# Bridging Silos: Collaborating to Create Authentic Learning Experiences for Future Instructional Designers

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Authentic learning experiences such as internships can enhance employability and support the development of interpersonal skills. Arranging internships can be challenging for instructional design and technology (IDT) education programs, involving a need for collaboration with others across disciplinary areas to connect students with real-world instructional design needs and project ideas. This paper offers a design case of a partnership of investigators from multiple disciplines at a large, urban, public university in the southwestern United States that was leveraged to create summer internships for IDT students. Interviews were conducted with participating students six months following the program. There were noted impacts of the internship on their identities as novice IDT professionals, with certain components of the internship structure more directly shaping their IDT skills for working on transdisciplinary team projects.

# Introduction

Though instructional design and technology (IDT) professionals can have various roles and responsibilities, interpersonal skills, including communicating, collaborating, and interfacing with diverse stakeholders, are essential. Providing opportunities in IDT education for the development of these skills in authentic ways (referring to learning experiences that are realistic to how the skills will be used; Herrington et al., 2014) can foster the employability of future IDT professionals as they enter the field (Ornellas et al., 2019). Authentic learning environments, embodied through internships and client-based course projects can immerse students in IDT practices, and provide them with opportunities to interact with subject matter experts (SMEs), collaborate on team-based projects, and apply conceptual understandings (Lowell & Moore, 2020). Experience gained through internships can further serve as on-thejob training for new IDT professionals, as prior related experience is an often-stated expectation in IDT job postings (Nworie, 2022). Authentic learning opportunities can be challenging for IDT education programs to offer, as these experiences often require partnerships with organizations and individuals that connect students with real-world instructional design needs and project ideas. Programs also have to consider how students will be monitored and supported as they work on projects to maximize benefits and outcomes for all involved.

The purpose of this paper is to offer a design case of a partnership of investigators from multiple disciplines, referred to as "transdisciplinary," at a large, urban, public university in the southwestern United States. The partnership was leveraged to create summer internships (five to ten weeks in length) for IDT Master's level graduate students in 2022. Internship projects included the development of a virtual escape room on artificial intelligence/machine learning (AI/ML) concepts and applications to health literacy; the conversion of a face-to-face workshop on scientific data management principles for biomedical researchers to an online, on-demand format; and usability testing of a decision-making tool for distribution of food supplies during disasters. Interns were mentored through one-to-one virtual weekly sessions by an IDT faculty member, who then updated the transdisciplinary team regularly regarding the intern's progress. Interviews were conducted six months after the internship to explore the interns' perceptions of their experiences and the impacts of these experiences on their identities as developing IDT professionals.

#### **Literature Review**

Authentic learning and practice are central to students' academic experiences, especially as they enter a highly competitive job market that continues to change based on global, societal, and technological advances (Martínez-Argüelles, 2023). Constructivist pedagogy and technological considerations can inform the authenticity of hands-on learning experiences in this context (Ornellas et al., 2019). Authentic learning encourages the immersion of students in spaces, roles, and cognitive habits that connect learners with target content through strategies such as role-playing exercises, problem-based activities, internships, and case-based learning (Herrington et al., 2010). Related literature that will be briefly reviewed describes fundamental IDT skills, affordances of authentic learning experiences in general and internships in particular, and design cases in which such experiences have been brought to life through transdisciplinary collaborative efforts.

#### Instructional Design and Technology Skills

To identify and improve the learning performance of IDT students, the knowledge, skills, and abilities (KSA) framework establishes specific criteria concerning the creation, use, and management of IDT-related processes and resources (Martin & Ritzhaupt, 2021). Similarly, the Association for Educational Communications and Technology (AECT) has developed specific standards for IDTs that include the areas of:

- 1. Content Knowledge,
- 2. Content Pedagogy,
- 3. Learning Environments,
- 4. Professional Knowledge and Skills, and
- 5. Research (Martin & Ritzhaupt, 2021).

Developing competencies in content pedagogy, such as capabilities in designing projectbased learning materials, can help early career IDT professionals to be able to incorporate instructional strategies that are authentic and student-centered in their designs (Mettas & Constantinou, 2007; Rubiah, 2020). Abilities in areas of "initiative and focus" and "leadership and ethical judgment" have also been prioritized by Ritzhaupt et al. (2018).

#### Authentic Learning Experiences for IDT Skill Development

The term *situated learning* (Collins & Duguid, 1989) is used to characterize the approach used to foster emerging IDT professionals' authentic learning experiences (Ornellas et al., 2019). Situated learning refers to "the notion of learning knowledge and skills in contexts that reflect how the knowledge will be useful in real life" (Collins, 1988, p. 2). Applying situated learning to instructional design and practice can take the form of a cognitive apprenticeship model (Collins, 1988), which is a structured approach to providing instrumental experiences for learner development of IDT skills *in situ* (Ornellas et al., 2019). This type of learning also supports academic-based social interactions with more

experienced IDT professionals who observe, guide, assess, and provide feedback to apprentices to equip them with skills needed for the workplace (Herrington et al., 2010).

