

# Evolution of Design Competence in UX Practice

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## ABSTRACT

There has been increasing interest in the adoption of UX within corporate environments, and what competencies translate into effective UX design. This paper addresses the space between pedagogy and UX practice through the lens of competence, with the goal of understanding how students are initiated into the practice community, how their perception of competence shifts over time, and what factors influence this shift. A 12-week longitudinal data collection, including surveys and interviews, documents this shift, with participants beginning internships and full-time positions in UX. Students and early professionals were asked to assess their level of competence and factors that influenced competence. A co-construction of identity between the designer and their environment is proposed, with a variety of factors relating to tool and representational knowledge, complexity, and corporate culture influencing perceptions of competence in UX over time. Opportunities for future research, particularly in building an understanding of competency in UX based on this preliminary framing of early UX practice are addressed.

## Author Keywords

Competence; UX practice; design capability; expertise; identity.

## ACM Classification Keywords

H.5.m. Information interfaces and presentation (e.g., HCI): Miscellaneous.

## INTRODUCTION

In the past decade, there has been a dramatic shift in the adoption of UX practices in a variety of industries, an increasing need for qualified job candidates, and an expansion of programs to train interaction designers and user researchers. In parallel, curricula in interaction design has changed to a studio model of education in a number of in-

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stitutions in order to accurately reflect the workplace where students will practice. This study presents the complexity of this expanding space as UX students are initiated into the professional design community as a rich area for future HCI research. The contributions of this work address how interaction design students translate their educational experience into the workplace; and more broadly, how the competencies of a UX designer change or adapt over time in relation to a specific design environment.

While there has been some attempt to document competencies of usability engineers and other practitioners within the HCI domain over the past two decades, these have been limited to documentations of specific practices, and have often been constrained to one or two companies [e.g., 2, 4, 7, 14, 22]. In this exploratory work, a broader range of companies are included in a 12-week longitudinal study, with the goal of understanding the critical first three months of practice as interaction design students transition into jobs or internships in the UX field. Over these three months, we asked interns and early practitioners (EPs) to document perceptions of their competence, both individually and in relation to their work environment. Through this study, we begin to address the issue of competence in UX, both as a concept that spans the discipline and is related to professional practice and preparatory pedagogy, and as a personally situated construct that is co-constructed over time through the relationship of a UX designer to their organization.

Within this framing, the contribution of this work includes three primary elements: 1) Documenting the shifts in competence as interaction design students take their first jobs or internships in a variety of corporate settings; 2) Understanding more fully how a beginning designer co-constructs their identity in reaction to the organization they work for, especially in regard to their competence; and 3) Beginning an exploration into the factors that affect the development of competence for UX practitioners, which may eventually lead to a fuller understanding of what UX competence should include in a more general sense.

## REVIEW OF LITERATURE

To address the issue of competence, both in the framing of UX and as it exists as a concept within the broader design literature, several main issues will be introduced in this review of literature. These include nascent definitions of competence that already exist in the HCI literature linked to









*Tool/Representational Knowledge*

Interns and EPs each began their positions with the expectation that most of their work would rely on good software skills in prevailing wireframing and creative products; one EP noted “I think that getting a good proficiency in Photoshop, Balsamiq, and Axure will be necessary” (Week 1), while an intern expressed a need to gain skills wireframing, explaining “I have experience doing this, but I'd like to gain a lot more” (W1). These expectations of tool use grew in the early weeks of the job, and competence developed in a more integrative way, focusing more on depth than breadth. One EP reflected on the learning of tool skills on an as-needed basis, explaining: “we weren't ever really taught how to use ‘this feature’ or ‘that feature’ in the products that we used. This is something you just have to learn from day to day” (W3).

As interns and EPs were enculturated by their workplaces and their competence stabilized, an increasing focus was placed on analog skills for representation, rather than just software tools. One intern related her experience learning about “internal sketch style and research sharing formats” including “a technique for idea/sketch generation from the Basel School for Design [...] which involves creating many iterations of a highly constrained thing in order to come up with surprising stuff” (W6). Comparisons in tool and representational skill also developed over time, especially around representations by visual designers; one EP related: “I found that even though I have had adequate sketching skill, my visual design peers are really good at articulating ideas rapidly and with extreme depth” (W6).

