Learning LXD Through LXD: Applying Conceição and Howles' Framework for Designing Online Learning Experiences

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Learning experience design (LXD) builds upon instructional design by incorporating user experience design, user-centered design, and design thinking. While instructional design focuses on creating instruction that meet specific learning objectives, LXD takes a more holistic approach by considering learners' needs, goals, and motivations to create engaging e-courses. Despite e-learning's growing popularity, many online courses employ outdated approaches and technologies that fail to engage modern learners. Using a cognitive apprenticeship approach and Conceição and

Howles' (2021) Integrated Framework for Designing the Online Learning Experience, this design case chronicles the redesign of an online course whereby faculty and students experience LXD through LXD.

Introduction

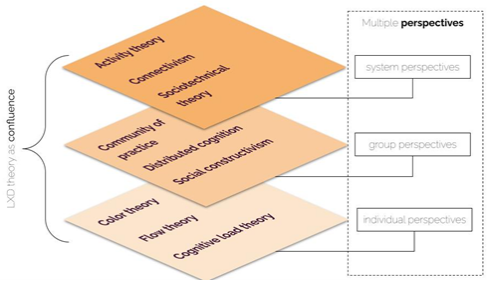
While the term *learning experience design* (LXD) may seem like a relatively new concept, it has its roots in the field of instructional design, which has been around for several decades. Niels Floor is credited with coining the term "learning experience design" in 2007, and his characterization of LXD as "a combination of two domains: design and learning" emphasizes the importance of applying design principles to the development of effective and engaging learning experiences (2017, para. 3). Floor defined learning experience design as "the process of creating learning experiences that enable the learner to achieve the desired learning outcome in a human centered and goal-oriented way" (2016, para 1). Schmidt and Huang (2021) expanded on this definition, describing LXD as "a human-centric, theoretically-grounded, and socio-culturally sensitive approach to learning design, intended to propel learners towards identified learning goals" (p. 141), while drawing insights from user experience design methods.

Weigel (2015) observed the diverse interdisciplinary nature of learning experience design, highlighting that LXD, influenced by the learning sciences, pedagogy theory, and neuroscience, also took inspiration from UX to enhance the learning experience. The term "user experience" coined by Donald Norman in 1993 refers to all aspects of a person's experience when interacting with a product or service (Lyonnais, 2017). While both LXD and UX follow similar practices, such as starting with broad concepts and refining iteratively, engaging in discovery and brainstorming, conducting research on user preferences and experiences, and testing ideas to align with user needs, they diverge in their focus on the user, specifically the learner, whose unique characteristics influence the content and ideal design approach for their individual learning experiences. Jahnke et al. (2022) provide further clarification on the distinction between users and learners. They emphasize that LXD specifically focuses on learners who engage in distinct learning tasks and employ specialized learning technologies, in contrast to the broader scope of encompassing any user, any task, and any technology that is typically associated with UX. In light of the expanding field of LXD, Tawfik et al. (2021) noted the absence of a unified theory in this area. To address this gap, Jahnke et al. (2022) proposed a comprehensive theory of LXD that integrated multiple disciplines, including user experience, learning design, and educational technology, and encompassed three key dimensions: social/sociocultural, technological, and pedagogical. They observed that learning experience design represents the convergence of various theoretical perspectives. Figure 1 by Jahnke et al. (2022), provides a visual

representation of the converging perspectives, including theories referenced in user-centered design (UCD), human-computer interaction (HCI), usability research, cognitive load theory, the sociotechnical disciplines, and theories of change. The diagram categorizes the various theoretical perspectives into three planes: system, group, and individual. The system plane encompasses theories such as activity theory, connectivism, and sociotechnical theory. The group plane includes community of practice, distributed cognition, and social constructivism. The individual plane incorporates theories related to color, flow, and cognitive load.

Figure 1

Learning Experience Design is a Confluence of Multiple Theoretical Perspectives by Jahnke et al. (2022)



Jahnke et al.'s (2022) theory underscored the significance of social and sociocultural factors in learning, such as sociality, social presence, and cultural influences on communication and collaboration, while also considering the technical aspects of learners' interactions with digital technologies and the pedagogical aspects of digital learning, including the learning space, goals, activities, assessment, and learner controls. This inclusive approach provides a robust framework for understanding and describing the individual and perceptual aspects of technology-mediated learning, ultimately guiding the practice of learning experience design.

Despite these developments and the rapid growth and popularity of online education in recent years, awareness and acceptance of learning experience design principles by faculty and instructional designers in higher education has been slow. Even with improvements in digital technologies and instructional practices, many of today's online courses still lack effective design, which can lead to disengagement, poor learning outcomes, and a lack of motivation among learners (Lodge et al., 2022). On the plus side, "the commoditization of online learning" as Kilgore (2016) described it, caused "colleges and universities to think differently about how they construct digital courses" (para. 3). As Alvarado observed (2020), "digital learning can meet the demands of today's students, but only if it is created with best practices in mind" (Conclusion, para. 1).

Using Floor's (2016) characterization of learning experience design as a combination of both *design* and *learning,* this design case will, (1) describe the redesign of a fully online educational technology graduate course to create an environment where faculty and students work together to learn about learning experience design *through* learning experience design; and (2) document how the students in the re-designed course applied

LXD principles through a *cognitive apprenticeship* approach to design their own instructional design learning product using evidence-based LXD principles.

An Integrated Framework for Designing the Online Learning Experience

There are several notable conceptual models available to LXD designers, including Reigeluth and An's (2021) *Holistic 4D model*, the *Design Thinking* approach popularized by IDEO and the d.school at Stanford University (Dam, 2023), and Conceição and Howles' (2021) *Integrated Framework for Designing the Online Learning Experience*.

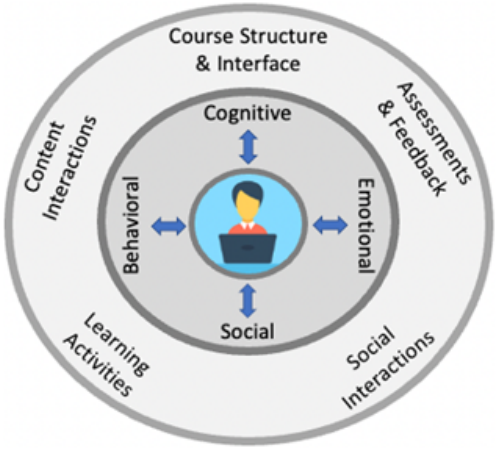
Reigeluth and An's comprehensive 4D model, encompassing the stages of *define, design, develop,* and *deploy*, provides a valuable framework for enhancing the instructional design process's effectiveness and efficiency. Their book, *Merging the Instructional Design Process with Learner-Centered Theory: The Holistic 4D Model* (2020), along with its accompanying website, offers templates and examples to support instructional designers, catering to both emerging and experienced practitioners.

