business procedure and importance of an RFQ,

Request for a Proposal (RFP), and Historically Underutilized Business (HUB) participation. Students reviewed case studies of the RFQ submissions, including an analysis of the evaluation criteria and firm interviews. A rubric was used to evaluate participating firms experiences and HUB subcontracting approaches. Project management expertise, technical competence and the ability of the firms to control quality and cost were taken into consideration. Students were teamed for a role-playing activity. They created a fictional design firm, developed qualifications, and prepared written responses to an RFQ for the programming phase of the new Center. Students had to identify key team members, assign roles, and based on their firm's experience of similar projects, describe pertinent considerations in programming the Center. Each team presented its proposals to the class, including demographic analysis and its programming process. Immediate feedback from peers and instructor on the strengths and weaknesses of each proposal prepared students for the next step in the process. Design firm visits followed and the firm presented a summary of their process and final program document. The firm noted the importance of a visioning session to understand the user's top priorities for the space: Inclusive, Belonging and Diverse. The experience allowed students to understand the design process, from proposal to program completion. A key takeaway embraced inclusive design placing the user at the center of the design process in shaping significant decisions. (Altay et al, 2016) Learning outcomes demonstrated the importance of working with issues related to inclusivity, diversity and equity. Students captured alternative viewpoints and engaged in critical and creative thinking. Observations included that most students understood the importance of inclusion; a small percentage failed to define the end user as relevant to

the project brief. This project successfully incorporated professional best practices for understanding inclusive design, the responsibility of an interior designer to consider inclusion, diversity and equity in space design, and the influence the industry has in shaping such environments.

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Professional Practice: In-Class Group Exercise

Students _____ _____

_____

Provide Definition:

1. RFQ

2. RFP

3. HUB

4. HUB Plan

Exercise:

Imagine you are pursuing a design project, how would you answer the below questions to respond to the RFQ?

Project Description:

This project will be to design and construct a Multicultural Center on a University Campus which is a key priority of the Campus Strategic Plan. This project will be an approximately 7,000 gross square foot (GSF) structure and will relocate the Multicultural Center currently located in the Student Union to a dedicated facility. The new facility will create a welcoming environment to support the functions and services provided by the Center to foster the success and awareness of historically underrepresented student populations.

The new facility is proposed to be located in the heart of campus near or adjacent to the Student Union. This could be a free-standing facility or an expansion to the Union. A detailed site evaluation, including conceptual perspectives, will be performed by the selected team as well as programming documents. The new facility should serve the students by creating a distinct, highly visible, welcoming identity. Final site location will determine massing and exterior façade design. However, the design should represent the University's value of fiscal responsibility. It is anticipated the Multicultural Center program will include spaces such as a student lounge, multipurpose rooms, meeting rooms, offices, and storage spaces. It is also desired to be connected to outdoor communal spaces.

Provide the below Firm Profile

Name:

Age of Firm:

Number of Employees:

Criteria:

Criterion A - Respondent and proposed team's experience and capability to perform design services of Multicultural Center type projects. Responses should include the team's experiences in helping to cultivate an environment where people of all identities and experiences can thrive. Projects or experiences that foster the success and awareness of historically underrepresented populations with an emphasis on disability, ethnicity, gender, interfaith, race and sexual orientation.

Criterion B –Most pertinent consideration in programming and designing the project –

State briefly what the firm believes to be the most pertinent consideration(s) and

challenge(s) that must be addressed in the design and construction of a project of this

type. Sketches, diagrams, analyses, or other tools that will help illustrate the teams'

point may be included.

Criterion C – Description of the Team: Responses should include all key team members

and sub-consultants for Programming, Design and Construction Administration

services. Please designate in your

response team members and sub-consultant's role and duration during the project.

Scholarship of Teaching & Learning – Pedagogy
Presentation

Interior Materials: A Hands-On Approach

Sarah Angne Alfaro, Ball State University

Abstract

Interior design programs teach design students about materials in a variety of ways. Typically a material course is designated in the interior design program's curriculum as means to focus on various interior construction techniques/assemblies, products, codes, specifications, etc. Within a typical course, professors lecture about specific material topics weekly, have quizzes from assigned readings, invite guest speakers to talk about specialty areas, have field trips to showrooms and site visits, plan hands-on demos for students to learn (i.e. grouting tile), and even build models (i.e. stud walls, etc). Most recently, a distributed material box was developed by interior design faculty that accompanies a textbook and includes numerous samples: textiles, stone, veneers, etc for students to learn from in synchrony. While brainstorming ways to teach a new generation of interior design students about materials more effectively and creatively, a university had the opportunity to teach their materials class in an immersive setting, via a hands-on approach. A grant was secured, and the class partnered with a local community partner and a construction consultant to redesign two ancillary spaces. Students were on site learning each class: field measuring, designing, client presentations, selecting materials and specifying, purchasing, receiving products, demolition, installing, checking punch lists, and perfecting the final touches. This

