Situating MOOC Learners Within the Field of Learning Experience Design Through Immersion in Authentic Contexts

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We present a design practice paper to explore the power and potential of extended reality (XR) to enable immersive and dynamic learning opportunities within a series of MOOCs focused on the Learning Experience Design (LXD) profession. This project integrates XR-enhanced learning experiences using interactive 360º videos. These media take MOOC learners through a fictionalized design process mapped to key topics of the series. Through a simulated apprenticeship, MOOC learners develop situational awareness and contextual understanding of LXD practice. We use the Developing Instructional Design Professionals for Education through Apprenticeship model to understand the ways these immersive experiences instantiated the four stages of the model.

Introduction

Learning Experience Design (LXD) is a growing field that integrates learner-centered design perspectives, theories of learning, socio-culturally sensitive approaches, and a range of user experience design processes and methods (Jahnke et al., 2022; Schmidt & Huang, 2022). As the field is increasing in prominence, so is a demand for educational programs that cultivate LXD professional competencies and skills. In many respects, such programs aim to instantiate the "signature pedagogy" of the LXD profession. Shulman (2005) describes signature pedagogies as the "forms of instruction that leap to mind when we first think about the preparation of members of a particular profession" (p. 52). In the LXD context, this could involve developing disciplinary knowledge, analytical and critical ways of using that knowledge for design, an understanding of how expertise functions in the LXD field, and a nuanced conception of how stakeholders influence LXD activity. Within programs offered through traditional college and university settings,

developing these LXD “habits of mind” should increasingly involve pedagogical approaches where learners engage in apprenticeship and experiential activities, observing and working alongside professionals in the field (Tracey & Boling, 2014).

We are starting to see new programs bringing the practice of LXD to new audiences of global learners at the scale of large online audiences. This requires that instructors consider how learners can engage with the signature pedagogy of LXD and how learners can develop and practice professional skills within authentic design contexts (McLain, 2022). The challenge becomes one of providing online learners with similar experiential activities that promote meaningful opportunities to cultivate LXD competencies and reflect on various LXD design practices. One promising avenue for exploration—and the focus of this paper—is the inclusion of immersive learning activities situated within LXD online learning experiences offered *at scale* as a vehicle for fostering professional engagement in an educational setting (cf. Ip et al., 2016).

Professional Skills for Learning Experience Design

LXD, as with most professional contexts, requires learning about a range of ideas, practices, roles, and skills in the profession. LXD professionals need to understand different theoretical perspectives on learning and media and how they can use those theories within their designs (Jahnke et al., 2022). They also need to know the process, activities, and tools for designing learning experiences, how to navigate the design process, all while collaborating with partners, communicating their ideas, and managing projects in an effective manner (Ritzhaupt et al., 2021).

When we consider these types of professional competencies that are part of learning experience design and the skills that we want students to gain, we can look to how others have used a cognitive apprenticeship approach (Stefaniak, 2015) to help us move towards a vision of a more active, experiential education approach. This is also what we see when we institutions encourage students to take industry internships that hopefully connect with their degree programs. The aim here is to put students in situations where they can see and interact with the activities, roles, discourse, etc. that comprise the professional culture that students are aiming to join. Brown (2006) describes this as the distinction between “learning about” and “learning to be.” Where “learning about” something mainly involves communicating ideas from an expert to a learner (i.e., many traditional classrooms), “learning to be” involves learning how to become part of a professional culture. Drawing on ideas from situated cognition and situated learning (e.g., Lave & Wenger, 1991) where learning involves enculturation into a new practice, Brown (2006) describes “learning to be” as “enculturation into the practices of a field” through apprenticeship where students can experience the “ways of knowing” in that professional culture, and where students can learn to engage in productive inquiry to know what constitutes solutions to the important problems in that profession. This learning perspective is seen in the concept of *signature pedagogies*, where the goal is to draw on pedagogies that prepare learners to become practitioners in a professional field, all while imparting a set of beliefs about the attitudes, values, and dispositions of the profession (Shulman, 2005). This also leverages the idea of *cognitive apprenticeship*, where we see the notion of apprenticeship models being applied as “learning-through-guided-experience” on cognitive skills and processes (Collins et al., 1989).

