Exploring the curricular relationship between service experience design and interaction design

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Abstract
Connectivity in the contemporary networked society has required designers to shift their disciplinary focus from individual products to the entirety of human experience. The field of Experience Design (XD), pursuing an integrative flow of human experience, consisting of multiple dimensions [1], and its subsets (interaction design, service design, spatial design, etc.) is growing in both size and complexity. Experience designers are starting to influence an ever-increasing scope of problem spaces. To be successful in today's experience design practice, designers must simultaneously approach problems from a broad, system level and a micro, tangible level and produce strategic design solutions. This work frequently involves the integration of many interconnected deliverables.

Being influenced by cultural and social understandings of design, students tend to regard design as what they will make. This perception, with heavy focus on the solution phase in designing, causes a fragmented view in design education. In order to expand students' integrative understanding of design, we have introduced a framework that is based on the tiers of human experience when engaging with design. We reflect on our experience from this experiment and discuss its values in student learning.

Keywords: people centered design, service experience, interaction, interface, curriculum

1 Introduction

The Visual Communication Design faculty at Herron School of Art and Design (Indiana University, Indianapolis, USA) recently had the opportunity to redesign the senior capstone curriculum. This opportunity stemmed from a desire to create a more integrative experience that would best prepare the students to thrive in the constantly evolving professional design landscape. However, once the redesign preparation started, it was revealed that there is a gap in student understanding around the contemporary design practices. Students are rooted in a 20th century artifact-oriented understanding of the design professions. As a result they have outdated expectations of their career possibilities.

The following report serves as a case study of how the authors of this paper worked to update the senior capstone experience to better reflect industrial activity and provide a way for students to identify their individual strengths within that industry.

1.1 Curricular misalignment
The capstone courses at Herron were in need of an update. The previous iteration of the capstone at Herron presented a troubling dichotomy to the students. The capstone system formed a division that was an attempt to best leverage faculty expertise. In that system, senior-level students were asked to decide between two emphasis areas: Exhibition Design—dealing primarily with museum exhibit design—or Service Experience Design—dealing with system-level design thinking [1]. Faculty expertise was a main driver to establish these two areas. Less distinctive descriptors between these options caused confusion amongst the students. Both areas dealt with the notion of experience but approached the idea from different perspectives. This division gave the students the inaccurate perception that they were deciding to conduct a capstone project that was either artifact-centric or concept-centric.

The issues associated with this dichotomy surfaced more important questions about the purpose of the capstone course. If a capstone course is supposed to be the culmination of a student's undergraduate learning, the course should provide opportunities for the students to apply and demonstrate a totality of core competencies. In addition, we believe that a capstone project should be relevant for students' future career goals. The curriculum at Herron has adopted people-centered design as its main pedagogical framework. This approach places emphasis on people's values and contexts when developing design solutions. Herron VCD students spend a lot of time learning about why it is important to involve real people in the design process and how to engage them—or leverage their contextual expertise—in that process. The previous capstone course structure, established by faculty expertise, was not cohesively aligned with the defined purposes of the capstone experience.

1.2 Shifting the focus of the capstone experience
Moving forward, a revised capstone course, downplaying a faculty expertise-driven approach, would allow students to identify potential career outlets within a people-centered design methodology through the development of an individual project. To facilitate this approach, the students were asked to conduct an extensive people-centered project that will allow them to demonstrate the totality of their acquired knowledge and skills with an eye toward professional goals. This approach allows the faculty to be much more deliberate about facilitating student understanding about their skill set and professional potential.

In order to craft a new capstone experience that showcased a culmination of student learning and defined students' professional objectives, we had to look outward to determine what the objectives and outcomes of the course should be. To help, we looked to emerging industry trends and reflected on our own professional experiences. Specifically, we investigated the continuum of work that happens within experience design professions. The following two sections will outline our findings from that inquiry.