Similarly, the *design thinking* approach, championed by David and Tom Kelley and Tim Brown at IDEO (Szczepanska, 2019), emphasizes user collaboration to address complex problems in human-centric ways. With its five stages of *empathize, define, ideate, prototype, and test*, it is a solution-based approach that emphasizes collaboration between designers and users to address complex or undefined problems by reframing them in human-centric ways and prioritizing the users' needs and goals (Dam, 2023).

However, for this design case, Conceição and Howles' (2021) *Integrated Framework for Designing the Online Learning Experienc*e was selected due to its multidisciplinary nature, drawing from user experience design, human factors design, human-centered design, and design thinking. Their book, *Designing the Online Learning Experience: Evidence-based Principles and Strategies* (2021), provides a roadmap for enhancing each phase of the learning experience, offering practical examples and guidance to improve learner interactions and overall learner experience. They assert that when designing online courses, instructors and course developers need to “cultivate a learner-centered mindset, always being sensitive to the cognitive, emotional, behavioral, and social learning needs of learners” (p. 33). Their integrated framework (see Figure 2) provides a conceptual model “for achieving learner-centered design goals, resulting in the design of deeper, more meaningful and engaging learning experiences for online learners” (p. 23).

Figure 2

Visual Representation Adapted from Conceição and Howles’ Integrated Framework for Designing the Online Learning Experience (2021, p. 22)



With the learner situated in the innermost circle of the framework, four interrelated learning dimensions, fundamental to the learning needs of learners, are positioned in the middle circle. Conceição and Howles (2021) describe them as:

1. **Cognitive Dimension**. This dimension relates to the "mental activities and processes" (p. 7) needed to understand and process new information. It includes "perception, memory, classification, reasoning, critical thinking, and problem solving" (p. 7). Incorporating the cognitive dimension into the learning experience involves being attuned to the cognitive processes and demands imposed on learners during the online learning experiences.

2. **Emotional Dimension**. This dimension is "associated with learner motivation, and encompasses positive emotions" (p. 8), like delight, curiosity, interest, and enthusiasm, as well as adverse feelings such as confusion, frustration, and disillusionment. According to Conceição and Howles (2021), "online learners want their learning experiences to be enjoyable, engaging and interesting" (p. 27). Therefore, incorporating the emotional dimension into the learning experience involves being cognizant of the learners' "emotional journey" and "incorporating motivational elements" throughout the learning experience (p. 28).

3. **Behavioral Dimension**. This dimension focuses on "observable learner actions… or what learners 'do' in the online environment…" to engage with "…content, people, and course-related software" (p. 28). It involves cognitive actions like studying, practicing, participating in discussions, and completing assignments, as well as physical activities that involve interacting with the learning management system, such as opening pages, and submitting documents. To incorporate the behavioral dimension in learning involves designing interfaces and activities that are easy to use and learn.

4. **Social Dimension**. This dimension focuses on the relationships and sense of community learners experience in the online learning environment. The social dimension of learning involves learner interactions with peers, as well as with

> instructors. Lehman and Conceição (2010) recommend that incorporating the social dimension in learning involves creating a "perceptual experience" or sense of "being there" and "being together" with members of the online learning community (p. 7).

Conceição and Howles (2021) propose that each of the four interrelated dimensions come "into play in various degrees through learner interactions within the online environment" (p. 23) as learners encounter the following five essential design aspects of online learning environments:

1. **Course Structure and Interface**. *Course structure* refers to the way in which the course content is organized and presented to the learners. This typically involves breaking the course down into smaller units, such as lessons or modules, and organizing them in a logical sequence that helps learners build their understanding of the subject matter. The *course interface* refers to the visual and interactive elements learners use to engage with the course content.

2. **Content Interactions**. According to Conceição and Howles (2021), *content interactions* refer to the ways in which course content is created, organized, structured, and presented to learners. This can include a wide range of activities, such as creating videos, designing interactive exercises, developing assessments, and organizing course materials in a way that is easy for learners to navigate.

3. **Learning Activities**. *Learning activities* are the exercises and experiences learners engage in to achieve their learning objectives. According to the U.S. Department of Education (2017), "technology can be a powerful tool to reimagine learning experiences" (p. 9). For example, multimedia resources like videos and animations can activate learners' cognitive and emotional dimensions of learning, while interactive exercises and simulations can promote the behavioral dimension. Similarly, collaborative online activities like group projects and discussions can engage learners in the social dimension of learning.

4. **Social Interactions**. *Social interactions* refer to the communication and collaboration between learners, instructors, and other members of the learning community. They may involve modeling, coaching, and scaffolding to support learning and engagement of learners in discussions and collaborations with fellow classmates (Conceição & Howles, 2021). According to Rajabalee and Santally (2020), "activities that encouraged online and social presence, enhance and build learner confidence and increase performance" (2.5 Student Performances, Satisfaction, and Their Engagement in Online courses, para. 1).

5. **Assessments and Feedback**. *Assessments* are an important part of the online learning experience as they provide learners with opportunities to demonstrate their learning and receive feedback on their progress. *Feedback* is an integral part of the assessment process, as Conceição and Howles (2021) observe, it helps learners understand their strengths and areas for improvement (p. 122). "Assessments not only determine if students are meeting the learning objectives, but they also can engage students as they learn" (Major & Miller, 2020, Redesigning Assessments for Course Quality, para. 1).

Using the integrated framework as a guide, instructors and instructional designers can design the course structure and interface, content interactions, learning activities, social interactions, and assessments and feedback with the learners' needs and preferences in mind. The next section describes how a fully online graduate course was redesigned based on the integrated framework.

Redesigning an Online Course Based on the Integrated LXD Framework

Designing effective learning experiences for online environments "entails taking advantage of new digital tools and pedagogies and using design thinking to shift the focus of online course content structures from information-centric to more learner-centric" (Conceição & Howles, 2021, p. 42). Using their integrated framework for designing the online learning experience, a fully online graduate course was fundamentally redesigned to incorporate LXD principles to demonstrate how a well-structured, engaging, and effective learning experience looks and feels.

By experiencing such a course, it is hoped that current and future learning experience designers will gain a deeper understanding of the importance of employing LXD principles in course design and apply those principles to their own design efforts. In the revamped course, students used an evidence-based rationale for: selecting, creating, and utilizing technologies for e-learning; identifying a real-world instructional need or opportunity in their work environment; and building an online course using a free version of the Canvas learning management system. Throughout the course students experienced and practiced LXD through LXD. The following sections describe how each essential design aspect of the online learning environment was reimagined.

