I

DESIGNING FOR THE LEARNER EXPERIENCE

Higher education has gone through major shifts in the last few decades. These shifts are the result of enrollment decline, changes in learner demographics, and skills expectations of employers. These changes have driven innovation and the need for a shift from emphasizing instruction and content to designing impactful learning experiences for a more diverse, mobile, and tech-savvy student population. With a learner population that is more diverse, mobile, and technologically savvy, the design of these experiences requires a different mindset that places greater attention on the overall experience of learners. This chapter explains why higher education is at a tipping point and the need to focus on learner-centered values and approaches, particularly in the online learning environment. We introduce concepts and research from a variety of fields, provide a definition of *learning experience design*, and offer core concepts that provide the basis for this book.

Tipping Point in Higher Education

The context of higher education in the United States is at a tipping point due to enrollment changes, shifts in student demographics, the continued rise in college tuition, the need to prepare a workforce with new skills, and the struggle to deal with innovation. These changes have led to the rise of online education and the need to focus on how learning is designed and delivered in a time in which the value of education is at stake.

Overall U.S. higher education enrollments in brick-and-mortar institutions continue to decline, whereas online education enrollments continue to grow (Seaman et al., 2018). This trend has made online educational offerings

part of the norm for many higher education institutions. The shift in student demographics shows that nontraditional students are the new majority of postsecondary enrollment. The profile of these students is 25 years old or older, with full-time jobs and family obligations, likely attending school on a part-time basis (Dabbagh, 2007) and choosing online education as their primary mode of learning.

At the time of the publication of this book, many of these nontraditional students were millennials, those aged 26 to 35 years in 2016 (Fry, 2016), accustomed to highly personalized phones and computers (Twenge, 2014). Millennial learners have encountered the most rapid changes in terms of technology, have spent their entire lives surrounded by and using technologies (Rosen, 2011), and have different educational expectations involving technology. Their learning readiness and preparedness for the use of technology place new demands on higher education to innovate.

With high expectations from millennials for an immediate return on investment (ROI) after graduation and the continued rise in college tuition with no guarantee that a diploma will lead to a job, the value of higher education is being questioned. With a particular set of priorities, students are now doing their own search for courses and programs that provide value for their education (Weise & Christensen, 2014). Value means a learning experience that is flexible, convenient, relevant, and affordable and that provides the skills needed to be a highly functional member of the workforce.

Employers also have higher expectations for developing a more skilled workforce. They are demanding graduates with academic credentials that reflect specific proficiencies and skills related to industry needs. However, increasingly higher education is perceived as not preparing students to meet these needs and students want their education to more directly connect with employer needs, such that learning and work become inseparable twins (Weise & Christensen, 2014).

All these changes drive higher education institutions to innovate and act in new ways. Institutions that fail to innovate will be left behind. Institutions that are dealing with these changes are going through mergers within a university system (Savidge, 2017), adopting blended and online delivery approaches (Bowen, 2012), using mastery and modularization of learning to meet learner demands (Weise & Christensen, 2014), and moving to competency-based education and online learning (University of Wisconsin System, 2018). This, however, is not enough. Instructors and course designers, who have the greatest impact on the learner experience, must also embrace these changes. These changes require not only an awareness of the present context of higher education but also a recognition of the current dynamic learning ecosystem and a unique mindset for designing learning.

Dynamic Learning Ecosystem

Emerging technologies have influenced how a person thinks, feels, and behaves in a learning environment. Learning has become part of a much bigger, more dynamic digital ecosystem; it is now taking place everywhere—in libraries, on the internet, in books, and on digital devices—and no longer occurs in the vacuum of a traditional classroom setting. New digital learning environments integrate content, technology, and people within an institutional culture (Rosenberg & Foreman, 2014). Content is administrated and managed centrally through an institution and can also be social, collaboratively administered, and expert-generated. This ecosystem is mediated by technology, which extends the processes and functions of learning, yet all of this does not guarantee learning success. The culture involves the university, business, and communities of practice.