The Development of Instructional Designers Apprenticeship (DIDA) Model

If “learning to be” involves becoming acculturated into a profession, learning experience designers can “learn to be” through the cultivation of professional competencies. Such competencies represent the knowledge, skills, and attitudes needed to effectively perform on the job. As educators of new members of the profession, it is necessary to create educational activities that allow learners to acquire such competencies and apply them within similar activities and contexts that they will encounter in the profession. One such model we can use to guide a pedagogical approach for LXD professionals is the *Development of Instructional Designers Apprenticeship (DIDA)* model (Mancilla & Frey, 2020), which extends Ertmer and Cennamo’s (1995) work on cognitive apprenticeship and has been tailored to higher education contexts. The model was developed in response to a need for a professional development pathway for novice

instructional designers in higher education (Tracey & Boling, 2014). Throughout each stage of the model, novice learning professionals are encouraged to articulate their knowledge, reasoning, and problem-solving processes (Collins et al., 1999) with mentors at their internship or job site.

The model consists of four stages that encompass pedagogical features that are essential to the development of a learning design professional. It is presented as a "continuum of immersive tasks designed to foster competence among recently employed, novice IDs with little to no practical experience in design knowledge, practices, processes, and thinking" (Mancilla & Frey, 2020, p 1). The model can be used to craft internship or onboarding experiences for new LXDs who are starting at a new job site. Depending on level of experience, the LXD could begin at any stage with full completion of the model lasting from months to years.

- **Stage 1: Observation and Modeling.** In this stage, novice LXDs are provided with multiple opportunities to observe experienced learning professionals engaged in authentic design tasks. By observing at the periphery, novice designers are exposed to the "implicit cognitive strategies and rules of thumb [that] heavily influence the design process" (Kirschner et al., 2002, p 87). In addition to observation, novice LXDs are given opportunities to hear expert practitioners explicitly describe how they are approaching a design problem or task.
- **Stage 2: Tasks with Coaching.** In this stage, novice LXDs engage in structured, discrete design activities and receive direct coaching from expert learning professionals throughout this process (Stefaniak, 2017). Coaching from the expert mentor can include assisting with goal setting and organizational skills, providing feedback on the novice's design choices and offering alternatives if appropriate, and setting up timely debriefings and question and answer sessions.
- **Stage 3: Contextualized Practice.** In this stage, the novice LXD engages in increasingly independent and applied design work, moving beyond individual elements and taking on entire projects. From the expert mentor, they may receive sufficiently challenging and meaningful design problems and specific feedback on their progress.
- **Stage 4: Reflection and Exploration**. In this stage, the novice LXD applies a critical lens to their design work through a process of reflection and self-assessment. The LXD begins to move from reflection *in* action (Schön, 1983) about design decisions they have made to reflection *on* action, bringing together theory and practice (Mancilla & Frey, 2020). Exploration in this phase refers to the novice LXD being able to locate resources, experts, and opportunities needed to advance in the profession beyond their immediate work environment.

The DIDA model gives us a conceptual framework that we can use to develop an overarching educational approach for novice LXDs. But within this framework, we would like to consider what kinds of representations and tools we might use to foster the types of experiential activities that would support "learning to be" an LXD. Furthermore, we would like to consider ways of doing this at scale as we think about online educational contexts that have the potential to reach a larger number of learners in a range of venues. When the educational context is in-person and residential, we might engage in internship placements where students can work with professional LXD teams. However, this approach is limited by the number of internship venues and by the in-person nature of the experience. As we look to develop online educational opportunities for LXD education (e.g., within MOOCs), we would like to design alternatives that can still give a broader range of students more experiential, apprenticeship experiences within those online contexts. For this, we look at the possibility of incorporating immersive learning approaches in the form of extended reality (XR; this term will encompass virtual reality and immersive 360-degree video) tools and representations.

Using Immersive Media Within the Development of Instructional Designers Apprenticeship (DIDA) Model

In recent years, there has been more discourse around the potential of XR and other immersive media to positively impact learning (e.g., Bailenson, 2018). The promise of tools like virtual reality is to immerse learners in educational contexts that might be difficult or impossible to engage with otherwise. This opens a range of possibilities for using immersive media to support training, professional development, and other types of learning activities that beforehand might only be available in person. By being able to immerse learners in different contexts, we can envision ways to

develop the types of experiential activities that help support “learning to be,” especially in the LXD context where we could use immersive media to help novice LXDs attend design meetings, meet and work with collaborators and stakeholders, and practice communication skills. This also gives us the opportunity to explore ways of enhancing online learning opportunities with immersive media to see if we can give students access to similar kinds of activities that would normally be out of their reach because of the online context.

