Design Research in Interior Design Education: A Living Framework for Teaching the Undergraduate Capstone Studio in the 21st Century

Charles Boggs*, Helena Moussatche, Catherine Pizzichemi and Meghan Woodcock

Savannah College of Art and Design
* cboggs@scad.edu
DOI: 10.21606/drs.2016.368

Abstract: This paper serves as a reflective discussion on the changing forces impacting the undergraduate interior design capstone studio. Reinforced by a successful Council for Interior Design Accreditation (CIDA) visit during the fall of 2015, the program has identified a major shift in the process approach to better structure the potential development of design innovation: moving from a reactive mode based on industry expectations and standard systematic research methods towards using a living research and design framework refined throughout the design process as observations and findings evolve. The CIDA accreditation review offered 'evidence' of the results of this shift. By reviewing the process of teaching the capstone over the last 7 years, this paper provides a platform to ground the current state of the pedagogical framework employed from its early stages to its current form.
Keywords: interior design; design research; design thinking; framework

1. Introduction

Today, designers are faced with a range of pressing societal issues and new circumstances surrounding global practice. From issues that affect how we realize our projects, to cultural and political issues that affect the context of practice, to radical changes in technology and information sharing that change the way in which we conduct practice.

Within the realm of interior design in the United States, systematic research has served as a basis for understanding these issues. The primary approach currently taught and utilized has been Evidence-based design (EBD) alongside other traditional methods derived from the social sciences.

As commonly defined,

> "EBD is an informed approach to design where designers intentionally base their
> decisions on quantitative and qualitative research – two forms of systematic
> inquiry." (Nussbaumer, 2009, p. 4)

As the model adopted in the academic realm of interior design, as well as encouraged by CIDA, this is how the majority of large-institution based interior design programs in the United States have approached research. These programs have implemented this research-oriented approach in not only graduate degree programs, where research has traditionally had its strongest role, but in undergraduate degree programs as well. It is our experience that the incorporation of systematic research methodology within traditionally linear design process pedagogy is limiting for professional interior design education focused on proactively shaping practice in response to these issues. This paper is aimed at educators engaged with curriculum development and will provide a new pedagogical framework for design research in interior design professional programs.

2. The 21st Century Design Studio

Interior design pedagogy in the United States has grown out of an understanding of the design process as a linear sequence of phases that start with client profiling followed by programming, concept development, design development and design implementation (Pile, 2003). As a result, traditional interior design studio education primarily works from two basic project models. The first provides the student with a hypothetical scenario where many if not all of the project components are simulated. The second involves a real client who serves as an active participant in the studio providing the students with a real life design challenge, real-life parameters and real-time feedback.

In both cases, the projects are bound by a typical program characterized by conventional activities that offer the students the opportunity to address a variety of predefined client goals or "design problems". For example, corporations that need to increase productivity, retail that needs to increase sales, healthcare that needs to maximize efficiency. According to Lang (1987), the built environment is usually designed with the intention to accommodate certain activities and behaviours. It is then no surprise that the interior design studio tends to heavily rely on the observation of human behaviour within these established settings to inform the design solution.

This framework does not provide the opportunity to challenge the behaviour setting itself. In other words, there is no prompt that encourages the student to ask whether the provided program was appropriate for desired activities. Additionally, students at the undergraduate level may lack empathizing references for a variety of activity settings due to lack of life experience. Paradoxically, these same students are constantly exposed to complex global issues through social media and television.

Parallel to the increasing global complexities of contemporary culture there is a shift happening in the studio. Issues such as sustainability, poverty, social inequality, and cultural

diversity are directly impacted by the built environment and the 21st century students should be:

> "Intentional learners who can adapt to new environments, integrate knowledge from different sources, and continue learning throughout their lives, thriving because they are empowered through the mastery of intellectual and practical skills; informed by knowledge of the natural and social worlds and about the forms of inquiry basic to an understanding of ourselves and the world we inhabit; and responsible for their personal actions and willing to work toward the public good" (Ramaley, 2013, p. 2.4)

Under this new reality, the graduating student needs a more diverse set of skills in order to evolve the profession and with this, design education will increase its ability to advance future design thinking and practice.