presentation highlights the objectives and outcomes of the immersive materials course. A time-lapse video showcases the process from beginning to end. Student feedback, recorded in a course journal, highlights the personal account from the student's perspective of the experience. Photo and construction documentation reveal the before and after of the spaces. Strengths and weaknesses, as well as areas for improvement are presented. With efforts to teach a new generation of designers in design school about materials, this presentation highlights a radical approach that proved quite effective with its engaging content and pedagogical approach.
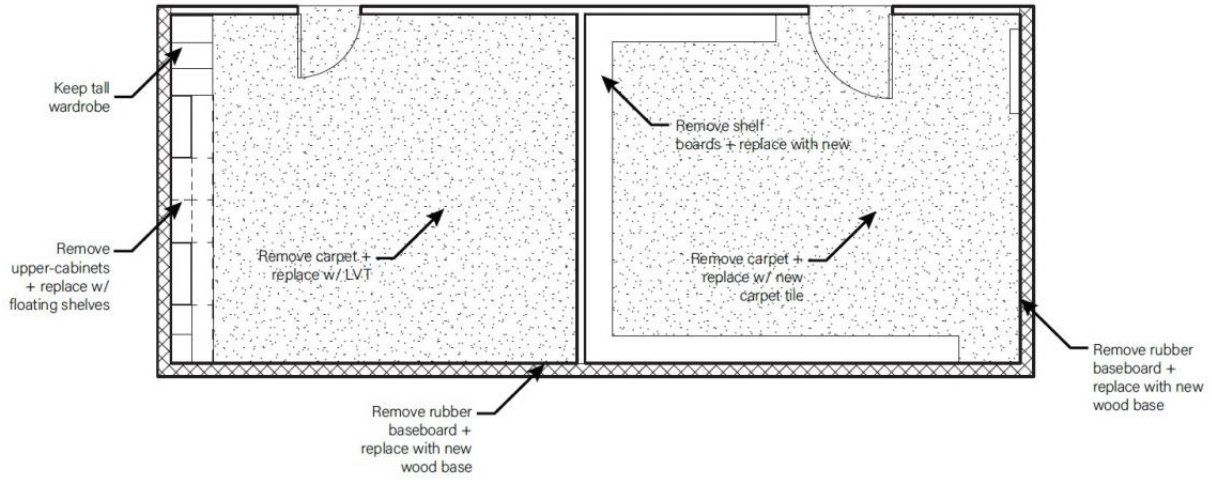
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*Existing Ceiling Fixtures
(lights + fans) are to be
replaced with new

Keep tall
wardrobe

Remove
upper-cabinets
+ replace w/
floating shelves

Remove carpet +
replace w/ LVT

Remove shelf
boards + replace with new

Remove carpet +
replace w/ new
carpet tile

Remove rubber
baseboard +
replace with new
wood base

Remove rubber
baseboard +
replace with new
wood base

1 Level 1 Demo Plan
   1/4" = 1'-0"
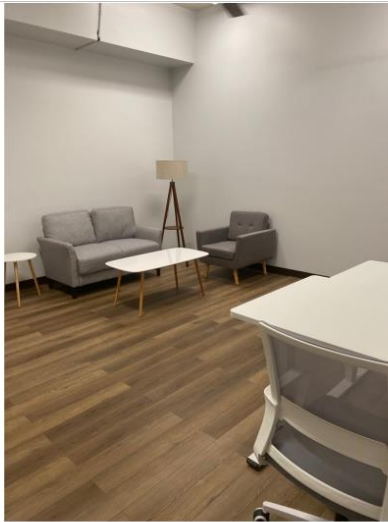
"Construction Documentation" Existing Space

"Before and Process" Photos of Storage Room

"After" Photos of Storage Room

"Before and Process" Photos of the Study Room

"After" Photos of Study Room

Scholarship of Teaching & Learning – Practice
Presentation

Transformation of 1960's University Residence Halls to Meet the Demands of Today

Sally Ann Swearingen, Stephen F. Austin State University
Jennifer Luque, Stephen F. Austin State University
Nathaniel Walker, Stephen F. Austin State University