As we look at exploring the use of immersive learning approaches within a DIDA framework to support LXD education, our paper is guided by the following research question:

> *How do course designers and instructors draw on theoretical perspectives and design frameworks to develop immersive learning activities that allow MOOC learners to engage in observation and reflection within authentic, professional learning experience design contexts?*

Situating MOOC Learners in the Field of Learning Experience Design

This work is situated within a four-course MOOC series on Learning Experience Design. The motivation for this MOOC series was to develop an online version of a graduate certificate program at the University of Michigan that is a collaboration between the Marsal Family School of Education (MFSOE) and the Center for Academic Innovation (CAI), which is the on-campus center that develops online educational programs for much of the university. The residential graduate certificate program is a 12-credit program open to all university graduate students. The program combines academic courses on learning theory, curriculum design, multimodal literacies, evaluation, and research design at the MFSOE along with a student residency at CAI. This residency is the hallmark of the certificate program, as students are afforded the unique opportunity of working alongside professional LXDs, media designers, and other partners and stakeholders on authentic design opportunities as they engage in several projects, such as MOOC development.

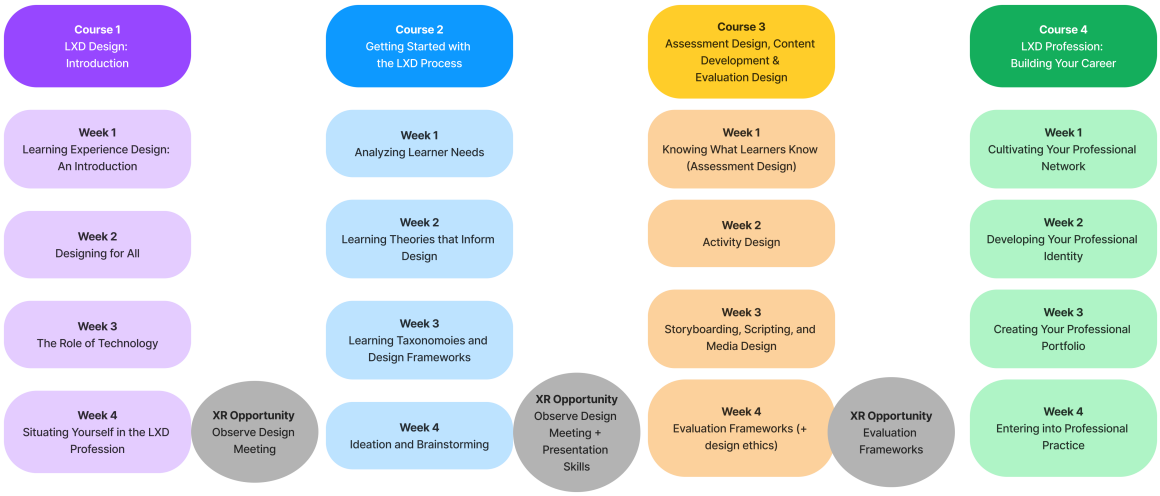
The motivation for developing the LXD MOOC series was to respond to requests from many students outside of the university and professionals who were interested in the curriculum and residency from the certificate, but who, because they could not matriculate at the university, were unable to enroll in the residential certificate program. A challenge, however, in developing the LXD MOOC series, was to develop content that offered a parallel to the residency aspect of the residential certificate program. While much of the course material, lectures, readings, etc. in the certificate program could be included in the MOOC series, the exposure to professional opportunities that arises in the certificate residency is more challenging to replicate. This is where the idea of experimenting with immersive media began to emerge. While this would not necessarily be a complete replacement for a full student residency, it could provide a way of engaging online students with some professional interactions and experiential opportunities that goes beyond the typical MOOC.

Application of DIDA Model to Immersive Learning in LXD MOOC Series

The DIDA model provides a frame for the design and development of the three immersive learning experiences that are integrated into the first three courses of the LXD MOOC series (Figure 1). (Note that the fourth course is focused on the learning in terms of career building, developing a professional portfolio and network and is less suited for an immersive experience.)

