

Developing Students' Instrumental Judgment Capacity for Design Research Methods

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OVERVIEW

How are we currently teaching design research? How can we do it better? This activity group encourages participants to explore the ways that educators teach research-through-making and research-informed making at multiple curricular levels. For example, students seeking advanced degrees in design are grappling with “rigor” and “distinction,” learning how these characteristics of research are defined and understood in other disciplines as well as in relation to creative practice. Meanwhile, educators at k-12 and undergraduate levels struggle to incorporate creative inquiry processes in meaningful ways, grasping for resources and leaning on others’ “design thinking” approaches.

Prior to participating in this session, organizers had hoped that attendees would collect and submit 3–5 examples of materials related to teaching design research, with either successful or unsuccessful outcomes. These could include published or unpublished papers or case studies, books, websites, syllabi, project briefs, documentation of project outcomes, games, card decks,

or other resources. These could be authored by participants or could be secondary resources that have been used in a design classroom.

The session aimed to generate discussion, explore examples, discover new resources, and ultimately create a usable cache of tools and references for those teaching (and learning) design research at various levels within and outside of academia.

BEYOND METHODS: STUDENTS' DEVELOPMENT OF INSTRUMENTAL JUDGMENT

Instrumental judgment includes the capacity to choose appropriate approaches to design problems, decide from an array of established options, or create new approaches. Inculcating students' instrumental judgment is one of the duties that design educators must take seriously as we collectively prepare students to move to the next level of their life and work. Owning a design methods book does not teach students at any level to cultivate judgment. Those who have attempted to integrate design research into their courses understand that the task is not as simple as choosing the appropriate book of methods and asking students to select some methods from the book and apply them. Instead, educators must create opportunities for students to step back and see what connects various methods to one another; why certain methods are especially useful in specific contexts or at particular moments in the design process; and where entirely new methods or combinations of methods may be needed to inform intuition, mitigate biases, or gain empathy for the design context. In other words, educators must create opportunities that enable students to develop a mindset toward methods (Gray, 2016). In order to cultivate this mindset, students require substantial space for experimentation and failure so that they can learn when something is not working or when a different approach would serve them better.

CASE STUDY: SPIRALING STUDENTS DEVELOPMENT OF INSTRUMENTAL JUDGMENT

We will briefly describe one approach to systematically developing students' instrumental judgment capacity that has been implemented in a novel undergraduate program in UX Design at Purdue University (led by several of the authors, and documented further in Vorvoreanu, Gray, Parsons, & Rasche, 2017). To overcome common course-based instructional constraints in design education, we created a new model of studio education which we refer to as the integrated studio. In an integrated studio environment, students learn across multiple strands of content in each course session, practicing design activities and critique, while also blending research, history, ethics, and psychology skills in a reflexive, "spiraling" way. In a cascading set of studios across five academic semesters, students learn about, build, and deepen their skills in many areas of user research, prototyping, evaluation, and design philosophy. A sample of the research and analysis methods addressed in each semester is provided in Table 1.

Course	Sample Research and Analysis Methods Covered
UXD Studio 1: Fundamentals	Interview, observation, contextual inquiry, affinity diagramming, task flow diagrams
UXD Studio 2: Screen	Co-design, participatory design, heuristic analysis, probes, experience and user journey maps
UXD Studio 3: Cross-Channel	Wizard of Oz, service design, anthropometric analysis
UXD Studio 4: Strategy	Design communication, workflow methodologies
UXD Studio 5: Specialization	Student-selected

Table 1. Distribution of research and analysis methods across the curriculum.

To achieve our aim of spiraling the development of research skills, we have created a dual-strand studio experience each semester (Figure 1), enabling students to learn and deepen their skills in the heightened reality of our learning studios, which are engineered to promote certain forms of design development and a baseline of skill. In parallel, students practice their skills through industry projects in a program-wide experience studio environment, where students work on cross-cohort teams on semester-long projects with industry sponsors. Through these experiences, students are encouraged to continuously learn and practice research skills, attending not only to skill acquisition on the course level, but also the progression and deepening of these skills over time. In this way, we have foregrounded the development of students' instrumental judgment.



Figure 1. Map of studio integration and student cohorts across the undergraduate UX Design program.

