



Designing Online Learning in Higher Education

Florence Martin and Doris U. Bolliger

Contents

Introduction	2
Importance of Design in Online Learning	2
A Brief Overview of Online Course Design Research in Higher Education	3
Standards and Rubrics for Online Course Design	5
Online Course Design Elements (OCDE)	6
Instructor Preparation and Support for Online Course Design	13
Role of Instructional Designers in Online Course Design	15
Recommendations for Instructors and Designers and Future Research	16
References	16

Abstract

Design is critical in online learning. This chapter reviews research and practice on designing effective online courses in higher education. Firstly, the importance of design in online learning is described including asynchronous, synchronous, and bichronous delivery methods, as well as the significance of course organization and meeting learner needs in online courses. Secondly, we provide a brief overview of online course design research in higher education. Thirdly, standards and rubrics for online course design from US colleges and universities as well as professional organizations across the world are reviewed. Fourthly, we describe a research-based and validated online course design element rubric, which includes overview, course presentation, interaction and communication, assessment and evaluation, and student support. Fifthly, the chapter describes how instructors can

F. Martin (✉)
University of North Carolina at Charlotte, Charlotte, NC, USA
e-mail: Florence.Martin@uncc.edu

D. U. Bolliger
Richard W. Riley College of Education and Leadership, Walden University, Minneapolis, MN,
USA
e-mail: dorissbolliger@gmail.com

be prepared for and supported in online course design, incorporating administrator support, pedagogical support, technology support, and personnel support. Sixthly, the role of instructional designers in online course design is described. The chapter concludes with recommendations for instructors and designers and topics for future research.

Keywords

Online learning · Online course design · Higher education · Instructional design · Online instructors · Course quality · Course design elements · Course design standards · Instructional designers

Introduction

Design is critical in online learning. Online course design is described as “a context-specific form of instructional design oriented to online learning spaces. Therefore, online course design includes both the features of the online course, and the processes and procedures used to create that online course” (Martin, Ritzhaupt, Kumar, & Budhrani, 2019a, p. 35). According to Martin et al. (2019a), online learning includes three critical phases: design, facilitation, and assessment and evaluation. This chapter reviews research and practice on the first phase or “designing effective online courses” in higher education. It will first describe the importance of design in online learning and provide a brief overview of research on online course design in higher education. It will then describe standards and rubrics used for online course design and introduce the online course design elements (OCDE). Furthermore, it will describe how instructors can be prepared for and supported in online course design and discuss the role of instructional designers in online course design. The chapter concludes with recommendations for instructors and designers and future research.

Importance of Design in Online Learning

Online courses are no longer an innovation but have become mainstream in higher education. This was particularly the case when the COVID-19 pandemic disrupted the entire educational system worldwide and education shifted from traditional learning to emergency remote and online learning. Online courses provide flexibility because learners are able to participate in learning from anywhere. There are three types of online courses that institutions may offer: asynchronous, synchronous, and bichronous online learning. Asynchronous online learning is anytime, anywhere online learning where students have the ability to participate in courses at their convenience and work at their own pace. This format, however, tends to have limited interaction with peers and instructors due to the lack of real-time communication and immediacy. Synchronous online learning is anywhere online learning but requires

real-time sessions. Students are able to log in through a synchronous tool and communicate with their instructors and peers at the same time. Bichronous learning, although a recent coined terminology, includes the blending of both asynchronous and synchronous online learning (Martin, Polly, & Ritzhaupt, 2020a).

Kuo, Walker, Belland, and Schroder (2013) found that learner-content interaction was the strongest predictor of student satisfaction in online courses. If the course organization is not clear to online learners, it is difficult to retain them in the course. Taking content from an on-campus course and uploading it to a learning management system or delivering content via synchronous lectures does not make an online course effective (Ko & Rossen, 2017). In traditional, on-campus courses, learners have information on how to navigate to their physical classrooms and know what to do once they arrive, which is different from online courses where instructors need to provide enough information on how to get them started and “to get students through ‘the door’ to the content” (Baldwin, 2019, p. 202).

Another important aspect of designing online courses is meeting the needs of learners. The needs of online learners can be different from on-campus learners because many online students are adult learners who have a variety of responsibilities such as jobs, family, and other duties. Therefore, courses need to be designed considering students’ prior knowledge, time constraints, and desired competencies.

A Brief Overview of Online Course Design Research in Higher Education

There are numerous research studies investigating various elements of online course design with a variety of methodologies and methods, study participants, variables, and so forth. It would be impossible to provide a comprehensive review of all of these investigations. However, we would like to highlight a few areas of research such as how instructors design online courses, instructor and student perceptions of online course design elements, other recent developments, and models and frameworks that have been used in online course design research.

Instructors as designers. Recent research has focused on how university instructors approach the design of online courses for adult learners. When Martin et al. (2019a) interviewed eight award-winning online instructors, they found that expert instructors used a systematic approach in their design of the courses, alignment of learning outcomes with content, and chunking of course content. These experts were considerate of online learners’ needs, created opportunities for student interaction, integrated a variety of assessments, and used rubrics to grade activities and assignments. Interviewees also mentioned that consistent course organization is critical in online courses.

Baldwin (2019) found that instructors used similar approaches to course design in face-to-face and online courses. Instructors reported they used approaches and strategies that worked in face-to-face courses to design online courses. Baldwin, Ching, and Friesen (2018a) found that instructors did not use instructional design models; however, they followed a similar process as illustrated in instructional

design models. Instructors who were interviewed developed learning objectives; searched for existing resources and evaluated them; structured courses based on semester length, class size, and content; aligned topics by modules or weeks; uploaded instructional material in learning management systems; and revised courses based on student feedback. In order to assure quality in online course design, some institutions and programs have invested in faculty training for peer assessment (Gibson & Dunning, 2012; Hollowell, Brooks, & Anderson, 2017).

Faculty perceptions. Limited research has been conducted to include the voices of online faculty regarding good quality online course design. Some of these studies investigated practices by instructors (Lenert & Janes, 2017), quality elements and effective online assessment strategies (Gaytan & McEwen, 2007), and faculty perceptions of facilitation and engagement strategies (Martin & Bolliger, 2018; Martin, Wang, & Sadaf, 2020b). Gregory, Rockinson-Szapkiw, and Cook (2020) focused in their study on how faculty perceptions of the Quality Matters™ rubric, which includes online course design standards, changed after participation in a professional workshop.