3. Development and Evolution of the Undergraduate Capstone Studio at the Savannah College of Art and Design

The Savannah College of Art & Design established the Bachelor of Fine Arts as its professional degree, and developed its current curriculum based on the standards and criteria set out by the Council for Interior Design Accreditation (CIDA). The Masters of Arts degree was set to serve as a research degree for those seeking deeper knowledge in interior design, whether as a focus of their career or to complement their chosen area of practice, but not those intending to go forward into institutional teaching and research. The Master of Fine Arts would then serve as a research and application degree for those intending to take deeper research into practice or to move into institutional teaching and research. The program faculty and external professional advisors constantly review these three degree paths to ensure their relevancy.

Once the Bachelor of Fine Arts degree was established as the professional, accredited degree, that allowed for the refinement of goals and objectives based on the CIDA Professional Standards as well as the university and departmental mission statements. First and foremost, this degree path focuses on the practice of interior design and preparing students for the career of practice, not the career of research. Research plays an important role in achieving these goals, but this distinction shifts the intended outcomes in a different direction than those for the graduate programs. In many ways, the Master of Fine Arts and the Bachelor of Fine Arts follow a similar structure and progression, but the degree-specific goals and intended outcomes are intentionally different.

The capstone project serves the undergraduate program in the same way the thesis serves the graduate program—it is a singular, student-driven project intended and structured so students can demonstrate their ability to achieve the program and degree goals. The capstone takes place over two academic quarters as a dedicated studio. Continuity is kept with the same studio instructor carrying through both quarters. Where the ultimate goal of a graduate thesis is to contribute to the body of knowledge for interior design in a designated area of research, the main goal of the capstone project is to engage students in innovative and strategic thinking while developing a project-specific program that maximizes design

research throughout all the traditional phases of a project. Whereas thesis follows a research model, capstone follows a practice model. The faculty are aided in their oversight by professional mentors to facilitate the application of design research and to unearth insight throughout the design process—the final outcome of which is a complete design for a project type. The faculty and mentors must have practice experience and demonstrate a clear ability to guide project exploration to a design outcome. While the thesis is meant to propose solutions for its specific identified problem within a topic, capstone must propose a complete design that attempts to creatively address the problems identified by the student in researching the project. Thesis can therefore be thought of as problem-based, while capstone is project-based. The thesis is meant to demonstrate the ability to conduct research itself, whereas the capstone is meant to demonstrate a competency to utilize research methods within the process of designing an interior project.

With preparation for practice as its primary objective, the undergraduate program and specifically the capstone studio had always emulated the traditional practice model, utilizing the phases of Client/User Analysis, Programming, Conceptualization, Schematic Design, and Design Development. In evaluating this model for the studio setting, the faculty determined one of its inherited weaknesses to be that it was reactive to the profession instead of proactive in its influence on the profession. The faculty felt strongly that there was a greater potential to be tapped into, that design education has the ability to influence future design thinking and practice precisely because of the aspects that differentiate it from practice. Within practice designers and their clients often bring to the table years of experience and thinking within their specialized areas of work. While this is of huge benefit, it can also prove to be a limitation. Their experience has taught them to think of their design solutions as variations or evolutions of those they have already mastered. As a result, there may be no part of the design process that questions these solutions at a basic level to review whether they are the right solution for today. Studio is free of the constraints that experience itself can provide and may be a more open environment in which future-forward ideas can surface.

4. Assessing and Defining the New Framework

The role of innovation became a focus area when determining the goals and outcomes of the capstone process for the 2007-2008 academic year. As a mechanism for achieving this goal, qualitative research methodologies were strategically stepped into the studio sequence. The capstone then became the place where the students were challenged to evaluate and identify the appropriate methodology for their self-identified design exploration.

The initial outcomes of adding systematic research methods to a traditional design process into the studio were disappointing. Due the systematic nature of traditional research methodologies the research phase of the process was too prescriptive and delayed design thinking. Combined with the short duration of the design studio and the complexity of the design process, the research findings were inconclusive, not allowing the students to surface

meaningful insights. Therefore, the design process could not drive innovative ideas as desired.

These results presented the challenge of revising the design process and rethinking design research in a way that would push students into new areas of discovery and innovation. This became one of the most important drivers for establishing a living framework that could evolve and change based upon these outcomes being observed.

With ten weeks allocated for each quarter, the first quarter is dedicated to establishing the parameters of the project, defining the design problem, and proposing an initial approach to addressing the problem. The second quarter is then dedicated to enacting the proposed approach in the development of a fully designed interior project. In evaluating the two quarter process, it was determined that the students were successfully meeting the goals and outcomes of the second quarter, which closely followed the traditional model of design development in practice.

