during this phase the course designer might realize that in one of the former phases such as understanding the learners or defining the problem, the goal may need to be refined. The design process is iterative and may need to loop back to previous phases to refine ideas. Table 8.2 provides a sample test survey. The following criteria are useful for selecting and testing ideas:

- What works best and is most appealing for learners?
- What is feasible given existing resources?
- What best produces the desired learning outcomes?

Implement

This phase brings design thinking to some type of closure. After testing and refinements have been made based on feedback, the learning materials are ready to be incorporated into the actual course. Some people say that design is never complete, but at this point only minor tweaks may need to be made and elements polished. Feedback should still be obtained from learners to check for reusability and scalability.

Design thinking may seem like a lengthy process, but it can be done rapidly and informally. The approach used should be adapted to the specific situation to make the most sense for a particular situation and needs. The key facets of the design thinking mindset are to put users first, ask the right questions, be committed to exploring, and use rapid prototyping to test ideas and get feedback. This process is carried out in a more flexible and nonlinear fashion. Sometimes more than one phase can be worked on concurrently. An existing version of a learning material can be used as an initial prototype to get learner feedback and identify problems.

Guiding Design Questions and Design Strategies for Each Design Aspect

In this book, we have included guiding design questions from chapters 3 to 7 along with design strategies that answered these questions at the end of the chapters. Table 8.3 provides a summary of the guiding design questions and strategies for each design aspect as a quick reference when using design thinking.

Moving Forward for Designing the Online Learning Experience

As digital learning environments continue to evolve and online education becomes the standard in higher education contexts, creating quality online

TABLE 8.3
Summary of Guiding Design Questions and Strategies for Each Design Aspect

Design Aspect	*Guiding Design Questions*	*Design Strategies*
Course Structure and Learner Interface	• How can we use a course conceptual model to shape and focus the design of the course structure to better accomplish learning goals and meet learner needs?	• For knowledge-based courses, the structure should be organized around topic-based thematic units • For skill-based courses, the structure should be organized around constituent tasks
	• How can we design a course structure that is meaningful to learners and organized to better support specific kinds of learning outcomes?	• Align core topics or tasks with course goals • Get feedback and refine thematic units and explore strategies that support suitable instructional methods • Avoid fragmentation by creating cohesiveness and interrelationships of thematic units
	• How can we apply design thinking and UXD to create a learner-centered online course interface?	• Design a simple, usable, and appealing learner interface by obtaining learner feedback through iterative prototype testing
Content Interactions	• How can we start designing online content for different course design situations?	• For existing online courses, focus on making minor enhancements to information design, designing new learning activities, and incorporating external content • For converting classroom-based courses, rethink existing course model and structure, redesign and repurpose existing content, and incorporate external resources

(*Continues*)

TABLE 8.3 (*Continued*)

Design Aspect	*Guiding Design Questions*	*Design Strategies*
		• For creating new courses from scratch, do everything noted previously, and use design thinking to explore new technologies and digital pedagogies to enhance learning
	• How can we shift our thinking and practice to create pedagogically engaging content using new digital tools?	• Shift from fragmentation to integration of learner–content interactions • Shift from broad-brush to finely targeted content • Shift from decontextualized to contextualized content • Shift from single media to hybridized media content • Shift from cognitive dominance to emotional and behavioral interplay
	• How can we incorporate learning experience design strategies to create impactful learner–content interactions?	• Use pedagogical wrappers to integrate content. • Integrate rich content interactions through hybrid multimedia and instructional methods • Increase cognitive engagement and motivation through emotional design • Add context to content through stories and scenarios
Learning Activities	• How can we apply design thinking to create learning activities?	• Apply design thinking with an empathic mindset for the learner
	• How can we design engaging online learning activities?	• Use new technology tools and their affordances to create integrated and impactful learning activities

TABLE 8.3 (*Continued*)

Design Aspect	*Guiding Design Questions*	*Design Strategies*
	• How can we integrate learning activities into a course unit to support higher-order learning?	• Integrate multiple learning tasks into an inclusive learning activity
	• How can we design learning activities that help learners engage in deep learning?	• Use pedagogical wrappers to prepare learners cognitively and emotionally for the learning activity
Social Interactions	• How can a positive climate be set through social interactions?	• Set the stage for a positive climate through personal and professional stories, shared learning responsibility, pedagogical wrappers, and instructor involvement
	• How can social interactions create emotional connections?	• Create emotional connections through an intuitive learner interface, facilitated/guided and logistical/organizational communication
	• How can personalized communication be conveyed through social interactions?	• Use personalized communication for identifying participants through photos and graphics, sharing beliefs and values, and identifying people by name
	• How can learners be engaged in deep learning through social interactions?	• Promote deep learning through social engagement, scaffolding of social interactions, and course guidelines
	• How can learner involvement through social interactions enhance the flow of the course?	• Build learner involvement into the flow of the course through free-flow discussions, virtual office hours with a purpose, and end-of-course debriefings