1.3 Industrial trends
The current design industry is highly volatile. Designers are continuously evolving to stay relevant in the market. To do this, designers are not simply expanding their technical ability but

rather expanding the scope and type of problems they take on. The increasing popularity of cheap or free design services (e.g. Squarespace logo, Wordpress, Vistaprint) is making it harder for designers to claim value in professional practice by simply producing standalone artifacts. This is not a new revelation, it has been happening for years now.

To thrive, designers are expected to apply their thought process to broader, more complex problems at the system level. In the past, a client would come to a designer and ask them to design a website to solve their predetermined problem. Now, designers are starting to work with the client—or ideally the entire set of stakeholders—to better define the problem and make a strategic plan on how to address the problem. An artifact may still be an outcome but it is only one part of a larger strategic, integrative solution.

This system-driven design work can be loosely grouped into a category called "experience design" (XD). XD attends the meanings people bring when engaging with design outcomes or artifacts and interactions accordingly [2]. Similarly, Goulden and McGroary define experience design as "a shift away from a focus on increasing or improving functionality towards a more culturally relevant solution" [3]. There are several industries and schools of thought that have emerged in recent years to support this type of experiential design: User Experience Design [4], Interaction Design [5], Service Experience Design [5], and Design Thinking [1] to name a few. What we think of as traditional graphic design or visual communication design is also part of this environment but is only one piece of the puzzle.

These trends in the design industry are representative of the broader experience-centric service economy. Service industries account for 68 percentages of U.S. GDP and four out of five U.S. jobs [7]. The U.S. Bureau of Labor Statistics estimates that 11 of the 13 industries with the highest growth potential are service providers rather than product providers [8]. As the shift toward a service economy and technological evolution has blurred the boundary between human experience and product, most product experiences are being transformed into ecological, integrative service experiences. More important than the artifacts that a designer might produce, there is documented desire from industry for designers to "relate to and understand another human's perception of [their]…personal value" [9]. Deeper understanding of human experience in design is growing in demand and is showing job growth potential as a result. The Bureau of Labor Statistics (BLS) estimates that User Experience jobs will increase more than 22% over the next 10 years (2012-2022) [10]. This is in stark comparison to the projected growth of traditional graphic design fields, which is projected at around 7% over the same timeframe [11]. After taking a broad look at trends in the design industry, it is clear that the focus of profession of experience design is evolving. Innovation in design education needs is necessary to allow design graduates to succeed.

1.4 Instructor influence
As a way to frame the pedagogical approach described in this paper, the background of the instructors will be briefly examined here. The authors of this paper acted as co-instructors for the capstone course. The instructors' personal career paths correspond to the industrial changes. Both have experienced the evolution from visual communication designer to experience designer. Reflecting on personal career paths, both have found that the roles of people in the design discipline have expanded from passive service recipients (customer or user) to active partners in problem solving. An understanding of people has been increasingly emphasized and

become integral to the design processes. The role of designers has been also expanded and adapted to this change. For instance, user research in interaction design in the early Dot-com era was limited to the user's experience engaging static information within an online space. Now user research in interaction design requires holistic and contextual understanding of user in defining purpose and flow of experience involved in on and offline spaces. Figure 1 by Sanders [12] summarizes our individual experience from a macro level.

The traditional design discipline focus on the designing of products	The emerging design disciplines focus on designing for a purpose
Visual Communication Design	Design for experiencing
Interior space design	Designing for emotion
Product design	Design for interacting
Information design	Design for sustainability
Architecture	Design for social inclusion
Planning	Design for participating

Figure 1 The snapshot in time of traditional and emerging design practice by Sanders (2008)

2 Methods

2.1 Framework

We developed a framework that would explain what it takes to design a full experience based around people. We established this framework after an inquiry into the essential elements of human experience involved in the creation of design outcomes. Additionally, we took the identified industrial trends into account and tried to map competencies that are required for potential career outlets. With all this in mind, we defined our experience framework with three tiers of engagement: service, interaction, and interface.