To provide students with authentic learning experiences, there is a need for accurate assessments that demonstrate students' levels of understanding and skill. In contrast to traditional methods of assessment (e.g., essays, quizzes, examinations; Herrington, 2015), authentic assessments focus on the value of the learning process itself as the final product rather than prioritizing grades (Barber et al., 2015). Additionally, reflection is a crucial component of these experiences, as student reflection can lead to new understandings and transformative learning (Bester & Pretorius, 2022). Learning through reflection activities is further supported when students return to their experiences, attend to the feelings they experienced, and then re-evaluate the experiences (Boud et al., 1985).

Internships and practicums offer a means for IDT skill development in authentic settings. For instance, the Australian Qualifications Framework (AQF) for postgraduate certificates uses internships and practicums to engage students with applications of theoretical concepts from their fields of study (Heggart & Dickson-Deane, 2021). Project-based learning fits into an internship structure naturally and provides opportunities for leadership and communication skill development that can prepare learners to be workforce-ready (Hynie et al., 2011). Such authentic learning opportunities can arise through transdisciplinary collaborations between IDT education programs and partnering units through which students can experience a "fair balance between theory and application of ID principles" (DeVaughn & Stefaniak, 2020, p. 3318).

#### **Experiential Learning and Self-Efficacy**

Experiential learning through "doing" can be transformational as learners engage with illstructured problems, devise and try out possible solutions in real life, work collaboratively with various partners, and reflect on their experiences (Perusso & Baaken, 2020). It is essential to highlight that in this context, teachers assume a more facilitative role rather than a direct instructional role (Hew & Knapczyk, 2007). Instructors can mentor and provide timely guidance through appropriate scaffolds that support students in navigating through complex tasks productively (Ge et al., 2005). For example, an instructor might use question prompts to "direct students' attention to important aspects of the problem, activat[e] their schema, elicit their explanations, and prompt them for self-monitoring and self-reflection" (Ge et al., 2005, p. 220).

Purposefully building in points of self-reflection can lead students to assess their past actions and plan for their next steps and goals (Perusso & Baaken, 2020). In the process, their self-efficacy regarding their capabilities for target skills and understandings is enhanced. While skills and knowledge are crucial for success, having self-efficacy, which is the belief in one's ability to achieve specific tasks and desired outcomes (Bandura, 1997), may be just as important for accomplishing tasks (Versland, 2015). Students' self-efficacy in learning through challenges of practice is influenced by how engaged they are in exerting effort and the performance achievement they encounter (Dunlap, 2005).

#### **Transdisciplinary Collaborations**

To meet students' learning needs and to allow for authentic learning experiences to take place, transdisciplinary collaborations are needed as faculty reevaluate conventional methods for course designs (Devies et al., 2022). In using the term *transdisciplinary* in this case, rather than similar terms of *interdisciplinary* or *multidisciplinary*, the participatory and integrated characteristics of the collaboration are emphasized. Thus, transdisciplinary collaborations bring investigators from different areas of expertise together to achieve shared goals in ways that span individual disciplinary boundaries.

When faculty members work together in developing curricula, a sense of "communal responsibility and ownership" (Briggs, 2007, p. 677) forms, where terms like "our students" and "our curriculum" replace terms like "my course" and "my department." Further, this shared sense of ownership encourages faculty to allocate time in meetings to discuss curricular engagements and collaborations, communicate their progress, and solicit colleague comments (Briggs, 2007). Additionally, teamwork between curriculum developers and collaborators is crucial to facilitate effective communication regarding "development processes, timelines, and expectations to support the collaborative curriculum development process" (Devies et al., 2022, p. 108). The implementation of curriculum reform through transdisciplinary collaborations can equip faculty to "use strategies that involve external stakeholders during the design process" (Voogt, 2016, p. 127).

# Method

Six months after the conclusion of the internship, the interns were invited to participate in interviews about their experiences in the program. The purpose of gathering data via interviews was to understand the interns' perceptions about their roles within the collaborative internship structure and identify the mid-term impacts of the internship on their learning and career trajectories. The following research questions guided the development of the semi-structured interview protocol:

- 1. How do the IDT students perceive the transdisciplinary collaborations as part of the internship design?
- 2. In what ways has the internship impacted student learning of IDT concepts and technical skills?
- 3. How were the interns' views on their IDT professional identities reframed through the internship?

The interview questions inquired about why the interns chose to participate in the internship, how their IDT understanding was shaped through the internship, their observations regarding the partnership between the IDT program area and the other discipline areas, how the internship experience impacted their graduate studies or professional work, aspects of the internship they found most valuable, how the internship design could be improved, and views on their career development going forward. Three co-authors reviewed and refined the questions to support instrument validity (Golafshani, 2003). The semi-structured interview protocol is provided in Appendix A.