Abstract

Collaboration and learning how to listen and apply what client expectations are, along with determining your objections can be daunting sell for students. The course capstone project required renovation of two sister residence halls that were built in 1964 and 1967. One is currently all female while the other is designated as a Co-ed residence hall. As the majority of the housing residences halls of American colleges and universities reaches the fifty-year mark that makes them eligible for historic status, the sensitivity of renovation of these buildings grows; this is a need not only from the field of architecture and student affairs, but from the fields of planning, sociology and education as well as those in the discipline of historic preservation. The class goal was to provide a presentation to the Residence Life Administration and the VP of Student Affairs illustrating the transformation of 1960's university residence halls to meet the demands of today. This was achieved through reviewing the Universities Mission, the Residence Life mission, touring the residence halls on our campus and other campuses who have renovated older residence halls, built new halls, determining the trends of new residence halls, surveying students who currently live in the halls or have previous lived

in either hall, hearing from architectural firms that are currently developing new residence halls and interviewing staff who either work, live or assist in maintaining the facilities to provide a broad view and assisted in molding the proposed changes. Much time was spent analyzing survey data, determining the needs and current issues of the students. The two dorms on campus are popular due to their price point, but the current administration wanted to make changes that would encourage more students to live on campus. Our world has changed in the past 40 years and the students needs have changed along with the technology required for college success. The goal was to create a living environment where residents can develop and thrive socially and academically. The goal of this presentation is to illustrate the process in which two teams developed their programing, process and end presentation. You will see what changes were proposed to meet the needs of the students today without demolishing the building, but providing a residence where students have a sense of community. The building must also meet student demands of today, by providing better wayfinding techniques, lighting, finishes, addition of student community and private spaces, exterior landscaping, promoting well-being and health, factors affecting the perception and the use of outdoor spaces, to give a few examples.

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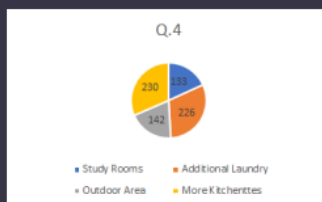Anderson, H.C./LTI. (2020) Case Study: https://lowtempind.com/case-studies/tl-hanna-high-school/

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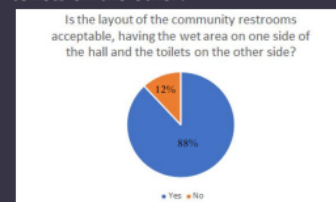
Creative Scholarship- Design as Art
Presentation

Monarch Migration

Valerie Settles, University of Central Oklahoma

Abstract

The "Monarch Migration" installation was created for an event sponsored by a non-profit organization that provides home goods for families coming out of homelessness. The event, held at the zoological park, featured collaborations between chefs and designers who created thematic spaces where potential donors could enjoy a gourmet meal. The zoo provided a natural source of inspiration for installations centered around immersive tablescapes. Each team was assigned an area approximately 12x 12 inside a dining pavilion with high ceilings and few structural elements to delineate space. The concept was Monarch migration. Sadly, numbers of adult Monarchs who make the migration trip each fall have dropped drastically, over 80% in the past two decades. Impacts of climate change in high-altitude forests of central Mexico where Monarchs spend the winter result in warmer temperatures and extreme weather changes. Also alarming, the area occupied by overwintering Monarchs dropped to an unprecedented 2.1 hectares in winter of 2020/2021 due to habitat destruction and removal of critical lumber in the region (Lovett, 2021). The installation was an interpretation of the Oyamel Fir Forest of central Mexico. This represents the beginning and end of the annual "Monarch Migration." Monarch butterflies spend the winter there and begin their journey north in early spring; the great-great-grandchildren of these Monarchs return from the northern

border of the United States to the safety of their mountain refuge (Taylor, 2020). Representing the Fir Forest, the installation was a visual interpretation of critical elements such as fir and pine trees in which Monarchs roost, surrounding trees and undergrowth to protect from extreme weather and predators, cool air, and the presence of water (Lovett, 2021). The design utilized biophilic elements that integrated the natural and built environments to connect people and nature. The space represented these elements with gathered branches and low paper shrubs. The shrubs that emulated forest undergrowth were fabricated from construction paper, an easily accessible and inexpensive medium. The presence of water was represented by teal blues in the place settings and an organically shaped centerpiece; Monarchs themselves were characterized by enveloping banners on the perimeter of the dining space, laser cut with abstract images of the stages of the Monarch's life cycle. Members of the team designed, laser-cut, strung together, and applied hundreds of butterfly cut-outs in various sizes throughout the installation. It was important to develop a design that minimized the environmental impact of the installation. This included natural found objects that could be composted, paper that could be recycled, and place settings sourced from donations and returned at the close of the event. In addition, providing an educational experience for diners that encouraged habitat restoration for monarchs and other pollinators, packets of wildflower seeds purchased from a local feed store were incorporated into the place settings as gifts. This fundraising event provided an exciting, collaborative opportunity for designers to utilize their skills to help the community and educate diners about the plight of Monarchs and how they can contribute to the continuation of these beautiful creatures.