The **service** tier focuses on attribution of human experience from an ecological point of view, which encompasses people including their value and purpose, the scaffolding of intended design outcomes and the surroundings. Next, **the interaction tier** focuses on an engagement process that allows a person to act on design outcomes [13]. Lastly, **the interface tier** deals with visual or tactile artifacts that facilitate interactions between a user and the system. Each tier in a continuum aims to enhance human experience with a different scope and focus.
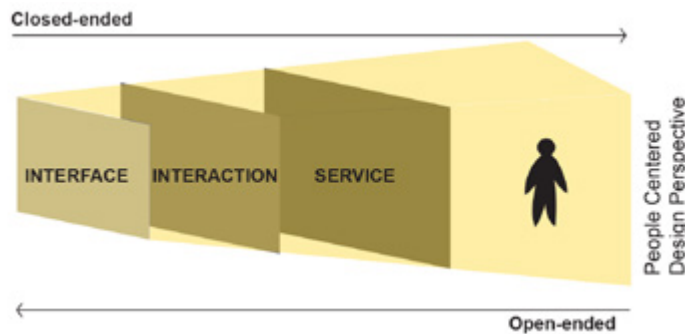

Figure 2 The Continuum of Service, Interaction and Interface

As mentioned above, a relationship can be drawn between these experiential tiers and professional opportunities. This framework facilitates a better understanding of how the broad, vague notion of an experience is broken down both conceptually and logistically. It also reinforces the idea that designing an experience requires a continuum of work and expertise. Ideally, by mapping design activities in this way, we ultimately enable students to define their strengths and declare their position of engagement within this continuum.

2.2 Course Structure

The capstone course spans two semesters. The course in the fall semester prepares the students for the individual capstone project by covering the methodology of people centered design. Herron VCD curriculum has adopted Min Basadur's Simplex [14] creative problem solving model and scaffolds it in student learning across the courses, from sophomore to senior level. As the students advance their learning, they are expected to define their own design process based on the Simplex model. The iterative learning process with different learning outcomes helps the students understand the design process not as action steps but as a methodological inquiry process for problem solving. In addition to defining their own people-centered design process, the fall semester capstone course facilitates critical discussion about the relevancy of research methods. At the end of semester, the students are required to demonstrate their methodological understanding of people centered design through a team project.

In the spring semester, the students developed an individual capstone project. Each student was asked to identify a real context involving people and then apply the design process to seek a solution. This decision was completely driven by the student. Early in the process, students selected a problem space (e.g. low student involvement on campus or a dwindling volunteer participation within local literacy group). The students then each went through an individual process of defining stakeholders and analyzing the context. Then, through their own design process they each determine how they could approach the problem space. They utilized the framework outlined above to determine what tier (or tiers) they would like to focus on and what the outcomes might entail.

To help them define the design problem, we provided them three prompts: Urgent, Personal, and Innovative. "Urgent" implies the significance of the design problem. This prompt urges the students to think about the potential impact of the solution for others. "Personal" asks the student to consider meaningfulness of engagement as designer through their values and potential career choice. " Innovative" asks them to be concerned with the quality of the outcomes. In the course, we define the meaning of "innovative" with three specific variables. The innovative solutions should be **appropriate** and **relevant** for those who are involved in the defined problem [15]. The final factor that is needed for a solution to be innovative is the idea that the solution is "something different that has impact" [16]. These prompts serve for the students to design the independent project and for the faculty to evaluate their design outcomes. Two tiers of interaction were developed to help students respond to their prompts: peer interaction and faculty mentorship. These outlets allowed them to externalize their process in order to successfully design their project.

2.3 Students

A little more detail about our students will reveal rationale on why we developed this framework and capstone experience. Herron School of Art and Design is a part of Indiana University,

located on the Indianapolis, Indiana campus. Indianapolis is a mid-sized city in the Midwest United States with around 1.2 million people in the metropolitan area. The university is situated in an urban environment that provides the students with access to pressing community problems.