Four interns participated in the interviews. At the time of the interviews, one of the participants had graduated from the IDT program, and the other three were still enrolled. One

faculty team member not involved in the direct supervision of the interns led the interviews, and an IDT doctoral student assisted with interview scheduling and note-taking. The interviews were conducted with individual participants via Microsoft Teams, and each was about 30 minutes long. The study was reviewed and approved by the first author's Institutional Review Board, and consent was obtained from all participants before data collection.

The interviews were recorded and transcribed. An initial round of open coding analysis (Gibbs, 2007) was conducted by the first and second authors in which they each read the individual interview transcripts, marked similar descriptive topics using keyword codes that were developed from the data, and began to make initial comparisons about observations noted across the transcripts. The authors reviewed each other's coding and then met to discuss and consolidate the keyword codes into an initial set of emerging themes.

The authors then engaged in a second round of analysis in which the transcripts were reexamined using Gee's (2011) Identities Building Tool, a discourse analysis technique that involves asking questions of the data to explore how speakers are using language to express their own identities and those of others:

For any communication, ask what socially recognizable identity or identities the speaker is trying to enact or to get others to recognize. Ask also how the speaker's language treats other people's identities, what sorts of identities the speaker recognizes for others in relationship to his or her own. Ask, too, how the speaker is positioning others, what identities the speaker is "inviting" them to take up. (p. 110)

Gee's tool centers on identity in three aspects – identities of the speaker (i.e., self-identities), identities of others, and impacts of how the speaker perceives others' identities to the shaping of their identities. Based on the tool's guidance, the authors considered the role of identity in the context of the internship and constructed three sets of questions to ask of the interview data–

- Intern's self-identity: What identity is the intern building for themselves? How does the intern use language to build these identities? What parts of their identities did the interns use when working? How do the intern's past identities shape their present identities in this internship, and what have they chosen to do afterward?
- 2. Identities of others: What identities is the intern building for others? How is the intern using language to build these identities?
- 3. Impacts of others' identities on the intern's self-identity: How do the roles that the intern perceives of others impact their own identity building? Are there any tensions or contradictions in how the intern attempts to build their own identities both through how they talk about themselves and through their contrasting of their identities with those they attribute to others?

The authors separately re-read through the transcripts and captured their observations and interpretations relating to the three sets of questions using comments in the documents. They reviewed each other's comments, revisited the drafted emerging themes from the first round of analysis, and refined the themes further to reflect the observations that surfaced

during the second round. Example excerpts were selected from each interview to illustrate theme dimensions.

## **Findings and Discussion**

Revisiting the internship experiences through the interview dialog illuminated some key findings in four main theme areas-

- 1. Gaining practical authentic learning experiences
- 2. Valuing working in transdisciplinary collaborations
- 3. Struggling productively in the complexity of authentic projects
- 4. Supporting self-efficacy in instructional design and technology

In the interviews, the interns shared their reflections on aspects of their learning that they gained through the internship and have since found applicable to their professional work. The interns generally characterized themselves as novice IDT professionals and the internship was an opportunity to feel what it could be like working as an IDT professional. There were also other self-identities noted similarly across multiple interviewees, including continual learners, self-managing workers, resume-builders, mergers of prior professions with new IDT skills, solution-creators, and contributing members of a larger project team. There were also examples shared of how certain internship experiences and interactions with others impacted these self-identities. Gee offers insights into such observed changes in identities:

We humans actively create our core identity by the way we tell our stories of our lives—and what we have to say about who we are—to others and to ourselves. And yet this story and what we say about who we are, can change in different contexts and across time. (p. 106)

The interns described examples of how their internship experiences contributed to their growth and confidence in their IDT capabilities, with certain components of the internship structure being prioritized as having more direct impacts on their IDT skill development and abilities for working in transdisciplinary team projects. Key findings within each theme area will be discussed in turn. Illustrative transcript excerpts are incorporated into this discussion, with interviewees referred to as P1, P2, P3, and P4.

#### Theme 1: Gaining Practical Authentic Learning Experiences

The first theme identified from the interview data was how the internship provided opportunities for authentic learning. Several students mentioned theoretical concepts that they had learned in their IDT coursework and how they then experienced the application of these concepts during the internship. For example, P1 saw applications of concepts and skills they had learned in their digital storytelling course, as they worked on creating and editing videos. In utilizing their knowledge for an authentic instructional design project, P1 began to consider expanded career opportunities in the instructional design field–

When I saw the internship for instructional design, I was excited to take part in it because I mean, it's one thing to do things in the theory, but then it's another thing to put into practice. So, I took the classes, I did the coursework, but there's only so much that the coursework can prepare us for the real world. And so, I saw this as an opportunity to work with another department potentially as an instructional designer intern and start to get that experience and see if maybe that's the right place for me. So, those were the motivations of career outlook and what it could potentially mean for me and the future steps that I take toward my career.