In this dynamic learning ecosystem, learners have access to experts such as instructors who facilitate their learning and encourage them to take responsibility for their own learning. In technology-enabled online and blended courses, learning can be designed as an experience, part of a dynamic process, rather than a series of required tasks and assignments. Social networking and collaboration are integral components of this learning process (Rosenberg & Foreman, 2014).

In this learning ecosystem, instructors take on multiple roles—learning designer, evaluator, observer, supporter, facilitator, and mentor (Lehman & Conceição, 2010). Though studies have shown that some instructors in traditional higher education environments tend to focus mainly on teaching and content (Bennett et al., 2017; Postareff & Lindblom-Ylänne, 2008), in a dynamic learning ecosystem, this mindset is counterproductive. The practice of making content available online to learners, replicating heavily content-based instruction, is not congruent with a dynamic learning environment and the learner characteristics of today. This shift in perspective requires a whole new way of thinking about course design.

Mindset Shift for Designing Learning

As instructors and course designers embark on learning design for the online environment, there are new ways of thinking about the learner, the environment, and learning interactions. Designing online learning in this digital age requires a mindset that places a greater emphasis on how learners respond cognitively, emotionally, behaviorally, and socially in a dynamic learning ecosystem. Creating new types of learning experiences requires an open mind and an exploratory attitude toward using innovative technologies. Learning design is no longer a solitary task performed by a subject matter expert; it

involves continuous and in-depth feedback from a variety of stakeholders throughout the online course design process. Most of all, it requires a shift from a content-focused delivery mindset to a learner-centered approach focused on the learning experience in a holistic way.

The Learner-Centered Approach in Higher Education

The concept of a learner-centered approach has been a major theme in educational psychology research since the 1990s. Several learner-centered principles have been developed that focus the design of learning from the perspective of the learner. These principles view the learner and the learning process holistically, recognizing that learning environments interact with various internal factors of learners. These internal psychological factors center on cognitive, affective, developmental, social, and other individual differences that address the learner and the learning process in the context of real-world learning situations (Learner-Centered Principles Workgroup, 1997).

When initially developed, these principles served as a framework for learner-centered educational practices, with the purpose of positively impacting student learning outcomes and satisfaction (Learner-Centered Principles Workgroup, 1997). Using these principles ensures greater connection and empathy with learners at multiple levels—intellectual, emotional, social, and behavioral.

Learner-centered design principles have been applied to online learning contexts for a few reasons. Technology-mediated environments have been viewed as less personal, and so there is a need for greater learner engagement. Learners are not in close proximity to instructors and often feel a sense of disconnectedness. Because the online learning context presents constraints in how students interact with content, instructors, and other learners, it becomes important to consider these challenges and potential solutions when designing online courses.

Design of Online Learning Environments

New technologies and media have given rise to next-generation digital learning environments and learning ecosystems to support both blended and online learning (Brown et al., 2015). Accompanying the development of new technology-enabled learning spaces is an emerging concern about becoming overly technology-focused. Some learning ecosystem models in higher education focus heavily on technical infrastructure, increased functionality, interoperability, and integration of tools and software using a learning management system (LMS) to support both on-campus and online instruction (Kellen, 2017). However, these systems often impose limitations for the design of learning. Rosenberg and Foreman (2014) criticized many digital

learning environments as being overly technology-centric. Technology-centric approaches begin by focusing on the features and functional capabilities of new tools and then look toward finding ways they can be used to transmit subject matter, often with limited input from instructors and learners.

Nielsen (2017) has noted that all too often the adoption of new technologies typically moves us one step forward in terms of new capabilities but often takes us back two steps in terms of usability and human factors. In this book, we advocate and envision new designs for learning environments that are learner-centered from the ground up. It is helpful to look to other disciplines for inspiration, new approaches, and ideas for designing more learner-centered approaches to technology-enhanced learning.

