SYNOPSIS

KEY POINT SUMMARY

OBJECTIVES

This study sought to gain insight into the interaction between the primary change agent (the designer) and the evidence through the surrogate environment of an architectural design studio.

The Research-Design Interaction: Lessons Learned from an Evidence-Based Design Studio

Haq, S., & Pati, D. 2010 | *Health Environments Research & Design Journal Volume 3, Issue 4, Pages 75-92*

Key Concepts/Context

With the emergence of the Evidence-Based Design (EBD) approach being integrated into design practice models throughout design firms, much attention has been given to the research portion of the process. However, little is understood about the interaction between the designer, the primary change agent, and the evidence they are using to bring about the change. Understanding this interaction is necessary for producing the desired outcomes associated with incorporating design and scientific evidence.

Methods

This study was conducted in a large accredited professional architecture degree program. During the spring semester of 2009, a course named "Evidence-Based Design" was offered to students pursuing their professional master's degree. The intent of the course was outlined prior to the students signing up. A total of 12 students participated in the studio, along with an expert in nursing, an expert in healthcare design research, and the main instructor.

The project for the studio used an existing program for an 180,000-square-foot 100-bed general hospital, as well as three separate local sites with varying physical characteristics to create three unique design challenges. One site was in a tight urban setting next to an elevated expressway, the second site was in a nondescript suburban setting, and the third was in a picturesque setting with hills and a lake.

The agenda for the studio was divided into three phases: (1) knowing a hospital; (2) knowing the evidence; and (3) designing with knowledge and evidence. The first phase was intended to give the students working knowledge and holistic perspective of hospital design that would enable them to work in a professional firm as a beginning healthcare designer. Ethnographic studies of all departments within

Copyright 2015 © The Center for Health Design. All Rights Reserved.

the acute care setting, site visits of two nearby large hospitals, expert panels, and the viewpoints of various stakeholders were used to provide this foundation. Students also delivered individual reports and verbal presentations during this phase on topics such as electronic medical records, magnetic resonance imaging, automated medication dispensers, and robotic surgery, to gain knowledge of individual systems, key concepts and technology used within the acute care setting. During the second half of the first phase, students conducted in-depth examinations of the following four program areas: (1) the medical-surgical unit, (2) the birthing/postpartum unit, (3) the emergency department, and (4) the diagnostic and treatment unit. The students designed these areas in greater detail, with an emphasis on the relationship of the program area with respect to the hospital as a whole and global-level circulation.

The second phase of the studio introduced students to three main categories of literature: (1) scientific research publications, (2) industry and trade magazines, and (3) recently published books on EBD. Examples from each of the three categories were presented to the students, and students were also encouraged to explore evidence beyond the required class readings.

For the third phase of the studio, students working in groups of four developed designs for each of the three sites. Each design proposal included the evidence used and its implications in the design decision-making process. Areas such as administrative spaces that had previously not been studied were researched and designed collectively. This final phase resulted in three completely integrated hospital complex designs.

Following their studio experience, students were administered a questionnaire. The questionnaire assessed the students' EBD studio experience by capturing their perceptions regarding the collation, assessment, and application of evidence. Demographic statistical analysis was used for the questionnaire responses and the final products from the studio. Studio products were also contextually analyzed to assess emerging themes.

Findings

Findings from this study suggest that four domains must be considered in the optimization of the research-design relationship. The first domain relates to developing a knowledge structure that is easy to comprehend. Within the published literature, evidence is presented based on higher-order issues followed by a second and subsequent descending tier/s of sub-issues. While identifying first tier literature was relatively easy, students found it difficult to articulate the subsequent layers. While first tier literature deals with global issues such as patient safety and caregiver well-being, second tier literature deals with topics such as exterior view that can be related to multiple tier one issues. This created a dilemma of creating a meaningful classification structure for the evidence being used within

Copyright 2015 © The Center for Health Design. All Rights Reserved.

DESIGN IMPLICATIONS

This study reveals that designers in practice would benefit from evidence that is presented in a way that can be efficiently accessed and processed by the designer. This study also reveals the need for students within an academic setting to experience a more nontraditional approach to architecture, such as the one represented in this study.

each and quickly became formidable for the students. To overcome this, students developed single-page reports of key evidence to convey the translation of the evidence into the design. Scores from the questionnaire supported these observations. Students rated the evidence collection task at 53%, which is more than halfway between "very easy" and "very hard." These results show that organization and representation of research that relates to sub-tiers can be difficult to convey within the design process.

Findings also revealed that for designers, relevance of evidence is associated with specific phases within the facility procurement process. Because of this, evidence that may be important to the designer in one phase may not be relevant to other phases of the design process. To overcome the absence of a phase-complemented evidence representation structure, students identified five domains where evidence can be implemented: (1) programming, (2) schematic design, (3) design development, (4) interior design, and (5) building engineering. Trying to filter evidence into the appropriate phase can be time consuming for designers. Results from the survey indicated that, for the schematic design phase, students considered only 20% of the evidence reviewed as relevant. Students considered that of the remaining evidence 30% was relevant to the programming phase, 18% to design development, 20% to interior design, and 12% to engineering design. This shows that for a student who was working primarily on the programming phase, there was a 30% return-on-investment evidence examination.

A third domain that the study uncovered is the need for architects to have greater access to information regarding context and precedence. Once an architect has found in the evidence something that will either hinder or help the quality of care, their focus shifts to how best to implement design to mitigate or enhance the desired effect. However, context and precedence are not usually part of a scientific paper. This left the students looking for examples of context and precedence to go along with the evidence. From the survey it was reported that students found 54% of their evidence from peer-review journals and 64% from trade publications. However, upon examination of the students' single-page reports, 60% of the evidence used in the final design proposals came from industry sources such as books, trade magazines, and journals. In contrast, only 23% of the sources in the single-page reports were from scientific peer-review journals. This reveals that students found scientific peer-review journals less valuable during application of the evidence into design concepts or design decisions.

The final domain to consider from this study is the need for a designer-friendly vocabulary. Designers think, analyze, and synthesize evidence visually. Due to this, students found information from industry and trade publications more applicable, even though the core concept came from a scientific journal. This reveals that combining evidence with graphical representation, as in Malkin's book (2008), is highly beneficial to designers. This type of combination allows designers to become

Copyright 2015 © The Center for Health Design. All Rights Reserved.

familiar with the scientific language in a way that becomes tangible within the design process.

Limitations

This study was preliminary investigation. Inherently within that framework some of the limiting factors to this study are the small sample size and the setting. Other limitations to the findings are the strength of the data analysis and the use of a non-validated tool (the questionnaire).

The Center for Health Design: Moving Healthcare Forward

The Center for Health Design advances best practices and empowers healthcare leaders with quality research that demonstrates the value of design to improve health outcomes, patient experience of care, and provider/staff satisfaction and performance.

Learn more at www.healthdesign.org

Copyright 2015 © The Center for Health Design. All Rights Reserved.