(*Continues*)

TABLE 8.3 (*Continued*)

Design Aspect	*Guiding Design Questions*	*Design Strategies*
Assessments and Feedback	• How can we better design assessments and feedback considering stages of learner development and prior learning?	• Design assessments and feedback based on a learner growth mindset
	• How can we incorporate assessments throughout the online learning experience?	• Incorporate emotional and cognitive elements into assessments and feedback to infuse interest, challenge, and curiosity
	• How can we design assessment activities to be more engaging and conducive to deep learning experiences?	• Embed assessments and feedback into the learning experience to promote engagement and deep learning
	• How can we use assessments and feedback to establish and sustain learners' attention and motivation?	• Involve learners in assessments and feedback to spark interest and sustain motivation
	• How can we design assessments that help learners monitor their own learning?	• Include iterative self-assessment approaches to encourage self-regulated learning

courses now requires an integrative approach and a way of thinking that incorporates elements of user-centric interface design, emotional design, instructional message design, learner-centered design, and learner experience design. This approach involves the integration of the learner experience and online learning design, bringing distinctive ideas to produce creative solutions. This calls for a new set of learning design skills for instructors and course designers based on the concepts from these different fields of research and practice. By developing these skills, instructors and course designers can intentionally create personalized, engaging, and meaningful learning experiences for online learners.

Drawing from research in a variety of fields, we developed the integrated framework for designing the online learning experience as a way of thinking holistically about the learner through the four dimensions of learning and

the five aspects of design. The framework is flexible and can help instructors and course designers set a frame of mind to build new courses, convert face-to-face courses to the online environment, or fine-tune existing online courses. We have also adapted design thinking concepts in the context of online learning as a mindset and a toolkit for creating learning experiences.

Our goal with this book is to provide a new approach for looking at the online learning experience and learner-centered design, with a focus on the cognitive, emotional, behavioral, and social needs of the learner considering the affordances of technologies. Our intent is not to provide a new model or recipe for designing online courses but rather to encourage others to think differently about learners, learning, and online course design. The core concepts, learning experience design principles, and integrated framework addressed in this book can serve as the language practitioners and scholars use to talk about learning experience design. The book is an attempt to help the emerging field develop more conceptual rigor. We hope to inspire instructors and course designers to consider these new skills and practices as they move forward into the future of online education.

GLOSSARY

Active learning strategies: A broad range of instructional approaches aimed at engaging learners as active participants in the learning process, bringing together knowing, doing, and active engagement in learning tasks involving multiple learner dimensions (cognitive, behavioral, and social)

Aesthetics: The look, feel, and visual attractiveness of the online course environment, particularly elements of the learner interface and content displays

Age differences (learner characteristics): Cognitive, emotional, behavioral, and social characteristics of learners within different age groupings

Aptitude (learner characteristics): Natural inborn talent or ability enabling an individual to perform certain types of work or tasks easily and quickly

Assessments and feedback (design aspect): Assessments as formative, occurring throughout the online course, and providing a detailed representation of a learner's progress and achievement; feedback as any messages from an instructor, formal or informal, in response to a learner action

Behavioral design principle: Focus on bridging the cognitive, emotional, and social dimensions of learning with opportunities for learners to apply and practice what they have learned

Behavioral dimension: One of the four dimensions of learning that focuses on observable learner actions or what they "do" in the online environment

Cognitive design principle: Focus on crafting learning interactions in ways that help learners use their cognitive capacities efficiently and effectively to accomplish learning goals

Cognitive dimension: One of the four dimensions of learning related to mental activities and processes that include perception, memory, classification, reasoning, critical thinking, and problem-solving

Concept map: Conceptual diagram that depicts relationships between concepts

Conceptual model: An image in the mind of a designer, prior to course development, that describes the purpose, function, look, and feel of an online course, which then shapes the course structure, user interface, and other features of the online course environment

Content interactions (design aspect): Creating, organizing, structuring, and presenting content to learners both synchronously and asynchronously using various media and message design strategies

Copresence: The sense of being together with other people in a shared online environment