Student perceptions. There is a plethora of literature on students' perceptions of good quality online course design. Researchers have focused on useful course design elements (Crews, Wilkinson, & Neill, 2015; Fayer, 2014), quality indicators and effective assessment strategies (Gaytan & McEwen, 2007), effective instructor facilitation or engagement strategies, and skills students need to successfully complete online courses (Bolliger & Martin, 2018; Crews et al., 2015; Young, 2006). Other areas that have been examined are student perceptions of outcomes such as student satisfaction with online learning and perceived learning (Bolliger & Halupa, 2012; Bolliger & Martindale, 2004; Kuo et al., 2013; Paul, Swart, Zhang, & MacLeod, 2015; Swan, 2001).

Other research. Additionally, research has been conducted to examine relationships between online course design elements and outcomes using existing data and self-designed checklists. For example, Jaggars and Xu (2016) studied how online course design elements influenced students' grades using a self-developed course assessment tool, course evaluations, and students' grades. Shin and Cheon (2019) used a similar approach to determine student satisfaction with online course design elements by evaluating courses using a self-designed checklist (based on the Quality Matter's rubric) and student course evaluations.

Models and frameworks. While several instructional design models have been used for the design of in-person instruction, many models can also be used for the design of online instruction (Dick, 1997; Morrison, Ross, Morrison, & Kalman, 2019). Some traditional frameworks that have been used in online course design research are Chickering and Gamson's (1987) Seven Principles for Good Practice in Undergraduate Education (see Crews et al., 2015; Grant & Thornton, 2007), Moore's (1989) Interaction Framework (see Bernard et al., 2009; Karataş, Yılmaz, Dikmen, Ermiş, & Gürbüz, 2017), and Moore's (1991) Transactional Distance Theory (see Paul et al., 2015) and the Universal Design for Learning framework developed by the Center for Applied Special Technology in 2008 (n.d.) (see Rao, Edelen-Smith, & Wailehua, 2015). However, there are a few specific frameworks

used to design online courses. For example, Czerkawski and Lyman (2016) developed an e-learning engagement design framework that included four essential components: instructional needs, instructional objectives, learning environments, and summative assessment. The learning environment aspect included components specifically relevant to the online environment such as the development of interaction and collaboration strategies, design of facilitation strategies and feedback, and selection of media and instructional resources. Gao and Ji (2019) created the Five-Star Teaching Cycle Framework of Online Courses which is based on Merrill's (2002) *First Principles of Instruction*. The authors focus on a problem-centered approach that is structured. The framework includes the following steps: problem-centered, problem progression, activation, demonstration, application, and integration. For each stage, instructional design activities are suggested, and interaction activities – when appropriate – are included. Conole (2014) introduces the 7Cs of Learning Design Framework which was developed in partnership with the Open University and University of Leicester to meet the needs of today's learners who has a multitude of digital media and tools at their fingertips. It was conceptualized because it includes the following elements: conceptualize, capture, create, communicate, collaboration, consider, and consolidate. All these models and frameworks emphasize the importance of following a systematic process to design effective instruction.

Standards and Rubrics for Online Course Design

In order to assist practitioners in their efforts to design high-quality online courses, several organizations in the USA have created online course development rubrics. Some of these rubrics include Blackboard's (2020) Exemplary Course Program Rubric and the Quality Matters' (2019) rubric. Several rubrics were developed at universities or colleges in the USA: the California Community Colleges' (2016) Course Design Rubric for the Online Education Initiative, the Illinois Online Network's (2015) Quality Online Course Initiative, the Open SUNY Course Quality Review Rubric (Online Learning Consortium, 2016), and the California State University's (2015) Quality Online Learning and Teaching assist with online course design.

Outside of the USA, there are a few standards such as the Open eQuality Learning Standards (Joint eQuality Committee, 2004) created by the European Institute for e-Learning, the quality assurance framework of the Asian Association of Open Universities (2020), and the Benchmarks developed by the Australasian Council on Open, Distance and e-Learning (2014). Some of these rubrics and standards focus entirely on design, whereas some of them have a broader focus but include some elements pertaining to design. These rubrics have a different number of standards (Table 1); however, all of these rubrics can be used by instructors or instructional designers to guide their design of online courses.

Table 1 List of online learning design rubrics and number of standards

Rubric or standards	Number of standards
Blackboard's (2020) Exemplary Course Program Rubric	17
Quality Matters' (2019) rubric	42
California Community Colleges' (2016) Course Design Rubric	56
Illinois Online Network's (2015) Quality Online Course Initiative	
OSCQR Course Design Review (priorly known as Open SUNY Course Quality Review Rubric	50
California State University's (2015) Quality Online Learning and Teaching	57
Open eQuality Learning Standards (Joint eQuality Committee, 2004) from the European Institute for e-Learning	25
Asian Association of Open Universities (2020) Standards	54
Benchmarks developed by the Australasian Council on Open, Distance and e-Learning (2014)	64

Online Course Design Elements (OCDE)

Building on six of these rubrics, Martin, Bolliger, and Flowers (2021) created and validated the online course design element (OCDE) instrument. This was an extension of a study by Baldwin, Ching, and Hsu (2018b) who identified 22 standard online design elements after analyzing several rubrics including the Blackboard's (2020) Exemplary Course Program Rubric, California Community Colleges' (2016) Course Design Rubric for the Online Education Initiative, Illinois Online Network's (2015) Quality Online Course Initiative, Open SUNY Course Quality Review Rubric (Online Learning Consortium, 2016), California State University's (2015) Quality Online Learning and Teaching, and Quality Matters' (2019) rubric. Martin et al. (2021) extended this analysis through the review of the literature on online course design and an expert panel review. The OCDE instrument includes five categories (Fig. 1) and 38 items (see Table 2).

Overview. An overview to the course assists the online learner in beginning the course. Online learners can benefit from a “getting started” or “start here” module including overview elements such as a student orientation, course goals, student expectations for communication, participation, and assignments. This section can also include the instructor's biography, contact information, availability for office hours, response times, and various policies for the online course.

Research has shown the importance of including a course orientation in online courses (Jones, 2013) for students to be better prepared. Instructional design models and research emphasize the importance of providing course goals and setting expectations. It is also a good practice for the overview module to include the instructor biography and different ways for online learners to contact the instructor (Price, Whitlatch, Maier, Burdi, & Peacock, 2016). Figure 2 includes a sample overview page from an online course with a number of items that students are required to review and complete at the beginning of a course before instructional



Fig. 1 Online course design elements

content is introduced. Online learners can also benefit from an overview of various course projects and the course grading and feedback information.

