Chapter 4
Building a Holistic Design Identity Through Integrated Studio Education

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Introduction

Design is a unique way of knowing that has been called the "first tradition" of human endeavor (Nelson & Stolterman, 2012). While design competencies are often categorized by the form or type of designed outcome (cf., Buchanan, 1995), contemporary approaches to design education view outcomes as increasingly situated, dynamic, and experiential. This expansion has led to the need for a more holistic approach to developing students' "designerly ways of knowing" (Cross, 2007) in ways that prepare them for the realities of current design practice, while also building a foundation for the present and future broadening of design practice. In this chapter, we explicitly link students' acquisition and performance of designerly ways of knowing with the development and integration of a *design identity* (Gray, 2014b; Liu & Hinds, 2012; Tracey & Hutchinson, 2016), whereby they are able to produce intentional change in the world through the lens of professional design activity.

Design education frequently takes place within a studio learning environment. The studio pedagogy, as one of many "signature" pedagogies in higher education (Shulman, 2005), is focused on types of learning that are germane to the practice of design. Some of these features include project-focused curricula, critique as a formative and summative method of socialization and assessment, and an intentional bridging of learning activities with their eventual utility in practice (Cennamo, 2016; Brandt, Cennamo, Douglas, Vernon, McGrath, & Reimer, 2013). We have built upon this traditional notion of studio, which has existed in some form for over two centuries, to address the rapid changes in design outcomes and the required competencies of practitioners. While the centerpiece of studio has conceptual

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similarity to modern instructional practices often labeled as "active learning" or "inquiry-based" learning, we attempt to reposition the nature of studio pedagogy practices while also seeking to maintain resonance with the signature form of studio recognized in art and design disciplines.

In this chapter, we chronicle a portion of the development of a novel undergraduate program in user experience (UX) design at a large, US research-intensive university. We focus our attention on the ways in which the program and course design facilitate students' development of a holistic and future-oriented identity as design practitioners: a design identity. In particular, we explore the development of an *integrated design studio* that is experience-focused rather than content-focused, relying on a spiral model of skill attainment that inculcates values such as productive failure, iteration, leadership, and reflection. Rather than focusing primarily on content (e.g., topics and methods), an experience-focused curriculum prioritizes ideas, attitudes, and values in a way that is coherent with students' everyday lives and future identities (Beane, 1995). From this perspective, a significant portion of instructional energy is aimed at developing the personal, emotional, value-driven aspects of design work that are necessary for meaningful, deep learning (Caine & Caine, 1997; Erickson, 2002). While there are strands of instructional design literature that have indicated the potential interplay of tasks, topics, and learned routines (e.g., Van Merriënboer & Kirschner, 2007), our overarching curricular philosophy was to design curricula that produced primarily emotional and attitudinal outcomes through experiences that we wanted for students to have (Boling, Siegel, Smith, & Parrish, 2013).

Building a Design Identity Through the Hidden Curriculum

In previous work, researchers have addressed the developing identity of design students and the relationship and trajectory of this identity with future practice—a forward-looking attitude toward professional practice and design activity that we refer to as one's *design identity* (Brandt et al., 2013; Gray, 2014b; Liu & Hinds, 2012; Tracey & Hutchinson, 2016, 2018). While student development is often framed through the lens of academia, the forward- and future-looking trajectory of students as *proto-professionals* (Gray, 2014a) has previously been shown to be useful in modeling identity formation processes in design as inherently being oriented toward practice. Brandt et al. (2013) have described this liminal space as the "studio bridge," where students learn academic ways of knowing while also having access to constructive and authentic design tasks that help them to develop their abilities. Tracey and Hutchinson (2016, 2018) have previously identified reflection as particularly valuable in calling learner and instructor attention to this development process, increasing awareness of the role of the developing designer herself in producing a lasting change in identity.

Within this liminal space occupied by the academic design studio, we particularly value the role of the *hidden curriculum*—which we define as the learning

outcomes that are learned without being explicitly taught. The concept of a hidden curriculum comes from the critical pedagogy literature (e.g., Freire, 1970/2000; Martin, 1976) and refers to aspects of socialization that may not be openly intended yet influence and shape learners and learning behaviors. Scholars have argued for decades that the hidden curriculum can be described—thus laying bare the unintended and often negative aspects of learning taking place in learning environments. But we argue, in agreement with Martin (1976), that knowledge of the hidden curriculum can lead to the development of new practices and structures that subvert or change this curriculum. We take on this pragmatic yet activist stance toward our own program, seeing the hidden curriculum as not solely negative but also generative to instructional design interventions. In doing so, we attend not only to the *designed curriculum* (i.e., what is intended by us as program designers) but also the *lived experience*—what is *actually* felt and experienced by students in terms of both learning and socialization.