Designing the Course Structure and Interface

Chang and Tung (2008) suggest that online learner motivation or behavioral intention to use an online learning space is influenced by "perceived usefulness, perceived ease of use" and "perceived system quality" or design (p. 71). Based on this observation, Conceição and Howles (2021) recommend several design considerations when creating the course structure and interface:

- **Interface Design**. The interface design should convey quality to learners. This can include using high-quality graphics, clear and consistent formatting, and intuitive navigation.
- **Content Organization**. The content should be organized in ways that appear relevant and useful to learners. This includes using clear headings, subheadings, and bullet points to help learners quickly identify and access the information they need.
- **Interactions**. The interactions should be user-friendly and simple to use. This includes designing activities that are easy to understand and complete, providing clear

instructions and feedback, and using technology that is reliable and accessible.

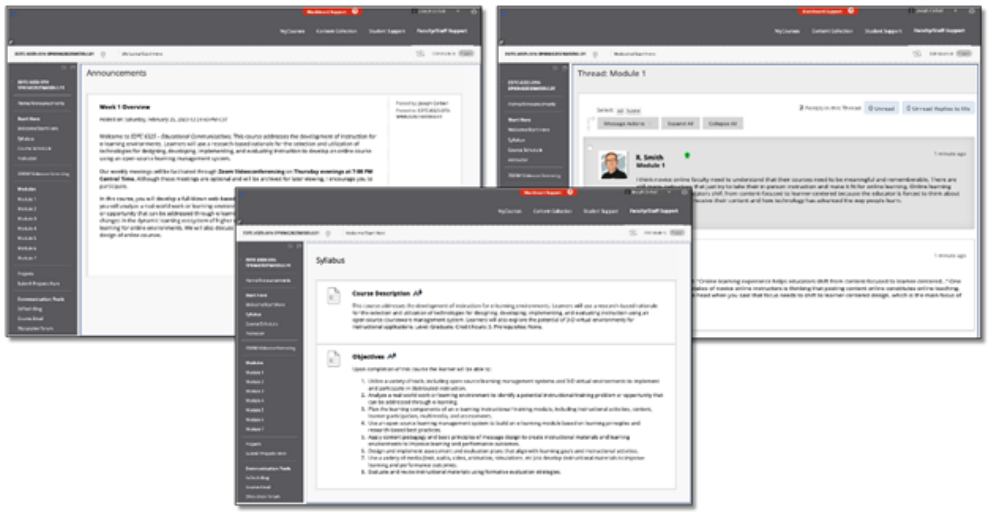
The first step in the redesign project was to consider the LMS interface from the learners' perspective. Learning management systems are usually effective at the "*administration* of learning" (Kellen, 2017, p. 55), which, according to Conceição and Howles (2021), facilitates "institutional and instructor course management needs" (p. 6), but can "impose limitations for the design of learning" (p. 4). A student in the redesigned course agreed, noting in a course discussion post,

> *the LMS is not very user friendly. Developers should learn from and adopt aspects of social media to improve their appearance and function. Most learning management systems have the vibe from the early 90s web sites that relied on too much text.*

This criticism of the LMS by the student quoted above is not too far off from the current reality, and ironically, is echoed by Hampson (2014) nearly 10 years ago, who shared, "one aspect of online higher education has remained virtually unchanged since the 1990s: the way that traditional colleges and universities go about designing, creating, and financing in-house online course development" (para. 3). As shown in Figure 3, not much has changed in LMS design to improve the look and feel of the user interface from the learners' point of view.

Figure 3

Screenshots of Typical LMS Content Pages as Seen by Students

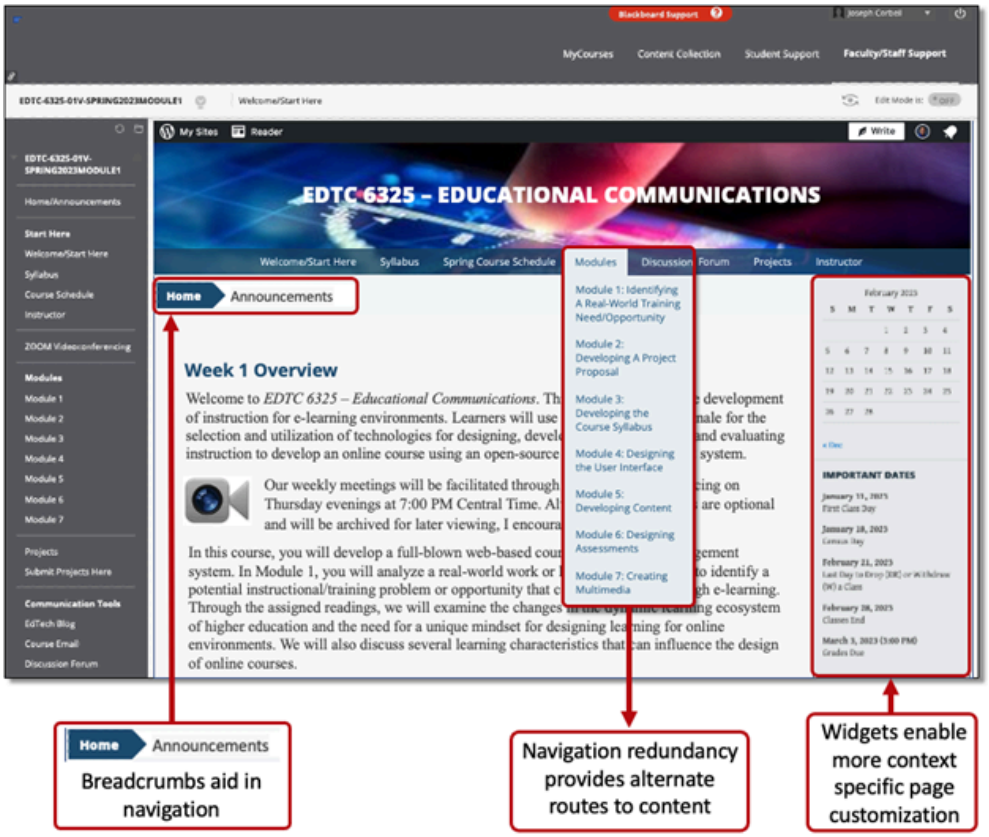


To address the look and feel of the course, we took a cue from the student's recommendation of adopting aspects of social media to improve the appearance and function of the user interface. By *wrapping* the LMS around a WordPress content management system, we were able to create an interface that was familiar, usable, and satisfying to work with.

We started by transferring all the course content into the WordPress content management system. Using professional-looking templates, custom widgets, and high-quality graphics, we were able to create a user interface that was aesthetically pleasing, used clear and consistent formatting, and provided intuitive navigation (see Figure 4). The level of customization afforded by the blog enabled us to do things not currently possible in most LMS platforms, such as integrating context-specific widgets into pages, embedding multiple media types from a larger library of sources, and having more precise control over the look and feel of the content.

