Planning for Interactive Distance Education

Cindy S. York, Patrick R. Lowenthal, Mary Herring, & Sharon E. Smaldino

Table of Contents

EdTech Books

DOI: 10.59668/858

URL: https://edtechbooks.org/planning_for_interactive_distance_education

York, C. S., Lowenthal, P. R., Herring, M., & Smaldino, S. E. (2023). *Planning for Interactive Distance Education (3rd ed.)*. EdTech Books. https://dx.doi.org/10.59668/858

Cindy S. York

Northern Illinois University

Cindy S. York is an Associate Professor of Instructional Technology (IT) in the Department of Educational Technology, Research and Assessment (ETRA) at NIU, with a focus on technology integration in educational practices. Her most recent scholarship includes Artificial Intelligence, Computer Science Education, and Mathematics Education. She has worked for companies like Hewlett-Packard, Compaq Computers, and 3M in instructional design and as a technology specialist. She also has taught 4th and 5th grade. Her courses currently include PhD Seminar courses as well as Artificial Intelligence in Education, Distance Education, Human Resource Development, and Multimedia Design. She received her PhD in Educational Technology from Purdue University in 2010 where her area of study was instructional design heuristics.

Patrick R. Lowenthal

Boise State University

Patrick R. Lowenthal is a Professor in the Department of Educational Technology at Boise State University. He specializes in designing and developing online learning environments. His research focuses on how people communicate using emerging technologies—with a specific focus on issues of presence, identity, and community--in online learning environments.

Mary Herring

Sharon E. Smaldino

Northern Illinois University

Sharon E. Smaldino, Ph. D., holds the L. D. and Ruth Morgridge Endowed Chair for Teacher Education in the College of Education at Northern Illinois University (NIU). Dr. Smaldino teaches graduate courses in instructional development, distance education, and professional standards and ethical practice. She focuses on working with faculty and P–12 teachers to integrate technology into the learning process. She is the author of *Instructional Technology and Media for Learning.*

1

Introduction

Introduction to Distance Education

> *The COVID-19 pandemic reminded us that distance education can come in various formats and serve many different purposes. There are many ways to develop low-tech, sometimes even low-cost, distance education learning experiences that are still interactive and effective. This book is meant to serve as a basic introduction to interactivity in distance education.*

We find ourselves in exciting times. Today, people can learn nearly anything they want from a distance, often at any time, from any place. Distance education is not new, though. It dates back well over 200 years. However, advances in technology coupled with advances in pedagogy have helped increase overall interest in and use of distance education. Enrollments in online courses[1] alone demonstrate that distance education has in many ways become mainstream, with nearly one in three students[2] taking an online course each year. However, online learning is just one type of distance education.

The COVID-19 pandemic quickly reminded us that distance education can come in various formats and serve many different purposes. In fact, Hodges et al., (2020) were quick to point out the differences between emergency remote teaching and online learning/teaching. But even outside of a pandemic, distance education does not need to look the same or look like the common high-tech, carefully planned, and developed online courses of today to be effective. There are many ways to develop low-tech, sometimes even low-cost, distance education learning experiences that are still interactive and effective.

Acknowledgments are due to Mary Herring and Sharon Smaldino (1997) for their original publication of Planning for Interactive Distance Education. We chose to write a new edition of this book because we think there is still a need today, as there was in 1997 when the first edition was written, for an introductory text on distance education—specifically, a text that discusses some of the fundamental building blocks for planning for interactive distance education. This book is meant to serve as a basic introduction to distance education. We hope it can be a resource for teachers, teacher educators, trainers, faculty developers, instructional designers, and curriculum developers new to distance education.

---

[1] Online learning is just one form of distance education. And even online learning manifests in many different ways. See Lowenthal, Wilson, and Parrish (2009) and Moore, Dickson-Deane, and Galyen (2011) for descriptions and comparisons of different types of online learning.

[2] Throughout this book, we use the terms students and learners. We use students when we are talking about distance education in formal for-credit settings (e.g., K-12 or higher education) or learners when we are focused on

distance education in broader situations (e.g., Massive Open Online Courses or professional development courses).

2

Context

Hybrid Learning | Technology | Collaboration | Synchronous | definition | Blended | Asynchronous | interaction | Distance Education Definition | features | learning objectives

This chapter will briefly define distance education and briefly overview it. We will then focus on the role standards and objectives usually play in distance education. Finally, we will conclude with how technology can assist the distance educator.

Distance education can mean a lot of different things to different people. This chapter will briefly define distance education and briefly overview it. We will then focus on the role standards and objectives usually play in distance education and conclude with how technology can assist the distance educator.

Defining Distance Education

Distance education is education (formal or informal) where a teacher and a learner are separated by space and/or time.

Distance education is not new. Distance education, in the form of correspondence courses, dates to the 1800s. The correspondence course model involved learners completing activities and assignments and sending them (typically via postal mail) to an instructor to grade. The rise of the internet, the World Wide Web, and computer-mediated communication led distance educators to question, rethink, and improve the traditional correspondence model of distance education. More than anything else, these technological advances increased the capacity for interaction. The opportunity for interaction between a teacher and learners, as well as between learners and other learners, distinguishes modern distance education from earlier versions.

During the late 1990s and early 2000s, distance educators began to emphasize the role and importance of interaction in distance education. For instance, the California Distance Learning Project (CDLP) in 2005 identified distance education as consisting of the following key features:

1. the [physical] separation of teacher and learner during at least the majority of each instructional process;
2. the use of educational media to unite teacher and learner and carry course content;
3. the provision of two-way communication between teacher, tutor, or educational agency and learner;
4. separation of teacher and learner in space and/or time;
5. volitional control of learning by the student rather than the distance instructor (para. 6)

While definitions of distance education have evolved in some ways since 2005, these five features still capture the defining features of distance education today.

Today, more emphasis is placed on teasing out the nuances under feature one, specifically about when and how students and teachers interact. Traditionally, and in many ways still today, interaction in distance education happened asynchronously—that is, not happening at the same place and time. For instance, students might work on an activity and an assignment and then mail or email it to their instructor. And then, days or even weeks later, the teacher would grade the assignment and often provide some feedback. Even "most online courses today rely predominantly on asynchronous interaction" (Lowenthal et al., 2017). However, over the years, with technological advances, distance educators began interacting synchronously—that is, happening at the same time—with students, whether that be by adding live synchronous sessions using video-based web conferencing or even some face-to-face meetings. These changes in how students and teachers interact began to complicate the distance education landscape in many ways. This led distance educators to differentiate between different variations of distance education (e.g., correspondence courses, fully online courses, hybrid or blended courses) from in-person face-to-face education (whether web-enhanced or not). Table 1 illustrates how one organization defined these different face-to-face and distance education formats. However, it is important to note, especially since the COVID-19 pandemic, that there is increased interest, at least at colleges and universities, in adding even more flexibility where students could choose to attend a class one week online in a synchronous format, another week face-to-face, and yet another week asynchronously online, and so forth.