In our previous work, we have identified reflection as one important mechanism for revealing students' identity development as designers and the disjunctures that often form among students' perceptions of their learning environment, their beliefs as designers, and their involvement in design activity (Gray, 2014b). By foregrounding the hidden curriculum and the role of these learned behaviors on identity formation, we seek to use this implicit learning as "material" with which to inform and direct the creation of learning experiences. This learner-centric view of the aesthetic learning experience (Gray, 2015) inverts the instructional design process in some important ways, valuing the role of *experience* over that of content or specific measurable gains in objective or objective-like knowledge. Thus, we position agency and student control within the learning experience to be constitutive of the students' developing design identity and, within this development process, the hidden curriculum to be the most fundamental mechanism through which the instructor can design and shape students' view of disciplinary "content" and the tacit knowledge that binds this content together.

In what follows, we will demonstrate how we build on this approach of foregrounding and designing with the hidden curriculum as it links to our students' identities as designers. We will outline the mechanisms we have used in creating our integrated studio to build these designerly identities, focusing on design leadership, learning through productive failures, and developing a sense of design expertise by trusting one's tacit knowledge.

Method

We use a single case study approach (Yin, 2009) to document the program and course design, exploring how the interactions among various elements of the learning system encourage students to take on a design identity and continuously practice that identity in a holistic way. To document our instructional design approach and learning outcomes, we rely upon a variety of data sources: (1) artifacts from our

design process, such as whiteboard sketches, project briefs, and other planning materials; (2) student-created artifacts, such as written reflections, project deliverables, and course evaluations; and (3) dialogue among three program faculty that have been responsible for creating the integrated studio. In triangulating these data sources, we seek to expose both the objective knowledge that our final instructional design represents, as well as the tacit and professional judgments that have led us to make these decisions.

Program Goals and Institutional Context

Our initial goals for this undergraduate program were situated within common educational patterns in UX and the relatively new disciplinary status of UX (Lallemand, Gronier,& Koenig, 2015; Vorvoreanu, Gray, Parsons, & Rasche, 2017). Historically, practitioners have either learned on-the-job or have received graduate training in human-computer interaction (HCI), information science, or related disciplines. Because there were virtually no other undergraduate programs in UX design, we knew that our students would likely have to compete with graduate students for internships and jobs. Thus, our goal for the program was to have students build holistic abilities in UX design, not leaning too heavily toward user interface design (with links to graphic design and the tradition of art and design schools) or usability (with links to human-computer interaction, information science, and human factors). We also wanted to ensure students' ability to enter a rapidly changing discipline where long-term technical skills are unstable and the core competencies needed for success are still emerging and contested (e.g., Kou & Gray, 2018).

At the institutional level, substantial incentives were being provided to encourage the development of transformational educational programs at the time of this program's creation. While some characteristics of these programs included features common to "active learning" more broadly in higher education, other features situated the focus at the program level, including instructional innovations such as vertical and horizontal integration across courses and cohorts, in-context learning, and the provision of real-world or authentic learning experiences ("Answering the Call", n.d.). The UX design major was the first to be developed with these criteria in mind, with substantial institutional support for breaking down barriers between courses and challenging traditional notions of course delivery. Thus, while studio as an educational approach is under threat in other segments of higher education (e.g., Boling et al., 2013), we were able to receive broad support for rethinking course and program delivery in a residential context.

Creating the Integrated Studio

Working within these institutional and disciplinary constraints and opportunities, we constructed what we refer to as the *integrated studio*. The integrated studio encourages students to build competence across multiple strands of content in a reflexive, spiraling way, integrating knowledge(s) from multiple disciplinary traditions and perspectives. Because of the diversity of UX as a discipline and its numerous intellectual cousins (e.g., Faiola, 2007), teaching in a content-focused way is increasingly infeasible or otherwise undesirable. Instead, we crafted a cascading series of integrated studios (also known informally as "learning studios") (Vorvoreanu et al., 2017) spanning five semesters of students' undergraduate experience that are themed, broadening, and deepening students' understanding of design and UX in each semester (Fig. 4.1). Each studio includes primary threads of user research, prototyping, and evaluation/testing, with supporting threads of design philosophy, HCI/technology history, psychology, values and ethics, and collaboration/teamwork/leadership. All strands are present in every semester, and students' competence is built and extended progressively throughout the studio sequence. Students are also simultaneously enrolled in a cross-cohort studio consisting entirely of industry-sponsored projects each semester, providing a coherent experience that continuously informs their skill development and identity formation as a designer.