Figure 4

A Screenshot of a WordPress-Enhanced LMS Announcements Page Illustrating Features That Aid in Usability, Navigability, and Customization



To embed the Wordpress pages into the LMS, we created a series of course menu items for blank pages that would be used to hold the content. We used an HTML <iframe> tag to embed the pages into blank LMS pages. The resulting pages were designed to be beautiful, user-friendly, accessible, and easy to read, which were intended to fulfill Conceição and Howles' (2021) conveyance of a sense of course quality to learners. As a faculty colleague observed in a peer evaluation of the revised course,

> *This is one of the most organized, well designed, and integrated courses I have ever seen. The structure and friendly design invites anyone to navigate and engage in a real online learning experience. The integration of external websites and online applications is so smooth that one can barely realize they are not part of the LMS (Faculty Annual Peer Evaluation of Online Course, August 24, 2022).*

Although the conspicuous new look and feel of the course became quickly obvious, most students were not aware that they were interacting with content that resided outside of the LMS. As far as they were concerned, they were interacting only with the LMS. Designing the course experience as a single integrated system helps to provide students seamless access to all course content and tools.

Content Interactions

Conceição and Howles (2021) recommend designing *learner-content interactions* that consider the affordances of digital media and technologies to positively impact how students interact with the materials. They recommend several design considerations when creating learner-content interactions:

- **Use Pedagogical Wrappers**. Use pedagogical wrappers as activities to prepare learners for the interactions they are about to engage in. According to Conceição and Howles (2021), pedagogical wrappers explain the "rationale, relevance, and learning goals" (p. 74).
- **Create Rich Media Content Interactions**. To create more meaningful learner interactions with the content, integrate "hybridized" media content (i.e., blogs, wikis, digital notice boards, video discussion boards, etc.) that "interweaves multiple media formats and instructional methods" (Conceição & Howles, 2021, p. 76).
- **Increase Engagement and Motivation Through Emotional Design**. To "arouse and sustain learner attention" and motivation, Conceição and Howles (2021) recommend "activating the emotional dimension to improve cognitive engagement" (p. 77). They observe that motivation is usually left solely up to the learners, adding however, that "in learning experience design, it is also the instructor's responsibility" (p. 77).
- **Add Context to Content**. Add context to content by making real-world connections through stories, case studies, and scenarios learners can relate to. Engage all four learning dimensions (cognitive, emotional, behavioral, and social) by designing opportunities for learners to interact with the content, allowing them to draw on their own knowledge and experiences.

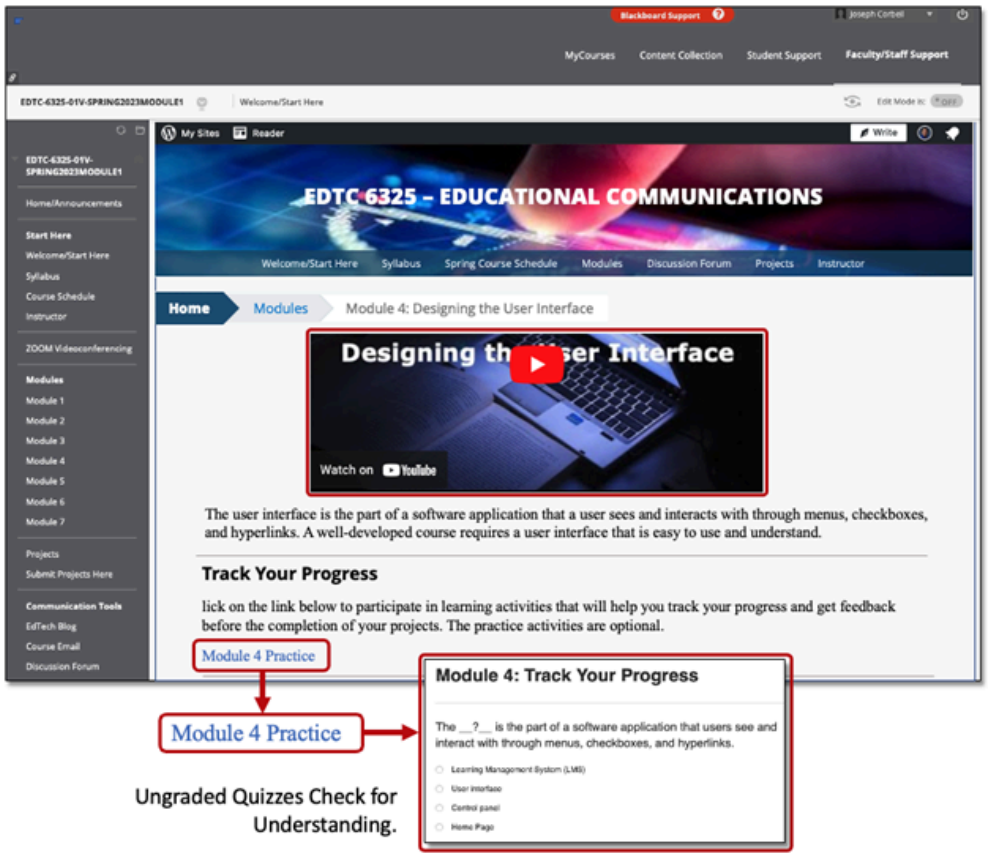
According to Conceição and Howles (2021), the integration of these techniques necessitates moving away from simply presenting course material to developing strong interactions between learners and content that prioritize the learners' viewpoint in a pedagogically sound manner. Therefore, the next step in the course redesign involved evaluating existing course content to identify where pedagogical wrappers, rich media content interactions, and content contextualization would be appropriate. Through it all, we sought to build learner-content interactions that "aroused and sustained" (Conceição & Howles, 2021, p. 77) learner attention.

We started with the weekly announcements. They are the first point of contact instructors have with students at the start of the week. Taking into consideration the emotional dimension of learning (Conceição & Howles, 2021), we began by presenting an aesthetically pleasing *Home/Announcements* page, which is the first thing people see when they log in to the course. Figure 4 above presents a screenshot of the Home/Announcements page. The tone of each message is welcoming and uplifting. The weekly announcement serves as a priming activity, or pedagogical wrapper, to prepare the learners cognitively and emotionally for the activities and interactions they are about to engage in during the week. A short video with an overview of the weekly topics and major assignments was recorded for each week. Each announcement ended with a summary of the weekly activities, due dates, and reminders of upcoming projects.

In a similar way, the weekly *Module* and *Project* pages were revisited and revised to enhance the learner-content interactions (see Figure 5). Each assignment started with an introduction that included a pedagogical wrapper to explain the goal, rationale, and relevance. A short video went over the project deliverables and provided examples of exemplary products. Non-graded practice quizzes were embedded into the module pages as a self-assessment of knowledge "to engage learners with the content and encourage deep learning" (Conceição & Howles, 2021, p. 131).