Table 1

Common variations of distance education[1]

Variation	Description
Fully online courses	All course activity is done online; there are no required face-to-face sessions within the course and no requirements for on-campus activity
Blended/Hybrid	Most course activity is done online, but there are some required face-to-face instructional activities, such as lectures, discussions, labs, or other in-person learning activities.
Web-enhanced	Online course activity complements class sessions without reducing the number of required class meetings

Interaction in Distance Education

From its inception, interaction has been a critical feature of distance education. Early iterations of distance education mainly focused on students interacting with content. However, as distance education and theories of teaching and learning evolved, an increased emphasis and interest began to be placed on other forms of interaction. Michael Moore (1989) identified three common types of interaction in distance education: learner-to-content interaction, learner-to-instructor interaction, and learner-to-learner interaction[2].

Instructor-to-learner and learner-to-learner interaction may be asynchronous (i.e., delayed or occurring before or after the class period) as in the case of computer-mediated online learning or correspondence programs. It may also be synchronous (e.g., real-time conversations during the distance education class period) with the availability of two-way audio and video technology (e.g., through the use of weekly Zoom meetings). There are benefits to interacting asynchronously as well as synchronously.

Asynchronous instructor-to-learner and learner-to-learner interactions enable instructors and learners to interact when most convenient for them from any location. Most importantly, it allows instructors and learners to think about, reflect on, and take their time to read, respond to one another, and complete any assignments and/or feedback or grading. On the other hand, synchronous interaction allows instructors to replicate many aspects of an in-person, face-to-face educational setting, such as enabling instructors and students to interact in real-time from a distance, often seeing each other. In contrast, they interact, which can help improve timely interaction and social presence, which can then help build an interactive learning community between and among students and the instructor. Advances in technology

continue to provide distance educators with different ways to enable instructors and students to interact asynchronously or synchronously.

The emphasis and importance of interaction continue today. For instance, in the United States, there is an emphasis on ensuring regular and substantive interaction, specifically in online courses. In fact, institutions of higher education that receive federal funding cannot offer distance education courses with no or little instructor-to-learner and learner-to-learner interaction. Therefore, when and if you are designing distance education in formal for credit settings, it is essential to think about how learners might interact with each other and how learners and the instructor will interact.

There is a general preference these days to have teachers and students regularly interact with each other and the course content in distance education. Garrison et al. (2000) developed the Community of Inquiry framework in the late 1990s. That framework posits that meaningful education occurs in a Community of Inquiry, including teaching presence, social presence, and cognitive presence. Each of those presences aligns with Moore's (1989) three types of interaction. Simply put, instructor-to-learner and learner-to-instructor interaction can help develop teaching presence, learner-to-learner interaction can help build social presence, and learner-to-content can help develop cognitive presence. For more on the Community of Inquiry framework, visit one of the following websites:

- https://coi.athabascau.ca
- http://www.thecommunityofinquiry.org

However, these popular models or approaches of highly interactive and collaborative forms of distance education are just one type of distance education. For instance, there are a lot of variations of self-paced distance education (e.g., self-paced eLearning training courses or self-paced Massive Open Online Courses). Anderson (2003), one of the original creators of the Community of Inquiry, later developed the interaction equivalency theorem, in which he argued that as long as any one of the three types of interaction that Moore (1989) identified (i.e., learner-to-learner, learner-to-instructor, or learner-to-content interaction) is of high quality, then the others can be reduced or eliminated without lowering the learning experience. Therefore, while it is often ideal to get a group of learners together and have them experience regular and substantive interaction with each other and the instructor, effective distance education can still be created, focusing on only one or two types of interaction.

Technology in Distance Education

Most types of distance education today use technology in some way to facilitate the learning experience. The array of "low tech" to "high tech" technologies available today allows distance educators to identify the best tools available to meet the needs of students/learners and address the standards or learning objectives. The terms "low tech" and "high tech" technologies usually refer to the levels of immediate interactivity possible using these technologies. What follows is a brief discussion of some of the technologies available for teaching at a distance.

Distance Education Using Low-Level Technology

An early means of providing learning at a distance was via correspondence study. This text-based communication system between educator and student provided an occasion for an individualized form of distance learning. Students would receive printed materials from the instructor, read them, complete the assigned tasks or activities, and return the completed materials for grading, typically at their own pace. After reviewing a student's work, the instructor might give the student a grade (with or without feedback), return the materials for corrections, prepare a test, or forward the next stage of instruction to the student.

Technological advances over time (e.g., with audio and video) enabled distance education to move beyond only using text-based materials. Students could listen to the radio or, later, view television broadcasts for the instructional portion of the lesson and then complete any assignments that needed to be sent to the instructor for grading and/or feedback.

Radio and television are still used in developing countries and some rural areas and have seen a resurgence in some places due to COVID-19.

As the cost to record audio and video decreased, distance educators began sending audio and videotapes, and later CD-ROMS and DVDs, with print-based materials for students to use at home. This improved correspondence study since the student and instructor were not bound to a specified broadcast time for any audio or video component of the instruction. Also, the student could review the lesson repeatedly since the media permitted the student control over the material.

Because of its low cost and the many materials already prepared in this format, correspondence study is still used today worldwide. Students with time constraints or topics that do not require audio or video for instruction are good candidates for this low-tech approach to distance learning. This is also a good option when there might not be consistent internet available.

Correspondence study can and often is enhanced by placing materials on a website or blog (e.g., Google Sites or WordPress) or in a Learning Management System (LMS) such as Blackboard, Canvas, D2L, or Moodle, which we discuss in more detail below under high-level technologies. Technology-supported correspondence study like this is still considered low-level because it tends to take a one-way, individual, and ultimately low-level technological and pedagogical approach to distance education.

Distance Education Using Medium-Level Technology

Advances in telecommunications enabled distance educators to allow multiple users from various locations to talk to each other over a single telephone connection, often referred to today as a conference call. Teleconferencing is a low-cost way to add interaction to distance education. Any visuals necessary for the lesson can be distributed in advance (e.g., via postal mail, email, or downloaded from an LMS) and used at each site during the conversation. The supplementary materials, though, need to be well organized so that participants can be guided through the materials easily and ideally accessible by the learners before the start of the meeting. These are minor problems when weighed against the enrichment of a live, two-way connection.