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annual-cycle-migrations-and-the-number-of-generations/

Process – Construction paper "shrubs" to replicate undergrowth of the fir forest

Process – Laser cutting butterfly cut-outs to string together to replicate clusters of Monarchs in the winter habitat
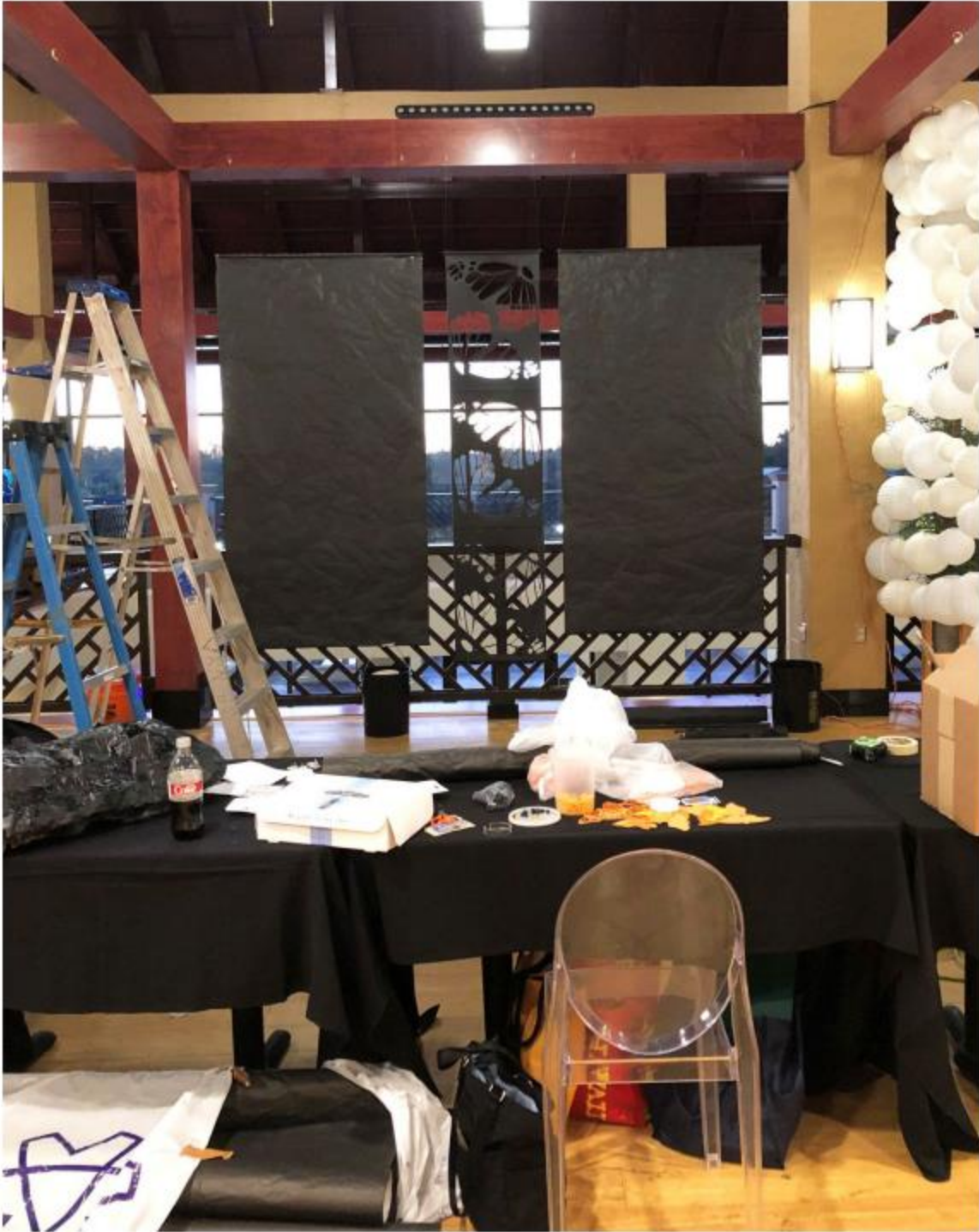
Process – a portion of the banners hanging in the space, center banner highlights a stylized representation of the shape of the Monarch wing

Process – hanging banners delineate the space with featured banners highlighting stylized representations of patterns associated with the stages of the Monarch's lifecycle

Finished Space – representing critical elements of the fir forest: trees for protection, low shrubs for undergrowth and protection, presence of water

Finished Space – addition of dramatic lighting to highlight features and the completed tablescape

