
Vertical Integration in UX Design Studios

Paul Parsons

Purdue University
West Lafayette, IN 47907, USA
parsonsp@purdue.edu

Nancy Rasche

Purdue University
West Lafayette, IN 47907, USA
nrasche@purdue.edu

Colin Gray

Purdue University
West Lafayette, IN 47907, USA
gray42@purdue.edu

Austin Toombs

Purdue University
West Lafayette, IN 47907, USA
toombsa@purdue.edu

Abstract

In this discussion paper, we present an approach to HCI pedagogy that leverages vertical integration within a studio-focused UX design program spanning the undergraduate and graduate levels. We provide a brief introduction to the program we have developed at Purdue University, present our vertical integration strategy, and discuss plans for future scholarship.

Author Keywords

HCI education; studio pedagogy; vertical integration.

Introduction

In this discussion paper, we present an approach to HCI pedagogy that leverages vertical integration within a studio-focused UX design program spanning the undergraduate and graduate levels. Although aspects of our novel curricular approach have been discussed elsewhere (see [6, 7, 8]), here we focus particularly on vertical integration and challenges in “scaling up” with growing enrolment.

Institutional Context

When the development of our program began in 2014, substantial institutional incentives were being provided to encourage the development of transformational educational programs. Some of the incentives provided were focused specifically at the program level, including instructional in-

Permission to make digital or hard copies of part or all of this work for personal or classroom use is granted without fee provided that copies are not made or distributed for profit or commercial advantage and that copies bear this notice and the full citation on the first page. Copyrights for third-party components of this work must be honored. For all other uses, contact the owner/author(s).

Copyright held by the owner/author(s).
CHI'20, April 25–30, 2020, Honolulu, HI, USA
ACM 978-1-4503-6819-3/20/04.
<https://doi.org/10.1145/3334480.XXXXXXX>

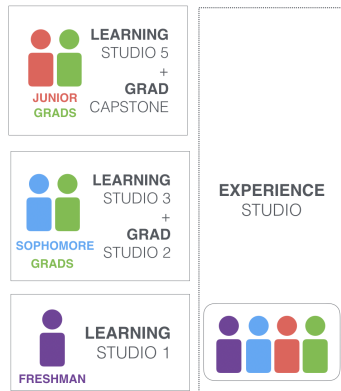


Figure 1: Vertical integration across studios during the spring semester.

novations such as vertical and horizontal integration across courses and cohorts, in-context learning, and the provision of real-world or authentic learning experiences [1]. The UX Design major that we developed was the first 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., [2]), we were able to receive broad support for rethinking course and program delivery in a residential context.

Our program has grown from an initial class of 15 students in early 2016 to over 100 undergraduates on campus in early 2020, including a new starting class of 45 students. This rapidly increasing scale brings pedagogical opportunities, as well as practical and pragmatic concerns. Below we present some of the strategies we have developed to manage this growth in our studio courses, focusing on how we have leveraged the vertical integration of multiple studios at multiple levels to encourage students' individual and collective development of design ability.

Studio Pedagogy

The studio is considered as a space to engage in design work, engage in critique, and a place that intentionally bridges academia and practice (cf. studio bridge [3]). While elements of studio differ by discipline (e.g., [4]), typical components include spaces and large blocks of time to engage in intensive individual or collaborative design work, critique as a means of professional enculturation and formative and summative feedback on in-progress design work, and the connection of theoretical and practical skills that lead to good design outcomes.

While this description of studio is still accurate in many traditional design disciplines, emergent design and technology disciplines have frequently adopted elements of studio pedagogy at a scale not anticipated in the original atelier model, where a single studio master developed deep and long relationships with their students and the development of design outcomes [5]. In the development of our program, we have had to focus on a “scaling up” of studio, where dedicated space, long blocks of uninterrupted time are no longer available or practical, or where new forms of engagement in critique are introduced and design work becomes more collaborative than individual in nature.

Vertical Integration

Vertical integration is one curricular approach among many that we have implemented in efforts to provide a holistic, transdisciplinary design education (see [6, 7, 8]). Our vertical integration strategy is implemented in at least 3 different yet complementary ways: (1) cross-cohort integration within the same studio, (2) mentoring, and (3) professional practices.