Inspiration From Other Disciplines

One field to note is human factors research and design, which specializes in designing technology for human use (Huchingson, 1981). This field emerged from the recognition that instead of adapting technology to the needs of humans, humans were often forced to adapt to the design features of technology-based systems and tools. The goal of human factors research was to study and improve human interaction with technology-enabled systems, particularly with computers. Initially, considerable attention was placed on the design of user/computer interfaces and how users interacted with them to perform tasks. Over time, the term *human-centered design* became one of the mantras for the human factors design community (Norman, 2005).

In the 1990s, Don Norman took the human-centered design concept one step further and coined the term *user experience design* (UXD). UXD goes beyond a focus on functionality, usefulness, efficiency, and what people see and do on computer screens (Nielsen, 2017). In the broadest sense, the scope of UXD encompasses any interaction with any product, artifact, or system focusing on people's needs, reactions, and behaviors. Garrett (2011) highlighted the user-centered aspect of UXD as taking "the user into account every step of the way" (p. 17) while developing a product.

As a process, UXD incorporates all activities from inception to implementation of a product or service. It is a holistic design approach encompassing the sum total of what's happening to the user of a product or service. It includes affective elements such as user engagement, enjoyment, and satisfaction. It balances user needs with the needs and goals of the organization (Garrett, 2011). In education, particularly in the area of designing technology-based learning environments, we are approaching a similar situation. There are many similarities between learner-centered design and user-centered design in terms of values, processes, and outcomes.

Learner Experience Design

The design of online education has much in common and much to learn from UXD. In the field of UXD, the term *experience* is a key transformational concept (Garrett, 2011). The emphasis goes beyond creating a functional, efficient, and usable product or service, but instead an overall positive and memorable user experience.

Learning experiences are highly subjective psychodynamic states resulting from a person's combined interactions with course content, instructors, fellow learners, and various media and technologies involved in the learning process. To have a "learning experience," learners are deeply invested at the cognitive, emotional, social, and behavioral levels. According to Kolb and Kolb (2009), "Learning is a holistic process of adaptation. It is not just the result of cognition but involves the integrated functioning of the total person—thinking, feeling, perceiving, and behaving" (p. 43).

Experience design coupled with learner-centered design aims to engage learners at deeper and more personal levels as participants in the learning process, creating experiences that span course, unit, and lesson levels. Whether intentional or not, every online course, lesson, learning activity, or content resource reflects design decisions that impact the learner's experience in some way.

The design of a well-crafted and impactful learning experience is an appealing goal for instructors and course designers but in practice is seldom well thought out and fully acted upon. Common design strategies for online courses rely heavily on LMSs. They enable rapid course development through the use of templates, list-based content menus, links to discussion forums, and student tracking. These environments are not learner-centered by design, but instead focus on institutional and instructor course management needs. Many LMSs inadvertently encourage content-centric design, a one-size-fits-all course structure, and a passive learning design mindset.

Learner experience design emphasizes learner-centered values and principles in all aspects of online course design, including user interfaces, content presentations, learning activities, social interactions, and assessments and feedback in the design of learning at the course, lesson, and learning activity levels.

Learner experience design is becoming more relevant as new digital pedagogies and technologies become incorporated into online courses. These technologies include open educational resources (OERs), personalized learning, adaptive learning, games and simulations, and immersive technologies such as augmented and virtual reality. Learner experience design ensures that next-generation digital learning environments and ecosystems put the

learner at the center and technology in the background, to better serve the needs and goals of learners and instructors.

Our Definition of Learning Experience Design

Learning experience design focuses on the structure and psychodynamics of individual and group experiences that take place in the context of a particular learning environment. In this book, we approach learning experience design as a process and set of principles that involve creating technology-mediated interactions applied at the course, lesson, and activity levels in the online environment. Experience design is holistic in that it integrates the cognitive, emotional, behavioral, and social dimensions of learning. Figure 1.1 depicts the four dimensions of learning and how they serve as a foundation for the learning experience.