Today, the Internet and accompanying web conferencing applications have replaced teleconferencing in most places. Students can now log onto an application like Zoom, Webex, or Google Meet (on a smartphone or a computer), where audio and video transmissions allow live, two-way interactions among the participants. The signal quality has significantly improved with advances in computer-based technologies. Web conferencing applications today often include additional features such as a “whiteboard” where all the participants can contribute to an online writing space, polling, and breakout rooms--as well as the additional ability to record the meetings so that those unable to attend can watch later.

Many educators turned to web conferencing to hold live synchronous meetings when they were forced to teach remotely during the COVID-19 pandemic because the technology was readily available, relatively easy to use, and did not require too much planning or rethinking what they usually did in class. In other words, they could continue having class at a particular time and place by having students log in to the web conferencing application.

Distance Education Using High-Level Technology

Advances in personal computing, the internet, and educational and communication technologies have drastically changed distance education. It is now possible to use a computer or a cell phone to connect people and resources worldwide in ways many of us could not imagine a decade ago.

Distance education using high-level technologies essentially refers to efforts made by institutions and organizations to provide distance education at an enterprise level. So, while popular LMSs offer free versions of their software (e.g., Canvas, Blackboard, and Moodle are currently available), these free versions are often limited and must be better suited

to provide distance education at scale. Instead, when institutions and organizations are interested in providing distance education at scale, they usually license some type of enterprise-level LMS that will enable them to manage enrollments and accounts at scale, utilize various features of the LMS (e.g., asynchronous discussion boards, chat/messaging, announcements, quiz/testing, grade book), and integrate and combine other high-level technologies such as ePortfolios, asynchronous video (e.g., VoiceThread, Flipgrid), virtual worlds, publisher materials, and even a library.

Table 2

Low- to High-Tech Technologies

Low-Tech	Medium-Tech	High-Tech
• Television • CD/DVD • Email • Digital camera • Digital video recorder • Telephone/cell phone • Podcast • Blog	• Text chat • Messaging • One-way video • eLibrary • Audio conference • Wiki	• Learning Management Systems • Synchronous Video • ePortfolios • Virtual worlds • VR/AR • Smartphone • Video conference

Whether one is using low-tech, medium-tech, or high-tech technologies (or some combination of the three), instructors and students now have a multitude of ways to communicate one-on-one or many-to-many to help improve the interaction in distance education (see Table 3). Technological advances will continue to provide educators with new ways to interact with learners; however, the key is to let one's instructional goal or objective, not the technology, guide one's instructional decisions.

Table 3

Common Educational Technologies

Technology	Description
Discussion Forum	Discussion forums (also called threaded discussions or discussion boards) are a place where text-based conversations take place asynchronously between multiple people
Chat	A text-based synchronous conversation between two or more individuals
Messaging	A text-based asynchronous conversation between two individuals
Learning Management System	A complex software tool that integrates multiple types of software organized for education systems.
Web Conferencing	The use of the internet and webpages for two or more people to meet electronically to interact via multimedia
Asynchronous Video	One-way video that can be viewed multiple times by an individual. It can be downloaded to a computer or streamed across the internet at any time convenient to the user
Virtual World:	A computer-simulated environment in which avatars represent logged-in individuals. The virtual environment simulates something from reality, such as a classroom, outdoor space, etc., and is a meeting place for interacting online.

Technology	Description
ePortfolio	An electronic portfolio consisting of multimedia
Blog	From the words web log. A text-based entry on an individual's website or group website in which the topic can vary greatly. Most Blogs allow visitors to comment via text-based comments.
Wiki	Text-based webpage or website that allows multiple people to add to the content, edit previously added content and comment. A collaborative tool managed by multiple people to create something, either public or private.
Whiteboard	An online chalk/whiteboard to synchronously write, type, or add pictures that all can see when added to the whiteboard. Multiple people can write on it at the same time.

Objectives or Standards in Distance Education

Clear, understandable, and measurable objectives or standards, aligned with appropriate assessments, are the foundation of high-quality education. This is because they help educators focus on what they want students to know and be able to do and determine later if their instruction was effective. Depending on one's situation, you might have the freedom and flexibility to create your own course objectives, or you might be in a situation where you need to align your instruction to existing course and/or program-level objectives or standards.

Standards come in many forms. There are national, state, and district standards, as well as content or industry-level standards. The Common Core [http://www.corestandards.org] are perhaps some of the most famous standards at the K-12 level in the United States. The Common Core Standards are essentially a set of common content standards that were developed to align and provide consistency across different states in the United States. Distance educators need to be aware of any standards used to align their instruction.

Finding Standards

There are many places where educators can look for standards. Some places to look include:

1. State and district standards: State departments of education are good places to check for state standards, while district comprehensive school improvement plans can provide local guidance.
2. National standards documents: These documents are produced by professional organizations such as the International Society for Technology in Education (ISTE) or content specific such as nursing (The American Nurses Association (ANA) Scope of Practice https://www.nursingworld.org/practice-policy/scope-of-practice/). They contain helpful information about requisite knowledge and skills.
3. External Standards Studies: Studies that have attempted to synthesize national and state standards documents.
4. Curriculum Director: An individual who should have access to pertinent standards documents.

Once you have identified the standards you will use, the next step is to write meaningful objectives to guide your curriculum development. In many cases, though, you might not have any external standards to guide your curriculum development. In situations like that, distance educators must develop their own program and/or course objectives to guide their curriculum development. Often, this is done by answering the question: "At the end of this program or course, what should learners know and be able to do?"

Understanding Standards

Understanding standards takes some time. They are written broadly, with indicators or benchmarks provided for further clarification. Standards are found in several different formats:

1. Content Standards in traditional subject areas: These generally serve as the core of the curriculum, depicting essential knowledge and skills in different subject areas (e.g., the National Council of Teachers of Mathematics (NCTM) standards[3]; the International Organization for Standardization (ISO) standards for human resources management[4]).
2. General reasoning skills standards: Typically, reasoning skills (e.g., problem-solving or decision-making) are included in most standards sets.
3. General behavior in the world of work: Managing time effectively or learning that promotes teamwork, character, and student responsibility is needed to do well in school and work. However, they are seldom addressed in subject standards, but they are often found in school improvement plans.

Writing Measurable Objectives

Different educational systems require objectives to be written in different formats. However, the basic components of a well-written objective are: audience (learner), behavior (what you want them to perform), conditions (any restrictions or aids provided), and degree of accuracy (the level at which they perform to be considered acceptable for the objective). Some refer to this as the ABCD of objective writing. Keep in mind, though, that not all objectives must contain all components and not necessarily in the ABCD order.