Studio Integration

Each semester, students are enrolled in one of 5 cohort-specific studios (“Learning Studios”) and a studio where all cohorts are present together (“Experience Studio”). Starting in the spring of 2019, we also included graduate students in our third Learning Studio (LS3), adding another layer of vertical integration across our undergraduate and graduate curricula. Figure 1 depicts our vertical integration strategy across all studios during our spring semester when LS1, LS3, and LS5 are being taught.

Experience Studio. In the Experience Studio environment, students work in cross-cohort teams, from the freshman to graduate levels, on a range of 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. Starting in the spring of 2020, we also included graduate students in these cross-cohort projects, adding additional vertical integration opportunities. Figure 2 depicts the vertical integration structure of the experience studio in its current semester (spring 2020).

Scaling up Experience Studio. Our experience studio has more than quadrupled from 21 students in spring of 2016 to 95 students in spring of 2020. Currently, the freshmen cohort of 45 students almost matches the number of 50 students in the upper classes and graduate cohorts (see Figure 2). This weighting presents new challenges in providing relevant and consistent feedback on project process and individual growth within the team dynamic. To alleviate the burden on the 2 team co-leads, we added another level of leadership with project owners who manage two teams. They maintain direct contact with the two co-leads on each of their teams and report progress to the instructors in the course. Project owners are expected to support the co-leads evaluation of the viability of project distribution, provide feedback and direction towards the completion of deliverables, and manage the development of team members, which was previously done within the teams by the team co-leads. Expectations include attending team client meetings and critique sessions, conducting two sessions of 1:1 meetings with all team members, and leading 2 peer evaluation sessions between the teams throughout the semester.

Mentoring. All students are paired with a faculty member and a student one year ahead of them in the program upon matriculation. This pairing takes place the summer before classes start, and all new students are added to a program-

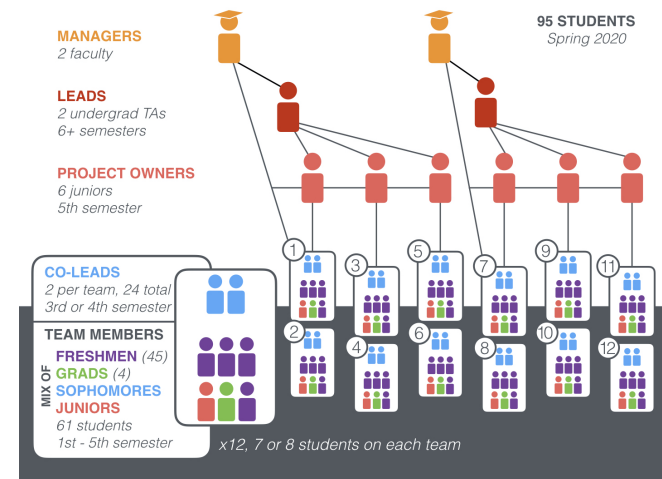


Figure 2: Scaling up vertical integration in the experience studio for the Spring 2020 semester.

wide Slack workspace, allowing them to connect with the program before they arrive on campus. All student mentors are volunteers, and historically we have seen over two-thirds of our students volunteer for this role at the end of their first studio experience. Mentoring provides an initial path into enculturation, and as the new student’s studio experience begins, provides a social and emotional “safety net,” helping us identify students at risk of withdrawal. In the experience studio specifically, formal mentorship is built into the teams as described above. Originally, the framework was meant to on-board new students to the course structure, team, project, and expectations where mentorship was scaffolded within the teams. Over time this became a more collaborative structure as mentoring was encouraged between teams outside of direct leadership.

Shepherding and Critique

As our numbers have grown, our assessment load has grown substantially. Additionally, in our first learning studio, we begin with project teams of two and gradually scale to teams of four or five. To mitigate the sheer number of projects that we would like to give large amounts of feedback, we added a “professional practices” requirements to our second- and third-year studio courses, requiring each student to engage with one team during the semester as a formal “shepherd.” This role includes meeting with the team at least once, providing feedback and practical advice, and also helping to encourage a sense of belonging and hope as they navigate the chaos of early design identity formation. Each shepherd also provides non-grade-oriented feedback on their team’s project after it is submitted, closing the loop and developing strong cross-cohort connections. All third-year students are also required to join either the first- or second-year studio for a group critique or a formal project presentation, providing feedback in person and in summary form using Slack.