The *cognitive dimension* is the realm of mental activities and processes that includes perception, memory, classification, reasoning, critical thinking, and problem-solving. Within the cognitive dimension, learning is often viewed in terms of content acquisition, knowledge construction, and building intellectual skills (Anderson & Krathwohl, 2001).

Figure 1.1. Dimensions of learning.
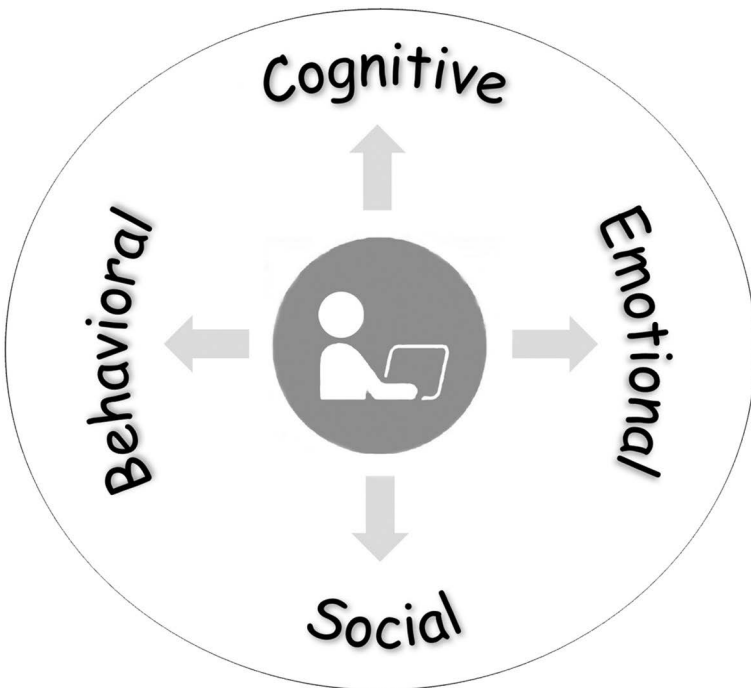
The *emotional dimension* is closely associated with learner motivation and encompasses both positive and negative emotions. Although learners may desire their learning experiences to be enjoyable and engaging, most meaningful and deep learning experiences often involve episodes of confusion, frustration, and struggle before positive feelings of accomplishment emerge (D'Mello et al., 2014; Graesser & D'Mello, 2011).

The *social dimension* focuses on the relationship and discourse between individuals in a learning environment. Unlike the other three dimensions, which are essential for almost all types of learning, meaningful and deep learning through social interaction needs to be approached more judiciously, and sometimes it may not need to be a core component in the design of every learning experience.

The *behavioral dimension* is an extension and externalization of the other three dimensions. It bridges the knowing–doing gap by connecting knowledge construction with application. Behavior is shaped and supported through thinking, feeling, and social interactions. In addition, how learners self-regulate their own learning process through decisions and choices manifests in their behaviors throughout a course experience (Cazan, 2013).

Core Concepts for Learning Experience Design

Designing learning experiences for the online environment becomes clearer when contrasted against the backdrop of conventional instructional design practices. For that, we offer four core design concepts that underlie the practice of learning experience design by comparing the two practices. These concepts will be frequently revisited in the subsequent chapters.

Learner-Centered Design

Whereas conventional instructional design practices tend to be instruction- and content-centric, learning experience design focuses on the learner and learning tasks. Conventional course design decisions focus almost exclusively on the learner's cognitive dimension and these decisions are usually made by the instructor without feedback from learners.