Content presentation. As part of the content presentation, objectives have to be clearly defined, instructions need to be clearly written and chunked, and activities need to be aligned with the objectives. Online courses have the advantage of including content in various modalities at the same time as maintaining instructional rigor. With this opportunity, however, comes the responsibility of maintaining accessibility for students with disabilities. Most learning management systems (LMSs) have functionalities included to create modules or units and then chunk information based on the course organization (Ko & Rossen, 2017). It is important for content modules to begin with clearly defined course objectives that are aligned with course goals (Czerkawski & Lyman, 2016). Instructional material can be presented in various formats. Figure 3 shows a screenshot of a sample module introduction page which lists the alignment of weekly objectives with course goals in parenthesis and illustrates the alignment with weekly activities.

As mentioned previously, online courses can be delivered asynchronously, bichronously, or synchronously. It is important for the course to include instructor-generated videos or other instructional materials to establish instructor presence. When videos are created, it is helpful to make them reusable (Martin & Betrus, 2019). There are a number of lecture capture tools (e.g., TechSmith Capture™, Camtasia®, Kaltura, etc.) instructors can use to easily record videos in order to integrate them in online courses. These videos can include still pictures or slides,

Table 2 Online course design elements

OCDE categories and items (Martin et al., 2021)
Overview
1. A student orientation (e.g., video overview of course elements)
2. Major course goals
3. Expectations regarding the quality of students' communication (e.g., netiquette)
4. Expectations regarding student participation (e.g., timing, frequency)
5. Expectations about the quality of students' assignments (e.g., good examples)
6. The instructor's contact information
7. The instructor's availability for office hours
8. A biography of the instructor
9. The instructor's response time to e-mails and/or phone calls
10. The instructor's turnaround time on feedback to submitted assignments
11. Policies about general expectations of students (e.g., late assignments, academic honesty)
Content presentation
12. A variety of instructional materials (e.g., textbook readings, video recorded lectures, web resources)
13. Accommodations for learners with disabilities (e.g., transcripts, closed captioning)
14. Course information that is chunked into modules or units
15. Clearly written instructions
16. Course activities that promote achievement of objectives
17. Course objectives that are clearly defined (e.g., measurable)
Interaction and communication
18. Opportunities for students to interact with the instructor
19. Required student-to-student interaction (e.g., graded activities)
20. Frequently occurring student-to-student interactions (e.g., weekly)
21. Activities that are used to build community (e.g., icebreaker activities, introduction activities)
22. Collaborative activities that support student learning (e.g., small group assignments)
23. Technology that is used to promote learner engagement (e.g., synchronous tools, discussion forums)
24. Technologies that facilitate active learning (e.g., student-created artifacts)
Assessment and evaluation
25. Assessments that align with learning objectives
26. Formative assessments to provide feedback on learner progress (e.g., discussions, practice activities)
27. Summative assessments to measure student learning (e.g., final exam, final project)
28. Assessments occurring throughout the course
29. Rubrics for graded assignments
30. Self-assessment options for learners (e.g., self-check quizzes)
31. Opportunity for learners to give feedback on course improvement
Learner support
32. Easy course navigation (e.g., menus)
33. Consistent course structure (e.g., design, look)
34. Easily viewable media (e.g., streamed videos, optimized graphics)

(continued)

Table 2 (continued)

OCDE categories and items (Martin et al., 2021)
35. Media files accessible on different platforms and devices (e.g., tablets, smartphones)
36. Minimum technology requirements (e.g., operating systems)
37. Resources for accessing technology (e.g., guides, tutorials)
38. Links to institutional support services (e.g., help desk, library, tutors)

Note: Items “Content presentation,” “Interaction and communication,” “Assessment and evaluation,” and “Learner support” were excluded because they were short-answer, write-in questions

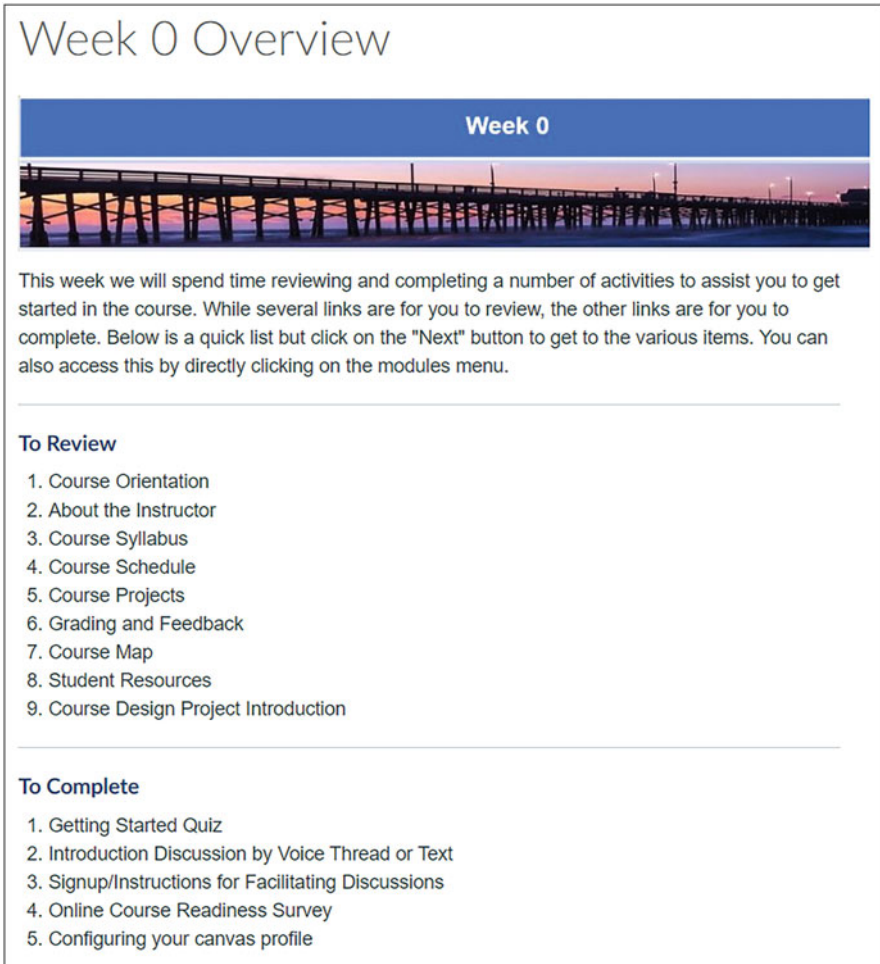



Fig. 2 Sample overview page from an online course

Week 1



Know your Learner (Jan 25 to Jan 31)

In this first week, you will be introduced to characteristics of your learners. The objectives in this week focuses both on characteristics and learning strategies of the 21st century learners which includes Gen X, Y and Z learners.