Being primarily a commuter school, many students have part time jobs, some of which already working with local design practices. The local design community in Indianapolis presents a wide spectrum of design practice from traditional print shops to design strategy and interaction design companies. Although there has been vibrant movement in embracing contemporary design practice with the local design community over the years, the overall business culture is somewhat conservative. This outside culture beyond the classroom influences student perception toward design practice and requests additional efforts from faculty to broaden their understanding of design.

2.4 Assessment

As discussed above, the parameters of assessment of design outcomes mainly consist of three elements: impact (urgent), meaningfulness (personal) and relevance and appropriateness (innovative). The characteristics of the parameters are grounded in people centeredness, including the designer, which acknowledges importance of values and roles of designer in people centered design.

The assessment was conducted from multiple points of view: faculty, project partners, and local professional designers. The faculty, closely engaging with each student throughout the capstone process, evaluate of their process management and design decision over the course. The project partner—acting as the problem owner—can evaluate the innovative quality of the student's design outcomes. And finally, invited local designers evaluate the professionalism of each student's design outcomes and artifacts through the presentation of the solution with both visual and verbal communication.

This assessment experience provides students with not only feedback on their design outcomes but also a concrete sense of "measurability" of those outcomes. The students are familiar with "critique" as a form of feedback in traditional studio learning environment. The whole experience of bringing outside perspectives and getting evaluation from them informed the students that design outcomes are measurable, which is differentiated from interpretative artwork. Particularly for those students who primarily focus on aspects of interface design, this assessment experience became a critical opportunity to learn that designing interface-level outcomes needs solid rationale just like the other, more conceptual tiers: service and interaction.

3 Results

The total of 19 students completed their capstone projects. For this experiment, rather than trying to evaluate the projects success or failure, an analysis was conducted on how the proposed framework benefited student work and their ability to identify career potential. Using the framework as a starting point for comparison, each student was assessed on their ability to work within each tier. Based on the previously stated criteria, each of the student's outcomes were classified as innovative (appropriate, relevant, and novel), simply appropriate and relevant (but not novel), or none of the above. After analyzing the patterns of work, three groups emerged:

1. Those who can define innovative concept of **service experiences**, design appropriate **interactions** and produce appropriate **interface**.
2. Those who can design innovative **interactions** when the concept of service experience is well defined and also produce appropriate **interface**.
3. Those who can design an appropriate or innovative **interface** when both the concept of **service experience** and the **interaction** is well defined. The students under this third category mostly struggled with managing the design process and focused on aesthetic aspect of design.

In this paper, we will mainly examine two examples from Category 1 and Category 2 and share the findings, including Category 3 in the discussion.

Project example 1: Your Story. Your life: Latino Youth Summit

The students in the first project fell within Category 1: an ability to define innovative concept of experience, design appropriate interaction and produce appropriate interface. This project, was developed in partnership with the Fairbanks School of Public Health, Indiana University. The previous research conducted by the School of Public Health identified large numbers of Latino adolescents living in Indianapolis are experiencing acculturative stress. Acculturative stress is a common struggle for immigrants as they adjust between their native cultural values and customs and the new culture that surrounds them. Acculturative stress is associated with depression. In order to prevent depression of the defined population, the School of Public Health initiated a yearlong multicomponent intervention that consisted of an initial weeklong summer camp, followed by monthly booster sessions.