As previously stated, objectives are written statements describing what task you want your students to perform. To create a well-written objective, you want to be sure it is clearly written in specific terms and not too general that it becomes vague to interpret. First, make sure it is from the learner's perspective and not the instructor's perspective. In other words, what is it the learner should accomplish at the end of the learning activity? Not what the instructor needs to do to help the learner perform (that would be an instructional strategy). Perhaps the single most crucial part of an objective is the measurable verb. What will learning and success look like? Thus, verbs like "understand" or "learn" are usually not specific enough in an objective. The real question is, how will you know if a student understands something? What does understanding look like? Some even like to work with frameworks like Bloom's taxonomy (Marzano & Kendall, 2008) to help not only classify the levels of thinking of their objectives but also to identify good measurable verbs for their objectives. In fact, there are many lists of action/measurable verbs on the internet for you to utilize.

Additional Reading and Resources

- https://www.sciencedirect.com/topics/social-sciences/learning-objective
- Bloom, B. S., Engelhart, M. D., Furst, E. J., Hill, W. H., Krathwohl, D. R. (1956). Taxonomy of educational objectives: The classification of educational goals. Handbook I: Cognitive domain. David McKay Company.
- Bloom, B. S. (1994). Reflections on the development and use of the taxonomy. In K. J. Rehage, L. W. Anderson, & L. A. Sosniak, (Eds.). Bloom's taxonomy: A forty-year retrospective. Yearbook of the National Society for the Study of Education. 93. National Society for the Study of Education.
- https://www.celt.iastate.edu/teaching/effective-teaching-practices/revised-blooms-taxonomy/

Resources for Action Verbs/Objectives

- https://www.teachthought.com/critical-thinking/249-blooms-taxonomy-verbs-for-critical-thinking/
- https://www.frontiersin.org/articles/10.3389/feduc.2020.00107/full

Chapter Summary

So now that you've chosen your technology (low to high), the standards your course needs to meet, and written the objectives for your learners, you need to design the distance learning experience.

---

[1] These are based on Sener, J. (2015, July). Updated E-Learning Definitions. OLC Insights. https://onlinelearningconsortium.org/updated-e-learning-definitions-2/

[2] See Michael G. Moore (1989) Editorial: Three types of interaction. American Journal of Distance Education, 3(2), 1-7. DOI: 10.1080/08923648909526659

[3] https://www.nctm.org/standards/

[4] https://enterpriseengagement.org/articles/content/8483139/iso-releases-the-first-standards-on-human-resources-practices/

3

Design Considerations

environment | Interactivity | Constructivism | learner analysis | Design considerations | Learner Characteristics | Cognitive abilities | Student-Centered

This chapter addresses issues that should be considered when designing instruction at a distance. Analysis of general learner characteristics can inform the instructor of the types of students in the class. The more the instructor knows about the students, the better the instructor will be able to prepare an effective learning environment.

This chapter addresses issues that should be considered when designing instruction at a distance. This chapter starts by discussing the characteristics of the class (i.e., learner analysis) and then explores the learning environment and learner interactivity. While most educators have experience preparing to teach (some refer to as lesson planning, instructional planning, or course design), the distance setting presents some unique challenges that even veteran teachers must confront. This chapter addresses design considerations you must consider when creating an interactive distance learning environment.

Learner Analysis

Conducting a learner analysis is all about better understanding the types of learners you will have in class or who will be completing your instruction (e.g., in self-paced distance learning situations) so that you can design the best type of distance learning experience for your different learners.

General learner characteristics

When instructors take the time to understand their learners, the learning experience is enhanced. Analysis of general learner characteristics can inform the instructor of the types of students in the class. Among other things, knowledge of these characteristics can aid the instructor in overcoming a sense of separation between the teacher and students. One way to learn this information is by conducting pre-course surveys (see Figure 3.1). Regardless of how an instructor collects the information, instructors should know some essential details about their learners to increase the effectiveness of the instruction. For instance, the instructor should know:

1. Prerequisite knowledge or skills of students
2. Number of students taking the course
3. Demographics of students (e.g., rural vs. urban, age range, education levels)
4. Student backgrounds (e.g., cultural, social, and economic backgrounds)
5. Student expectations (e.g., attitude or interests, intrinsic value of the learning)

As the instructor learns more about their students' diverse nature, the instruction's design can be improved. The more the instructor knows about the students, the better the instructor will be able to prepare an effective learning environment. There are several additional ways in which an instructor can gain information about their students:

1. Contact other instructors who have worked with the group of students involved.
2. Plan some information gathering process (see Figure 3.1).
3. Create opportunities to get to know students at the beginning of the course (e.g., icebreaker).
4. Encourage out-of-class contact with the members of the class (e.g., social media or study groups).
5. Arrange ways to meet the class, whether as an entire class or smaller groups of students, either face-to-face or synchronously online (e.g., Zoom, WebEx, Google Meet).

Getting to know your students is not restricted to “before” the class begins; it is possible to get to know your students and their learning needs as the course progresses and to make shifts and changes where appropriate to meet their needs (see Dobrovolny & Lowenthal, 2011). Additional characteristics to be considered include the students’ general cognitive abilities and needed levels of interactivity.

Figure 3.1

Sample Participant Information Survey

Name:
Cell Number:
Email Address:
Level of education:
Highest degree earned:

Have you taken an interactive distance education class before?
___ Yes ___ No

If yes, what type of class was it? How was interactivity addressed?

Do you have experience with the content of this course?
___ Yes ___ No

If yes, what type of experience?

What do you expect to learn through your participation in this class?

What is your preferred style of participation in a class?

Do you have any special needs that should be addressed?
___ Yes ___ No

If yes, what are they? How can they be met?

Is there any additional information that you wish to share?

General cognitive abilities

A student’s ability to learn will be impacted by the complexity of the environment in which the learning takes place. Understanding the cognitive abilities of one’s students can aid an instructor in designing quality learning experiences. The instructor can observe students' interactions with the content presentations to determine the best ways to encourage learning. An instructor can observe students by checking the following:

1. Prerequisite knowledge or skills
2. Prior learning experiences
3. Learning preferences
4. Responses to questions or results of pre-tests
5. Review of portfolio information

Once this information is available, the instructor can adjust the learning experience to ensure the student succeeds. Note that this can be done on a case-by-case basis, or there are times when an instructor might realize that changes need to be made to the course for all students to succeed. Sometimes, these changes can be made right away to improve the rest of the course; sometimes, these changes will have to be made once the course is over to enhance the course the next time it is offered.

Complex cognitive content requires that learners be able to interpret the information in a meaningful way. This type of content can be presented to students in various formats and modalities to help students gain understanding. Students can remember complex

material better if chunks of information are grouped into meaningful sets. By combining similar knowledge or ideas together, students can improve their understanding and retention.