The students clearly showed an entry level competence to plan, develop, and detail a design solution — it was the catalytic ideas that were lacking creativity and originality to qualify those solutions as innovative. It was found that many capstone students were focusing more on checking the boxes associated with the design research phase instead of enjoying the journey of discovery. As a result, revisions focused on restructuring the first quarter of the capstone studio in order to catalyse innovative thinking. The first layer of the framework, then, incrementally evolved over the last seven years as faculty refined a pedagogical approach to the process by which the project is formulated. The sequence of this evolution is as follows:

- To break from the traditional pedagogical model, an exercise that created awareness of contemporary issues was implemented. Students were instructed to search for articles that were not necessarily connected to interior design as a source for ideas that could potentially inform their design projects. Articles from The Economist, Scientific American, and Wired Magazine are examples of suggested sources cited during this initial subject search.
- With this exercise, project types started evolving and subsequently the project ideation phase expanded. However, the framework was still following the traditional design process. Over the subsequent years, as students were defining projects based on contemporary issues, the process naturally evolved to align with the design thinking philosophies discussed by Rowe (1991) in his book *Design Thinking*.
- The next iteration focused on an exercise to stimulate creativity that integrated random image collection, analytical classification and intuitive attribution of meaning in order to bridge the identified contemporary issue with a visualization of a sensory interior experience.
- With the insertion of those two steps, the exploration of contemporary issues and expansion into design thinking made the length of the studio a prominent issue. In response, we implemented a pre-studio meeting held eight weeks

- prior to the beginning of the capstone studio in order to introduce project requirements and orient the students to the initial phase of the process. This kick-off meeting prepared students in such a way that they were able to enter capstone studio with more developed ideas; ready to explore and discover.
- After the success of the first kick-off meeting, a second meeting was implemented with an additional focus on expanding their individual experience lens by suggesting alternative methods of exploration such as listening to podcasts, watching documentaries, and observing life in action.

As a result of this incremental evolution, the first layer of the framework was developed, consisting of five nodes, and can be visualized as such:
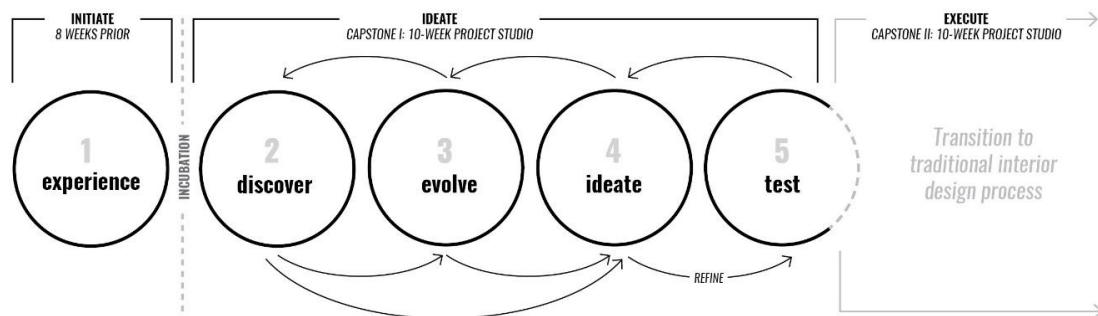

Figure 1: First formal iteration of the revised framework

5. Expanding the Framework

This framework illustrates the incremental evolution and refinement of a pedagogical approach to the design process in combination with key elements from the following models:

- the four key stages of design (Coles & House, 2007, p.148);
- traditional interior design process (Pile, 2003, p.136);
- original design-thinking theoretical framework (Rowe, 1991); and
- IDEO's design thinking framework.

The amalgamation of the models above generated the multi-layered framework. The first layer of this living framework is composed of the process sequence itself. However, the "absorption" node was added following the initial meetings prior to the beginning of the capstone studio, completing this first layer (absorb, discover, evolve, generate, test). Each node within every layer of the living framework is reliant on the following pedagogical pillars:

- *Semantic flexibility* utilizes interchangeable vocabulary to allow for a variety of ways to engage students understanding.

- *Visual connectivity* drives a process that is visually integrated into context and conveyed through this context.
- *Actionability* allows for students to immediately engage in a framework exercise.
- *Natural iteration* creates a positive feedback loop allowing for deeper exploration.