Ultimately, these participants grew to think about tools and representational systems in a different way, not constrained by prevailing notions of “correct use.” This included a much more substantial component of individual design judgment and pragmatism: “I've learned to stop worrying about what software I'm using and leverage what I know” (Intern, W7).

*Dealing with Complexity*

Virtually all participants reported a need to intellectually and experientially deal with the demands of their work environment, either in the scope of work expected, the deadlines or time pressures of design, or the problem space and requirements of projects. Early on, the common refrain from many participants was similar to this EP: “I felt a little more overwhelmed with the scope of this project” (W2). While some participants had to deal with complexity in relation to scope, others dealt with complexity in a more collaborative sense; another EP relates their first experience working with new designers: “It. Was. Utter. Chaos. Here I'm talking about collaborative design. I stupidly didn't step forward to be a lead, so these incredibly green designers did, and it was a huge waste of time. Next time, I will volunteer myself. Most of the problems stem from poor project/time management.” (W4).

For others, managing the multiple projects and responsibilities was a bigger issue, with one intern reflecting that “time management is a big skill I have yet to master. I think the small deadlines will help me balance my tasks out more.” (W4). For EPs, while time management was still reported, the balancing of complexity dealt more with the shaping and scope of the overall projects or tasks. For one EP, “[t]he main difference I encounter in my job is that the goal and problem is not clearly identified. In school, projects had a clear problem space defined in the form of a brief. Although school projects still required reframing and narrowing of the space, work projects aren't even at that point.” (W5). For another EP, the need for domain-specific knowledge was challenging: “The domain expertise I need for each project, at least this first one and I assume every subsequent one, is slow to acquire.” (W8). Finally, many EPs were dealing with the realities of complex systems for the first time, “solving for some of the cases that are not so ‘happy path’ [...] They sort of test the limit of what our ‘nice’ designs do once they get thrown into a more complex and outlier situation. It's a lot about making a judgment call and keeping up with consistency.” (W8).

*Vocabulary/Language/Communication*

Communication with others in the organization was one of the big challenges facing many of these participants, with industry-specific jargon or unfamiliar work processes often standing in the way. Early on, this could be almost crippling, with one intern noting their need “to continue to find the proper vocabulary to express my ideas” (W2), and another intern admitting their unfamiliarity with “polished, corporate speak” (W2). An EP dealt with this lack of vocabulary in a more blunt manner: “I ask a lot of questions and won't let a question go until it is explained in a cut-the-crap-and-big-words-say-what-you-really-mean manner. If I don't understand, I keep asking questions until someone can give examples or paint a picture.” (W1).

Over time, participants found strategies to increase communication with others, including honing presentation skills and building arguments that are convincing for developers or stakeholders. One EP explained: “I've learned and am learning how to present to a massive corporation in a way that resonates with them.” (W6); while another intern used “sketches and mockups [to] drive the discussion” (W8) with their team. Communicating with developers was a common struggle, with one EP noting the barrier of “learning how to ‘talk to developers’” (W9) and another intern describing their strategy of “draw[ing] insights quickly from research [to] build a convincing argument for developers to get onboard” (W5).

*Design Leadership*

A common theme among almost all of the participants was the lack of understanding about what UX could “do” for an organization. Many interns were placed in positions without substantial UX talent or mentoring, and several EPs were

similarly serving in roles where they had minimal control over applying UX on a broad scale. An intern explains this frustration early in their experience, reflecting: “I am not sure my team knows what to do with me. I feel they recognize the need for UX, but in a way I have to tell them where I can help.” (W2). Another intern struggled with “justifying the value of HCI and design” in a more general sense (W4).

Despite the organizational pushback that many participants experienced, they attempted to implement design processes in their respective organizations. An EP was able to lead in this area, demonstrating his “ability to think about systems, articulate rationale, and lead project teams to success” with “numerous people com[ing] up to [him] asking for advice about leading teams, from interns to professionals” (W6). Although there were some stories of leadership around design processes, another EP was more constrained, “find[ing] himself making things and not knowing why other than ‘he/she/it told me to do it’” (W9). Ultimately, leadership in design and UX on an organizational level was highly situated and politically charged, and participants had differing levels of success in producing change.