The instructional material to achieve these objectives include three articles and each one focuses on Gen X, Y and Gen Z learners which assists you in meeting your objectives. The reading from Wilson describes effective elements of teaching millennials (Gen Y students) and the reading from Mohr introduces you to the digital natives (Gen Z students) and the reading from Brown review Gen X students. The elesson that follows the readings summarizes the characteristics and learning strategies used by these learners.

The readings and the elesson assist you to be prepared for your discussion where you reflect on characteristics and strategies that you use as a learner and that your students use.

Weekly Objectives (WO)




By the end of this week, you will be able to:

1. Review characteristics of 21st century learners (CG2)
2. Describe teaching and learning strategies that work for millennial and digital native students, Gen X, Gen Y and Gen Z (CG2)

Tasks

1. Read the articles and review the resources
2. Watch the Elesson
3. Participate in the Discussion

Readings and Resources

1. Teaching, Learning and Millennial Students [\(PDF\)](#) 
Wilson, M.E. (2008). Teaching, learning and millennial students. *New Directions for Student Services*, 2004(106), 59-71.
2. Understanding Gen Z Students [\(PDF\)](#) 
Mohr, K. A. (2017). Understanding generation Z students to promote a contemporary learning environment. *Journal on Empowering Teaching Excellence*, 1(1), 9.
3. New Learning Strategies Gen X [\(PDF\)](#) 
Brown, B. L. (1997). New Learning Strategies for Generation X. ERIC Digest No. 184.

Activities and Assessment

1. Participate in the discussion 1 (measures WO1 and WO2)

Fig. 3 Module introduction page

video files, motion video capture of the instructor's screen, and the instructor's voice. While external video creation tools are available, some LMSs include video recording functionality. Figure 4 shows a short video recording that was created using Camtasia and uploaded using Kaltura into Canvas, an LMS. It also includes closed captioning to support learners with special needs.

Experts recommend keeping instructional videos relatively short – less than 10 min – to hold students' attention. More complex or complicated topics that require more time to discuss can be broken down into smaller segments (Haley & Heise, 2008). Audio files or podcasts can also be easily created and shared on a variety of learning platforms. Another option includes the integration of open educational resources which may add valuable instructional content to a course without having the need for instructors to generate personal content (Colvard, Watson, & Park, 2018).

Interaction and communication. Student interaction is an essential component in online courses. In online education, teaching and learning takes place in different

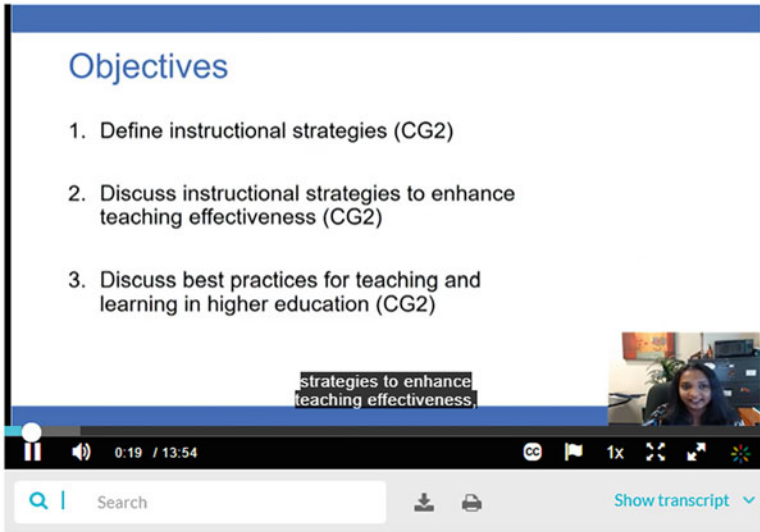


Fig. 4 A short video recording of an instructional lesson

spaces. In other words, online learners are physically separated from their instructors (Moore & Kearsley, 2012). Therefore, it is important to engage learners by creating opportunities for student-student, student-instructor, and student-content interaction. The online course should include opportunities for all three types of interaction (Moore, 1989). These elements focus on the importance of collaborative activities, building and sustaining community, and using technology to enhance interaction and communication.

While various strategies can be used for interaction and communication in an asynchronous online course, synchronous sessions assist in building community and provide immediacy. In an asynchronous online discussion, it is important to provide clear discussion prompts, required number of posts, and due dates. Additionally, it is helpful for learners to include a discussion grading rubric (see Fig. 5).

Some additional ways to enhance learner-instructor interaction and communication include providing periodic announcements, reflection opportunities, and timely feedback. Different ways to provide opportunities for learner-learner interaction include peer review, peer facilitation, group projects, a virtual student lounge for informal conversations, icebreaker discussions, student presentations, etc. (Martin & Bolliger, 2018).

Synchronous sessions can enhance both learner-learner and learner-instructor interactions. The use of various synchronous features, such as text, audio and video chat, polling features, white boards, and screensharing functions, can assist in enhancing interaction with students. Lowenthal, Dunlap, and Snelson (2017) examined the importance of live integrated web meetings, which could reconceptualize virtual office hours. Some of their design recommendations for synchronous sessions included providing a schedule, an orientation to live sessions,

Announcements
This is a graded discussion: 10 points possible
due Feb 21

Pages
Discussion 3 - Discussion 3 1
Jan 29 at 2:10pm

People
From 202110-ADMN-8695-080-ADMN-8695-090-XLSCX202110_Combined
13/30

Discussions
By Thursday, February 18th, 11:59 pm.

Post responses to the following questions with a minimum of 300 words. Use APA references from readings and resources to support your post.

1. Identify a course that you might teach in the future. Describe the course.
2. Describe at least five of the different instructional strategies and best practices that you might be able to use in this course.

Files
By Sunday, February 21st, 11:59 pm.

Read through a sampling of the postings of your colleagues, focusing particularly on those to which you can add relevant or insightful comments that expand the Discussion. Respond to at least two of your colleagues' postings.

Discussion Board Grading Rubric

Discussion Board Grading Rubric			
Response	0	5	10
Posted Discussion	Post was not relevant to course content or no post was submitted.	Posting reflects only a basic understanding of course readings and content, and/or summarizes only basic information that does not support their message.	Student posted thoughtful discussion on time. Posting clearly reflects an understanding of course readings and concepts and uses appropriate terminology and quotes to support the message.
Peer Discussion	Students did not respond to two or more peers.	Responds predictably to other posts, adding little to the discussion and/or references interactions within their reflection but does not provide evidence of learning.	Actively seeks to add depth to the discussion, reflection or critique, providing quality analysis of content.