These pillars allow for expansion of the nodes, and adaptation to new topics, challenges, insights, and programmatic requirements. The nodes within each layer must be approachable and prescriptive enough to allow students to be self-directed, but adaptable enough to allow them to unearth the best method of discovery for their project type. Below is an example of one such expansion:
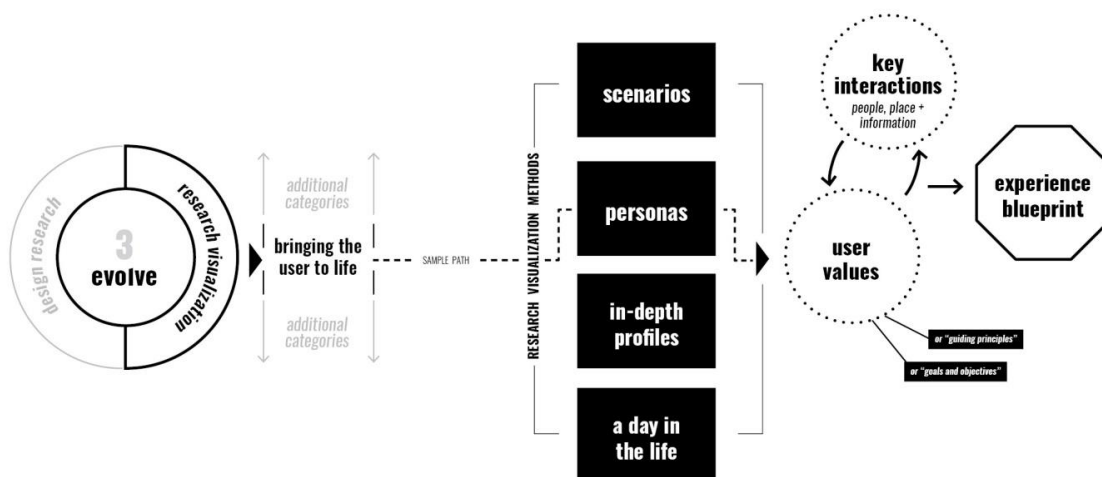

Figure 2: Sample expansion

This example illustrates how the second layer for the node 'evolve' could embody the pedagogical pillars. Each research communication method (scenarios, persona, in-depth profiles, and a day in the life) is a potential directive leading students on a path to their experience blueprint. However, this is not a one-way path leading to a potential dead-end. If the followed communication method does not provide an actionable result, the student can return to another research communication method to explore alternate avenues, thus creating a positive feedback loop.

The third layer (not depicted) is used to guide students through their chosen research communication method. For example, if creating personas was the desired approach, the third layer would be the detailed explanation of a persona with multiple options on how to proceed with the chosen method.

6. Discussion

As the framework has evolved, positive outcomes have been identified alongside challenges to pinpoint specific opportunities to shape the next iteration. The following observations presented are intended as discussion points to guide the continued evolution of the framework and should be viewed as informal insights rather than formal research results.

When surfacing values, iterations of the framework proved to be successful at meaningfully connecting more students to contemporary issues and subsequently allowing them to define more meaningful projects. Supporting outcomes observed include:

- proposed projects showed potential to innovate within existing project typologies;
- design proposals showed increased sensitivity to social issues;
- the complexity of the student driven programs increased;
- students utilized a more iterative process of developing design solutions; and
- design solutions were more thoroughly developed in relation to the user experience.

While these outcomes were promising, the changes to the framework revealed many new challenges. Additionally, each new cohort of students presented their own challenges to how they approached the framework. In general, many of them expressed or exhibited difficulty with the following:

- successfully sifting through data collected;
- uncovering and/or articulating insights that would inform and inspire design;
- identifying connections within different types of information collected; and
- transitioning from uncovering insights in their research to shaping user experiences and proposing programs based on those insights.

Additionally, students frequently communicated feeling overwhelmed by the multi-layered, iterative process and the self-driven nature of it. Their previous studios, while growing in complexity and a sequentially more independent exploration process were still far more prescriptive in the information and challenges being presented. While some students embraced the opportunity to take ownership of these early phases of their capstone projects, others required far more direction and oversight, especially in starting the process.