#### *Internal/External Upskilling*

Participants readily assumed roles of self-learning, drawing on the experiences of others in their team, while sharing their own skills. While these skills were often situated in UX, including sharing expertise around wireframing, presentation skills, or “func-specs,” this also included knowledge specific to an individual, such as one intern’s “engineering and knowledge of physical materials [in] a certain robotics-y project” (W2). There was also a nuance to how individual skills came to bear on a particular situation, with one EP evaluating their own presentation skills in relation to their colleagues: “It’s not actually delivery that’s their problem, it’s that their contributions could be more insightful. I haven’t actually said, ‘hey, asshat, stop and think for a moment,’ but I think people can learn by example, so I try to be thoughtful in my comments.” (W2).

The participants appeared to be actively focused on acquiring skills they perceived would be of use, ranging from competitive analysis research to “soft skills” development to learning how to create an empathy map. One EP noted this acquisition process, explaining their need “to work toward absorbing more information from other teams as well as people on my team” (W9). Another EP projected their need for acquisition of skills in a more pragmatic sense, situated in their project development: “I need to NOT start from scratch as often [...] inventing only when absolutely necessary.” (W11).

#### *Reconciling Corporate Reality/Culture*

This theme framed many of the participants’ reflections on their development in competence and early experiences in a UX position. Their educational experience, in many cases, had not prepared them for the level of bureaucracy, limited control, and tight deadlines of practice, and participants had

to reconcile this with their personal approach to design. Two primary aspects of this reconciliation with corporate culture appeared to be evident: 1) learning about the corporate culture in order to engage it more effectively, and 2) adjusting their expectations to match reality.

Learning about the culture was an inevitable part of the transition process, and began in the first weeks, with one intern “starting to see the focus on the revenue” (W3) and an EP “adjusting to corporate hierarchy and learning the ladder of communication” (W4). Another intern dealt with specific issues in getting her user study approved: “I need to get acquainted with protocols and bureaucracy” (W3).

While most participants adapted to their new environment more willingly, others were more frustrated, like this intern: “The more I learn about the consulting business the less I like. My co-workers, namely those above me, guard their clients like bulldogs. I had to listen in on a client conversation and as a designer I felt I was coming into the project way too late. This seems to be typical.” (W4). Others had to adjust to more menial parts of the process, such as the generally slower pace of work, or the movement from more “blue sky” to “laser focused” tasks. One EP explains this movement: “on a professional project, you get a list of requirements, try to follow *all* of them. In school, if you get a list of requirements, you can usually get away with following 1-2 of them really well. At work, you can attempt to do the same thing, but you have to show how the rest of the requirements fall into line. Also, if you pick the WRONG 1-2 requirements to follow, [...] it isn’t a great move. The problem space isn’t as wide open as it is at school.” (W1).

#### *Designerly Identity*

As with the constant presence of the corporate culture, there was a constant sense in which the participants had to engage with their identity as a designer in a co-constructive manner with their environment. This played out in both positive and negative respects, with some participants struggling to adapt to their environments, and others deciding whether to or how to determine their value as a person through their work performance.

Some participants wrestled with basic work/life balance, such as: “will the bulk of my professional satisfaction [be located] in the workplace?” (EP, W2) or “want[ing] time to myself” (Intern, W6). Others noted the more positive aspects of their work: “It simply felt good to contribute to something.” (EP, W2). One intern celebrated his individual skills in comparison to colleagues: “Some people are taken aback by my willingness to scrap and idea” (W11).

It seemed as if participants all had their own way of coping with their new work environment, with some worried about how others would see them—“I don’t want to appear to not be a self-starter, and I don’t want to eventually get overwhelmed if I take on too many projects.” (EP, W2)—and others fighting for their approach: “We had a phone call with a client today. We were briefed before to only speak if

"teed" up to speak. That is such an abrasive thought for a HUMAN computer interaction designer. Where, the [Master's] program tells me to talk to all stakeholders." (Intern, W3).