Finished Space – corner trees contain strings of butterfly cut-outs to replicate hanging clusters of wintering Monarchs, middle banner highlights a stylized representation of the pattern found on the Monarch caterpillar

Finished Space – corner installation: branches replicate trees with hanging clusters of wintering

Monarchs and low shrubs and paper flowers replicate undergrowth of the fir forest

Finished Space – tablescape with centerpiece replicating the presence of water in the fir forest

Finished Space – close-up of place setting with orange napkins integrating another prominent color found on the Monarch, informational card with critical facts about Monarchs and their migration, gift of seed packet to encourage cultivating of wildflowers important to the Monarch and other pollinators

Scholarship of Design Research- Diversity, Equity, and Inlusion
Poster

Salute: A Design Application for Healthy Guest Room Hotels

Rana Bazaid, Texas Tech University
Elnaz Nahirafee, Texas Tech University

Abstract

Due to the current pandemic, the hospitality industry is looking for new approaches that focus on the health and well-being of guests. This study outlines a new way to design guest hotels that promotes health and provide environments where guests feel safe and healthy. In addition, this design project seeks to offer a homelike space for different kinds of guests with diverse backgrounds and cultures. The design project utilizes healthcare's Salutogenesis framework in a hospitality setting. Data was collected from literature review and scientific magazines. This research uncovered three important aspects of Salutogenesis applicable to hotel design: care, cleanliness, and plaudit. This project proposes a design solution that incorporates these three aspects in the suggested design of the hotel to improve the overall well-being of guests. The proposed project concentrates on promoting health and providing situations and environments where people stay healthy. The details focus on biophilia, environmentally and human-friendly environment, and clean and continuing lines, resulting in seamless furniture and materials with reduced edges that limit the accumulation of germs and make the space cleaner while maintaining a layout that is healthy, cozy, and comfortable.

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Scholarship of Design Research- Social and Environmental
Poster

Co-Housing a Possibility for Recent Retirees

Atina Kia, Texas Tech University
Sharran Parkinson, Texas Tech University

Abstract

Adjustment is challenging, especially for retirees who leave their workplaces after many years. As a social context, workspaces shape communication and identity among its personnel. That's why retirement and missing the workplace bring isolation, inactiveness, and purposefulness for recent retirees. These retirement issues often leads to mental disorders such as depression (Coe & Zamarro, 2011; Fonseca et al., 2014). As a replacement for the workplace for recent retirees, co-housing is assessed in this study. The study tried to modify this ready-made community-based living by providing some suggestions that specifically address the retiree's needs. These suggestions include the design of the site plan, interior, building facade, and common-house activities.

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Influence of Vernacular Design of Afghan Refugees Homes on Integration in Host Community During the Resettlement Process

Azra Fific, University of Oklahoma

Abstract

Ever since the United States pulled out of the war in Afghanistan in August of 2021, more than 1800 Afghan refugees have been resettled in Oklahoma. Along with physical and psychological trauma the warfront inflicted on them, large cultural differences between their home county and the western society they are migrating into create numerous barriers that have to be overcome in order to transform their new environment into a home and it starts with the built environment of the dwellings that have been allocated to them. This project will investigate the impact of placemaking through interior design on the success rates of Afghan refugees becoming integrated in their host communities. Placemaking is essentially adjusting one's environment, both physical and psychological, to meet its user's needs when it comes to embodying their cultural pride and identity. It is the process of transforming a generic space that usually focuses on function, into a place that creates a new reality which represents the user's unique idea of home (Sabie et.al, 2020). Due to the immense significance of placemaking in the social integration process and the wellbeing of individuals and groups, as well as the amount of time an average person spends at home, it is important that the impact extent of placemaking methods utilized to transform the

interior environment of refugee homes is investigated (Hadjiyanni, 2009). Another layer of importance of this study is added when the vast difference between the architecture and interior design of homes in Afghanistan and the United States is taken into consideration on top of the already difficult process of placemaking through the built environment as it is. Data on living condition in country of origin and current location along with housing expectation will be collected through surveys and focus group interviews. A cultural liaison will be hired for the study who will help with subject recruiting and data translation during interviews. Photovoice will be one of the primary data collection methods for living condition in country of origin and housing expectation upon arrival to US. To maximize the accuracy of the collected data, a total of 25 households across Norman and Oklahoma City shall be recruited for this study. Non-Governmental Organizations (NGO) that have already established a relationship with the research groups in those cities will be contacted to assist with the recruitment and information collection process. The results identified through this research will contribute towards the existing efforts to help with the resettlement process of the Afghan refugee population. Future studies can use the results of this research to identify and highlight some program recommendations to the local social welfare agencies assisting in the refugee resettlement process area and also the state and federal government on how to address the housing affordability, need and quality issues during the resettlement process of immigrant refugees.