Beyond expanding upon the opportunities presented by the outcomes and challenges outlined above, two major opportunities were identified that are not directly related to the framework components themselves, but rather the specific nature of the design student. The first proposes adopting multiple processes for eliciting student feedback in an effort to best identify legitimate concerns that need to be addressed. While currently most feedback comes in the form of end-of-quarter evaluations, one-on-one exit/debriefing interviews along with an anonymous online discussion forum could provide students the opportunity to express concerns or communicate parts of the process that provided them with either a challenging or a rewarding experience. Feedback can be documented, assessed and

appropriately responded to in order to effectively evolve the second and third layers of the framework each academic year. The second opportunity focuses on different learning styles as an informative lens with which to view the framework: If feasible, is it valuable to identify "routes" within the framework based on predominant learning type (i.e. concrete, analytical, logical etc.)?

The final discussion point relates to the theoretical meta-analysis of the relationship between design research and breakthrough innovation. After their discussion on incremental and radical innovation, within the context of human-centered design research, Norman and Verganti (2012) draw the conclusion that

> "…emphasis on iterated observation, ideation, and testing is ideally suited for incremental innovation and unlikely to lead to radical innovation" (p. 79).

Do the observations to date strengthen this argument or do they suggest possible adaptations to human-centered design research that may allow it to open up more innovative opportunities? Are there paths within the framework to provide students a clear route for intuition driven trial and error while still aligning with the core goals and objectives of the capstone studio?

7. Conclusion

While the observations outlined above seem promising, the success of the current framework must be evaluated through well-documented recurrent implementation. The complexities of a comprehensive design studio present so many variables that it may be difficult to use year to year results to gauge the methodology's success and long term trends. At the same time, the framework is designed to allow more instantaneous adaptation to resolve unforeseen outliers and variables, hopefully reducing the impact of some of those issues.

The insights, so far, suggest that students engaged in the framework were more able to utilize research strategies in their design process and achieve superior outcomes. It is here that the framework demonstrates its merit and warrants the additional evaluation and longer documentation period. As expressed by Wolff and Rhee (2009), the role of the studio in interior design education is evolving and

> "We are educating designers who can actually begin to be social entrepreneurs and not just the providers of a product for somebody else to commercialize. With business acumen and design thinking skills, they are strategic in that they don't just come up with the theme; they are coming up with the system that is going to sustain and proliferate the theme and actually have an impact on the world." (p. 13).

In other words, our goal is not to create researchers, nor is our goal to create professionals who utilize the traditional design process to create a product. Instead, as design educators, we aim to create something greater: new interior designers who do not merely create more evolved solutions of current thinking, but who utilize research as a gateway to address the problems in our world. This new generation of interior designers will use their acquired

insight and knowledge to generate innovative thinking, which will result in design solutions that enrich life in the 21st century.

8. References

House, N., & Coles, J. (2007). The Fundamentals of Interior Architecture. AVA Publishing.

Lang, Jon. (1987). Creating Architectural Theory: The Role of the Behavioral Sciences in Environmental Design. New York, NY: Van Nostrand Reinhold.

Norman, D., & Verganti, R. (2014). Incremental and Radical Innovation: Design Research vs. Technology and Meaning Change. Design Issues, 30(1), 78-96. doi:10.1162/DESI_a_00250

Nussbaumer, L. (2009). Evidence-Based Design for Interior Designers. New York, NY: Fairchild Books.

Pile, John. (2003). Interior Design. New York, NY: Prentice Hall.

Ramaley, J. (2013). Thriving in the 21st Century by Tackling Wicked Problems. In M. Fennell (Ed.), Presidential perspectives: A higher education presidential thought leadership series; 2013/2014 series: Elevating Sustainability Through Academic Leadership.

Rowe, P. (1991). Design Thinking. Cambridge, Mass.: MIT Press.

Wolff, L., & Rhee, J. (2009). Is Design the New Liberal Arts. Re:D Magazine, 9-13.

About the Authors:

Charles Boggs has been a Professor of Interior Design at the Savannah College of Art and Design since 2011. His research, centring on design process, has been heavily influenced by a decade of specialized practice experience in cruise ship design.

Dr. Helena Moussatche is a Professor of Interior Design at Savannah College of Art and Design. Her research interests include design pedagogy, educational environments and sustainable design. Dr. Moussatche is an accreditation commissioner at the Council for Interior Design Accreditation (CIDA).

Catherine Pizzichemi is a Professor of Interior Design at Savannah College of Art and Design. With seventeen years of education and professional practice in interior design and architecture, her major research interest focuses on human-centered design methodology.

Meghan Woodcock is a multidisciplinary designer and full-time faculty member in the interior design program at the Savannah

College of Art and Design. Her research interests include various topics in design education with emphasis on design methodology and information visualization.