Figure 5

A Screenshot of a WordPress-Enhanced Modules Page Illustrating Some of the Interactive Elements to Facilitate Content-Interactions



Hybridized media content, as recommended by Conceição and Howles (2021), in the form of *course-specific* discussions were facilitated through a blog-enhanced class discussion forum that focused on learning experience design issues and how learners would address them in their own course design. *Discipline-specific* discussions were facilitated through *The EdTech Blog*, a forum where graduate students in the EdTech master's and doctoral specialization programs discussed emerging issues impacting the Educational Technology field. Using blogs to facilitate these conversations enabled learners to interact with other learners inside and outside of the online classroom.

As a primer for the weekly synchronous sessions, each week, we posted a fun *Pre-Class Padlet Activity* to the meeting reminders to get students to start thinking about and share their thoughts about interesting things happening in the EdTech world. Padlet is an example of a free hybridized social media app for creating private notice boards for sharing text, audio, and video messages within groups. Sometimes the activities were fun, like students sharing photos of themselves doing something goofy or amazing during the first week of class or describing their remote/lockdown business attire for synchronous, web-based meetings using Zoom. Other times, students were asked to share project-related media, such as screenshots of the home page of the course they were developing. Then, during the first few minutes of the weekly synchronous sessions, we shared and discussed our

submissions to the *Pre-Class Padlet*. Students seemed to enjoy these social, mostly non-academic activities to get to know their fellow classmates, and instructor better. As one student observed in a course evaluation comment, “I really enjoyed the weekly Padlet activities. They’re mostly silly but they also make a point, like when we were making fun of our remote work attire during the pandemic” (Course Evaluation Summary, Summer 2022).

Learning Activities

Learning activities refer to the processes through which learners create new knowledge, develop abilities, practice more advanced cognitive thinking, and establish links between what they learn and their “academic, professional, and personal lives” (p. 85). When designing learning activities, Conceição and Howles (2021, pp. 96-100) recommend:

- **Apply the 4Cs of empathetic design**. To more fully engage learners in the learning activities, apply the 4Cs of empathetic design: “(1) caring about the learner’s experience, (2) curiosity about how learners are thinking, (3) conversations with learners to better understand their course experiences, and (4) changing or correcting deficiencies in the course design” (p. 11-12).
- **Use digital technologies to create integrated and impactful learning activities**. Supplement the LMS tools with a variety of third-party digital technologies including hybridized media to enable learners to “interact with content, instructors, and other learners” more fully (p. 98).
- **Integrate multiple learning tasks into inclusive learning activities**. Combine multiple tasks that entail learning, applying, and connecting new knowledge and experiences to learners’ academic, professional, and personal lives.
- **Use pedagogical wrappers to prepare learners cognitively and emotionally**. Use pedagogical wrappers to set the stage for the learning that is about to begin, provide context and relevance, provide closure to the activity, and connect the learning to the course and module learning goal and objectives.

Keeping these recommendations in mind, in the redesigned course, there were three main categories of learning activities: (1) acquiring new knowledge, (2) applying new knowledge, and (3) connecting new knowledge and experiences to learners’ academic, professional, and personal lives.

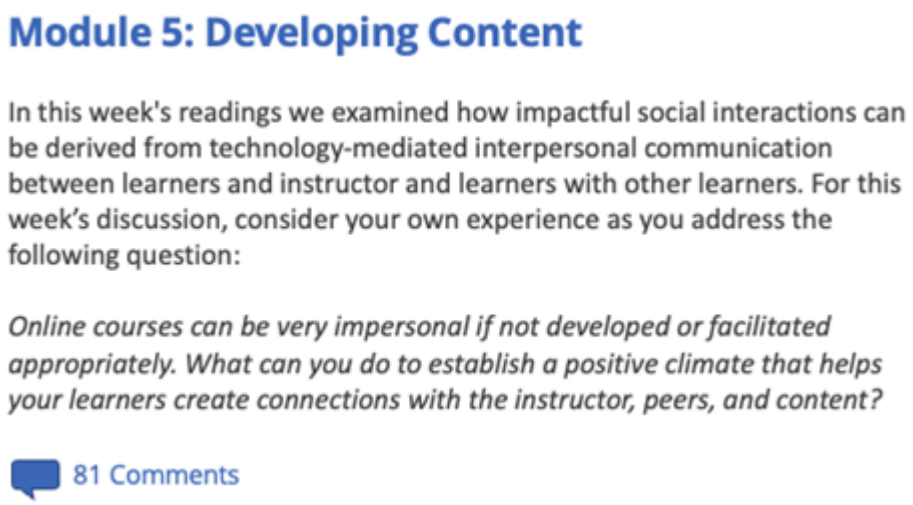
Learning activities included a variety of self-directed and collaborative/social learning engagements. The self-directed activities included reading the assigned texts, watching short videos, and reviewing project instructions, tutorials, and rubrics. In the redesigned course we were careful to make the activities integrated and inclusive. Pedagogical wrappers were used to introduce the activities, provide context, and relevance, and to help learners see how they fit into the big picture. The language and tone were adjusted to encourage students to connect cognitively and emotionally with the learning tasks.

Applying and *connecting activities* transpired through the weekly synchronous and asynchronous discussions and were designed to engage learners in applying and connecting new knowledge to prior knowledge and experiences while discussing their e-learning design projects with classmates and the instructor. As illustrated in Figure 6, the questions began with a pedagogical wrapper that situated the question within the context of

the module and connectedthe conversation to the culminating project being developed in the course. Empathetic design was incorporated into the question by enabling students to draw on prior online learning experiences to explain how they will make their online courses better.

Figure 6

A Screenshot of a Revised Discussion Question Tying New Knowledge to Existing Knowledge and Experience



The synchronous discussions continued the forum conversations via weekly, hour-long videoconferencing sessions. Though optional, participation in these sessions was usually high, indicating that students found practical value in them. Instead of lecturing, a typical session involved a short discussion of the project deliverables for the upcoming phase of a project, an explanation of the instructor's expectations for each deliverable, and tips on how students can ace the project. The remainder of the time was dedicated to students taking turns sharing drafts of their work. Acting as a moderator, the instructor asked guiding questions to help students focus on certain aspects of the project. After examining several project drafts, students were able to visualize, through the formative feedback given by the class, the kinds of modifications they will need to make on their own projects. Though the weekly sessions were planned and targeted specific objectives, the atmosphere was casual and friendly, and the feedback was always positive to encourage students to take chances by sharing their work with others.

The third *applying* and *connecting activity* was the e-learning design project itself. As mentioned earlier, students identified a real-world instructional need or opportunity in their own work environment and developed a short course in a popular learning management system.