Course design aspects: The five major course design focal points of the integrated framework for designing the online experience comprise the course structure and interface, content interactions, learning activities, social interactions, and assessments and feedback

Course structure and interface (design aspect): The first of five aspects of the integrated framework for designing the online learning experience that learners encounter as they use and navigate the online course space, the medium through which a learner's interaction with course content, the instructor, and other learners takes place

Culture and ethnicity (learner characteristics): Individual difference related to cultural dispositions and norms associated with learner ethnicity groups that can influence a learner's overall experience in online contexts

Deep learning: Learners' full engagement of mental resources to comprehend complicated material, understand complex concepts, solve problems requiring analysis and synthesis, and make difficult decisions by drawing upon discipline-specific knowledge and experience

Design thinking: Variously defined as a mindset, a problem-solving process, set of principles, and a toolkit for developing innovative learning solutions, products, and services

Didactic strategies: A teacher-centered method of instruction whereby an instructor communicates information to learners in a direct way such as through presentations and readings

Dimensions of learning: Four core human elements that when holistically integrated into the learning design process bring about meaningful and impactful learning experiences—the cognitive, emotional, behavioral, and social dimensions of learning

Emotional design: A term coined by cognitive psychologist Donald Norman based on the fact that behaviors, thinking, and emotions are intertwined; the idea that learning environments designed to be aesthetically pleasing and functional set the stage for positive learning experiences

Emotional design principle: Focus on design efforts to activate and sustain learner interest and motivation to more fully engage with every aspect of the online course experience

Emotional dimension: One of the four dimensions of learning, closely associated with learner motivation and encompassing both positive and negative emotions

Emotional presence: "The outward expression of emotion, affect, and feeling by individuals and among individuals in a community of inquiry, as they relate to and interact with the learning technology, course content, students, and the instructor" (Cleveland-Innes & Campbell, 2012, p. 283)

Empathic design: A learning design strategy and mindset that approaches learning design decisions from the learners' perspective, considering how they engage and interact with every other aspect of the learning environment

Explanatory presentations: A frequently used strategy of instruction wherein a subject matter expert or instructor attempts to provide answers to presumed learners' questions, clarify difficult concepts, and help learners in their understanding of a particular knowledge domain, mainly involving a didactic teaching strategy

Flow: A holistic sensation of total involvement, a state when a person performing an activity is totally engaged in the activity

Formative assessment: A method to improve learning and provide information about learner development during the online course

Four Cs of learner empathy: Caring about the learner's experience enough to invest effort in making it better; curiosity that provokes interest in what learners are thinking, feeling, behaving, and saying about their experience; conversations with learners about their course experiences, probing and listening to their ideas and suggestions; and changing or correcting the deficiencies in the course design aspects based on learner input

Gamification: "Using game-based mechanics, aesthetics, and game-thinking to engage people, motivate action, promote learning, and solve problems" (Kapp et al., 2014, p. 54)

Gender differences (learner characteristics): A mosaic of attributes that are shared by both males and females in diverse proportions with unlimited variation at the individual level

Growth mindset: Having an open mind or a positive outlook, embracing the idea that a person's capabilities and capacity to learn can be nurtured and developed through practice and hard work as opposed to inborn fixed abilities

Inductive strategies: Means by which learners acquire (induce) knowledge from concrete experiences or through challenging problems presented in the course, including problem-based and project-based learning activities

Information architecture: Part of learner interface design involving grouping, organizing, prioritizing, and presenting categories of content to give a sense of the scope and sequence of the course content, underlying menu design for course units, lessons, and topics as well as site navigation

Information design: Part of learner interface design focused on effective communication and presentation of content so that the learner can understand it more easily and use it to perform tasks

Integrated framework for designing the online learning experience: A mental model providing instructors and course designers with a practical, holistic, and evidence-based framework for achieving learner-centered design goals, resulting in the design of deeper, more meaningful and engaging learning experiences for online learners

Learner characteristics: Evidence-based categories of individual differences that influence the quality of learner interactions and learning outcomes in the online course environment, including prior knowledge, motivation, self-regulation, self-directedness, self-efficacy, perception of self-knowledge, personality traits, age differences, culture and ethnicity, aptitude, and gender differences

Learner interaction with technology: Clicking objects on the screen, scrolling, eye focusing, and other tasks performed related to accessing and interacting with content

Learner interface: The technology-based medium that a learner uses to facilitate all interactions in the online course space

Learner-centered design: A mindset and learning design strategy that approaches the design of each aspect of the online course environment from the perspective of a learner, applying the four dimensions of learning as a lens for envisioning learner interactions comprising the learning experience