The students, joining a collaborative project team, which consists of psychologist, social workers and educators, designed the concept and the activities of the camp from a people-centered service design perspective. The newly developed concept (Your Story. Your life) and the brand identity were instrumental to develop a cohesive and integrative participant experience across the five choice activity areas in the camp: Art and Design, Dance, Storytelling, Music and Technology. The students also designed the daily activities by identifying the touch points and the forms of interaction between the camp participants and the instructor. Lastly, they produced the handbook for the instructor and the workbook for the participants. The students in this project chose the service tier as their focus area, took a holistic view to problem solving, and led the design process in defining the design problem as well as developing the integrative design solutions. As a result of the project experience, the students could understand the transferability of designing as methodological application for human problem solving and expand their limited understanding of potential career in business contexts to intervention design in a public health context.
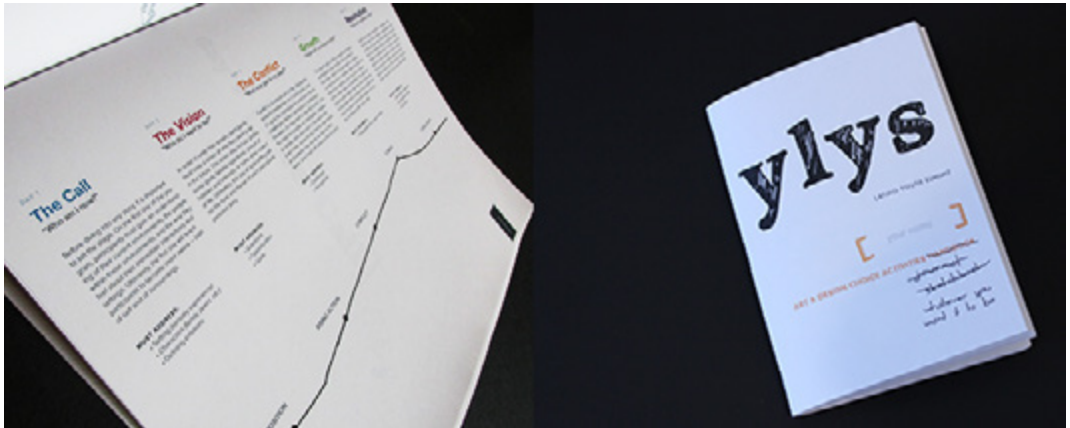
Figure 3 Example of design outcomes from the Your Story.Your Life: Latino Youth Summit project. The thematic concepts of the summer camp activities (left) and interface deliverable in the form of the student workbook (right).

Project example 2: Connecting customers to the product and the story behind its journey to Crate and Barrel
The second project that will be discussed falls within Category 2: the ability to design innovative interactions when the concept of experience is well defined and also produce appropriate interface. In this project, the student worked with the local branch of the high-end, modernist furniture and home goods store Crate and Barrel. The student worked at the store and therefore had access to both customers and employees with whom she could conduct research.

Her research revealed that Crate and Barrel merchandise often has a unique story about the manufacturer or place of origin. However, busy sales employees frequently are not able to share that story with every customer. Because an item's uniqueness is important to Crate and Barrel shoppers, the inability to the story can potentially hurt sales because. To solve this, she determined that the customer needed a better way to interact with the objects and engage with their stories.