The distance education environment adds a layer of complexity to learning. To minimize the impact of the complexity of the environment on learning, the instructor may need to develop supportive interventions to facilitate the learning process. Some types of interventions need not be invasive; they can be simply re-writing the directions for the next assignment that students need to complete. By giving the directions using different wording, students might be better able to understand the task. Another way an instructor can help students might be to create supporting materials such as checklists, study guides, and/or rubrics. Also, by varying the presentation of information or by enlisting multiple presentation formats, instruction might be designed to address multiple learner preferences (e.g., some students might prefer text or visuals, while others might prefer audio, video, or animations). See Lowenthal et al. (2020, 2021) for other tips on creating accessible and inclusive distance education environments.

Learner Interactivity

The level of interaction may directly impact student learning. Students who are less social may find it easier to interact with others in a distance education learning environment. Shy students may become more expressive due to the privacy and informative nature of mediated communication. Students may be motivated in a distance learning setting because of increased and varied interactivity and the possibility of immediate feedback. Additionally, all students can benefit from a broader range of cognitive, linguistic, cultural, and affective styles they might not regularly encounter in a traditional self-contained class.

While there is an increased focus on providing regular and substantive interaction in distance education (at least in the United States), it is important to always focus on how interactivity can assist student learning. Students who experience enhanced interactivity within their learning experiences will benefit from expanding their knowledge and relationships with other students, expanding their value systems, and having a shared sense of purpose or goal within the learning context. These are essential elements of a quality learning experience. Distance education can serve as a window to the world by providing experiences that model and project an understanding of the learning process.

Technology-mediated interaction and communication can sometimes feel muted compared to face-to-face; therefore, the instructor must make special efforts to foster learner involvement in classroom interactions. With extraordinary efforts, distance education can enhance learning experiences, expand horizons, and facilitate group collaboration. Learners must have many opportunities to work with their classmates in various ways to provide them with interactivity. What might be deemed interactive in a traditional classroom will need to be improved to foster the types of connectivity necessary to keep communication active in a distance environment. The instructor must create new and innovative ways to keep students “talking with each other” and working together to support students as they learn to communicate and collaborate at a distance effectively.

Once an instructor decides to incorporate an interactive design, the instructor should consider different approaches to creating interactivity. The types of interactive experiences designed will reflect the instructor’s view of when it is essential to provide structured experiences with specific assignments and when less structured experiences can be implemented. The goals and objectives will play a considerable role in the decisions related to the layers of structure incorporated. Several issues need to be addressed when designing interactive instruction at a distance. Meeting the learning needs of individual students is a priority.

Instructional materials are the primary connection students have with a distance learning experience. They often provide a visual connection to the learning experience. Students need to be able to interface with the information with ease; they need to be able to navigate through the learning experience without frustration or confusion. In addition, timelines and calendars can address the individual needs of students who need more structure or guidance.

Strategies adopted by the instructor to ensure interactivity need to be familiar to students, or time needs to be devoted to preparing learners for the specific method employed. The instructor is responsible for preparing learners for the types of learning experiences used throughout the entire learning experience. Interactive strategies can provide opportunities for students to collaborate, converse, discuss, exchange information, and communicate. Techniques are employed to assist students in achieving the outcomes identified for the specific learning experience.

Distance Learning Environments

While distance education dates back over 200 years and online learning dates back to the mid-1980s, it was only in the early 1990s that educators started talking about and designing what we think of today as distance learning environments. Early on, Hannafin (1992) explained learning environments as a set of systems that integrate, to varying degrees, tools, resources, and pedagogical

features that increase student comprehension. Duchastel (1994) then went on to identify four components needed in learning environments:

1. Information: access to learning materials and learning resources, both material and human;
2. Interest: sensory effects that attract attention and the structure of the information itself will help keep the learner on task;
3. Structure: cognitive maps such as themes, content lists, goals, problem sets, etc., assist in the building and refinement of cognitive models necessary to the internal understanding of the facets of the world;
4. Regulation: performed internally (through self-monitoring) and externally (through questions and problems), learner control allows the proper level of interplay between information and the learner's current cognitive structure. Learning environments provide the setting for students to move at their own pace and direction through the knowledge-construction experience.

Attention must be given to each of these areas when designing and implementing learning environments.

Marra and Jonassen (1993) identified the following principles needed to design constructivist-based learning environments:

- focus on knowledge construction, not reconstruction;
- promote context-dependent knowledge construction;
- provide multiple representations of reality;
- provide real-world, case-based settings;
- support for reflexivity;
- provide collaboration, not competition; and
- center locus of control at the learner level.

Note that both Duchastel and Marra's and Jonassen's lists are focused on the technology, not the teacher. The separation of student and teacher provides the opportunity for revisioning the learning opportunities. A shift in the locus of educational activity, from teacher-centered to student-centered, is needed to better prepare students for future productivity. A change from a teacher-centered classroom, where knowledge is an external quantity students must learn, to a student-centered classroom, where students learn the knowledge creation and acquisition process in a setting that provides access to multiple resources. The design of learning environments represents a shift in the educational paradigm that parallels societal changes that began over three decades ago, requiring problem solvers and collaborators. Redefining classrooms from centers for knowledge delivery to environments for learning will place the student within the process of learning how to learn rather than learning to reiterate information. The promise of learning environment design, especially with the growth of online learning, has begun to emerge. With a more complete understanding of the unique nature and features of distance learning systems, new teaching, learning, and technology dimensions will continue to grow.

Student-Centered Teaching

Distance education provides instructors with unique opportunities to extend their classrooms beyond the confines of the campus and to extend their perspectives of teaching by providing an environment based on a reexamination of ideas about teaching and learning. This reexamination parallels what is described as a paradigm of teaching that focuses on the learner. The teacher's job is to get students to interact with each other and the content, to collaborate, and ultimately to help form and get students to participate as a member of a community of learners.

Technological advances enable instructors to move beyond the "talking head" method of delivering instruction (e.g., videotape or one-way television systems) that was once common in distance education. The instructor's role is to guide and facilitate students by asking questions or providing feedback that assists students in finding solutions to problems or creating representations of their learning.

Bruner (1986) once said, "learning is active, dynamic, and continuous; and, importantly, it is inherently an individual as well as a social experience" (p. 25). Combining this concept with technological advances in the schools envisions a different kind of teaching where active, social learners require inventive and responsive learning environments. Emerging technology is increasing opportunities for learning environments with more diverse classroom populations and settings and multiple ways to incorporate new multimodal learning experiences. These advances also provide opportunities for learners to collaborate on their learning in ways that were not realistically possible from a distance not long ago. Johnson et al. (1991) identified several principles that undergird the student-centered approach:

- Knowledge is constructed, discovered, transformed, and extended by students. Faculty create the conditions so students can make meaning from material by processing it through existing cognitive structures, thereby retaining it in long-term memory.
- Students actively construct their knowledge. Learning is thought of as something a learner does, not something that is done to the student.
- Faculty focus lessons on developing students' competencies and talents.
- Education is considered a personal transaction among students and between faculty and students as they work together. Learning is a personal but social process that results from the cooperation of individuals in constructing shared understandings and knowledge. As material becomes more complex and pressure to achieve is increased, it becomes essential that social support is provided for the student within the learning situation.
- Teaching is assumed to be a complex application of theory and research. It requires continual instructor training and refinement of skills and procedures.