Learning activities (design aspect): A skillfully designed form of learner interaction aimed at accomplishing higher-order learning objectives through tasks that actively engage learners at the cognitive, emotional, behavioral, and social dimensions of learning

Learning experience design: A process that involves creating technology-mediated interactions applied at the course, lesson, or activity levels in the online environment, holistic in that it integrates the cognitive, emotional, behavioral, and social dimensions of learning to promote learner engagement and deep learning

Learning experience design principles: A set of heuristics that guide design decisions for each of the five design aspects in the integrated framework for designing the online learning experience

Learning task: Performance-focused actions by learners that support the accomplishment of learning objectives, which at a course structural level, can be viewed as performance components of a larger skill or job, but at a modular level, as smaller action components of a learning activity

Look and feel: Part of the learner interface design of the online learning space related to the graphical surface layer of what the learner actually sees, hears, and interacts with on the screen

Motivation (learner characteristics): An internal force within individuals related to the emotional dimension that activates, directs, and sustains an individual's attention and behaviors toward achieving certain goals, measured in terms of invested mental effort

Participatory design: A design practice that directly involves input from multiple stakeholders such as learners, instructors, and course designers in making decisions regarding the design of the various aspects of the online learning environment

Pedagogical wrappers: An integration strategy using concise descriptors presented before a learner engages in a learning activity, content interaction, or structured social discourse, serving to make explicit the pedagogical purpose of the interaction and its connection with other course material and learning objectives

Perception of self-knowledge (learner characteristics): Learners' ability to accurately self-judge or assess their own learning, which in many cases tends to be self-inflated

Personality traits (learner characteristics): Individual differences in long-standing patterns in the way a person thinks, feels, and behaves

Personalized communication: A style of verbal and text-based communication that uses a conversational tone, often incorporating more personal pronouns, to create a deeper emotional connection with learners, shown to positively influence learner behavior, motivation, and engagement in online learning

Prior knowledge (learner characteristics): An individual's stored knowledge from previous learning experiences, often represented cognitively as schemas and neurologically as existing neural networks

Problem-based learning: An inductive and learner-centered strategy whereby learning occurs through the experience of solving open-ended problems that often involve all four dimensions of learning

Scenario-based activities: Inductive-type learning activities that use contextualization strategies to reinforce application of course content by incorporating story-like narratives of authentic situations likely to be encountered in the real world, with well-designed scenario-based activities integrating all four learning dimensions

Self-directedness (learner characteristics): Learners' ability to guide and direct their own learning with moral, emotional, and intellectual autonomy

Self-efficacy (learner characteristics): A learner trait involving self-perceptions and beliefs about personal ability to understand certain content material and perform learning tasks, with perceived self-efficacy able to influence an individual's effort and persistence in challenging learning situations and impact learning outcomes in both positive and negative ways

Self-regulation (learner characteristics): The degree to which students are "metacognitively, motivationally, and behaviorally active participants in their own learning process" (Zimmerman & Martinez-Pons, 1988, p. 284)

Seven Cs framework: A set of design principles for crafting pedagogically compelling and interactive story narratives for scenario-based learning activities, with well-designed scenarios integrating seven elements into a story narrative: challenge, context, characters, content, choices, consequences, and connections

Shallow learning: Also referred to as *surface learning*, emphasizes memorization of new ideas, facts, and information which tends to result in minimal depth of conceptual understanding and cognitive processing

Social design principle: Focus on social interactions involving discourse between instructor and learner and among learners

Social dimension: One or the four learning dimensions, focused on the relationship of individuals in a learning environment, defined as having "a sense of being with others and responding to each other" (Lehman & Conceição, 2010, p. 16)

Social interactions (design aspect): One of the five aspects of the integrated framework for designing the online learning experience, focused on the design of technology-mediated interpersonal communications between individuals, groups, and instructor to facilitate learning

Spacing and interleaving assessments: Alternating assessments between content presentations and learning activities or embedding assessments and connecting them to new learning to create relevant associations of content

Story-based online content: A contextualization strategy whereby relevant stories associated with learning objectives and course subject matter are integrated into instructional units, lessons, and learning activities to reinforce application of important concepts and principles and to make connections to real-world experiences

Summative assessment: Conducted at the end of the course, determination whether learners met the course outcomes

User experience design: Any design interaction with any product, artifact, or system focusing on people's needs, reactions, and behaviors, taking "the user into account every step of the way" (Garrett, 2011, p. 17)

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