Figure 1

Course Design Visualization With XR-Enhanced Learning Experiences Shown in Gray Circles, Week 4 of Courses 1, 2, and 3



The model assumes that novices or learners are situated within an authentic design context, such as real-life internship or work environment as part of a structured professional development or onboarding process (Mancilla & Frey, 2020). The model also assumes direct and sustained engagement between the novice and expert LXD. While it is not possible to provide MOOC learners with such a rich, generative experience, we chose to simulate a complex design environment, where they would have the opportunity to progress through the four stages of the DIDA model through immersive learning opportunities that use interactive 360° videos. In this way, we sought to provide an opportunity for MOOC learners to be situated (even briefly) within an authentic design context, offering the possibility to become engaged in a community of practice (Lave & Wenger, 1991) within a large online environment.

Figure 1 shows the XR-enhanced experiences embedded in the LXD MOOC. The immersive activities present a fictionalized design process for an online course called “Transforming Education.” While Transforming Education is an actual MOOC series, the details of its design process are simplified in the XR experience for the purposes of creating an experiential learning opportunity that the LXD MOOC series learners will be to comprehend.

Immersive Learning Experiences in the LXD MOOC Series

The XR-enhanced experiences in the LXD MOOC series make use of 360° video, (i.e., surround or spherical video), where a 360° panorama is recorded using video and audio. Users can pan around this space using their gaze or controllers. The XR-enhanced experiences were created using an e-authoring tool that allows designers to include interactive elements, such as text, audio, recording options, and multiple-choice quiz questions. The XR-enhanced experiences are embedded in the MOOCs through a learning technology interoperability (LTI) protocol. Learners access the experiences through a link or QR code in the course. Through a web-browser, mobile device, or virtual reality headset, learners can engage in a sequence of situated learning activities. Each course in the MOOC series contains a recommended XR-enhanced activity. Before each activity, MOOC learners are given a set of pre-activity materials to review, such as project status reports, design artifacts, and project communication.

Scenario 1: Observing an Expert LXD in Action

Course 1 Overview

The first course in the series, “Learning Experience Design: An Introduction,” introduces MOOC learners to the big ideas of learning experience design, including an overview of the design process and process activities, along with introductions to different learning theories and design frameworks seen in curricular design, and when designing for all learners via equitable and accessible design approaches. Then, MOOC learners examine the role of technology in

designs for learning, including those that LXDs use in their practice and those that are used by learners throughout a learning process. The XR-enhanced activity is situated within Week 4 of the course, which focuses on becoming situated in the field of LXD. The driving question that guides learners in this section of the course is: “How can novice LXDs begin to develop skills and attitudes that are integral to the profession?” which includes the topics just mentioned here in terms of theory, design process, and frameworks.

Week 4 Overview

Here, MOOC learners start articulating a definition of LXD by situating it within a broader field and related ideas, such as learner-centered and user-centered design (Quintana et al., 2003). MOOC learners identify key competencies, skills, and attitudes that are necessary to cultivate to become a thriving professional (Stefaniak, 2015). Through watching a recorded conversation with two experts in the field, MOOC learners recognize challenges that novice LXDs may face and start to identify strategies they can use to develop LXD competencies (Chang & Kuwata, 2020). An applied project follows the immersive learning experience, where learners are asked to construct a professional development plan that is linked to key LXD competencies. This plan will serve as a guide for their self-directed learning throughout the rest of the courses in the series.

Immersive Learning Pre-Activity

MOOC learners are given a set of reading materials to set the stage for the XR-enhanced activities that will follow in courses 1, 2, and 3. These materials provide context about the Transforming Education online course that will be used as the basis for a sequence of XR-enhanced activities. Design team stakeholders include a faculty member, senior learning experience designer, project manager, and media designer. Also included is a project brief that conveys the overarching goals and ambitions for the Transforming Education course, meeting agendas from the first couple of project meetings, and email correspondence that shows communication between an “early career learning experience designer” (i.e., the MOOC learner) and a more experienced designer. The MOOC learner is instructed to prepare a short self-introduction for the next design meeting in the final email of the sequence.