DESIGNERS' UNIQUE SKILL SETS

Methods are but one facet of this puzzle. Teaching methods can easily be interpreted by students as a prescriptive way of doing something without an intentional accounting for what aspects of human experience they intend to explore and what analytic or sense-making lens they employ to abstract the design knowledge and gather insights. As designers, we need more *descriptive, exploratory, and generative* approaches that value the lived experience and knowledge of individual students. Methods are often weakly taught, particularly when viewed through an instrumental approach, without a commitment towards the unique rigor of design that lies in the designer's character, identity, and sense of competence (Nelson and Stolterman, 2012). Without taking on this broader role of design education, students may quickly come into conflict with other scientific or scientized disciplines when engaging in early exploratory/generative/evaluative steps that we refer to as research. Often, designers fall back on adding "sciences" to our work and approaches to make them seem more credible. While this approach can be useful in some cases, the design discipline may be better served by learning to better describe and discuss designers' unique skill sets, which are bound up in our capacity for professional judgment, particularly in relation to research methods.

SESSION OUTCOMES

In order to capture session participants' thoughts on what contributes to the cultivation of instrumental judgment, they worked in pairs with a worksheet provided by the session facilitators (Figure 2). During the session, groups engaged in a combination of collective and individual reflection using the worksheets—some worked from a student perspective while others worked from a faculty perspective. An initial synthesis of a cross-section of participants' responses follows in Figures 3–6.



Figure 2. Participants were given worksheets that asked them to brainstorm responses to these four questions (adapted from Nelson and Stolterman, 2012).

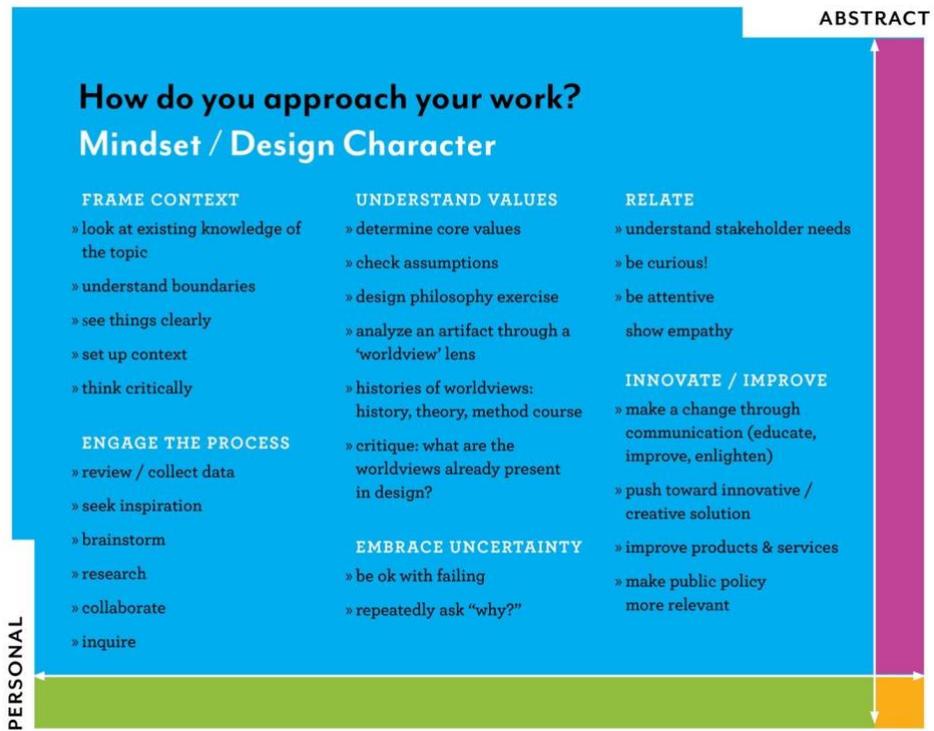


Figure 3. Cross-section of categorized participant responses to the question “How do you approach your work.”