As expressed in this excerpt from P1, the internship seemed to shape the intern's projections of their potential future identities in the IDT profession. This observation was similarly noted across all four interviews in which the internship experiences prompted them to reflect upon their prior experiences from other professional contexts, such as teaching and information technology, and identify ways to build upon their skills for use in instructional design settings. P2 discussed their perspective regarding this–

Oh, for my classes, at the time I had only taken two classes in the Spring. I focused on creating the design document, which was a familiar task for me as a teacher, involving all the necessary preparation work. This project provided valuable experience and exposure to media work. I wish I had gained more experience in observing the outcomes, particularly in relation to concepts like "ADDIE." Evaluation and learners' interpretation, which I developed, allowed me to identify areas for improvement. It felt like I was continuously refining a draft, as projects often involve ongoing collaboration. It was challenging not to witness the project's complete journey from start to finish, as I missed out on the reward of seeing the final results of the project. It was a learning experience, and I wish I could have seen more of the results from the project, because I found myself in the middle of its development... The most valuable experience was learning when I made a mistake. It taught me not to fear trying new things. Then talking about it and collaborating about how to go back and fix any mistake, because I'm so used to when I create something that it's set in stone. But while creating courses on Coursera, they had to be reorganized, reworded, and the quizzes needed to be different. That was the value of being fluid while working on projects and not thinking everything was going to be done in the next week or so. I currently apply this mindset in my job, where things constantly change. Reflecting on the internship, the experience afterward was definitely significant.

The interns were situated in a transdisciplinary collaborative work environment in which they were contributing to aspects of a larger project while also dealing with the inherent difficulties that come with working on such projects. These difficulties were simultaneously learning opportunities for engaging critical thinking and problem-solving skills to devise potential solutions to the challenges that did not seem to have clear instructions for solving. They were able to refine their time management, responsibility, and accountability as they completed their tasks as assigned, consistently following through with accomplishing their defined scope of work. P2's description of their steps in building online modules on Coursera involved making design choices that would support student engagement while also managing their workload in completing the various course components of readings, videos, discussion boards, and assessments.

Developing their identity as someone who "figures out solutions" was often mentioned by the interns as a core part of their internship experience, and they viewed the ability to create concrete instructional product drafts from parameters that tended to be somewhat abstract as an important IDT skill. Bridging the gap between theory and practice for IDT skill development involves connecting "learning about being a learning designer and a learning designer in practice" (Heggart & Dickson-Deane, 2021, p. 292). As the interns gained experience in putting these concepts and skills into practice, they indicated enjoyment in experiencing a sense of freedom to use their creativity productively through that process. P1 described how they navigated through this aspect of the internship-

*My* professor saying, "Make something like this," and her ideas were abstract, and so it was my job to take the abstract and to try to make something concrete. That was...both enjoyable and difficult, because I thought I was just going to- the professor was going to be holding my hand and say, "OK, here's what I need you to do this, this, this, and this." But, it was more of like an abstract idea- "Here, I want you to get something like this done, but I can't show you kind of what it looks like. It's so, here you go, make it happen, and then make something, send it to me, and I'll give you feedback on it." So, that initial part was very difficult, but once I started to get into the rhythm of it, then it was just an iterative process of her giving me feedback, tuning some things, making feedback.

While such a hands-on, iterative approach was difficult for the interns at the beginning, they all gradually seemed to become accustomed to the rhythm of considering the provided information, drafting their ideas into concrete forms that could then be discussed with their IDT faculty member, receiving regular constructive feedback on their drafted materials, and incorporating that feedback into the next iteration of their developing project. In providing authentic learning, the role of the instructor embodies coaching and scaffolding. Instructors support students at a metacognitive level by nurturing skills and strategies that help them "to accommodate, assimilate and build new knowledge structures" (Strydom et al., 2021, p.4).

#### Theme 2: Valuing Working in a Transdisciplinary Collaboration

The second theme observed through the analysis of the interviews was the interns' perceptions of the value of working in transdisciplinary collaborations. The interns observed partnering faculty from multiple fields actively working together, sharing resources and knowledge, and making team decisions. The internship also broadened interns' collaborative scope by giving them opportunities to work alongside professionals who are not teachers in an academic setting. As part of these collaborative partnerships, interfacing with SMEs was frequently mentioned. P1, for example, discussed how an IDT professional has to "collaborate with subject matter experts and then develop the content." The interns were largely unfamiliar with the content of their instructional design projects prior to the internship, including AI/ML fundamental concepts and applications to health literacy, data management principles for biomedical research, and disaster-response food distribution. Working in the transdisciplinary context introduced them to these concepts and a network of individuals who contribute their expertise to the projects. For example, P3 relayed how he

learned about the work of a cancer research data management librarian when he was producing video segments for an online course-

What's interesting is that during an internship or any work-related capacity, you not only have the opportunity to learn but also to apply your knowledge. It's not just about watching instructional tutorials on YouTube; it's a hands-on experience where you are doing the work. In my case, I got the chance to become more acclimated with video editing software. Specifically, I used Final Cut for the internship and had the opportunity to edit interview footage featuring...a subject matter expert. He worked at the library of the Memorial Sloan Kettering Cancer Center and provided valuable insights into FAIR use principles.