Fig. 5 Asynchronous online discussion with a grading rubric

and agenda for each session, selecting an inviting title, sending reminders, and sharing a recording of what to expect. When scheduling live sessions, it is important to consider different time zones, vary day and meeting times, and identify important events in the semester. Other recommendations include providing learners with reasons for the sessions and alternative learning experiences for those who are unable to attend, adding incentives for attendance, and engaging students in learning activities during the session. The authors emphasized the importance of including icebreaker activities, involving students in activities, scheduling formal and informal interactions, and modeling the level of interaction.

Assessment and evaluation. Assessments in online courses can look differently from in-person courses. The importance of aligning assessments with objectives is emphasized along with including formative and summative assessments. Frequent, smaller assessments should be spread out throughout the course instead of including high-stake assessments at the end of the course. Instructors should provide periodic feedback on learner progress, an opportunity for learner self-assessment, and an evaluative feedback option on course improvement.

Martin et al. (2019a) determined that assessment and evaluation are important components of effective online courses. Award-winning online instructors who were interviewed recommended the inclusion of a variety of course assessments,

traditional and authentic assessments, and grading rubrics for all assessments. Self-assessments enable learners to measure their progress in achieving learning and course outcomes (Gaytan & McEwen, 2007). For course evaluations, they recommended participation in a high-quality assurance process in which instructors receive feedback on course design and facilitation from both students and peers.

Support. Learner support is also an important online course design category. This category includes easy and consistent course navigation, consistent course structure (e.g., templates), easily accessible and viewable media (e.g., streaming video with closed captioning), minimum technology requirements for learners (e.g., hardware, software), resources for accessing technology such as online guides or tutorials, and links to support services offered by the educational institution (e.g., help desk, library resources).

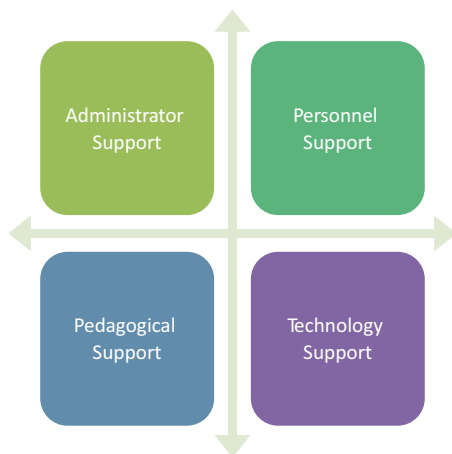
Swan (2001) emphasized the importance of consistent design and easy navigation. When these components are missing, then it is easy for students to get frustrated (Graf, Liu, & Kinshuk, 2010). It is important for all media files to be easily accessible and viewable for all learners. These are essential principles of universal design for learning for content presentation and learner engagement and interaction (Dell, Dell, & Blackwell, 2015; Rose & Meyer, 2006). Coombs (2010) also emphasized the importance of making documents accessible for online learners. Because online learners rely heavily on technology to participate in the course, they need to be aware of minimum technology requirements for them to be successful in the course. Mobile interfaces have been designed for LMSs in order for learners to access courses and content with various devices such as tablets and smart phones (Ssekakubo, Suleman, & Marsden, 2013). Additionally, resources for accessing instructional technologies utilized within the course and support information should be available in case learners encounter challenges. Moore and Kearsley (2012) pointed out that students who learn at a distance need different types of support than on-campus students.

Instructor Preparation and Support for Online Course Design

Not all instructors who begin teaching in higher education are trained to design and deliver online courses. Many doctoral programs focus mainly on content with little consideration for preparation for academic teaching. However, there has been a steady increase in the number of distance or online courses over the past 20 years at higher education institutions. In Fall 2016, over six million students (31.6%) were enrolled in at least one course delivered via distance (Seaman, Allen, & Seaman, 2018).

With the onset of the COVID-19 pandemic, almost all instructors at higher education institutions in the USA were forced to shift from on-campus teaching to emergency remote or online teaching due to campus closures in March of 2020 for several months (Martel, 2020). However, the literature shows that quality online course design requires lead time for instructors, professional development, and instructional design support to assist instructors with the transition from face-to-

Fig. 6 Support for faculty for online course design and teaching



face or blended teaching to online teaching. Martin et al. (2021) determined during the validation of the OCDE instrument that self-reported level of expertise was related to the use of elements listed in the OCDE, whereas years of experience were not.

There are several ways in which instructors can be prepared for and supported in designing online courses. Martin, Wang, Budhrani, Moore, and Jokiah (2019b) found there are four critical areas of support for faculty: administrative, personnel, pedagogical, and technology (Fig. 6).

Administrative support. Some requests from US instructors to their administration included more preparation time; reduced class sizes, including course development into teaching load; and recognizing quality in online courses (Major, 2010). Some institutions are able to provide incentives to faculty who participate in professional development or training pertaining to online course design or who are involved in the design and development of online courses. Although faculty consider supporting their students as the main reason for teaching online, administrators believe providing incentives to faculty is critical (Herman, 2013).

Personnel support. Faculty who are expected to design online courses also have personnel support needs (Martin et al., 2019b). These personnel include design and development support staff such as instructional designers, technicians, graphic designers, multimedia designers, or coders/programmers. Instructional designers are becoming more common in higher education as instructional design needs are growing due to the number of online courses that institutions are offering (Beirne & Romanoski, 2018; Chen & Carliner, 2021). Instructional designers are trained to systematically design instruction for various delivery methods, including blended and online courses. Quite often they are housed in centers for teaching and learning, distance education centers, libraries, or information technology units (Intentional Futures, 2016). Other personnel who can support instructors includes faculty or peer mentors, members of a learning community, and student teaching assistants.

Pedagogical support. Instructors can benefit from learning about online teaching strategies by participating in training to teach online and having access to instructional resources (Martin et al., 2019b). Training programs can be webinars, one-on-one consultations, formal and informal workshops, department workshops, and opportunities for practice. Most centers for teaching and learning at universities offer professional development workshops for instructors who are new to online course design or want to advance their skills. Instructors can also participate in online course design workshops offered by professional organizations such as the Online Learning Consortium or Quality Matters. Doctoral students who wish to be instructors and faculty new to teaching online can enroll in a graduate-level course at their institutions.

Technology support. Technical support for online instructors is critical. This includes access to help desks with knowledgeable staff during the design and delivery phase of online courses. Instructors also requested software for video creation and hardware such as cameras, headsets, and microphones (Martin et al., 2019b). While many universities in North America have access to an LMS, several universities across the world do not use one. This was one of the biggest challenges in course design for universities during the COVID-19 pandemic.