While almost 30 years old, these principles serve as a foundation for re-examining teaching and learning roles in the distance education environment that is still ongoing today.

The movement from the "traditional" teaching paradigm toward the student-centered approach finds its foundations in research and theory. Support for a student-centered approach is supported by constructivism. Constructivists believe that learning occurs when new meanings are constructed by the learner within the context of current knowledge. As Poplin (1988) explained, "Learning is not simply the taking in of new information as it exists externally (in adult minds, in the curriculum or text), it is the natural, continuous construction and reconstruction of new, richer, and more complex and connected meaning by the learner" (p. 404). Constructivist-based learning environments incorporate the autonomy of the learners in the educational process. The separation of teacher and student in distance education can be lessened by creating environments that build on the constructivist theory of student activity and interaction.

Additional Reading and Resources

Learning Environments

Herrington, J., Oliver, R., & Reeves, T. C. (2003). Patterns of engagement in authentic online learning environments. Australasian Journal of Educational Technology, 19(1).

Williamson, J. (2016). Effective digital learning environments: Your guide to the ISTE standards for coaches. International Society for Technology in Education.

Constructivism

Duffy, T. M., & Jonassen, D. H. (2013). Constructivism and the technology of instruction: A conversation. Routledge.

Lincoln, Y. S., & Guba, E. G. (2016). The constructivist credo. Routledge.

Chapter Summary

Now that you better understand how important it is to know your learners and the environment in which your course needs to occur, we will move on to the details you need to plan the distance learning experience.

4

Planning Instruction

Assessment | Evaluation | Visuals | Goals | Objectives | Personal Philosophy | Lesson Presentation | Preparing Students | Preparing Teachers | Classroom Management

Planning a distance education course is a multifaceted process. Distance courses require more structure than in-person face-to-face courses. Planning for instruction considers aspects of the resources, levels of interactivity, the types of activities, and how well the instructor and students are prepared for participation.

Planning a distance education course is a multifaceted process. Distance courses require more structure than in-person face-to-face courses. There are many issues associated with planning for instruction at a distance. The actual planning for instruction considers aspects of the resources, levels of interactivity, the types of activities, and how well the instructor and students are prepared for participation. We have found that attending to the following can help when planning instruction:

- Personal Philosophy
- Goals and Objectives for Instruction
- Lesson Presentation
- Visuals in Instruction
- Preparing Students for the System
- Preparing Teachers for the System
- Assessment and Evaluation
- Classroom Management

Personal Philosophy

One's personal philosophy often determines one's approach to teaching at a distance. For instance, one's philosophical beliefs usually affect one's selection of goals and curricular emphases. An instructor who believes in the philosophical arena of realism, idealism, essentialism, or perennialism might see the teacher as the central figure in the classroom, delivering knowledge and modeling to students; in other words, they may adopt a teacher-centered approach. On the other hand, teachers who adhere to the philosophical genres of pragmatism, existentialism, progressivism, constructivism, and social reconstructionism often see students as the central figures in the classroom or as equal partners in the knowledge construction process. While one's philosophy will not predict success in the distance education classroom, successful teaching at a distance should place the students' needs ahead of organizational convenience and at the center of planning and decision-making. Some of these needs can be identified during a learner analysis (as discussed in Chapter 3).

Goals and Objectives for Instruction

As touched on in Chapter 2, clearly identifying a course's goals and objectives is a helpful place to start the planning process. A course's goals, course objectives, and even a particular lesson's objectives often should not necessarily change simply because one teaches in a distance setting. Regardless of the medium, reasonable instructional goals and objectives should form the basis for instruction. It is helpful to share goals and objectives with students, helping them understand the intent of instruction. Objectives should clearly identify what knowledge or skill learners should possess by the end of instruction, and they should ideally be aligned

to the course's assessments. Experienced online course designers often conduct some type of course mapping process to help with this planning. Table 4.1 provides one example of what a basic course map might look like.

Table 4.1

Example of a Course Map to Align Course Objectives with Module / Lesson Objectives, with Assessment

Course Objectives	Module Objective(s)	Module Activities	Module Assessment
Module #: Name of module			
Insert information	Insert information	Insert information	Insert information
Module #: Name of module			
Insert information	Insert information	Insert information	Insert information

Lesson Presentation

After goals and objectives have been developed, the critical elements of a module or lesson need to be outlined. While the key elements of planning are essential regardless of the medium of instruction, they are even more important in distance education because they need to be identified and set up for learners before beginning instruction. Further, there are also often time requirements (e.g., learners should spend X amount of time each week on class) as well as interaction requirements (e.g., regular and substantive interaction is required in the United States for credit courses eligible for federal loans) that one must keep in mind. Timing can differ for distance education courses that rely more on synchronous vs. asynchronous communication.

Timing with Live Synchronous Classes

With live synchronous classes, many agree that the teacher's talk should be at most 10-15 minutes and should be varied with the use of visuals and questioning. An example of a 50-minute lesson might be structured as follows:

Activity	Time
Student/teacher interaction	9:00 - 9:05
Introduction of lesson	9:05 - 9:15
Student Activity	9:15 - 9:30
Questions and discussion	9:30 - 9:45
Conclusion of lesson	9:45 - 9:50

One should also consider what learners can do before a live synchronous class (e.g., read a chapter in a textbook or work on a series of problems) to help make the most out of the time an instructor and students have together in real-time. Finally, one should always plan for things to take a little longer than expected. It is also helpful to keep notes on how well the timing went during a lesson to make adjustments to the next lesson or the next time a course is taught.

Timing with Asynchronous Classes

In an online asynchronous course, timeframes should be flexible so students can fit their learning into their own schedules. Online asynchronous courses are usually set up in modules; a module could last anywhere from one week to two-to-three weeks, in which students have several activities (e.g., readings, discussions, projects, etc.) to complete. A calendar and even checklists that include a list of tasks (e.g., "Post your response to your group") and due dates can help keep learners on task.