The e-learning design project was broken up into 6 parts:

- Part 1: Developing the Project Proposal
- Part 2: Developing the Course Syllabus
- Part 3: Designing the User Interface
- Part 4: Developing Content (Overviews, Assignments, and Discussions)
- Part 5: Designing Assessments
- Part 6: Creating Multimedia

For this project, students were tasked with building an online course that embodied the best of instructional design and learning experience design principles and practices. They were encouraged to draw on their experiences with the content and discussions of the re-designed course, as well as their own experiences as online learners. Through the e-learning design project, students were able to make connections between the learning, applying, and connecting activities.

Social Interactions

When designing learning activities, Conceição and Howles (2021, pp. 112-118) recommend:

- Setting the stage for a positive climate
- Creating emotional connections
- Using personalized communication
- Promoting deep learning through social engagement
- Building learner involvement into the flow of the course

Keeping these recommendations in mind, we set out to design social interactions that set the stage for a positive climate. We started with the user interface for the discussion forum, perhaps one of the most criticized features of most LMS platforms. As Rachel Koblic (2020), a blogger who talks about online learning, shared in her experiences as a student with discussion boards:

> *The design of the interface is somewhat confusing, making it easy to reply to the wrong thread. The mobile app is impossible to navigate once there is any significant number of posts. You can't @ mention anyone, which seems to be a common feature in other communication technologies these days. The notifications you get via email or on your phone are so decontextualized that they are rendered useless. There are examples of technologies out there that foster dynamic and engaging conversation—can online education discussion boards move in that direction, please? (para. 9)*

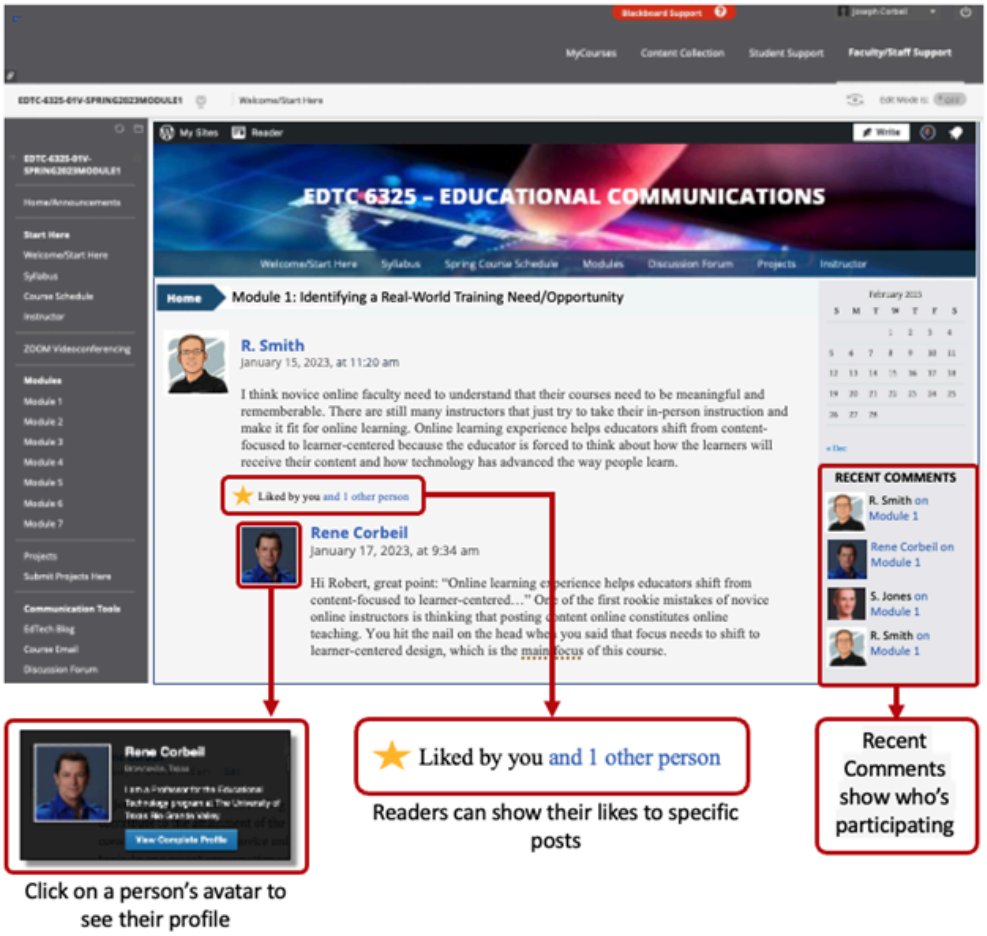
Her sentiments were recently echoed by a student in the re-designed course who reflected on LMS discussion forums in a recent class discussion, noting

> *My wish list for the LMS would be better discussion forums. On social media, if someone is addressing me, or mentions me in a post, I am immediately notified and can easily respond. I would like for notifications to be sent directly to me, and in a manner where I can immediately respond with ease. (EdTech Blog, February 26, 2023)*

By replacing the LMS discussion forum with a blog embedded into a discussion page on the LMS, we were able to create a learning environment that was aesthetic, accessible, usable, and friendly (see Figure 7). These enhancements to the look and feel of the discussion forum helped to create a positive climate by integrating social media elements that enable students to share social cues with each other. The social media enhancements to the look and feel of the discussion forum set the stage for a positive learning climate where learner engagement is valued and promoted. Empathetic design, incorporated into the development of the questions, enables students to draw on prior online learning experiences to explain how they will incorporate essential design aspects of the learning environment into their course design. The friendly interface also facilitates co-presence, or the sense of being and learning together, which contribute to creating emotional connections between the topics being discussed and the people discussing them.

Figure 7

A Screenshot of a Blog Enhanced LMS Discussion Forum with Social Media Enhancements



Through a combination of redesigning the discussion forum and questions and actively engaging in discussions, we successfully integrated learner involvement into the course

structure, promoted a stronger sense of community and connection within the learning community, and established student and teacher presence to promote greater social engagement among learners.

Assessments and Feedback

Instead of visualizing assessments and feedback as "terminal judgments" (Conceição & Howles, 2021, p. 123) of academic achievement, Conceição and Howles (2021), recommend we rethink assessments and feedback as learning experiences. As learning experiences, they can guide students in "constructing, connecting, and applying knowledge" (p. 127). When incorporating assessments and feedback into learning experience design, Conceição and Howles (2021, pp. 128-130) recommend:

- Designing assessments and feedback on a learner growth mindset
- Incorporating emotional and cognitive elements into assessments and feedback to infuse interest, challenge, and curiosity
- Embed assessments and feedback into the learning experience to promote engagement and deep learning

To reimagine assessments and feedback as learning experiences, we reexamined the major assessment of the course, the six-part e-learning design project, from the learner perspective. By placing the learner at the center of the task, we were able to identify opportunities where subtle, but important improvements could be made.