Role of Instructional Designers in Online Course Design

According to Ko and Rossen (2017), many instructors develop courses on their own. However, many institutions have implemented a team approach in an effort to standardize or streamline online courses. Teams may consist of a faculty member and instructional designer or other members such as project managers and instructional technologists. It is estimated that approximately 13,000 instruction designers work at US higher education institutions (Intentional Futures, 2016). Instructional designers are often involved in supporting faculty with the design and development of online courses because instructors may be overwhelmed with other tasks or do not have the skills to develop high-quality online courses (Chen & Carliner, 2021).

In this collaborative process, instructional designers who have been trained in the systematic design of instruction can support instructors in the analysis, design, development, implantation, and evaluation of instruction, whereas instructors serve as content experts and clients (Kumar & Ritzhaupt, 2017). This process is what Chen and Carliner (2021) term an “assignment” role. Other roles include facilitator of workshops and consultants to faculty members who need input on a particular issue. Quite often, instructional designers manage the process of others such as faculty, the university’s administration, information technology personnel, and other instructional designers (Intentional Futures, 2016). Chen and Carliner found that when instructional designers and instructors work together, they usually utilize instructional design models; modified, customized models; and “quality standard tools” (p. 481). Richardson et al. (2019) found that in order for collaborations to be successful, both parties – instructional designers and instructors – need to have the ability to establish connections; build trusting and respectful relationships; take the

time to listen without necessarily providing answers right away; remain open and flexible, particularly when projects shift into a different direction; and be aware of differences pertaining to culture, including the culture of disciplines or organizations.

Recommendations for Instructors and Designers and Future Research

Online course design is critical to the success of online courses. Below are some practical recommendations for instructors and designers for online course design:

- Participate as a student in an online course before you design and/or teach an online course.
- Participate in training before you design online courses.
- Use a framework to guide the design of online courses.
- Review other online courses to get ideas on course design.
- Utilize quality course standards or validated course design rubrics.
- Collaborate with instructional designers.
- Use peer mentoring.
- Use a peer review/observation process.
- Include an overview or getting started module in the online course.
- Include various aspects of course presentation (e.g., media files).
- Interaction and engagement are key to effective online courses.
- Build in learner support structures.
- Provide students with an opportunity to provide continuous feedback.
- Fine-tune your skills by participating in professional development opportunities.

All three types of interactions in online courses (Moore, 1989) are important because they affect student learning (Bernard et al., 2009). However, learner-content interaction even though critical in learning has not been investigated much, and there is a need for more research to examine this type of interaction (Xiao, 2017). Other areas of needed research are the use of online assessments in various contexts (Gaytan & McEwen, 2007), collaboration between online instructors and instructional designers (Chen & Carliner, 2021), and policies for online course design (Meyer, 2002).

References

- Asian Association of Open Universities. (2020). Quality assurance framework. Retrieved from <https://www.aaou.org/quality-assurance-framework/>
- Australasian Council on Open, Distance and e-Learning. (2014). Benchmarks for technology enhanced learning. Retrieved from https://www.acode.edu.au/pluginfile.php/550/mod_resource/content/8/TEL_Benchmarks.pdf

- Baldwin, S. (2019). Assimilation in online course design. *American Journal of Distance Education*, 33, 195–211. <https://doi.org/10.1080/08923647.2019.1610304>.
- Baldwin, S. J., Ching, Y.-H., & Friesen, N. (2018a). Online course design and development among college and university instructors: An analysis using grounded theory. *Online Learning*, 22(2), 157–171. <https://doi.org/10.24059/olj.v22i2.1212>.
- Baldwin, S., Ching, Y.-H., & Hsu, Y.-C. (2018b). Online course design in higher education: A review of national and statewide evaluation instruments. *TechTrends*, 62, 46–57. <https://doi.org/10.1007/s11528-017-0215-z>.
- Beirne, E., & Romanoski, M. P. (2018, July). *Instructional design in higher education: Defining an evolving field*. Boston: Online Learning Consortium. Retrieved from <https://olc-wordpress-assets.s3.amazonaws.com/uploads/2018/07/Instructional-Design-in-Higher-Education-Defining-an-Evolving-Field.pdf>
- Bernard, R. M., Abrami, P. C., Borokhovski, E., Wade, C. A., Tamim, R. M., Surkes, M. A., & Bethel, E. C. (2009). A meta-analysis of three types of interaction treatments in distance education. *Review of Educational Research*, 79, 1243–1289. <https://doi.org/10.3102/0034654309333844>.
- Blackboard. (2020). Blackboard exemplary course program rubric. Retrieved from <https://www.blackboard.com/resources/are-your-courses-exemplary>
- Bolliger, D. U., & Halupa, C. (2012). Student perceptions of satisfaction and anxiety in an online doctoral program. *Distance Education*, 33, 81–98. <https://doi.org/10.1080/01587919.2012.667961>.
- Bolliger, D. U., & Martin, F. (2018). Instructor and student perceptions of online student engagement strategies. *Distance Education*, 39, 568–583. <https://doi.org/10.1080/01587919.2018.1520041>.
- Bolliger, D. U., & Martindale, T. (2004). Key factors for determining student satisfaction in online courses. *International Journal on E-Learning*, 3, 61–67.
- California Community Colleges. (2016). Course design rubric. Retrieved from http://cvc.edu/wp-content/uploads/2016/11/OEI_CourseDesignRubric_Nov2016-3.pdf
- California State University. (2015). Quality learning and teaching (QLT) rubric. Retrieved from <https://ocs.calstate.edu/rubrics/qlt>
- Center for Applied Special Technology. (n.d.). About universal design for learning. Retrieved from <https://www.cast.org/impact/universal-design-for-learning-udl>
- Chen, Y., & Carliner, S. (2021). A special SME: An integrative literature review of the relationship between instructional designers and faculty in the design of online courses for higher education. *Performance Improvement Quarterly*, 33, 471–495. <https://doi.org/10.1002/piq.21339>.
- Chickering, A. W., & Gamson, Z. F. (1987). Seven principles for good practice in undergraduate education. *AAHE Bulletin*, 39(7), 3–7.
- Colvard, N. B., Watson, C. E., & Park, H. (2018). The impact of open educational resources on various student success metrics. *International Journal of Teaching and Learning in Higher Education*, 30, 262–276. Retrieved from <https://www.isetl.org/ijtlhe/pdf/IJTLHE3386.pdf>
- Conole, G. (2014). The 7Cs of learning design – A new approach to rethinking design practice. In S. Bayne, C. Jones, M. de Laat, T. Ryberg, & C. Sinclair (Eds.), *Proceedings of the 9th international conference on networked learning 2014* (pp. 502–509). Edinburgh/Scotland: University of Edinburgh. Retrieved from <https://www.lancaster.ac.uk/fss/organisations/netlc/past/nlc2014/abstracts/pdf/conole.pdf>
- Coombs, N. (2010). *Making online teaching accessible: Inclusive course design for students with disabilities*. San Francisco: Jossey Bass.
- Crews, T. B., Wilkinson, K., & Neill, J. K. (2015). Principles for good practice in undergraduate education: Effective online course design to assist student success. *Journal of Online Learning and Teaching*, 11, 87–103. Retrieved from https://jolt.merlot.org/vol11no1/Crews_0315.pdf
- Czerkawski, B. C., & Lyman, E. W. I. I. I. (2016). An instructional design framework for fostering student engagement in online learning environments. *TechTrends*, 60, 532–539. <https://doi.org/10.1007/s11528-016-0110-z>.