In this framing of curricular experiences, we thus move beyond the course as a container for content and rather view learning in the constructivist tradition as a constant movement toward competence and mastery. In the process, we broke with instructional design orthodoxy by choosing not to "chunk" or scaffold content but rather to sequence what Parrish (channeling Dewey) describes as the *aesthetic learning experience* in all of its complexity (Boling et al., 2013; Gray, 2015; Parrish, 2009). The framing of learning as being inherently experiential in nature leads to a different means of designing and structuring learning experiences. Using Parrish (2009) as a guide, an instructional designer might begin their process by consider-

Fig. 4.1 Overview of the integrated studio sequence

ing: *What experience do I want the learner to have?* This is dramatically different in focus from traditional approaches which place generative value on how to assess learning (cf., Backwards Design) or what learning objectives should frame the learning experience. This experience-centered approach was first suggested by the creator of the first curriculum map for this new major, which was then realized as a course experience by the first author. The particular approach to designing the *aesthetic experience* was inspired by two things: (1) the first author's ethnography of an HCI program, particularly focusing on the students' lived experience of the program that moved beyond the designed course experience (Gray, 2014a) and (2) a focus on hedonic (e.g., Diefenbach, Kolb, & Hassenzahl, 2014) and experiential (McCarthy & Wright, 2004) language to describe aspects of user experience in the HCI literature, resonant with Parrish's translation of Dewey in an educational context (Parrish, 2009).

Using this aesthetic framing of the learning experience, we identified the main threads of content and disciplinary competence that our program needed to include (Table 4.1). This process included multiple rounds of Post-It generation, sorting, and pruning in relation to existing UX/HCI texts. What resulted were two sets of strands—one oriented toward competence in UX particularly and one oriented toward a transdisciplinary situating of UX/HCI practice in a liberal education tradition.

In the undergraduate major that has resulted from these efforts, we leverage the student experience as a pedagogical "laboratory," where we can integrate best practices from critical pedagogy, instructional design, and design education. These experiences that we have designed and studied exemplify the instructional design value of documenting the hidden curriculum and using it to inform all pedagogical decisions on a course and program level. We have begun to validate that our students have achieved these intended outcomes, using a combination of data sources including regular reflections, assessments of student work, and workshops to engage students in cocreating the future learning experience. In addition, we have socialized the curriculum as a *learning experience*, rather than as a set of courses, involving students in core parts of the program such as mentoring, professional practices, and contact with industry partners. In our current research, we are studying ways in which this pedagogy can also meaningfully connect knowledge from academia/research and practice, constructing an effective "studio bridge" (Brandt et al., 2013)

Table 4.1 UX and transdisciplinary competencies embedded in the integrated studio

UX competency	Transdisciplinary competency
Visual and interactive representation	Psychology
Design philosophy	Anthropology and sociology
Social/research methods	Philosophy
Technical skills	Ethics
Global consciousness	Technology and HCI history
Leadership and teamwork	Art and design history

that allows students to learn and practice their role as future professionals throughout the program.

The integrated studio that has resulted from these efforts supports several higher-level competencies that exist "above content." In the following sections, we describe several of these higher-level competencies that emerged as design goals and elements of the "hidden curriculum" in the design of the undergraduate program and, in particular, the integrated studio learning environment.

Design Leadership

Nelson and Stolterman (2012) focus on the role of the designer as leader—an individual that is in service to the design situation and has a set of ethical obligations. We have positioned this learning outcome as formative to the development of students' design identity, bringing together strands of social psychology, organizational management, ethics and values, and design philosophy. These outcomes are cemented through multiple program mechanisms:

- *Teamwork and collaboration*: Throughout a five-semester sequence of studios, students work in teams to solve a range of "wicked" problems. Taking on problems that are, by their very definition, impossible to solve requires students to take on a leadership role and learn how to navigate conversations with their peers where there is no "right" answer.
- *Vertical integration*: Each semester, students are enrolled in a cohort-specific studio (Learning Studio; the integrated studios described in this text) and a studio where all cohorts are present (Experience Studio). In the Experience Studio environment, students work in cross-cohort teams on industry-sponsored projects. This experience fosters awareness of industry norms and the need to advocate for design and the "voice of the user" and facilitates peer mentorship among the students of varying levels.
- *Design as avocation*: Throughout the studio sequence, students are taught to view design as a way of being, rather than simply a method for solving problems or something that only has professional application. This view of design as avocation allows students to see their everyday actions—even something as simple as the positioning of a handle on a door (cf., "Norman doors")—as being always already permeated by designed experience and design possibility. Being a designer is positioned as an active negotiator and shaper of social change, with a substantial and weighty responsibility that is inherently value-laden.

Our program is designed to expand students' agency, giving them opportunities for peer mentorship, leadership in teams, and reflection on their role as designers and humans throughout the program. As students advance through the program, they gradually take on more leadership and mentoring responsibilities, through direct peer-mentoring roles and also as design-team leaders. Students' increasing

leadership expectations are supported through integration of design ethics as both an explicit topic of study and implicit substrate for team project work.

Productive Failure

Failure is widely acknowledged to be a critical element of professional success (Petroski, 2006); however, encouraging failure in the classroom can impose significant demands on both students and instructors. We not only advocate for failure, but we also place it at the center of our instructional and evaluative approach through some of the following mechanisms:

- *Failing with a safety net*: Student grade allocations are balanced to allow for significant failure on group design projects, with around 50% of the final grade allocated to individual work which is nontrivial, but also not difficult to score highly on (e.g., portfolios, reflection, reading annotations, participation). The remaining design projects are assessed through a mastery grading process, whereby students are evaluated not as freshmen or sophomores but as early professionals. Pragmatically, this means that students typically receive failing grades on their first projects in the program. Students are told that their final grade will be based not on their component grades but rather on their willingness to take risks and show a trajectory of development over time. Through this set of experiences, students slowly learn to value feedback more than grades. We have spent substantial time and effort on this aspect of socialization, recognizing that trust and strong identity as a designer can help to mitigate the fear that may come from a poor grade. Peer and faculty mentoring, alongside discussions about the purpose of feedback and the inadequacy of grades, are critical in learning complex performances such as design.
- *Centrality of formative critique*: While students do receive point value scores on their projects, the focus is on formative critique throughout the project lifecycle and open-ended feedback on their final project materials that is not grade-oriented. This focus means that the vast amount of feedback that students receive is not assessment-oriented in a summative sense but rather allows students access to multiple types of rich and subjective feedback, some of which is conflicting and potentially generative. Students regularly participate in desk, group, and peer critiques, and the final projects are evaluated by multiple graders with comments on Post-It notes. This grading model allows for multiple sources of feedback on numerous aspects of each project, including communication, organization, utilization of various required methods, argumentation, risk-taking, and demonstration of professional judgment throughout the process.
- *Acculturation through peer mentorship*: Throughout this process of experiencing failure, students' access to peer support is crucial. Because all students of varying levels interact together in Experience Studio, their sharing of these "failure moments" allows for bonding to occur and for more senior students to assure

junior students that their failure will not be a permanent state. Additionally, select senior students serve as peer graders for the lower-level studios, thus allowing the formative feedback to scale, and for students to continue to develop an awareness of their own abilities and design identity.

In our program, we intentionally build failure into the student experience across all levels of the curriculum, providing pedagogical, emotional, and reflective supports for them to reorient their notions of academic success, the value of formative feedback, and the role of design process in relation to design outcomes. We encourage students' development of community and mentorship relationships, which both prepares them for the failure they will experience and provides additional provision of peer critique and emotional support as they build resilience in their initial semesters in the program.

Design Expertise and Tacit Knowledge

One of the most important features of heightened design expertise is the increasingly tacit nature of design judgments, whereby experts are often unaware of the component judgments that result in large creative leaps (Cross, 2007; Lawson & Dorst, 2009). This gradual backgrounding of judgment makes it difficult to directly access or assess, requiring attention at the assessment, project, and experiential levels. We use some of the following mechanisms to encourage the development of design expertise:

- *Reflection as a way-of-being*: Students engage in various forms of reflection throughout the program, where the ultimate goal is for reflection to become a habitual means for students to understand themselves and their role as designers. Weekly written reflections in a shared Slack workspace[1] serve as the nexus of community-building and externalization of design identity, and this space is further supported by classroom reflections in aural and sketch form (cf., Gray, 2014b). Slack is a multi-platform team communication tool that allows participants to interact through public and private channels, as well as through direct messages, on many mobile and desktop devices. Through these reflection activities, students become more aware of their actions and rationale in informing their design judgments, as well as the larger role of designers in producing responsible change.
- *Rubric-free feedback*: Because our ultimate goal is for students to be able to understand and shape their tacit design judgments rather than to simply pass tests, we focus on providing rich formative feedback that meets the student where they are, rather than using rigid rubrics with predefined criteria and levels of performance. While we have overarching learning outcomes in mind, student

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[1] https://www.slack.com/

feedback is not governed by a rubric with defined categories of feedback and achievement. Rather, students are provided with adaptive and situated feedback from a range of perspectives, including technical writing, visual communication, organizational communication, design process(es), advocacy for user-centered design, presentation of research and analysis methods, and rationale for designed outcomes. This approach often results in dozens of Post-It notes on the final document and many desk and group critiques in the formative design stages. While we do consider a range of potential assessment criteria within each assignment, these criteria are not applied directly or exclusively to student work. Rather, we attempt to perceive each assignment in a holistic way, providing feedback on areas that appear most salient to that specific assignment for that particular student or student team.

- *Sustaining the learning community*: One of the most important drivers of the development of design expertise is the attitude of lifelong learning. Students quickly learn about the volatile nature of UX practice, which impacts their selection of tools and methods, their understanding of the role of UX designers in industry, and their positioning of the present and future of design as a driver of our society. While we encourage this forward-looking and continuous form of learning in our studios, such as by not teaching specific pieces of software in our program, students also play a central role through a UX-focused student organization and the sharing of internship experiences.

In our program, we carefully build students' metacognitive skills, particularly through monitoring and reflection exercises. These skills are regularly practiced through critique sessions, using a multimodal critique approach (Gray, 2019) and weekly reflections on a shared Slack channel. In addition, students are expected to explicate their design process and related design decisions in their project documentation, which also encourages self-reflection and enables the provision of substantial formative feedback. Throughout the sequence of studios, we progressively disclose a portion of our "hidden" learning goals as a means of furthering students' reflection, allowing them to assess their progress and their metacognitive development.

Implications and Future Work

Throughout the design and implementation of the integrated studio, we have questioned the role of courses in relation to the overall program design. When considering aspects of the hidden curriculum as design material, how or *should* "content-free" elements of the lived curriculum—that is, the curriculum that is actually experienced by students—intersect with content or disciplinary knowledge? What might it means to explicitly design the hidden curriculum through these sorts of outcomes as we have attempted to do in our program, and how should these explicitly designed elements subsequently be "hidden" again, thereby giving these elements legiti-

macy? As Martin (1976) noted, there is always a hidden curriculum in play; even once a hidden curriculum is described and intentionally altered, a new, largely hidden, form of socialization is created. We have chosen to alter the common hidden curriculum of higher education in specific ways to shape students' development as designers and have allowed certain elements of this redesign to remain hidden to students or to be progressively disclosed as they move through the curriculum.

We believe there is an important tension between the implementation of an explicit curriculum and maintaining some sense of narrative thread that makes the overall direction or trajectory of learning visible (cf., Boling et al., 2013) while also leaving aspects of that trajectory hidden or undetermined. Future work should include investigation into instructional design practices that rely more heavily on the narrative and aesthetic aspects of learning, potentially repositioning conventional ID wisdom away from issues such as scaffolding, fading, and chunking. In rethinking the role of content in instructional design practice, we seek to not just organize or sequence content but rather actively build upon and adapt existing signature pedagogies on a program level, respecting and leveraging the epistemological foundations and hidden curriculum of the disciplinary traditions we rely upon.

Conclusion

In this chapter, we have provided early research insights from our work in designing and studying an innovative undergraduate program in UX design. We propose that taking a critical perspective toward instructional design and the construction of a "living curriculum" (Churchill, Bowser, & Preece, 2016) encourages the rich externalization and discussion of values and learner experience, both from an educational standpoint and in how a pedagogy can prepare learners for future professional practice. While uncovering and foregrounding the norms and *hidden curriculum* in the classroom environment are vitally important, so too is an understanding of how learners construct patterns of self-learning with their peers and the attention to how an increase in design expertise inevitably involves the development of values in relation to the learner professional design identity.

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