As in this example excerpt from P3, sometimes the interns interfaced with SMEs asynchronously through the provided materials and resources. Although the intern did not have direct real-time interaction with the SME, the process of working on the recorded video footage served as a meaningful connection between the SME and the intern in their instructional designer identity. By editing the video footage featuring the SME, the intern's identity was influenced by the SME as they were able to immerse themselves in the expert's knowledge and insights and interact with an SME who was from a completely different field than them.

There were also opportunities for the interns to interact directly with SMEs in an in-person national conference that took place toward the end of the summer, in which the interns copresented prototypes of their work alongside the partnering faculty. For P1, it was not just the subject matter content that they gained through their participation in the conference but also their development of professional behaviors for networking with experts in such a setting-

I'm glad that I experienced something like that because I had never been in an environment with so many smart people, just important things happening and I get to be a part of that. Had I not done the things I did to get to where I'm at, I would have never experienced something like that. Having to dress up and having to be professional, look professional, and I would say that was one of my favorite things but also valuable to me in terms of how I grew up and its significance to me and now I feel that...if I were to attend any other event like that, that I belong and that I have the skill set and can do those things...Seeing my name on professional work like everybody did this and my name is on it. It makes me feel like I belong and like I can do intellectual things.

In this experience, P1 was trying on a new identity that involved differences in their professional appearance and interpersonal interactions with others. Having experienced this firsthand with the support of the mentoring faculty provided a foundation for the interns' future continued development of their professional presence. The transdisciplinary partnership generated internship experiences in which the interns would begin to view themselves as part of a broader professional and academic community.

In working with new content from other disciplines, the interns found that they were also learning some of the content in the process. P4 spoke about this when asked if they came

away from the internship with a stronger understanding of areas beyond instructional design-

I would say yes, especially in a situation where I was learning the subject myself. I mean this was-I didn't know anything about artificial intelligence other than like the basics of what it was...and so kind of starting from even further back of a process than we did in our studies, because we got to choose the topic for that and kind of learn from there. I had to take it a step backwards and say, "OK, I need to learn this subject, figure out what's important for the audience to learn, and then design...to help the general public learn more as well."

P4 was tasked with creating an immersive informal learning activity that would promote awareness of how AI/ML is being used in medical care. As they developed portions of the activity, they trialed their design as a potential learner, which strengthened their understanding of the concepts and helped them to empathize with the needs of the target learners.

Being placed in a position to interface with the specialized content also piqued their own interests in the material, as P1 explained-

Many people are making significant progress in the field of AI, and this internship served as my stepping stone and introduction to it. Previously, we were all familiar with buzzwords like AI, artificial intelligence, and machine learning, and how they are interconnected. However, through this internship, I gained practical understanding of how computer science, particularly artificial intelligence and machine learning, can be applied in the medical or scientific domains. This was one of the unique aspects of working with AIM-AHEAD that would have been different if I had worked with another department within the College of Education.

It is interesting how in this excerpt the transdisciplinary collaboration is viewed at an organizational level between AIM-AHEAD (the federally-funded project with which the partnering faculty were affiliated) and the College of Education (where the interns' IDT graduate program was located). This assertion could infer a more extensive institutional relationship that goes beyond the individual collaborating faculty and permeates various aspects of the internship, possibly including faculty development, scholarship, and curriculum design.

### Theme 3: Struggling Productively in the Complexity of Authentic Projects

Though the internship was difficult at times, the interns seemed to value the productive struggle overall that led to the authenticity of their learning through this experience. Interns were provided options for how they could contribute to the projects based on their interests and skill strengths. What made the internship authentic to them was how the challenges, logistics, and outcomes of the projects could not be neatly "mapped out" or "predicted" as they might be in an academic course. This dimension of the internship was what P4 felt was the most valuable part of the experience–

The whole process...being able to do it all, being able to do it all again for something that I didn't really know anything about and to have those weekly meetings and then to be able to take it to the conference at the end, that whole process was really something. I don't know if I'll ever be able to do again. And, it kind of encompassed- it was really cool to do every single step of that process. I feel like I've [done] instructional design in one summer. Being able to talk to so many different people, being able to- I mean, really, with these online courses, we don't get to talk to our professors very often. I mean, we can reach out, but that was also a great opportunity to speak with a professor one-on-one once a week. And normally we would talk about the project, but I really enjoyed that part of it too.

