Building Student Capacity to Engage with Design Methods

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ABSTRACT

Knowledge of design methods is critical for careers in User Experience (UX) design and other fields commonly served by HCI programs. In this masterclass, we will seek to bring together the knowledge contained in key texts commonly used in HCI education and the evident pedagogical challenges that underlie codified methods knowledge. Such fundamental questions at this intersection include: What kind of knowledge do methods contain? How do students learn about methods? and How do we know when students have sufficient knowledge of methods to continue engaging in adaptation, use, and creation in the future? We will collaboratively address these questions, laying the groundwork for participants to consider the following issues in their own curriculum.

CCS CONCEPTS

• **Social and professional topics → Computing education**; • **Human-centered computing → Interaction design theory, concepts and paradigms**.

KEYWORDS

design methods, instrumental judgment, design theory, HCI education

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1 BACKGROUND

Knowledge of design methods is critical for careers in User Experience (UX) design and other fields commonly served by HCI programs [1, 2]. The idea of *design methods* is not new, but rather reflects one of the original organizing concepts of design theory in the 1960s as participants from many different design disciplines found resonance in the idea of practical supports to describe and structure the rationality of design practices [7]. Modern design methods build—in part—on this legacy, providing intellectual or practical supports that enable designers to go about their work. For instance, volumes such as *Universal Methods of Design* [4], the *Delft Design Guide* [18], and *Design. Think. Make. Break. Repeat.* [17] include collections of design methods that are oriented towards supporting design students and practitioners and are commonly used in HCI and UX programs.

As described by previous scholars, HCI as a field and discipline has gone through multiple paradigms of knowledge production [6], and this evolution of the scholarship and practitioner space is volatile and pluralistic in nature [8]. One practical impact of this volatility is a continuing need for core skills in design methods—including methods relating to user research, prototyping, communication, and evaluation, among others [2]. However, while some methods have remained core over time, their use in practice or relative importance has evolved. Meanwhile, other methods are still emerging or need to be created as new forms of knowledge supports to inform future practices (e.g., in relation to emerging technologies; to address new constituencies; to respond to new regulatory practices).

The skilled selection and use of methods relies on the ability of designers to make good *instrumental judgments* [11]. Instrumental judgments describe students' and practitioners' "capacity to choose appropriate approaches to design problems, decide from an array of established options, or create new approaches" [10]—and in the context of design methods, this kind of judgment can also aid in considering which methods are deemed to be salient, how they are adapted or fit to address the felt complexity of the designer, and how the designer knows when the method has brought forth valuable insights (or potentially failed to do so). Good judgments are based on accumulated experience, and rely on the ability of designers to recognize patterns and discern appropriate trajectories through design situations. Judgments are essentially personal and situated, being inseparable from the designer and, as such, are not amenable to codification. As a result, teaching judgment ability is not simply an issue of content knowledge transfer—e.g., creating and transmitting a catalog of judgments for students to memorize and master.

We know that competent designers are able to make instrumental judgments about which methods are appropriate for a given situations—including the discernment of when to use them, under what conditions, and in which ways methods should be extended, modified, or created to fit the context under consideration. However, there have been very few recommended approaches to addressing methods competence that relate the formation and honing of instrumental judgments in HCI education and practice. Harrison et al. [5] describe how they encourage students to consider the "boundaries, utility, appropriation, and negotiation of processes that comes from actively performing many different methods over the course of a project," focusing attention on flexibility and appropriation of methods. Lallemand [9] describes three different pedagogical approaches to encourage students to consider methods, including self-exploration, scenario-based debates, and flipped classroom models; these approaches generally focus on the method

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as it was originally codified rather than how it could be appropriated or evolved. Finally, Pivonka et al. [16] describe how students build conceptual models of design methods, including a range of metaphors that they use to distill both methods knowledge and its utility in their everyday design work.

In this masterclass, we will seek to bring together the knowledge contained in key texts commonly used in HCI education and the evident pedagogical challenges that underlie codified methods knowledge. Such fundamental questions at this intersection include: What kind of knowledge do methods contain? How do students learn about methods? and How do we know when students have sufficient knowledge of methods to continue engaging in adaptation, use, and creation in the future? Our masterclass will address these questions, laying the groundwork for educators to consider the following issues in their own curriculum:

- What types of methods knowledge are critical for graduates of your program?
- How do you currently seek to support students' acquisition of methods knowledge?
- Where are there near-term or long-term gaps in students' mindsets towards methods knowledge or performance?

We will do this by first framing a foundational *language* of methods and then demonstrate use of this vocabulary to encourage reflection on pedagogical practices and future opportunities to build students' instrumental judgment capacity, thereby enhancing students' mindsets towards methods.

2 ORGANIZERS

Colin M. Gray is an Associate Professor at Purdue University and leads an undergraduate program and graduate concentration in UX Design. Their research focuses on the ways in which the pedagogy and practice of designers informs the development of design ability, particularly in relation to ethics, design knowledge, and professional identity formation. Their research on design methods includes a range of practice-led work to describe how practitioners engage with design methods [2], a theoretical vocabulary to engage with methods [3], and practical implications for HCI and design educators to consider when building students' methods knowledge [10, 16].