Immersive Learning Experience

The immersive learning experience is designed to align with two important topics in the course: designing for all learners and the role of technology in supporting designs for learning. The 360° interactive experience is organized in two corresponding parts: (1) the MOOC learner is seated in a conference room, with various design artifacts representing the progress of the design team to date distributed around the walls of the room. While they wait for the meeting to start, they can zoom in on each artifact (e.g., project notes on a whiteboard). When the meeting starts, they see a textual prompt: “Click on the microphone to introduce yourself and your role on the project. Then say, ‘I’m glad to be here.’” The learner clicks on a spinning microphone and verbally responds. The XR application recognizes the final phrase spoken by the MOOC learner and the experience resumes. MOOC learners observe an expert LXD facilitate a productive discussion with the faculty client about how the course design can support engagement for a global audience of learners; (2) MOOC learners observe a second turn of conversation, where the faculty member asks for advice on learning technologies that would support the desired interactions described in part one. The scenario ends when the expert LXD turns to the MOOC learner and says, “I’d like to ask our new colleague to do some research and make a recommendation at our next meeting” (see Figure 2).

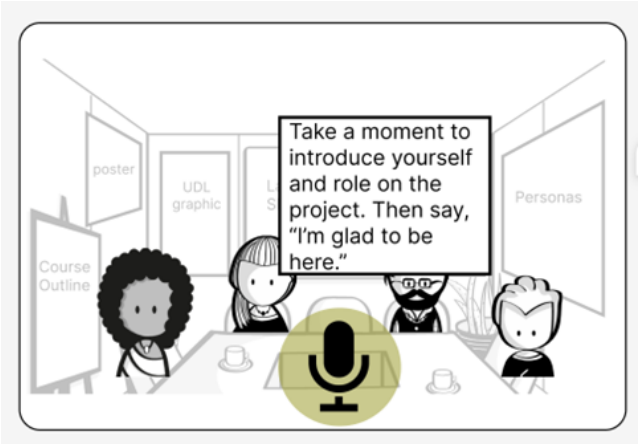
Immersive Learning Post-Activity

This post-activity corresponds with various aspects of the DIDA model, including: (1) Observation and Modelling, (2) Tasks with Coaching (in activity that follows the immersive-learning opportunity), and (3) Reflection and Exploration. In the MOOC platform, learners are asked to reflect on the immersive experience by using a digital workbook tool connected to the online learning platform. They are asked to reflect on what they observed by answering the following questions: (1) What were the key contributions of the LXD in the scenario? (2) How did they demonstrate mastery of core LXD competencies? (3) What ideas do you have for how you will develop skills and competencies you observed? In a discussion forum on the MOOC platform, learners are also asked to do some light research and identify one or two

learning technologies that meet the requirements described during the scenario. MOOC learners create an entry that describes the functionality of the tool(s) they have identified and rationale for their choice.

Figure 2

Sketch Showing Conference Room Where Design Meeting Takes Place. Design Artifacts are Positioned Around the Room. The MOOC Learner is Seated Across From Project Stakeholders and Must Give an Introduction When Called On



Scenario 2: Giving Feedback to a Colleague on a Presentation

Course 2 Overview

The second course in the Learning Experience Design MOOC series, called "Getting Started with the Learning Experience Design Process", focuses on early phases of the design process where LXDs analyze learner needs, use learning theories to inform design, and articulate learning outcomes using learning taxonomies. This incorporates a learner-centered design approach (Quintana et al., 2003) to ensure that the overarching learning experience design process is well-defined from the outset. The XR-enhanced activity is situated within Week 4 of the course, which focuses on ideation and brainstorming. The driving question that guides learners in this section of the course is: "How can LXDs use conceptual tools to facilitate ideation and brainstorming?"

Week 4 Overview

In this week of the course, MOOC learners focus on the topic of visualizing course structure, using a variety of methods and conceptual tools, including sketching, prototyping, and blueprinting (Dodd, 2021). They recognize that by using rapid prototyping techniques to visualize the major elements of a proposed course design, LXDs can capture, represent, and share design decisions without committing to a timeline or sequence (cf. Quintana & Tan, 2021). MOOC learners examine the strengths and limitations of these approaches and discuss the importance of finding a good "fit for purpose" (Conole & Wills, 2013). MOOC learners are exposed to a variety of examples and case studies that show early sketches paired with final course designs. Included within these case studies are explanations from practicing LXDs of how they selected and used each representation type and the advantages and disadvantages that they afforded. The immersive learning activity precedes an applied project where learners are asked to outline a learning experience from start to finish, including needs analysis, learner personas, learning outcomes, and identification of a learning theory that underpins it.