- Dell, C. A., Dell, T. F., & Blackwell, T. L. (2015). Applying universal design for learning in online courses: Pedagogical and practical considerations. *Journal of Educators Online*, 12(2), 166–192. <https://doi.org/10.9743/JEO.2015.2.1>.
- Dick, W. (1997). A model for the systematic design of instruction. In R. D. Tennyson, F. Schott, N. M. Seel, & S. Dijkstra (Eds.), *Instructional design: International perspectives: Volume 1: Theory, research, and models* (pp. 361–370). New York: Routledge.
- Fayer, L. (2014). A multi-case study of student perceptions of online course design elements and success. *International Journal for the Scholarship of Teaching and Learning*, 8(1), Article 13. Retrieved from <https://digitalcommons.georgiasouthern.edu/ij-sotl/vol8/iss1/13/>
- Gao, D., & Ji, Y. (2019). Research on the framework of online course design based on “First Principles of Instruction”. In *2nd Conference on education and cognition, behavior, neuroscience* (ESSP proceedings series, pp. 30–38). <https://doi.org/10.25236/icecbn.2019.006>
- Gaytan, J., & McEwen, B. C. (2007). Effective online instructional and assessment strategies. *American Journal of Distance Education*, 21, 117–132. <https://doi.org/10.1080/08923640701341653>.
- Gibson, P. A., & Dunning, P. T. (2012). Creating quality online course design through a peer-reviewed assessment. *Journal of Public Affairs Education*, 18, 200–228. <https://doi.org/10.1080/15236803.2012.12001678>.
- Graf, S., Liu, T.-C., & Kinshuk. (2010). Analysis of learners’ navigational behaviour and their learning styles in an online course. *Journal of Computer Assisted Learning*, 26, 116–131. <https://doi.org/10.1111/j.1365-2729.2009.00336.x>.
- Grant, M. R., & Thornton, H. R. (2007). Best practices in undergraduate adult-centered online learning: Mechanisms for course design and delivery. *Journal of Online Learning and Teaching*, 3, 346–356. Retrieved from <https://jolt.merlot.org/documents/grant.pdf>
- Gregory, R. L., Rockinson-Szapkiw, A. J., & Cook, V. S. (2020). Community college faculty perceptions of the Quality Matters™ rubric. *Online Learning*, 24(2), 128–141. <https://doi.org/10.24059/olj.v24i2.2052>.
- Haley, K. L., & Heise, K. (2008). *Building the successful online course*. Charlotte: Information Age Publishing.
- Herman, J. H. (2013). Faculty incentives for online course design, delivery, and professional development. *Innovative Higher Education*, 38, 397–410. <https://doi.org/10.1007/s10755-012-9248-6>.
- Hollowell, G. P., Brooks, R. M., & Anderson, Y. B. (2017). Course design, Quality Matters training, and student outcomes. *American Journal of Distance Education*, 31, 207–216. <https://doi.org/10.1080/08923647.2017.1301144>.
- Illinois Online Network. (2015). Quality online course initiative (QOCI) rubric: A tool to assist in the design, redesign, and/or evaluation of online courses. Retrieved from <https://uofi.app.box.com/s/afuyc0e34commxbfn9x6wsvvyk1fq18p>
- Intentional Futures. (2016, April). Instructional design in higher education: A report on the role, workflow, and experience of instructional designers. Retrieved from <https://intentionalfutures.com/static/instructional-design-in-higher-education-report-5129d9d1e6c988c254567f91f3ab0d2c.pdf>
- Jaggars, S. S., & Xu, D. (2016). How do online course design features influence student performance? *Computers and Education*, 95, 270–284. <https://doi.org/10.1016/j.compedu.2016.01.014>.
- Joint eQuality Committee. (2004). *Open eQuality learning standards*. Budapest: Learning Innovations Forum and European Institute for E-Learning. Retrieved from <http://www.futured.com/OpeneQualityLearningStandards2004.pdf.pdf>
- Jones, K. R. (2013). Developing and implementing a mandatory online student orientation. *Journal of Asynchronous Learning Networks*, 17(1), 43–45. <https://doi.org/10.24059/olj.v17i1.312>.
- Karataş, S., Yılmaz, A. B., Dikmen, C. H., Ermiş, U. F., & Gürbüz, O. (2017). Interaction in distance education environments: A trend analysis. *Quarterly Review of Distance Education*, 18(1), 63–82.