One obvious place to begin were the rubrics. To shift the focus of the rubrics from terminal judgments to formative learning experiences, we redesigned the rubrics to allow more space for instructor input (see Figure 8). Instead of a typical three-performance level (i.e., Developing, Acceptable, Target), we adopted a single "target" performance level that described the ideal or desired optimal outcome. By eliminating the other two performance levels, we were able to include an "Instructor's Comments" section to provide more individualized feedback for each criterion. This change enabled us to focus on the learning rather than the product (i.e., final grade).

Figure 8

Before and After Images of an Assessment Rubric

Criteria	Developing (1)	Acceptable (2)	Target (3)	Score
User Interface Design AECT Standards 1.1, 3.2, 3.3, 3.4, 3.6	The user interface design is functional and meets minimum requirements. The layout is easy to understand and navigate	The user interface design is well thought out and serves its purpose. The layout is user-friendly, visually appealing, and easy to	The user interface design provides a superior user experience. The layout is intuitive, visually appealing, and easy to	

Criteria	Target Description	Points	Instructor's Comments
User Interface Design AECT Standards 1.1, 3.2, 3.3, 3.4, 3.6	The user interface design provides a superior user experience. The layout is intuitive, visually appealing, and easy to navigate. The design elements are consistent with the theme and are effectively used to engage the user. The look and feel brings content, functionality, and aesthetics together to enhance the quality of the learning experience.	15	

We added pedagogical wrappers to each assessment to introduce the project, explainthe purpose and goal of the activity, and infuse emotional elements like challenge, interest, relevance, and curiosity. Introducing the *challenge* element, assessments were re-designed to allow students to build upon their existing skill set while challenging them to learn and apply new technologies or strategies. Both *interest* and *relevance* were fostered through the thoughtful writing of discussion forum prompts that catered to the diverse professions and specialties of the students, making the content personally meaningful. Furthermore, we cultivated *curiosity* by providing flexibility in the assessments, empowering learners to pursue topics and develop skills aligned with their individual interests. Throughout the project development process, continuous feedback and support were also provided, enabling students to refine their learning strategies and access additional resources when necessary.

Taking into consideration the learner growth mindset, which is the belief that intelligence, abilities, and talents can be developed and improved through effort, effective strategies, collaboration, and perseverance (Dweck, 2016), in addition to revising the rubrics, we also revisited how we provided the feedback itself. The feedback was presented as "coaching" to explain to learners what they were doing well, as well as where they could improve. The language and tone, to support a growth mindset, were moderated to help learners accept the feedback as opportunities to expand their knowledge, improve the quality of their products, and learn from their mistakes. The emphasis of the revised assessments and feedback shifted from product to process, in this case an instructional design process, that is iterative and includes multiple cycles of feedback along the way. Hence, the new focus of the assessments and feedback, as Heick (2022) observed when discussing the primary function of any assessment, was to answer the question, "What now?" (para. 1).

Teaching Learning Experience Design Through a Cognitive Apprenticeship

Approach

Using Floor's (2016) characterization of LXD as a combination of both *design* and *learning,* the first part of this design case focused on the design aspect to chronicle the redesign of a fully online graduate course to create an environment where faculty and students could work together to learn about learning experience design *through* learning experience design. To address the *learning* aspect of the learning experience, we adopted a cognitive apprenticeship approach to learning that emphasized active participation, social interaction, and the development of metacognitive and problem-solving skills.

Grounded in constructivist and cognitive-social learning theory (Collins et al., 1989), cognitive apprenticeship emphasizes the importance of social interaction and active participation in the learning process. Developed by Collins et al. (1989), cognitive apprenticeship focuses on "learning-through-guided-experience on cognitive and metacognitive skills and processes" (p. 457) to engage learners in activities that allow them to observe, practice, and apply skills and knowledge under the direction of an expert. These activities are designed to help learners develop the technical skills required to perform a specified task, as well as the metacognitive and problem-solving skills needed to navigate unfamiliar or complex situations. Collins et al. (1989), describe six core strategies in their cognitive apprenticeship model:

Modeling. Modeling involves demonstrating how to perform a task or solve a problem. To model evidence based LXD principles during course design, the redesigned course was reimagined around the five essential design aspects of Conceição and Howles' (2021) LXD framework: course structure and interface, content interactions, learning activities, social interactions, and assessments and feedback. By applying learning experience design core concepts that put learners at the center of the design process, we were able to create a course that was more "personalized, engaging, and meaningful for online learners" (p. 23).

Using the course as a model, learners were able to gain a deeper understanding of how to design effective online learning experiences that put the learner at the center of the design process. This approach aligned with the modeling dimension of cognitive apprenticeship, as it provided learners with the opportunity to experience an LXD designed course from the learners' point of view. In addition to using the course as a model of LXD design, we also made some modifications to how we engaged with the learners to model evidence based LXD teaching principles. For example, at the beginning of each live session, we employed pedagogical wrappers to clarify the session's objectives, its relevance to the course materials, and to their course design projects. Also, during the live sessions, we actively employed modeling techniques by presenting examples and non-examples of effectively designed course content.

Coaching. Coaching involves providing feedback and guidance as learners practice a task. It also entails modeling behaviors you want to instill in your learners. We demonstrated key LXD processes related to the portion of the project students were working on, highlighting key concepts, strategies, and techniques. Then, students took turns sharing drafts of their projects with the class. Assuming the role of expert, we guided the conversations by asking questions, inviting students to weigh in on key aspects of the design, and encouraging the

presenters to reflect on their thinking and design strategies. Coaching was exemplified through iterative rounds of formative feedback, wherein students took turns playing the role of the expert to identify and address gaps in their own understanding of LXD processes or design strategies, as well as those of their peers.

Scaffolding. Scaffolding is an instructional approach that offers learners temporary assistance while they strive to grasp new concepts or skills. The support progressively fades as learners gain proficiency, ultimately enabling them to independently accomplish the task (Mcleod, 2023). Scaffolding in the form of detailed instructions of project deliverables, non-graded practice quizzes, instructional videos, checklists, sample projects, rubrics, step-by-step tutorials, and coaching, demonstrating, and mentoring through asynchronous and synchronous channels were built into the flow of the course. Scaffolding was also integrated into the design of the course modules and projects through the sequencing of tasks of increasing complexity. As students became more proficient and gained confidence and their skills, they were able to take the lead on demonstrating and modeling learning experience design principles through their own teaching and project drafts. We also observed collaborative mentorships occurring in the asynchronous discussions as students took turns being the experts. Throughout the redesigned course, scaffolding structures provided appropriate assistance to help students complete each task. For example, each phase of the course design project included step-by-step instructions with screenshots of the various steps as well as a video describing the purpose and scope of the assignment, accompanied by examples of completed products for reference. The scaffolding structures helped students to complete tasks more effectively and efficiently, without overwhelming them with too much information.