Immersive Learning Pre-Activity

MOOC learners are asked to read the materials before participating in the immersive learning experience. MOOC learners are reminded that XR-activities in the course are optional, and that alternative means of engagement will be provided. To prepare for the immersive learning component of the course, MOOC learners are provided with a set of pre-read materials: a textual summary of the overarching goals of the fictionalized course and status of the course design, course learning outcomes, weekly learning outcomes, and several sketches, prototypes, and diagrams that evidence

current design decisions. For MOOC learners who have reviewed the previous XR-enhanced materials, the course design context will be familiar. For those who have not, the pre-read materials should be sufficient to set the context for the immersive activity that follows.

Immersive Learning Experience

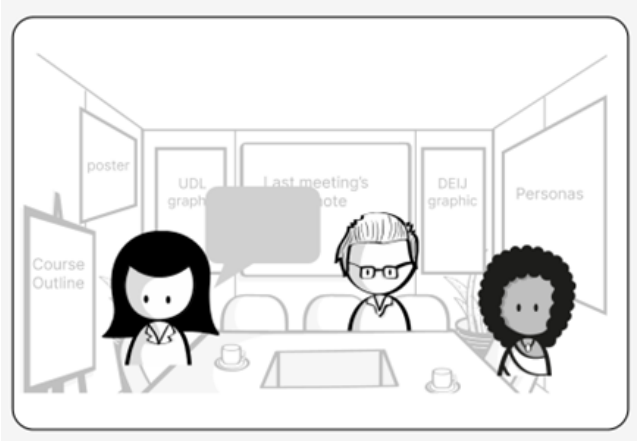
The primary focus of this experiential learning opportunity is on conceptual tools for ideation and brainstorming, and visualizing course structure. A secondary focus is on presenting new ideas to project stakeholders, a critical skill for LXDs. The 360° interactive experience is organized in two parts: (1) MOOC learners observe an LXD practice a “pitch” to stakeholders in front of colleagues. MOOC learners are given the opportunity to respond to multiple choice questions related to peer feedback they would most strongly support to improve the presentation (see Figure 3); (2) MOOC learners observe LXD deliver a revised, improved “pitch” in front of stakeholders (i.e., project team). The LXD uses a visual representation (diagram of course structure) to aid in sharing ideas, and the faculty member responds positively to the presentation. MOOC learners are given the opportunity to respond to multiple choice questions with elaborative feedback about the efficacy of the presentation, including the use of visual representations of course structure.

Immersive Learning Post-Activity

This post-activity corresponds with two aspects of the DIDA model, including: (1) Observation and Modelling, and (2) Reflection and Exploration. In the MOOC platform, learners are asked to reflect on their recent immersive experience using a digital workbook tool connected to the online learning platform. Learners are asked to respond to the following prompts: (1) Discuss what you learned from observing the practice and polished presentations. (2) Comment on the “fit for purpose” of the conceptual tools chosen for this presentation task. (3) Use resources available to you (websites, colleagues) to explore a range of ways to visualize course design.

Figure 3

Sketch Showing LXD Practicing Presentation in Front of Colleagues Showing a Preliminary Idea Using Course Visualization Approaches. Colleagues Provide Feedback.



Scenario 3: Making a Recommendation to a Project Stakeholder

Course 3 Overview

The third course in the Learning Experience Design MOOC series, called Assessment Design, Content Development, and Evaluation Design, focuses on design processes that LXDs use to ensure that course elements are developed to align with targeted learning outcomes. The XR-enhanced activity is situated within Week 4 of the course, which focuses on evaluation. The driving question for this section of the course is: “How do we know that our course design meets its intended goals and objectives?”