Products were developed through iterations with drafts discussed weekly in one-on-one meetings between the intern and the IDT faculty member. P3 described how the guidance provided during these meetings helped them navigate the ill-structured tasks they needed to complete-

I did see how I was a part of a team and how input regarding the accessibility of the modules that I had the opportunity to work on, I could see how the feedback was communicated to me so I could take it and let me make those improvements, let me incorporate those insights or those suggestions. And I did feel that there was a feedback loop. There were opportunities where throughout various stages of the course development we had to stop and review and revise and we entertained different approaches. So, it, the finished product, I'd say, it made it to that state iteratively, and it was a team effort to get it there. I could say that I know [the IDT faculty member] worked with me hands-on. So, the way we structured our interactions, she gave me free range to apply my skills and take a stab at it with my own creative vision. But then, she would give me guidance from a scholarly perspective on how to best approach it, how to really apply the concepts and the principles of curriculum and instruction. So, that helped me really refine it into something that, OK, it takes several people to put their hands on and put their eyes on it and then help really curate it into its final product.

The iterative, mentored approach contrasted with the typical course structure of the IDT graduate program which usually had specific assignment details and instructions for completing tasks. It took some time for the interns to comprehend the expectations of the internship and establish new routines to accomplish the target activities. Sometimes, they had to independently brainstorm and research new concepts that were unfamiliar to them. Design tensions between "what is and what ought to be" (Tatar, 2007, p. 415) surfaced at times, prompting them to question their next design decisions and how those decisions might align with the work of other team members who are working on different but related project components. Similar to the discourses of beginning designers explored in Howard and Bevins (2020), the interns grappled with tensions between what they understood theoretically for building effective instructional materials and the means of putting those ideas into concrete form for a real-world project.

Interns' desire for autonomy seemed to vary at different points in their design process. P2, for instance, said that they wanted "a little more structure beforehand, then creating a draft

and then getting feedback and restructuring things." However, they eventually figured out how to move forward in their work without such explicit instructions. P2 continued–

I've never been given an opportunity like this before. It's been some small projects for class, but nothing to the scale of people actually using my work and trying it. This helped me get my current job now because I have the experience of handling something like this. You can't really make too many mistakes. This internship allowed me to create my own path, and say "I actually could do that, I didn't know I could do that before, but now it's a skill that I can add to my resume." The internship helped me with project management, which I didn't realize how much instructional designers have to manage the project and set a timeline. I remember in June I set a timeline with the IDT faculty member to make sure that I was hitting the timelines and deadlines by the time we needed to present an offer. There was a lot of trial and error, which I'm now used to from this internship. I was ready for my new job. Because things change consistently, especially as an instructional designer, you have to work with subject matter experts and the facilitators. There are a lot of changes and being okay with those changes and still giving myself enough time to be able to take the change, represent it and make more changes.

P2 recognized their growth in becoming more adaptable and embracing change through this internship. Similar to P2, there were noticeable indications across the interviews that the interns' self-identities were shaped as they took on roles and duties that initially looked difficult or unfamiliar to them. The internship also provided a glimpse into some of the pressures and responsibilities that would be expected from them as IDT professionals. Yet, the mentored approach framed mistakes as iterations that can be built upon, as mined for insights that can be useful for personal growth, development, and improvement.

As they immersed themselves in the work and embraced the learning process, the interns seemed to exceed their own expectations and realize capabilities beyond what they could previously do. The interns were at different places in the IDT graduate program, with some having taken just a few courses (including the foundational instructional design course) and others at the completion of their degree. P2, who was early in their program, described how they perceived their readiness for the expectations of the internship–

When you get an internship, you need to be at a certain level...in my case, I had completed two classes that I felt provided a foundation, but I still needed to take some more. To address this, it could be beneficial to establish a prerequisite of a certain number of credits before participating in the internship. Or, if you still want to be open, to everyone have it where it's a buddy system. I would have really liked it if I had a buddy to work on the project with. Instead of the independent work, I really prefer to collaborate, because I was so new. Now, if I were to do the internship again, I would be fine working by myself the way I did, but I would definitely suggest the buddy system.

While the interns worked on different components of the larger projects, pairing the interns was not part of this structure. In considering the "buddy" suggestion, pairings could potentially leverage different skills and perspectives for shared tasks. However, working individually pushed the interns to try new things and "figure out" how to accomplish different

aspects of instructional materials development that they may not have chosen to do given the option to potentially "divvy up" tasks with a buddy. Overall, the interns expressed the value of receiving regular, detailed feedback on their progress, which they felt supported their personal growth in IDT skills.