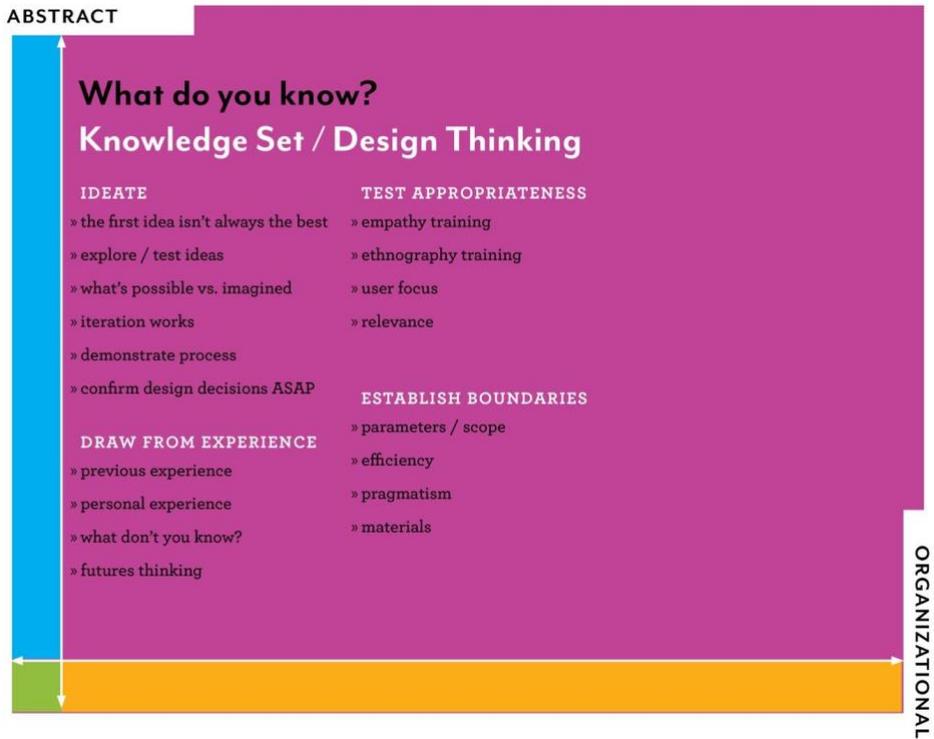


Figure 4. Cross-section of categorized participant responses to the question “What do you know?”

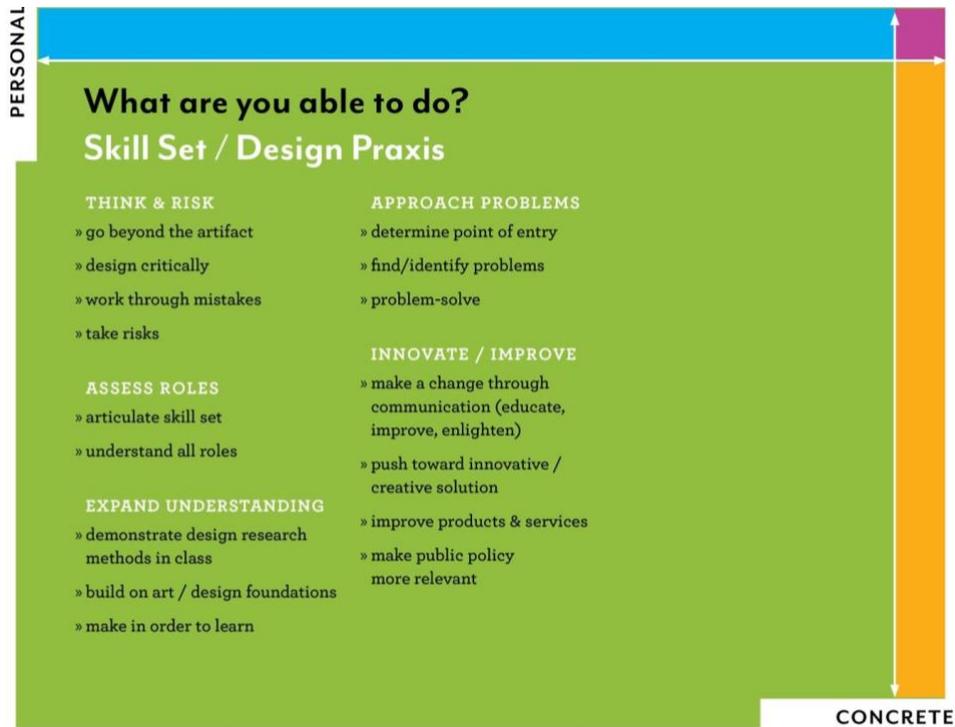


Figure 5. Cross-section of categorized participant responses to the question “What are you able to do?”



Figure 6. Cross-section of categorized participant responses to the question “What are you able to facilitate?”

CONCLUSIONS

While it took more time than the authors originally anticipated to establish a baseline understanding of what instrumental judgment meant for the various participants, some key themes and tensions emerged from the session. These include the need to:

- Acknowledge worldviews of various disciplines and approaches to design education
- Help students identify relationships between design theory and participating in concrete design activities
- Create continuity and interconnections between courses within a program, particularly within programs where instructors have different views regarding instrumental judgement and the development of methods knowledge
- Understand how to engage with texts that document methods in useful and pragmatic ways, while also attending to the development of higher-order skills

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