Week 4 Overview

In this week of the course, MOOC learners explore the topic of evaluation and recognize its importance within the overall design process, including ensuring goal alignment and improving the overall learning experience. They recognize that evaluation approaches and practices can be used to determine whether the designed instruction allows learners to transfer skills and knowledge learned to long-term changes in behavior and skills required for the target context (Calhoun et al., 2021). The course explains the role of data collection and analysis in the evaluation process. Three types of evaluation are discussed: formative, summative, and confirmative. Several evaluation frameworks are presented including the Quality Learning and Teaching (QLT) Rubric, the OSCQR Rubric, and Quality Matters Rubric. The immersive learning activity follows a multiple-choice quiz that assesses MOOC learners' comprehension of the week's learning goals.

Immersive Learning Pre-Activity

MOOC learners are asked to read the materials before participating in the immersive learning experience. To prepare for the immersive learning component of the course, MOOC learners are provided with a set of pre-read materials: a textual summary of the current status of the fictionalized course design, course learning outcomes, weekly learning outcomes, and a finalized course outline. The previous week's design meeting notes summarize 1-2 evaluation frameworks that are being considered. As with the other pre-activity materials, a biography of the faculty member who is leading the course design effort is included.

Immersive Learning Experience

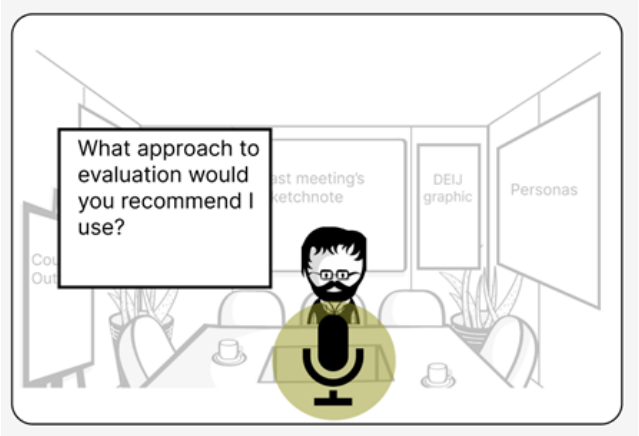
The MOOC learner is positioned across the table from the faculty client and listens carefully as he shares with them evaluation goals for the course he is developing. The faculty client then looks directly at the MOOC learner and says, "What approach to evaluation or framework would you recommend I use?" (Figure 4). The 360° video pauses and the MOOC learner is then shown a modified prompt: "What evaluation framework would you recommend and why?". A spinning microphone icon appears in a sightline with the following audio instructions: "Click the microphone icon to record your response. You will have the option to playback your response and re-record your response if you choose." Once the MOOC learner clicks the microphone icon, their response is recorded. They press the microphone to stop recording. The learner is given four options: listen to their response, record again, restart experience, and exit experience. Listening to their response again gives the MOOC learner the opportunity to prepare for the reflection questions that will follow outside of the activity. No further interactions with the faculty member take place.

Immersive Learning Post-Activity

This post-activity corresponds with two aspects of the DIDA model, including: (1) Contextualized Practice and (2) Reflection and Exploration. In the MOOC platform, MOOC learners are asked to reflect on their recent immersive experience using a digital workbook tool connected to the online learning platform. They are asked the following questions: (1) What did you learn from this experience? (2) What went well? (3) What would you do differently? (4) What aspects of evaluation would you like to learn more about to be more effective in an LXD role?

Figure 4

Sketch Showing Faculty Client Sitting Across from MOOC Learner. After Explaining Goals for Evaluation, the Faculty Member Asks, "What Approach to Evaluation Would You Recommend I use?" MOOC Learners Can Record a Response by Clicking on the Microphone.



Discussion

The three immersive experiences map roughly to the four-stage DIDA model, with some aspects of the model more clearly evident in the XR-enhanced experiences than others.

Stage 1: Observation and Modelling. This stage of the DIDA model was clearly evident across two of the XR-enhanced activities. In scenarios 1 and 2, there are extended opportunities for MOOC learners to observe an experienced LXD in action. In scenario 1, MOOC learners observe an expert LXD lead a discussion about designing for all learners and technology integration. In scenario 2, MOOC learners observe an expert LXD give a presentation of a new idea to a group of stakeholders. As with the Communities of Practice model advanced by Lave and Wenger (1991) where novices start at the periphery as observers before moving to the center of expert activity, MOOC learners have multiple opportunities to observe a complex design situation and the nuanced behaviors of stakeholders within it (Chang & Kuwata, 2020). Through careful scripting, the MOOC learner can observe the way the expert LXD asks questions, summarizes information, and drives progress. In this sense the LXD is able to model expert behavior within an immersive environment.