Interaction Planning

Interaction planning, as well as teaching methods in general, should be based on the characteristics of the instructor, student, content, and delivery system. Due to the increased responsibility for learning placed on the remote student, methods that focus on the learner and incorporate interactivity have been shown to be most successful. For example, according to Dede (1990), complex "content can be conveyed more readily" by "multiple representations of material (e.g., animations, text, verbal descriptions, visual images)," giving "learners many ways of understanding the fundamental concepts" (p. 14).

Contextual factors must be addressed before methods are chosen. Some suggestions:

- If it works in a regular classroom, it probably will work in electronically mediated instruction with some adjustment.
- Consider a variety of techniques but think interactively so students feel part of a learning community, sharing common goals and purpose.
- Combine techniques, a new learning environment opens the door to creative planning.
- Don't be afraid to experiment, to explore, to be creative.

Whatever strategy is adopted to actively engage students in the learning process, a method that includes modeling, reflecting, and actively involving the student and development of a community of learners should be selected (Conrad & Donaldson, 2011).

Attention to levels of interaction (i.e., between and within students, groups, and instructors) is essential. Class discussions, whether asynchronous or synchronous, take time. Further, they need to be intentionally planned and facilitated. Some suggestions for improving learner activity include:

- Make interaction expectations explicit in the course materials.
- Provide equal opportunity to access the teacher.
- Create and list groupings for class activities.
- Utilize peer learning and peer coaching.
- Stress the importance of individual differences and contributions to group efficacy.
- Place group problem-solving in an authentic context.
- Encourage both the cognitive and affective aspects of learning.
- Provide consistent, meaningful immediate feedback.
- Foster active involvement to prevent students "hiding" in distant sites.
- Show an individual on camera as he/she speaks (if possible).
- Adhere to class size recommendations and limits.

Table 4.2 provides one way instructors can plan and balance interaction in a course. And then Table 4.3 lists some more specific learning activities one might use.

Table 4.2

Time and Interaction Planning

Activity	Time	Type of Interaction
Module #: Name		
Activity Name Brief activity description		Instructor - learner; learner - learner; or learner - content
Module #: Name		
Activity Name Brief activity description		Instructor - learner; learner - learner; or learner - content

Table 4.3

Interactive Learning Activities - Quick Tips

Activity	Description
Buzz Sessions	Small group; short discussion; report to class
Brainstorming	Creative thinking; free association of ideas
Panel Discussion	Limited presentation followed by Q/A
Small Group Project	Each site works outside of class; presents project; Q/A
Written/Visual Scenario	Each site works on a situation, presents project; Q/A
Simulation	Present cases, problems, scenarios, etc.; students role-play; analysis and discussion about resolving the situation
Games	Competition can be between sites or students
Incomplete statements	Incomplete statements handout provided; students complete handout; thoughts shared with all sites
Character Dialog	Individual assumes role of a character; carries on class discussion
Debate	Moderated, organized, civil argument; discussion may follow
In-basket	Memos, letters, reports provided; students write responses; discuss findings
Group Work Exercise	Students given problem or situation; 10-20 minutes to solve
Site Surveys	On-site poll of opinion/values; results tallied; responses discussed
Ice Breakers	Games/techniques to reduce stress, introduce subjects or people
Questions Hotline/FAQ	Public page of questions asked and answered
Student-generated Questions	Student questions listed at the beginning of class; answered as class progresses
Alter Ego	Students take stand on relevant issue; opposites paired between sites; debate their identified point of view

Visuals in Instruction

Educators often do not place enough emphasis on creating and using visuals in their instruction. Visual literacy refers to the ability to interpret visual messages accurately and to facilitate the creation of visuals that prevent confusion. The visual component of instruction at a distance is very important.

Goals of visuals

Research has demonstrated that using visuals influences student learning (Bader & Lowenthal, 2018; Cohen et al., 1981). Good visual design tries to achieve at least four basic goals to improve communication between an instructor and students:

1. Legible visual information
2. Clarity of message
3. Increase learner engagement with visuals
4. Focus on the most important information

Legible visual information

When considering legibility, it is important that all students can see or read the information easily. Using high-resolution images and visuals can help accomplish this. In a web-based environment, using a font and font size that are readable without excessive

scrolling facilitates the learners attending to the information. An HD Webcam and a document camera can also help when teaching in a synchronous format.

Clarity of message

Using text and graphics to communicate can enhance the clarity of a message. More information can be presented using multiple visuals, such as several slides in a PowerPoint presentation, or by providing links to multiple visuals. One rule of thumb when creating PowerPoint presentations is the 6x6 rule. Making sure that there are at most six lines of text per slide and at most six words per line can improve the design of a PowerPoint slide by presenting learners with a manageable amount of text or information per slide. This can be addressed in a web-based environment by segmenting the information with targets or lines to divide the presented topics or areas. Another way of ensuring that visual information is readable in an online environment is to allow no more than one screen's length of information--that is, avoid forcing students to scroll too much so that they are not overwhelmed by the amount of visual information presented at any given time.

Increase learner engagement with visuals

Visuals that are pleasing to look at or that are visually stimulating increase the potential for learner engagement. If students can connect what they are doing to what they are learning, they will find more value in the materials. Choosing graphics that enhance rather than distract from the message draws the learners into the visual, thus helping them use the visual information for their learning.

Focus on the most critical information

Well-designed visuals can help students focus their attention on important information. Using techniques such as color or size can place emphasis where it is appropriate. Designing the visual to provide cues to the learner is one way a visual can help the learning process.

When using computer-prepared materials, preparing student handouts or documents that can supplement or enhance the visual information is simple. Providing students with handouts (e.g., a Word Document or Google Document) simplifies notetaking and ensures all the handouts are clearly visible.

Simply put, visuals are an essential means of presenting information to learners. Visuals can be a graphic outline of essential information for the learner. They serve as a reference for ideas. Attention to critical elements of their creation will assist students in more effectively learning the intended information.

Designing Visuals

Decoding or interpreting visuals is affected by a visual's design elements. Seeing a graphic does not necessarily mean that one can learn from it, but a well-designed visual can assist learners in developing knowledge. We will briefly address a few elements to consider when designing visuals or any instructional materials.

Fonts

The font style should be consistent and harmonize with other design elements. For informational purposes, a plain style is recommended. A sans serif font (such as Arial or Calibri) or a simple serif style (such as Times New Roman) should be used. Using more elaborate font styles can make it harder to read visuals.

In addition to font style, one should consider when and if to use all capital letters. Whenever using all capital letters, make sure it is only for short lines of text, such as a title. Do not use all capital letters for whole paragraphs of text, as this is difficult to read and can be interpreted as "shouting."

Letter or font size becomes less important in distance education environments. For instance, while it is better to use a larger font size and fewer words per line in PowerPoint slides presented in a face-to-face environment, in an online setting, font size is less critical, where learners can often customize the font size on their end as needed.