- Ko, S., & Rossen, S. (2017). *Teaching online: A practical guide* (4th ed.). New York: Taylor & Francis.
- Kumar, S., & Ritzhaupt, A. (2017). What do instructional designers in higher education really do?. *International Journal on E-Learning*, 16, 371–393. Retrieved from <https://www.learntechlib.org/primary/p/150980>
- Kuo, Y.-C., Walker, A. E., Belland, B. R., & Schroder, K. E. E. (2013). A predictive study of student satisfaction in online education programs. *International Review of Research in Open and Distance Learning*, 14(1), 16–39. <https://doi.org/10.19173/irrodl.v14i1.1338>.
- Lenert, K. A., & Janes, D. P. (2017). The incorporation of quality attributes into online course design in higher education. *International Journal of E-Learning and Distance Education*, 32(1), 1–14. Retrieved from <http://www.ijede.ca/index.php/jde/article/view/987>
- Lowenthal, P. R., Dunlap, J. C., & Snelson, C. (2017). Live synchronous web meetings in asynchronous online courses: Reconceptualizing virtual office hours. *Online Learning*, 21(4), 177–194. <https://doi.org/10.24059/olj.v21i4.1285>.
- Major, C. H. (2010). Do virtual professors dream of electric students? University faculty experiences with online distance education. *Teacher College Record*, 112, 2154–2208. Retrieved from <https://www.tcrecord.org/content.asp?contentid=15946>
- Martel, M. (2020, May). *Report 2: COVID-19 effects on U.S. higher education campuses: From emergency response to planning for future student mobility*. New York: Institute of International Education. Retrieved from <https://www.iie.org/en/Connect/COVID-19/COVID-19-Snapshot-Survey-Series>
- Martin, F., & Betrus, A. K. (2019). *Digital media for learning: Theories, processes, and solutions*. Cham: Springer. <https://doi.org/10.1007/978-3-030-33120-7>.
- Martin, F., & Bolliger, D. U. (2018). Engagement matters: Student perceptions on the importance of engagement strategies in the online learning environment. *Online Learning*, 22(1), 205–222. <https://doi.org/10.24059/olj.v22i1.1092>.
- Martin, F., Ritzhaupt, A., Kumar, S., & Budhrani, K. (2019a). Award-winning faculty online teaching practices: Course design, assessment and evaluation, and facilitation. *The Internet and Higher Education*, 42, 34–43. <https://doi.org/10.1016/j.iheduc.2019.04.001>.
- Martin, F., Wang, C., Budhrani, K., Moore, R. L., & Jokiaho, A. (2019b). Professional development support for the online instructor: Perspectives of U.S. and German instructors. *Online Journal of Distance Learning Administration*, 22(3). Retrieved from https://www.westga.edu/~distance/ojdla/fall223/martin_wang_budhrani_moore_jokiaho223.html
- Martin, F., Polly, D., & Ritzhaupt, A. (2020a, September 8). Bichronous online learning: Blending synchronous and asynchronous online learning. *EDUCAUSE Review*. Retrieved from <https://er.educause.edu/articles/2020/9/bichronous-online-learning-blending-asynchronous-and-synchronous-online-learning>
- Martin, F., Wang, C., & Sadaf, A. (2020b). Facilitation matters: Instructor perceptions of helpfulness of facilitation strategies in online courses. *Online Learning*, 24(1), 28–49. <https://doi.org/10.24059/olj.v24i1.1980>.
- Martin, F., Bolliger, D. U., & Flowers, C. (2021). Design matters: Development and validation of the Online Course Design Elements (OCDE) instrument. *International Review of Research in Open and Distance Learning*, 22(2), 46–71. <https://doi.org/10.19173/irrodl.v22i2.5187>.
- Merrill, M. D. (2002). First principles of instruction. *Educational Technology Research and Development*, 50(3), 43–59.
- Meyer, K. A. (2002). Does policy make a difference? An exploration into policies for distance education. *Online Journal of Distance Learning Administration*, 5(4), 1–13. Retrieved from https://www.westga.edu/~distance/ojdla/winter54/Meyer_policy_54.htm
- Moore, M. G. (1989). Editorial. Three types of interaction. *American Journal of Distance Education*, 3(2), 1–7. <https://doi.org/10.1080/08923648909526659>.
- Moore, M. G. (1991). Editorial. Distance education theory. *American Journal of Distance Education*, 5(3), 1–6. <https://doi.org/10.1080/08923649109526758>.

- Moore, M. G., & Kearsley, G. (2012). *Distance education: A system view of online learning* (3rd ed.). Belmont: Wadsworth.
- Morrison, G. R., Ross, S. J., Morrison, J. R., & Kalman, H. K. (2019). *Designing effective instruction* (8th ed.). Indianapolis: Wiley.
- Online Learning Consortium. (2016). OSCQR course design review. Retrieved from <https://s3.amazonaws.com/scorecard-private-uploads/OSCQR+version+3.1.pdf>
- Paul, R. C., Swart, W., Zhang, A. M., & MacLeod, K. R. (2015). Revisiting Zhang's scale of transactional distance: Refinement and validation using structural equation modeling. *Distance Education, 36*, 364–382. <https://doi.org/10.1080/01587919.2015.1081741>.
- Price, J. M., Whitlatch, J., Maier, C. J., Burdi, M., & Peacock, J. (2016). Improving online teaching by using established best classroom teaching practices. *Journal of Continuing Education in Nursing, 47*, 222–227. <https://doi.org/10.3928/00220124-20160419-08>.
- Quality Matters. (2019). *Course design rubric standards* (6th ed.). Retrieved from <https://www.qualitymatters.org/qa-resources/rubric-standards/higher-ed-rubric>
- Rao, K., Edelen-Smith, P., & Wailehua, C.-U. (2015). Universal design for online courses: Applying principles to pedagogy. *Open Learning, 30*, 35–52. <https://doi.org/10.1080/02680513.2014.991300>.
- Richardson, J. C., Ashby, I., Alshammari, A. N., Cheng, Z., Johnson, B. S., Krause, T. S., . . . Wang, H. (2019). Faculty and instructional designers on building successful collaborative relationships. *Educational Technology Research and Development, 67*, 855–880. <https://doi.org/10.1007/s11423-018-9636-4>.
- Rose, D. H., & Meyer, A. (Eds.). (2006). *A practical reader in universal design for learning*. Cambridge, MA: Harvard Education Press.
- Seaman, J. E., Allen, I. E., & Seaman, J. (2018). *Grade increase: Tracking distance education in the United States*. Babson Park: Bason Survey Research Group. Retrieved from <https://www.bayviewanalytics.com/reports/gradeincrease.pdf>
- Shin, S., & Cheon, J. (2019). Assuring student satisfaction of online education: A search for core course design elements. *International Journal on E-Learning, 18*, 147–164.
- Ssekakubo, G., Suleman, H., & Marsden, G. (2013). Designing mobile LMS interfaces: Learners' expectations and experiences. *Interactive Technology and Smart Education, 10*, 147–167. <https://doi.org/10.1108/ITSE-12-2012-0031>.
- Swan, K. (2001). Virtual interaction: Design factors affecting student satisfaction and perceived learning in asynchronous online courses. *Distance Education, 22*, 306–331. <https://doi.org/10.1080/0158791010220208>.
- Xiao, J. (2017). Learner-content interaction in distance education: The weakest link in interaction research. *Distance Education, 38*, 123–135. <https://doi.org/10.1080/01587919.2017.1298982>.
- Young, S. (2006). Student views of effective online teaching in higher education. *American Journal of Distance Education, 20*, 65–77. https://doi.org/10.1207/s15389286ajde2002_2.

Open Access This chapter is licensed under the terms of the Creative Commons Attribution 4.0 International License (<http://creativecommons.org/licenses/by/4.0/>), which permits use, sharing, adaptation, distribution and reproduction in any medium or format, as long as you give appropriate credit to the original author(s) and the source, provide a link to the Creative Commons license and indicate if changes were made.

The images or other third party material in this chapter are included in the chapter's Creative Commons license, unless indicated otherwise in a credit line to the material. If material is not included in the chapter's Creative Commons license and your intended use is not permitted by statutory regulation or exceeds the permitted use, you will need to obtain permission directly from the copyright holder.