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Do the Indoor Environmental Characteristics of the Design Studio Impact the Creative Design Process of Design Students?

Zahra Hosseini, Oklahoma State University

Abstract

Creativity is considered a central skill in developing modern knowledge of society, and education is one of the critical components in fostering creative skills (Ferrari et al., 2009). A common goal of educational institutions is to develop students' creativity in preparation for uncertain futures (Beghetto, 2010). The environment influences learning, and the environment is made up of elements with different qualities and attributes that can promote creativity in students (Azemati et al., 2016). Meanwhile, creativity represents one of the critical elements of the design (Daemei & Safari, 2018; Onsman, 2016). In this regard, previous studies stated that design studios are different from other lecture halls. Design studios require students to use their imagination to be creative enough to succeed in their design process (Gharaati, 2006). In other words, the classroom's physical environment can significantly affect students' creativity and motivate them to find novel solutions to design problems (Berte, 1985). However, few studies have focused on how the physical educational environment impacts young adults' creativity in the university setting. The goal of this study was to determine how the physical environment supports creativity in Interior design and Architecture studios by looking at the effects of interior spatial characteristics of design studios on the

divergent phase of the creative process. Sixteen students pursuing an interior design degree participated in the study. They were assigned to two groups. Each group performed a creativity task inspired by Guilford's Alternative Uses Task (1967) in two different studios, the Architecture building studio and the Interior design building studio of a southwestern university. The task asked participants to think of creative uses for a simple object consisting of a standard 8"x4" masonry brick and a binder clip. The task measured participants' creativity according to four variables: Fluency (how many other uses students can think of for the objects), originality (the variety of ideas that students come up with), flexibility (the range of ideas that students suggest), and elaboration (development and detail of the ideas. Additionally, a questionnaire was designed, and a survey was conducted to measure the students' perception of the relevance of the studio's spatial factors on their creative processes. These spatial features consisted of light, view, furniture, display space, size of the space, and ceiling height. It was hypothesized that the environmental features of interior space would significantly influence students' creativity. Support was found for the hypothesis, and results indicate that the environmental setting influences students' originality, flexibility, and fluency as the characteristics of divergent thinking. Furthermore, the questionnaire results showed that students believe that the physical teaching and learning environment impacts their creative performance.

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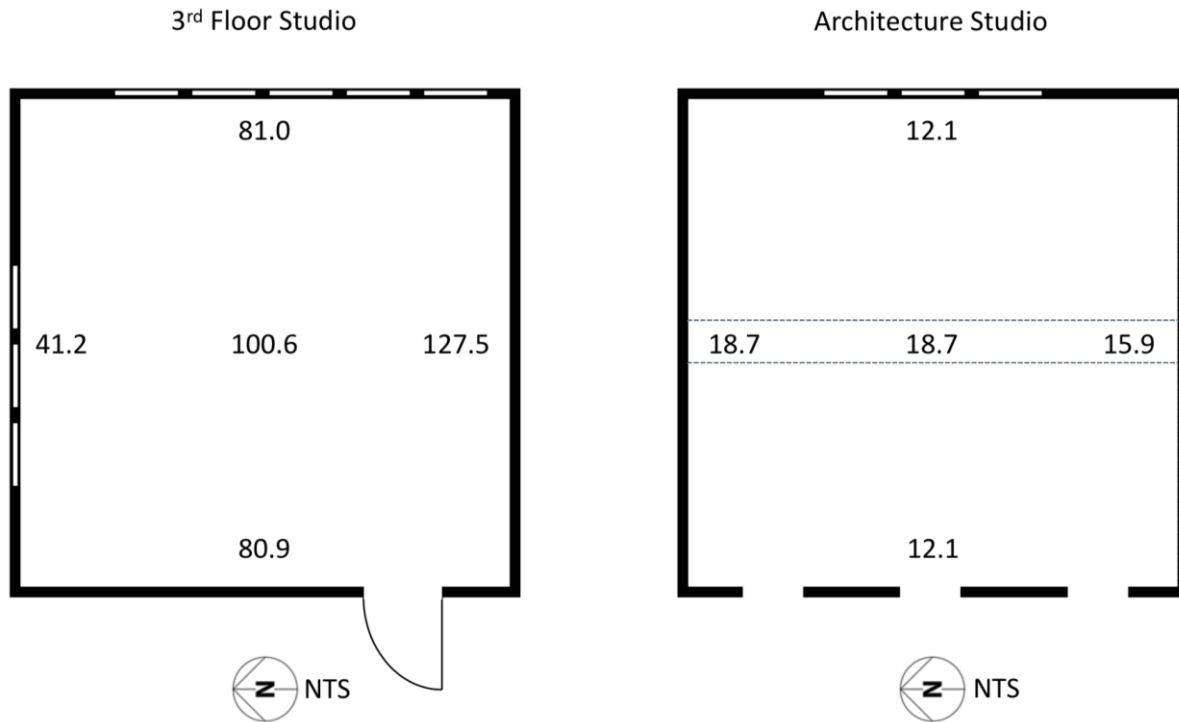
Figure 1: Light meter readings of the Interior Design studio on the left and the Architecture studio on the right.