### DISCUSSION

The development and expression of competence by these participants over a relatively short period of time brings several issues relating to the development of competence to the foreground. Rather than being a static entity or documentable system, I propose that competence is more fluid and personally and organizationally situated, drawing on elements unique to the context of use [25,33], while also drawing equally on the unique contributions and life experiences of the individual designer. This fluidity appears to be especially relevant in a nascent discipline like UX.

#### Corporate Culture as the Center of Experience

[20] concludes that being a design leader involves being "in service"—exceeding the original expectations of the client or stakeholder. In these initiatory moves into UX practice, both interns and EPs were met with the realities of their own designerly identity and the culture of the organization in which they worked. In many cases, they were confronted with the question: Does being a good designer mean being or becoming a good design leader?

This leads us to a fuller discussion of identity development within an organization, and the role of the organization and underlying corporate culture—both as a push and pull—in shaping an individual's designerly identity. In this relatively brief reporting period, these participants—interns and EPs alike—demonstrated their ability to affect their organizational culture by introducing new UX practices, designerly ways of thinking, and design leadership. But at the same time, the organization and corporate culture also affected these designers in a deep way. They were forced to assess how their "blue sky" visions of design fit into complex, integrated systems, and how their effectiveness as a designer is situated within the larger bureaucracy. To succeed as a designer, most participants ended with the self-realization that they must understand the culture in which they work in order to produce lasting change.

Mentoring and upskilling as a UX designer is another dimension in which the corporate culture has a significant role. Based on the level of UX adoption and underlying mentoring resources, the culture can allow an individual designer to either expand their projected worth, or diminish their sense of designerly identity. The level of UX adoption is not deterministically bound to either condition, but is highly dependent on the co-construction of identity between the organization and the individual designer. For instance, a designer in an organization with high UX competence might feel diminished in their personal competence due to aspirational role models, while they might have an inflated sense of competence if they are the sole UX or designer force in the organization or working group. In contrast,

when a designer is out on their own, they must justify their existence in many cases, working to translate their work into empiricist or positivist arguments that can be accepted by developers or engineers. This requires great personal strength, and may result in greater competence than merely being mentored.

#### Descending Reliance on Tool Knowledge

As others have documented [28], tool knowledge is not bound to specific software, but rather to the judgment of the designer. While some participants innately knew this, they came into their work environments with the expectation that they would need specific software competencies in order to produce adequate representations for their projects. Many participants seemed surprised, however, by their ability to learn something new on the fly, often "picking up" a new skill in the course of a week. And as the weeks progressed, there was less stated reliance on knowing tools—especially software—and more focus on the ability to lead others in a communicative sense through representations to and understand the core of their design practice.

Many participants came into their organizations with the perception that they would need to know specific software, especially to produce digital wireframes or high fidelity prototypes. While some organizations relied on these representations, many UX positions relied more on analog or low fidelity methods of representation for buy-in, and in some instances, the creation of higher fidelity mockups using software diminished effectiveness and wasted time.

In a somewhat unusual turn, especially as dozens or hundreds of wireframing and visualization tools are available to designers, some organizations seemed more concerned with reinforcing the need for strong analog skills, particularly in sketching and rapid forms of representation. This competence was taught at a baseline level in the formal education of participants, but not to the level of proficiency some jobs required. These visual competencies, along with the related manual skills, were the most referenced skills needed on the job, yet the least addressed in formal curricula.

#### Self-Learning

The ability to direct self-learning appears to be a primary indicator for future growth in competence, yet it is only addressed by a few models of competence [13,31]. Participants addressed this need for increase in competence in a variety of ways—directed both on a holistic level (e.g., how UX should be addressed in this environment) and a highly tactical level (e.g., specific software tools, methods, or techniques). The literature does not substantially address how these individual acts of competence development fuel future growth, or the potential role of project work and practice experience.

Participants had to quickly make a transition from being "fed" content in a classroom setting to leading their own efforts to be a better or more competent UX practitioner.