Stage 2: Tasks with Coaching. This stage of the DIDA model was not evident in the XR-enhanced experiences, namely because of the limitations of technology. Most LXD design tasks are difficult to simulate or enact in an XR environment, so the range of tasks possible are already limited. In terms of coaching, MOOC learners could practice providing a response within two of the scenarios, but the technology did not allow for real-time, external feedback. However, these limitations were addressed somewhat in the post-activity design, when MOOC learners are asked to identify a learning technology that could address the requirements surfaced during scenario 1's design meeting. MOOC learners are required to locate a real-world learning tool to address the client's needs in the scenario. While they are not likely to receive feedback on their choice at the level of coaching, they still have the opportunity to receive input from their peers.

Stage 3: Contextualized Practice. This stage of the DIDA model was strongly evident in scenario 3, where the MOOC learner is asked to provide a direct response to a faculty client after listening to their goals for the course. In this scenario, the MOOC learner is meeting 1:1 with the faculty client, showing that they are moving from novice-like tasks toward independent and applied tasks. They are presented with a detailed account of the faculty member's goals for course evaluation and are then asked to make a recommendation for a suitable evaluation framework based on their knowledge and experience. MOOC learners are required to engage in authentic problem-solving in a complex design situation.

Stage 4: Reflection and Exploration. This stage of the DIDA model was evident through the post-activities of scenarios 1, 2, and 3, and in the XR-enhanced portions of scenarios 2 and 3. Following each immersive learning activity, MOOC learners were given a chance to reflect on their experience in a digital workbook tool. Most questions were structured to provide opportunities for reflection on what they observed or on how they performed. Some questions were designed to prompt further exploration, following the DIDA model. In scenarios 2 and 3, MOOC learners were given changes to

reflect within the XR-environments themselves. In scenario 3, MOOC learners are encouraged to listen to their recorded response, reflect on its usefulness, and then decide whether to record again. From a technology perspective it is quite possible to provide feedback opportunities, with the ability to pause, add textual prompts, multiple choice questions, and playback options.

While this is an exploratory step at using immersive media to expand the range of educational experiences available to learners, we feel that it is helping us think about and develop ways that we can start to integrate experiential educational opportunities within online learning to impact, in our specific case, LXD education, but professional education more broadly. If we adopt a situated learning perspective and aim for enculturating learners within a new discipline, then we see that immersive media can have promise for providing these situated experiences in virtual settings to give learners some measure of experience that can support them as they learn to be LXDs, all within a MOOC setting that also supports learning about LXD.

Our initial work here is helping us start to see where immersive media becomes a valuable tool and also areas where it needs to be complemented by other tools in order to fully support learners. The DIDA framework is helping us see where immersive media can be a strong support to help learners observe and model new tasks and situations, and to help learners reflect on the activity they are immersed in to guide their further exploration into their professional activity. We see that immersive media can also support contextualized practice, where we can use the media to place learners in a professional context to help them engage with the people, resources, and activities that they are learning. But other times, immersive media alone may not be enough, as in providing tasks with coaching where the media might provide a setting for learners to work in, but the media would need additional support to embed coaching within that context. For example, integrating XR with artificial intelligence can provide some manner of coaching, much in the way that intelligent tutoring systems can scaffold learners with feedback when they are using them to engage in disciplinary activity (e.g., algebra). Furthermore, while we are experimenting with 360° video, we can also explore whether more immersive media that leans more towards virtual and augmented reality can provide realistic with more degrees of freedom for learner activity, all to see whether such media is indeed useful to facilitate “learning to be.”

Our approach outlined here is still exploratory work, and as such, has some conceptual limitations. This is a small study as we reflect on our own designs, and the next strand of work could involve a systematic evaluation into the utility of the immersive media to gauge our design, and to see how to refine these immersive media designs in a design-based research approach (Cobb et al., 2003). So there is still future work to continue to fully evaluate the impact of immersive media in these contexts. However, our design work at this point is helping us to outline specific cases and new directions for using immersive media to take us in a cognitive apprenticeship/situated learning direction at a larger scale. If successful, we hope to expand the scope of experiential education beyond the limited range of in-person internships to broader experiences that can benefit more learners.

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