Table 1. Identified items in the questionnaire:

No.	Categories	Items Identification
1.	Classroom Brightness	Amount of light in the studios (daylight and artificial)
2.	View of Nature	Any view to Natural element (outdoor and indoor)
3.	Size and Ceiling Height	The overall impression of the spaces' size
4.	Display Space	Display area containing the graphics, pictures, artworks
5.	Furniture Setting	Variation of furniture setting

Scoring

Scoring for creativity task is comprised of four components:

Originality - each response is compared to the total amount of responses from all of the people you gave the test to. Responses that were given by only 5% of your group are unusual (1 point), responses that were given by only 1% of your group are unique - 2 points). Total all the point. Higher scores indicate creativity*

Zero-Carbon Bamboo Sheltering: Comparative Life Cycle Assessment, Thermal Comfort and Resiliency of PDPC Settlements

Salma Akter, University of Oklahoma

Abstract

Post-disaster and post-conflict (PDPC) sheltering always appreciated as best solution to emergency care of the disaster-prone habitats but, in most cases, turns into a (semi-) permanent habitat and temporary solution (Pomponi et.al., 2019). Sustainability and resiliency are seldom accounted for in PDPC sheltering, despite having records of accommodation of third gender of some of the largest' temporary' PDPC sheltering camps across the world. Even little attention is paid to the affordability and the life span analysis of these infrastructures' planning, design, and construction phases. This study, therefore, assessed the ecological impact of such emergency sheltering using natural and indigenous construction materials. Prefabricated bamboo and industrial materials are primarily considered critical building construction materials to measure a comparative life cycle assessment (LCA) to demonstrate the environmental impact of these emergency shelters (Puri et.al., 2017). This study adopted the systematic review of existing literature as a methodological approach to understanding better the ecological impact of using natural and indigenous building materials for PDPC

sheltering. PubMed abstract and citation databases were used to identify the journal articles to be reviewed. Searches were limited to articles indexed from the last two decades to capture the most recent articles on the subject area. After screening the title and abstract of the collected papers, 214 publications were selected for this review. A network visualization diagram was generated in VOS viewer using a threshold of 100 keyword co-occurrences. According to the literature, scientific evidence shows that indoor thermal comfort is primarily connected with the material sections. The findings revealed that using natural and indigenous materials (earth, straw, reeds, clay, lime, and wood), predominantly plant-based fibers able to reduce the carbon footprint of temporary shelters and even attain a negative environmental impact and ensure thermal comfort. The findings also revealed that bamboo and earth plastering walls, floors, and reed roofs stand 50% lighter in weight, 50% cheaper, 10% cooler, and more durable than partition brick masonry. The benefits of these structures over the traditional brick buildings were significant and had positive impact for low-cost and PDPC sheltering This study contributes to call for LCA calculation design and constructing for the PDPC sheltering which will be environmentally resilient and contribute to the green architecture considering the passive solutions for heating and cooling that can reach a minus carbon outcome.

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Scholarship of Teaching and Learning- Pedagogy
Panel

Teaching Strategies from COVID Days to the New Norm

Sally Ann Swearingen, Stephen F. Austin State University
Jennifer Luque, Stephen F. Austin State University
Elise King, Baylor University
Michelle Pearson, Texas Tech University
Amy Roehl, Texas Christian University

Abstract

What is going to be the new norm? Due to COVID teaching strategies, modality options, provide opportunities for flexibility and engagement. Illustrations on how our class offerings modality options have changed in response to COVID-19 and future trends in education at the university level. Do we blend online and face to face? What is our new norm? As we all know universities are facing terrifying budget shortfalls as a result of the COVID-19 pandemic (Weineck, 2020). With budget cuts across all higher education in the United States, faculty are asked to increase numbers, increase access to classes, and increase the ability to meet student needs. Before the epidemic of COVID-19, faculty options included teaching face-to-face, or online, or virtual /livestream. Now some universities are asking faculty to roll two modalities into one and adding a HyFlex modality that allows students to decide week by week, which modality they'd prefer (McMurtrie, 2020). The goal of this panel presentation is to evaluate how our courses, have changed to adapt to different modalities and how our course modules have evolved to meet the needs of the new norm. We will identify different modalities and