# Theme 4: Supporting Self-Efficacy in Instructional Design and Technology

The fourth theme identified in the interview data related to how the internship fostered the development of the interns' self-efficacy in their IDT skills. Some interns expressed initially being fearful and hesitant at the beginning of the summer when they began their new IDT role, and they expressed misgivings about the sufficiency of their prior academic and professional backgrounds. The weekly check-in meetings with the IDT faculty member seemed to help with the transition of the interns into their new roles and supported their growth in IDT and professional job skills development. As they worked on their projects, they experienced shifts in their identities as they developed interests in new areas, acquired new skills, and broadened their capabilities through exposure to new perspectives and ideas. P1 discussed how they experienced such shifts–

As far as the professional experience, I wasn't entirely sure what to expect, and I hadn't done much research into what exactly an instructional designer does. I had the basic idea that it was some form of education and the creation of instruction. Once I started meeting with the IDT faculty member, initially I was kind of confused as to what exactly was expected of me, because I was afraid that I wasn't going to do the right thing and that maybe I needed hand-holding for the job. And so, it was a little bit frightening at the start of it, since this was my first experience doing a real job with a real partner working as an instructional designer. It was daunting at first, but then I started to get the hang of what I was supposed to do. I was assigned tasks to complete each week and would then provide updates and information on those tasks at the beginning of the following week. Eventually, this started to become a routine. Knowing that now, I see that's how instructional design works at the corporate level, where you're given some tools or some tasks and you'll have some meetings here and there, but it's primarily you out there getting the job done and then reporting back to your supervisor. This was a little bit of a different experience since my background is education and teaching. There are faculty meetings and you do meet with the principal, but it's never really reporting to someone else. It's more so meeting as a community and just sharing or collaborating. It wasn't direct commands from the top down, so that was one of the things that I also learned.

The interns came to understand that IDT professionals do more than create curriculum, and they gained insights into some IDT responsibilities, work environments, communications, and interpersonal interactions. This exposure provided the interns with a glimpse of what to expect in the job market, a sense of what various IDT job titles do, and the kinds of tasks that IDTs may perform. It helped them to have greater clarity about the types of positions they wanted to pursue and aspects of work environments or structures that would likely match their needs and interests.

Interestingly, all the interns were job hunting during the internship and began new job positions at the summer's end. Thus, their reflections about the connections between their internship experiences and applications to future careers are situated in about six months of working in their new positions. The interns spoke about how their internship experience helped them to be more confident in their IDT capabilities and skills. P3 had prior experience and education in information technology and was pursuing the IDT graduate program as a way to connect their technical expertise to support training and development. Though they had completed some of the coursework, they harbored doubts about their capabilities in taking on an IDT professional identity. These doubts can carry emotional undertones in which IDT students question whether they are sufficiently qualified to be accepted in an IDT workplace (Howard & Benedicks, 2019). The internship seemed to come at the right time for each intern participant, providing encouragement and validation that they, indeed, could be successful in the education sector. P3 explained in this excerpt:

The internship helped me retain my enthusiasm. Let's say when you start something new, you're eager. But then as you get into the thick of it, you can start to wane and not be as engaged, or you can fall out of engagement with the material. But the internship helped invigorate me and say, "Hey, if you keep going, you can do this every day, it could be your full-time job if you really wanted it to be."...When I thought about the IDT program, then I thought about, of course, my experience in the internship, I could see how there was something after corporate. There's something else, and getting a feel for what that could be and being able to kind of lock it down, because there's so many things that everybody can do, but you just don't know what's your thing. I was, in my head, "I think this is my thing. I could be really good at this!" But, I needed exposure.

The professional expectations of IDT positions became more realistic and understandable to the interns. They discovered multiple parallels between their future job opportunities and the kinds of tasks they had done for their internship projects; they also noted connections between technical and professional skills they felt were refined in the internship and the enactment of these skills to enhance their career trajectories. The internship seemed to shape the interns' conceptions of what careers might be possible and of interest for them to pursue as they gained practical experiences and industry insights, with noted changes to their short- and long-term career goals. P4, who chose to stay in teaching but moved into a different instructional context with their employment transition, spoke about how the internship prepared them for their new job–

Right after I got this internship, I got a different teaching job. This internship prepared me for that new role because I was transitioning from teaching a core class to teaching a career and technical education class. It was a really cool time and good timing because it helped me prepare to make my instructional materials for the current class I'm teaching and have that different mindset of how to train my students for these real-world skills versus purely academic classroom skills. My long-term goals have kind of changed, but I will say this internship did help me learn how to work with people in a way other than teaching, so again, back to that realworld aspect. I was so used to professional only being academic or in a school setting and I was able to stretch that beyond. I feel like this internship was really beneficial for anything I would want to do in the future. Time management and following through with tasks were professional work habits the interns felt that they refined during the internship. Indeed, professional skills such as communication, problem-solving, interpersonal skills, customer service, and resolution skills are pertinent to the typical activities of an IDT professional (Ritzhaupt et al., 2018). The weekly meetings with the IDT faculty member provided mentorship as well as accountability to ensure that the interns were progressing toward their project goals. The process of drafting, discussing, and revising their design ideas was also mentioned as useful to becoming accustomed to the work so that they could be prepared for their future jobs, and some contrasted this iterative approach with their prior graduate coursework where assignments are sometimes submitted once and not continuously reviewed and refined.