Paul C. Parsons is an Associate Professor at Purdue University and teaches in an undergraduate program and graduate concentration in UX Design. His research focuses on cognitive aspects of design and use of interactive artifacts, with a focus on data visualization interfaces. His research on design methods includes inquiry into which methods visualization designers are familiar with and use [13], how they make judgments about methods use in their work [12, 14], and how design knowledge is codified into guidelines and used in practice [15].

3 PROPOSED FORMAT AND STRUCTURE

We will use an interactive, constructionist approach to encourage the engagement of HCI educators attending the masterclass. We will include short periods that are content-oriented to build alignment and a shared foundation of vocabulary, and then extend this vocabulary through interactive activities that will allow participants to distill key insights in relation to their own curriculum.

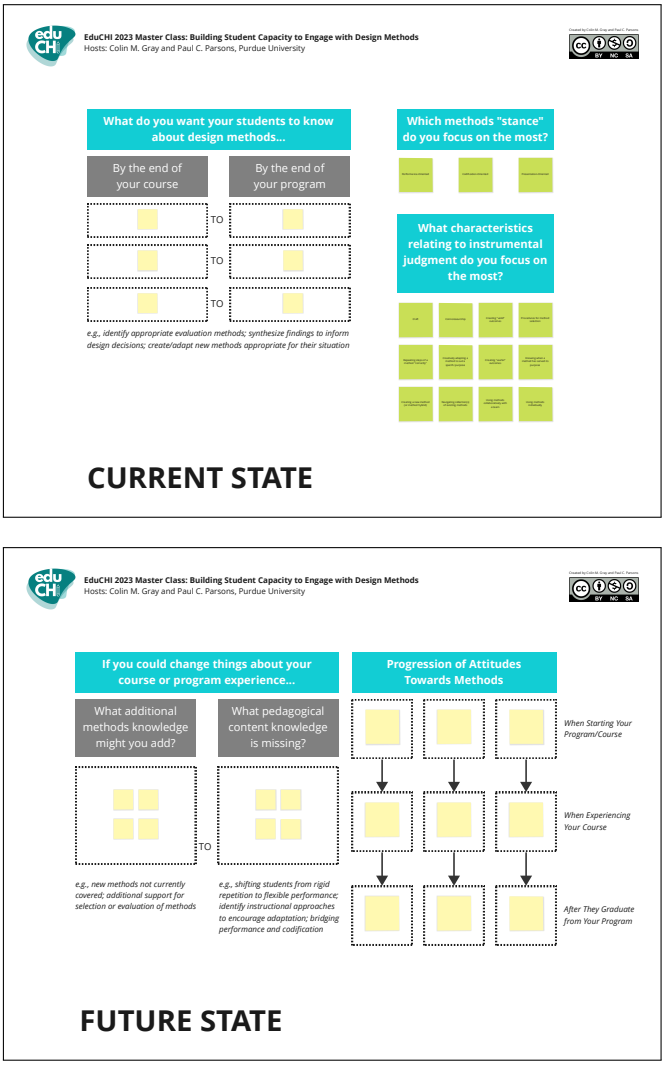

Figure 1: Worksheets that map existing attitudes towards design methods and instrumental judgment and potential future opportunities for program or course evolution.

- **Introduction to the Language of Methods** (10 minutes)—we will introduce key concepts relating to methods to ground the conversation, including: i) different types of knowledge bound up in methods; ii) different stances educators, students, and practitioners can take towards methods (i.e., codification-oriented, performance-oriented, presentation-oriented from [3]); and iii) implications of this complexity for the development of a mindset towards methods, including a diverse array of metaphors used to describe methods [16].
- **Identification of Current Engagement with Instrumental Judgment Capacity** (15 minutes)—through an interactive exercise on Miro (with worksheet materials also available for asynchronous engagement and in supplemental materials; Figure 1, top), we will encourage participants to

Figure 2: Course (top) and program (bottom) mappings of learning objectives, themes, methods knowledge, and methods metaphors. A standalone version of these materials is available in supplemental materials.

identify outcomes and instructional opportunities for students in their program or course. We will provide sample maps based on our own program experiences, including progressive development of methods capacity in both a single course/module and across multiple educational experiences over multiple semesters (Figure 2).

- **Articulating Changes in Methods Support Across a Program or Course** (20 minutes)—in continuation of the interactive exercise (Figure 1, bottom), we will guide participants in considering different attitudes or competencies towards methods before their course/program, during the course/program, and after graduation. We will indicate spaces for exploration of different forms of methods and methods knowledge, potential pedagogical content knowledge to support acquisition of knowledge, and practical scaffolding of these activities over time.
- **Reflecting on Practical Next Steps** (15 minutes)—through interaction question and answer and continuation of the interactive exercise, we will encourage participants to consider how they could apply this knowledge in their institutional context and allow for cross-pollination across participants. We will also welcome questions and discussion, reflecting on implications of our exploration of methods knowledge for HCI educational experiences.

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