discuss how a hybrid blend of two play a role in today's teaching and allow students to float from one to another. What works and what does not work for a studio or lecture? In addition, we will provide teaching tips illustrations on how to humanize our course modules to adapt to these modalities. Using tools such as Bitmojis, creating spreadsheets and student rotations in discussion responses, (Darby, 2020), exploring course transparency, and elaborating on expectations of student and faculty are a few examples of how to facilitate instructor and student communication. This feeling of world-weariness is not uncommon. The social isolation and loneliness of the COVID-19 pandemic presents significant emotional and physical health risks that make us and our students feel disconnected and put us on high alert, triggering stress. What will our future as educators be? Tips on how we relate to our students will spark conversation. In addition, we will review how we can encourage students to unplug from social media and engage in the classroom community. Or, how do we get students back into the classroom or do we? How polls and surveys throughout the semester provide feedback from students. As faculty, we know that language matters and with the different modalities offered, understanding students and faculty expectations will enhance projects, communication, and assignments. What are the rules for respectful conversation and how do we share our passion? How do we layout a course to hook the student and totally engage them? This panel will provide tips that will allow us to evaluate how we create calendars, course mapping, modules, and deliver methodology. Plus, share tips to enhance our new norm of teaching in combining modalities to create efficient and collaborative learning environments. We are hoping through dialogue all faculty will be inspired to embrace the future in how education is changing.

References

Darby, F. (August 24, 2020). The Secret Weapon of Good Online Teaching; Discussion Forums, The Chronicle of Higher Education.

McMurtrie, B. (May 5, 2020) Are Colleges Ready for a Different Kind of Teaching This Fall?, The Chronicle of Higher Education.

Weineck, S.M. (August 4, 2020). The Biggest Cuts Need To Come From The Top, The Chronicle of Higher Education. Frost, J. L., Wortham, S. C., & Reifel, R. S. (2008). Play and child development. Upper Saddle River, NJ: Pearson/Merrill Prentice Hall.

Example of a Course Calendar for CODES

Week	Module	Assignments
Week of August 23-28	Getting Started Module Module 1	• Make sure you have Version, 7 of "The Codes Guidebook for Interiors" by Katherine E. Kennon and Sharon K. Harmon and the 2018 IBC Codes book. • We will review how the class is set up and discuss expectations. • Note: Class only meets either virtually or face to face (that is your choice) on Tuesdays from 8:00 -9:15 a.m. You need to attend to understand the information and be willing to ask questions. You must go and listen to a City Commission Meeting and a Planning and Zoning meeting in the city of your choice. Must get a copy of the agenda and write a summary of what you learned. Must upload. • **Before class expectations:** You will need to read the Chapter required and the chapter each week. • Complete the Assignment worksheet that will be due at 7 a.m. each Tuesday prior to class. • **During Class:** At the beginning of each class you may have a 5 question quiz over readings. Be ready to have dialogue and work through scenarios. We will discuss Chapters. • **Homework**: You will have 1 to 2 Study problems that will be due each Thursday by 11:30 p.m. Friday's you will Take a quiz over the chapter we discussed in class, due by 5 p.m. • Read the next chapter. • Make sure you review all video's and read the corresponding chapter in the IBC Book • 1st Weeks HOMEWORK: Get a jump start on next week - it is two chapters. Start reading Chapter 1- you can complete your assignments ahead of time but **NO late work is permitted**. Chapter 1 assignment Worksheet due this FRIDAY by 5 p.m. Study Problem and Quiz due by SATURDAY, at 11:30 p.m.. (This week only)
Week of August 30- Sept. 4th	Module 1 About the Code Note: we have two Modules this week. Module 2 Accessibility	• **Before Class:** Read Chapter 2: About Codes, Make sure you watch all video's. Review corresponding chapter in IBC. Chapter 2. Complete Assignment Worksheet and upload. • Read Chapter 2 in Text book: Accessibility & watch the video. IBC Read Chapter 11: Accessibility. Complete worksheet for Chapter 2. Due at 8:00 a.m. day of class. Watch the Ron Blank & Associates video (52 minutes) and take the quiz and upload for a grade. • **During class** - first 5 minutes may have a 5 question quiz over Chapter 1 & 2 from Text book (The Codes Guidebook for Interiors/7th edition). Will review Module 1 & 2. Will discuss items within Codes, review the IBC book, how the course is set up. Will review ADA, & you will learn what TAS stands for. Be ready to discuss. • **Homework assignment**: Study Problems Due Thursday, by 11:30 p.m.; Quiz 2 Due Friday by 5 p.m. • Begin reading next chapter.