In considering how the development of these skills impacted interns' views of themselves, there are indications that the interns felt increasing confidence in their abilities to make design decisions and chart a path forward in completing their scope of work, despite navigating the challenges of working on ill-structured problems. They found that they could be successful in creating concrete products from conceptual ideas, utilizing their skills to complete tasks independently and creatively. The unstructured nature of ill-structured problems redefines roles that students can enact, providing them with expanded learning experiences that go beyond theoretical understandings (Savery, 2006). Such experiences allow students to experience a "culture of the practice" in which "only a close interaction with the work environment allows learners to acquire this culture" (Perusso & Baaken, 2020, p.3).

#### Conclusion

Students enjoyed the collaborative and social aspects of the internship, including the instructor-student mentoring relationship and social interactions among interns and project stakeholders. However, the less structured aspects of the internship posed some challenges for interns. In such environments, beginning designers tend to struggle with handling uncertainties and being asked to "make frequent judgments, and adapt formal models or theories into practical action, with little time for reflection" (McDonald & Rogers, 2021, p.1). Yet, these productive struggles offered intangible benefits of contributing to greater independence in their work processes, which enhanced their self-efficacy in their IDT capabilities.

Professional growth through such authentic learning experiences is supported through the provision of instructor mentorship (McDonald & Rogers, 2021). The weekly meetings the students had with the IDT faculty member not only fostered accountability for them to complete their projects within the internship timeframe but also facilitated constructive, individualized feedback on their progress. The iterative design process involved ideating, creating prototypes of ideas, discussing, receiving feedback, revising, re-discussing, and then revising again. Within a supportive learning environment, students were able to try out professional IDT skills such as working with SMEs from varied disciplines, contributing towards shared aims within a larger team, preparing final project deliverables for submission, and presenting to a professional audience. Through these experiences, they began to identify as emerging IDT professionals.

The projects provided interns with some exposure to AI/ML concepts and other disciplinary content, but their interest in the content beyond the scope of the projects was variable. The transdisciplinary partnership could be further leveraged through intentional activities in the internship structure that enhance intern learning of varied disciplinary content. Roundtable discussions with the larger team, brief presentations by collaborating faculty about their areas of expertise, panel sessions, workshops, seminars, short courses, and book/article talks could be organized.

Students extensively worked on portions of larger projects that continued to be developed beyond the summer. In the interviews, many interns asked about the status of their projects and expressed a desire to be privy to when their projects would be piloted and finalized. In addition to curiosity, this request could also be indicative of internal notions of responsibility, ownership, and pride in their work. Having a reduced project scope within the brief timeframe constraints could potentially enable these beginning IDT professionals to carry out the instructional design process more fully, from analysis through design and development to implementation and evaluation. Future research could explore the impacts of project scope on internship outcomes. Finally, the interviews completed in this study provided insights for the project team about intern experiences in the internship. Such data collection activities could be further expanded to investigate the perceptions of others in the partnership, such as collaborating faculty and mentors.

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#### **Ethical Approval**

The methodology and research instruments for this study were approved on January 11, 2023, by the Institutional Review Board at the University of Houston (STUDY00004025). Informed consent was obtained from all participants in this study.

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# Appendix A: Semi-structured Interview Protocol

- 1. What was your reason for completing the summer 2022 internship?
- 2. Describe some of the things that you feel you learned through the internship.
  - a. What instructional design concepts did you better understand through the internship?
  - b. What artificial intelligence-related concepts did you learn about through the internship?
  - c. Were there any technologies that you learned how to use through the internship? If so, what?
  - d. Describe some of the skills you had the opportunity to use and develop during the internship.
- 3. What are your thoughts regarding the authentic learning opportunities presented through the internship? Authentic learning means that learning is situated, or takes place, in realistic contexts of future use.
- 4. The internship was created through a partnership between the IDT program area and the other discipline areas connected to the projects (population health, medicine, and computer science).
  - What do you think about this partnership?
  - In what ways do you see such partnerships as supporting the work of instructional design and technology (IDT) professionals?5. In what ways did your courses prepare you for your internship?
- 5. What aspects of the internship did you find most valuable?
- 6. What aspects of the internship did you most enjoy?
- 7. What aspects of the internship did you find most challenging?
- 8. How did the summer 2022 internship experience impact your graduate studies or professional work?
  - Is there anything that you are doing differently as a result of your internship experience?
  - How did the internship impact your understanding of your career goals?

9. How could the internship design be improved?

 $^{\underline{1}}$  The ADDIE acronym is used for the instructional design approach of Analyze, Design, Develop, Implement, and Evaluate.