Articulation. Articulation entails being able to discuss and defend one's thought processes and design decisions with others. Articulation through a variety of synchronous and asynchronous channels was also built into the flow of the course. Synchronous sessions allowed for real-time discussion and feedback, while asynchronous conversations through the class discussion forum provided opportunities for more reflective and in-depth articulation. Articulation was exemplified during the synchronous sessions as students explained and justified their design choices, demonstrating a deeper comprehension of the subject matter and actively engaging in critical thinking.

Reflection. Related to articulation, reflection challenges students to reflect on their learning experiences, recognize their strengths and weaknesses, and identify areas for improvement. The feedback presented as "coaching" on students' design projects presented an excellent opportunity for them to reflect on the strengths and weaknesses of their course designs and positioned the learners to be able to answer the question, *What's next?* Because the feedback was iterative and included multiple cycles, students had multiple opportunities to make improvements on their products. Reflection becomes apparent through the quality of the final product. By the time students got to the final stage of production, most projects were of very good quality.

Exploration. The exploration phase refers to the process of testing and refining ideas and skills by applying them to new problems or situations. This phase typically followed the initial instruction or modeling provided by the expert and involved the learners actively engaging with the material and putting their knowledge into practice. By exploring and

testing their understanding in different contexts, the learners were able to develop a deeper and more flexible understanding of the subject matter. The exploration phase was often observed in future classes when students applied learning experience design principles in future instructional design projects. For example, exploration is commonly observed in the Educational Technology practicum course, taken during the students' final semester. In this course, a significant number of students choose to create their instructional solutions in the Canvas Learning Management System (LMS) and integrate LXD design principles into their design products. This example of exploration showcases their willingness to experiment and engage in innovative approaches to enhance the learning experience.

The cognitive apprenticeship approach is based on the idea that learning is most effective when it takes place within authentic contexts and is guided by an expert in the field. Through modeling, coaching, and scaffolding, our aim was to provide learners with hands-on experience in a real-world context while receiving guidance and support from an expert. Through articulation, reflection, and exploration, our design sought to challenge learners to discuss and defend their thought processes and design decisions, reflect on the strengths and weaknesses of their course designs, and test and refine their design skills by applying them in new instructional contexts.

Limitations to Embedding Wordpress Content into LMS Pages

While leveraging an iframe-embedded approach to develop LMS pages can significantly enhance their visual appeal, it is important to acknowledge potential limitations and implications, which can impose additional work on faculty when it comes to course maintenance and facilitation. One significant limitation is the lack of seamless integration between the Wordpress content management system and the LMS, which can complicate grading class discussions. Instead of conveniently accessing students' posts from the gradebook, instructors will need to search the comments for each individual student, resulting in increased grading time. Similarly, the absence of integration between the LMS announcements page and the email system necessitates manually copying, pasting, and reformatting of announcements for class emails. This duplication of effort extends the time needed to post and email announcements. To fully capitalize on the Wordpress content management system's robust social features, like adding profile photos or avatars, creating bios, subscribing to discussion threads, and liking students' comments, students will need to create a separate user account, which can add an additional layer of complexity and potential confusion when participating in the discussion forum. Compatibility issues may arise when accessing iframe-embedded blog pages on various operating systems and devices, including tablets and smartphones. Such issues can impact page rendering and compromise the user experience. Lastly, creating content within a blog differs from developing it within an LMS. Faculty who are not technologically proficient may encounter challenges when it comes to navigating the complexities associated with integrating Wordpress pages into the LMS interface. Faculty will need to weigh the aesthetic benefits against these limitations and consider the additional effort and potential complications involved in employing an iframe-embedded approach within the LMS.

Summary and Next Steps

In the fall of 2021, the newly designed course was launched, and, to-date, has been offered three times with a total of 75 students. The course was redesigned based on principles of learning experience design, with a focus on improving the course structure, interface, activities, interactions, and assessments to make it more aesthetically pleasing, accessible, user-friendly, and engaging. The redesign also incorporated effective online teaching and engagement strategies, including social interactions and learner-centered discussions that took into account learners' "cognitive, emotional, behavioral, and social learning needs" (Conceição & Howles, 2021, p. 33). To further reinforce the principles of learning experience design, the e-learning design project was modified to allow students to develop their own online courses and practice applying the principles learned in class.

The emphasis on LXD in the course redesign and facilitation appears to have had a positive impact on students' learning experiences. Throughout the academic year, the course received an exceptional overall student evaluation rating of 4.98 (99.6%) out of 5.00, which is the highest rating it has received in a single year. Previous year evaluation results ranged between 4.68 (93.6%) to 4.85 (97%). The feedback provided by students was overwhelmingly positive and emphasized the significance of designing and teaching online courses that consider the cognitive, emotional, behavioral, and social aspects of learning. The following student comments help to illustrate the point:

> *"Thank you so much for delivering clearly organized, extremely effective, superior instruction each week. I thoroughly enjoyed the activities you set up for us. Thank you also for your responsiveness, helpfulness, and exceptional communication skills."*
>
> *"This was a fascinating course. It was a great exemplar to follow when creating student-centered lessons."*
>
> *"The course and instructor were super organized. All material was presented in a way that was easy to follow. The friendly interface and activities made the class engaging."*
>
> *"This was a great course. I learned so much from how you designed the course and taught it. I truly appreciate how you made this such a great learning experience. I will take everything you have taught me and apply it to all my future projects and interactions with others."*

In summary, redesigning an online graduate course based on LXD principles and practices and teaching it, using a cognitive apprenticeship approach, could potentially help students learn about LXD through LXD in several ways:

Emphasizing the principles and practices of learning experience design could potentially help students gain a deep understanding of LXD by experiencing it firsthand. By seeing these principles in action, students could potentially better understand how they can be applied in the design of their own learning experiences.

Using a cognitive apprenticeship approach could potentially help students develop their own skills in learning experience design by working alongside experts who model effective practices. This approach involves giving students tasks and projects that challenge them to think like designers and to develop their skills and knowledge in a supportive learning environment.

Redesigning the course using LXD principles and practices could potentially also create a more engaging and effective learning experience for students. By designing the course with the learners' needs and preferences in mind, students could potentially be more likely to be motivated and invested in their learning, leading to better outcomes.

What this experience has shown us is that redesigning an online course based on LXD principles and practices, and taught using a cognitive apprenticeship approach, could potentially create a more effective and engaging learning experience for students, which could help them to better understand and apply the LXD principles in their own work. We will continue to explore the efficacy of learning experience design as a subset of instructional design in the coming years and expand our design efforts across all online courses in the program.

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