Learner experience design puts a greater effort toward viewing each aspect of the online course environment from the perspective of a learner and does this by applying the four dimensions of learning as a lens for envisioning the learning experience. Using this approach, instructors and course designers can avoid the tendency of using their own personal perspectives and assumptions about learners when making design decisions. By communicating and listening to learners before, during, and after the course regarding how they are thinking, feeling, and responding to the course, instructors and course

designers can gain a better sense of the experience from the learner's point of view. Learning objectives and course content can remain the same, but instructors gain insights to reshape elements of the course design based on the expressed mental, emotional, behavioral, and social needs of learners. This approach requires a type of openness and empathy (caring and curiosity) to understand the spoken and unspoken needs of learners and how they react to different aspects of the online course experience.

Emotional Design

Most conventional instructional design practices tend to overlook the emotional dimension of learning in the online environment. In contrast, online learning experience design focuses on the tight integration of cognition and emotions in learning. There are deep connections between cognition, affect, motivation, and social interactions. The design of learning experiences takes these connections into consideration in a holistic way. The emotional dimension of learning is of greater importance when learning goals involve complex content and deep learning (Graesser & D'Mello, 2011). Emotional design for learning may deliberately evoke both positive and negative emotions that, if managed, can result in more impactful learning experiences. These include a range of emotions. When deep learning of complex material is a goal, periods of confusion, frustration, and anxiety can serve as antecedents in producing positive states such as delight, challenge, flow, and surprise.

Participatory Design

The conventional course development process is heavily reliant on a single subject matter expert's decision regarding how a learning experience will be designed and their assumptions about how learners will respond. Collaboration and participation of others in the design process is often seen as unnecessary and time-consuming. Although the instructional design process for online courses has become less insular by involving technical and instructional design support, it still leaves out many stakeholders in making design decisions, particularly those who are destined to take the course.

The field of participatory design for human–computer systems is based on a central principle that users of any system should have input into its design (DiSalvo et al., 2017; Schuler & Namioka, 1993). Participatory design involves input and feedback from multiple stakeholders throughout the design process. The goal is that the design of online learning experiences will benefit from a greater number and type of inputs compared to conventional courses (Welsh & Dehler, 2012). Learning experience design involves collaboration among learners, instructors, and course designers in the online course design process to ensure the needs of learners are addressed. In this

case, the traditional role of the instructor at the center of the course design process shifts and expands to include the role of managing the collaborative design process. Input from learners is solicited during various phases of the course design process (Könings et al., 2014). The goal is to reinstate the learner as a central figure in the learning design process. To do this effectively requires a special type of mindset, often referred to as *design thinking*.

Design Thinking
The concept of design thinking, although now widely applied in multiple disciplines, has no single agreed-upon definition; it is typically used as a problem-solving approach for understanding and generating innovative solutions for complex problems. Design thinking has been presented as a mindset, a problem-solving process, a set of principles, and a toolkit for developing innovative products and services (Brenner et al., 2016). Over the last few years, there has been a growing awareness that the methods and thinking used behind great designs in engineering, architecture, health care, industrial design, and other professions can be applied in education, particularly for designing learning experiences (Koh et al., 2015).

    Design thinking is a term we use to denote the ability to adapt and incorporate design thinking processes, principles, and practices into designing aspects of online courses. Design thinking can be not only applied to the creation of an entire online course environment but also used in a granular way in designing smaller scale but critical learning experiences, including content interactions, instructor communication, social interactions, and learning activities. It becomes particularly useful in situations where an instructor is interested in developing innovative technology-based learning solutions.

    Design thinking reinvigorates conventional instructional design practices and is well suited for working with new technologies and learning ecosystems. Instructors and course designers can better utilize affordances of new learning technologies to craft more learner-centered, engaging, and meaningful online course experiences. Design thinking embodies concepts such as empathy, collaboration, ideation, prototyping, and user testing and incorporates these as practices in the learning design process. Our emphasis throughout this book is to approach design thinking more as a mindset and toolkit that instructors and course designers can adapt to their situational needs rather than as a procedure or recipe to follow.