In this example, the service experience is already well defined by Crate and Barrel. Knowing this, the student identified that the real opportunity to improve the experience lay in the interaction between the person and the store (or service). Using the provided framework, she was able to dissect the experience and pinpoint where she could make the most impact. With this in mind, she was able to focus her attention on designing innovative interactions and interface artifacts—in this case providing the product story in the user's path via an iPhone application— to facilitate those interactions. The student still had an understanding of the conceptual system in place and relied on that understanding to design a better solution. In this project experience, the student found that she enjoyed developing digital interactions and interfaces within a defined system. Not having to worry about the system-level design freed her to focus on the activity she truly enjoyed but still reinforced the idea of an integrated design approach.
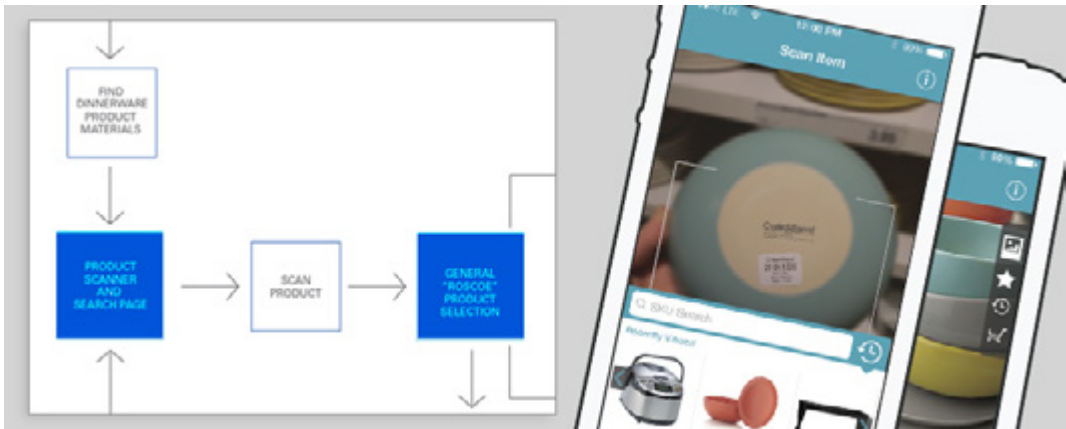
Figure 4 Example of design outcomes from *the Crate and Barrel project.* Interaction workflow planning (left) and interface deliverables in the form of an iPhone app (right).

4 Discussion

This results of this experimentation show that our approach provides a good start in attempting to expand students' integrative understanding of design. The majority of students—especially those identified under Category 1 and 2—demonstrated an ability to parse a design problem, define the spectrum of experiential approaches, and select an approach that aligned with their future career interests. However, even though they were able to make distinctions about the type of approach (service, interaction, or interface), most students were not able to produce innovative solutions within their context. This could potentially be due to the complexity of the project or a lack of clarification on the part of the instructor. More work is needed to develop strategies to allow students to excel in their chosen discipline, not just simply know that the discipline exists.

Students identified under Category 3 struggled with the methodological process and the concept of an integrated solution. Their work tended to focus on the aesthetic quality of artifact design with disregard for that object's role in a larger system. Students in this category did not fail because of a lack of effort. Rather, their professional aspirations involve being master technicians in the visual design field. We recognize that this type of visual design still has a legitimate role in the industry. Further work needs to be done at the department level to determine how we can best serve these students.

4.1 Limitations

There are some known limitations that obstruct our work to create an ideal academic setting. Students lack context around what contemporary design looks like and therefore struggle to buy into the idea of experience design. Once students do understand the general concept, it is hard for them to form a realistic picture of what their career might look like. Some work will need to be done to determine a better way to make career opportunities explicit to students.

4.2 Benefits

There are two perceived benefits to using the framework proposed above. First, making the continuum of experience design explicit can lead to better strategic development of innovation

design solutions. The framework, in conjunction with the assessment measures, set clear definitions for what innovation means within each tier. By asking students to focus in their work according to the tiers of human experience framework, they are able to pursue their design outcomes in a concentrated way. As noted above, more work is needed on the instructors part to formalize expectations for innovation in each tier or the framework.

Secondly, using this approach improved the student's understanding of their viable professional outlets. Again, by mapping competencies, design outcomes, and career paths to the experience framework, students were able to visualize their potential and form a clearer path towards achieving that potential. Talking with students at the end of the spring semester, the faculty observed that they had a much more accurate idea of potential career opportunities. Not only did they better understand what it means to be a contemporary designer, the framework also allowed them to reflect on and assess their own skillset. With this assessment, students are able to make more informed choices on how to maximize their skills when selecting a career path to pursue after school. Follow up assessment on the part of the faculty is necessary to fully understand the correlation between this pedagogical approach and a student's career success. In result, the framework proved to be a useful tool to help students understand the contemporary design industry and helped them maximize their strengths to strive for innovative design solutions.

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