Collecting Data for Reflection

While still in the early stages of “scaling up,” we are currently investigating the role of data that students can use to build their own reflective practices. Since the beginning of the program in 2016, we have video-recorded all formative and final critiques. We have shared the recordings with students for them to review their progress in developing design and presentation skills. Increasingly, we are using other forms of reflection across the boundaries of individual studios. For instance, we are now collecting reflection sketches across multiple points in the first two studios, and we provide students with these sketches at the end of the second semester to fuel a lengthy written reflection. While there are technical challenges to providing these resources at scale, we have found this to offload—or at least

augment—individual conversations with students about their developmental arc.

Participant Background

Paul (started in August 2015) has a background in computer science and cognitive psychology, with a focus on cognitive approaches to information visualization and human-computer interaction. Paul teaches and was the lead designer for learning studio 3 and co-designed learning studios 2 and 5. He also co-teaches learning studio 5 and the experience studio.

Colin (started in August 2015) has a background in studio education, having previously earned a Bachelors and Masters degree in graphic design. He has masters and PhD degrees in instructional design. Colin led the creation of and teaches learning studio 1, 2, and 5 and contributed to the design of learning studio 3 and 4. In addition, he contributed to the design of the multi-level experience studio.

Austin (started in August 2017) has a background in computer science and human-computer interaction, with a focus on feminist and care theory and community informatics. He has a terminal degree in HCI. Austin designed and teaches learning studio 3 and 4.

Nancy (started in August 2015) has a background in industrial design. She has an MFA in interaction design, as well as industry experience in product design. Nancy has iteratively designed and led the multi-level experience studio.

REFERENCES

- [1] 2020. Technology Transformed: How Far We’ve Come. (2020). Retrieved February 10, 2020 from <https://polytechnic.purdue.edu/technology-transformed>

- [2] Elizabeth Boling, Richard A Schwier, Colin M Gray, Kennon M Smith, and Katy Campbell. 2016. *Studio teaching in higher education: Selected design cases*. Routledge.
- [3] Carol B Brandt, Katherine Cennamo, Sarah Douglas, Mitzi Vernon, Margarita McGrath, and Yolanda Reimer. 2013. A theoretical framework for the studio as a learning environment. *International Journal of Technology and Design Education* 23, 2 (2013), 329–348.
- [4] Katherine S Cennamo. 2016. What is Studio? *Studio Teaching in Higher Education: Selected Design Cases* (2016), 248.
- [5] Colin M Gray. 2016. Emergent Views of Studio. In *Studio Teaching in Higher Education: Selected Design Cases*, Elizabeth Boling, Richard A Schwier, Colin M Gray, Kennon M Smith, and Katy Campbell (Eds.). Routledge, 271–281.
- [6] Colin M. Gray, Paul Parsons, and Austin L. Toombs. 2020a. Building a Holistic Design Identity Through Integrated Studio Education. In *Educational Technology Beyond Content: A New Focus for Learning*, Brad Hokanson, Gregory Clinton, Andrew A. Tawfik, Amy Grincewicz, and Matthew Schmidt (Eds.). Springer International Publishing, 43–55. DOI : http://dx.doi.org/10.1007/978-3-030-37254-5_4
- [7] Colin M Gray, Paul Parsons, Austin L Toombs, Nancy Rasche, and Mihaela Vorvoreanu. 2020b. Designing an Aesthetic Learner Experience. *International Journal of Designs for Learning* 11, 1 (2020), 41–58.
- [8] Mihaela Vorvoreanu, Colin M Gray, Paul Parsons, and Nancy Rasche. 2017. Advancing UX education: A model for integrated studio pedagogy. In *Proceedings of the 2017 CHI Conference on Human Factors in Computing Systems*. 1441–1446.