Integrating Design Thinking Into Learning Experience Design

A key feature of design thinking is its human-centered and experience-focused orientation (Brown, 2009), which aligns with a learner-centered

approach to the design of online courses and learning experiences. A learning experience begins the moment learners enter an online course environment and continues as they interact with content, people, and technology in the learning space. Instructors and course designers of online learning environments shape the quality of the learner experience; however, they are not always able to see, hear, and experience the course from the perspective of a learner. Too often instructors and course designers envision an online course from the inside out, focusing on the content that goes inside the learning environment. An outside-in approach focuses on the learners' perspective as they engage and interact with content and every other aspect of the learning environment. The ability to let go of one's own preconceptions and personal preferences and look at an online course's content and structure from a learner perspective is not easy. Doing this involves a core design thinking skill, which we refer to as *empathic design*.

Design thinking incorporates and puts into practice participatory design. Coming to closure too rapidly on important course design decisions is discouraged, along with insular decision-making by one individual. Instead, design thinking encourages continuous collaboration and feedback from peer instructors, former and prospective learners, and other colleagues involved in course design and delivery.

Good designers are continuously running their ideas by others, getting feedforward before investing in building anything substantial, rapidly iterating and vetting their ideas. Designing learning experiences is a process of successive approximation which the skilled course designer moves through rapidly. It is about letting go of "functional fixedness"—a type of cognitive bias that drives people to use both existing and new tools in standard ways (Harley, 2017).

Whereas conventional design decision-making for classroom-based courses tends to adopt the first idea generated by the instructor or course designer, learning experience design looks for new and better ways of designing learning experiences in all aspects of a course. The first idea is seldom the last idea that gets implemented. It involves an experimentation mindset using rapid prototyping to test out new ideas. It explores new approaches and reality tests them quickly, involving both feedforward and feedback.

Design thinking as a process involves several key practices that we refer to throughout this book:

1. *Empathize with learners* by constantly keeping the learner perspective in mind and even seeking their ideas and feedback when making important design decisions. Remember the four Cs when practicing empathic design:

    a. *C*aring about the learner's experience

    b. *C*uriosity about how learners are thinking, feeling, behaving, and talking about their learning experiences

    c. *C*onversations with learners to better understand their course experiences

    d. *C*hanging or correcting deficiencies in the course design based on learner needs, suggestions, and feedback

2. *Define design challenge(s)* by conducting research, observing activities, and collecting input from stakeholders (learners). This requires deferring coming up with solutions, instead asking lots of questions to fully understand design issues from multiple perspectives. This also requires curiosity by asking why, how, what, who, and when questions.

3. *Ideate and brainstorm a variety of potential solutions* on how to address the learning design challenge for innovative solutions. This involves collaborating with others to envision and generate a variety of "what-if" ideas while keeping focused on the design challenge and the learner perspective. This usually involves sketches that bring cloudy ideas into a more tangible form.

4. *Prototype ideas* by making one or two of the best potential solutions more tangible through rough mockups, visual narratives, or storyboards showing how learners might interact with the solution. These prototypes require minimal investment and can be quickly refined through successive iteration based on stakeholder feedback.

5. *Test design solutions* by refining prototype designs and returning to learners and other stakeholders for validation of a final design. This may also involve pilot testing a design solution in the context of a real course and obtaining feedback.

6. *Implement the final design*, ensuring that people, technologies, and processes are fully in place and the newly designed solution is achieving its intended goals. Because our focus is on the design, this phase will not be further addressed.

We view design thinking as an integral part of learning experience design. Our aim is to enable effective practice of design thinking within a narrower and somewhat unique context. We apply design thinking in an adaptive and flexible method in the context of online learning.

What Is Next for Instructors and Course Designers

As the learning ecosystem in higher education evolves, so do the practices of instructors and course designers who genuinely care about the learner

experience in an online environment. Learning experience design is a learner-centered approach requiring a different mindset, process, and toolkit for instructors and course designers. Chapter 2 introduces the integrated framework for designing the online learning experience, which supplements the core concepts introduced in this chapter.