Color

Color can be added to text to increase interest and ensure students find vital information. It is critical to use strong contrast (e.g., dark lettering on a light background) to improve readability. Be sure to use colors that do not compromise or distract the visibility of the visual for someone who might be colorblind. Also, be careful using animated text; it can potentially detract from the intended

message. A word of caution: use the color red sparingly; it tends to reverberate when projected onto any screen. There are contrast checker tools available online that can help (e.g., https://webaim.org/resources/contrastchecker/).

Alignment

Spacing or alignment is also essential. It is best to avoid crowding materials into a small space. Use plenty of “white space” around any visual, thus making sure that students can see particular elements. If the instructor puts too much information into too small a space, it may be difficult for students to identify what they should be looking at when viewing the visual. (See White Space is Not Your Enemy by Golombisky & Hagen for more information).

Texture

Adding texture to a visual or using a real object that has texture works well with a document camera. A scanned image where the digitized image can be viewed from multiple points of view achieves a similar experience for learners. It is possible to focus the view to highlight specific parts of an object, showing the learners precisely what is essential to view.

Pattern

The pattern is critical when designing good visuals. Select visual patterns that include shape, balance, and style can augment the learner’s understanding of the material. Use shapes familiar to learners for arranging the information so that they can follow the direction of the material and not be confused. For example, use a triangle to present information to learners, with the most critical information at the top and the subsets of information across the bottom.

Balance

Create visuals with a balance that is equal weight to the parts of the visual. Learners may need help to discern the information if it is difficult to read the material because it does not visually guide the learner across the material. By enlisting balance to visuals, learners will more likely not overlook information.

Different audiences or age groups might like different styles of visuals. Instructors may need to experiment to see what types of visuals their learners prefer. For instance, they may wish to have real objects or photographs, or they may prefer graphic representations because they prefer less complex visuals.

Preparing Students for Distance Education

Preparing students for instruction is important in any teaching mode. Still, preparing students for settings where class participants are not located in the same physical classroom is especially important. While the learning environment will ultimately determine what items need to be addressed, Table 4.4 lists a few things to consider.

Table 4.4

Time and Interaction Planning - Quick Tips

Consideration Area	Items
Attendance or Participation Policy	• Expectations • Access to missed material for review
Classroom Management & Netiquette	• Expectations • Consequences
Student Materials	• Distribution • Collection • Evaluation
Testing Procedures	• Expectations • Make-up

Consideration Area	Items
Technical Difficulties	• Who to contact for assistance • Online tutorials
Classroom Technology	• Access to instruction (e.g., LMS, Web conferencing software) • Required hardware and software (e.g., webcam, microphone)

Students must also realize that attending an online class is very different from a traditional in-person class. Unlike in a face-to-face in-person class where any time spent on class outside of attending "class" is considered "homework," in a distance or online class, students are always in "homework" mode. The perception that online classes take more time is exacerbated by the fact that the usual face-to-face time is now spent in front of a computer and possibly split up over multiple days in any given week.

It is important to remember, even with everyone's experiences learning from a distance during COVID-19, that distance education may still be new to some students and teachers. Therefore, care must be exercised in preparing students to succeed with distance and online education.

Preparing Teachers for Distance Education

Instructors preparing to teach a distance course should remember that they are expected to help each learner succeed. Presenting a "human" side is important since instructors and students usually do not have the opportunity to meet regularly face-to-face in person. Students' perceptions of their instructors can affect their course participation and in the end the quality of their learning experience. Table 4.5 lists some things to keep in mind when preparing teachers to teach from a distance.

Table 4.5

Teacher Planning - Quick Tips

Consideration Area	Tips
TECHNIQUES OF DELIVERY	
Developing social presence and maintaining rapport with students	• Get to know students • Admit mistakes • Regularly interact with students
Class Format	• Develop a course schedule • Balance individual and group work • Plan for student-student and instructor-student interaction
Timing	• Develop and adhere to a predetermined schedule • Post announcements and reminders • Provide timely feedback
Usability and Visual Design	• Make course content easy to access • Focus on making course and instructional materials visually pleasing
PERSONAL QUALITIES	

Consideration Area	Tips
Interaction	• Avoid becoming a “talking head” • Maintain eye contact • Let your personality show • Guide students to solve their own problems • Provide ongoing constructive feedback aimed at improving performance • Use various interactive techniques to involve the entire class, whether the course is asynchronous or synchronous.
Voice	• Do not rush instruction (whether live or recorded) • Allow time for reflection and assimilation • Show interest and enthusiasm
Appearance	• Dress professionally • Avoid distracting clothing; wear solid colors; avoid red • Avoid distracting backgrounds

Assessment and Evaluation

A well-designed learning experience has evaluation embedded into it. The two critical components of evaluation are: student assessment and design evaluation. Assessment is essential to measuring learning. Evaluation is important to future design. Explanations can provide directions for accomplishing tasks and for understanding the expectations for completing assignments. Rubrics and checklists are connected to assignments and are valuable tools in helping learners to understand their responsibilities for the learning tasks and can serve as data-gathering instruments for evaluation.

Matching learners' success with the actual objectives or standards is a way of identifying how the various tasks and events helped learners reach the outcomes. Other approaches can be incorporated into evaluation. Keeping a record of the events within each learning experience is helpful. A mid-course and/or end-of-course survey requesting feedback from students related to the course design is another means of gathering the data to use for course improvement.

The purpose of assessment and evaluation is not only to assess learner outcomes but also to evaluate both the instructor and the learning platforms’ effectiveness.

Assessing Students

To begin the assessment process, instructors must consider the intended learning outcomes identified when planning the instruction. Some advocate to design assessments at the time goals and objectives are being prepared (which is sometimes called backwards design). Others feel this stifles the creative process for the design and implementation of instruction. What is important here is the return to the intended outcomes. To design good assessments, one needs to determine what needs to be measured and how to best go about that process.

Formative assessment

The assessment process has several formats. In the more formal assessment venue, daily quizzes or unit tests can serve as gauges of progress. Less formally, online discussions and questioning within a live synchronous class session give an instructor an idea of how well the students are progressing within the context of a unit of instruction (Simonson et al., 2019). This formative assessment process allows the instructor to understand how well students are doing with the content. Further, especially for those returning to an educational setting after a long period of working, this formative assessment allows individual students to conclude how well they are doing within the context of a formalized class. Often, they feel much better knowing how much they have learned in smaller steps rather than waiting until an end-of-term test or formal paper or project.

Another benefit of more frequent assessments is that instructors can rely on multiple assessment procedures. By providing students with several different ways of demonstrating their knowledge and skills, students can overcome any problems associated

with a particular assessment tool (Savenye, 2004). Students like having the opportunity to demonstrate their understanding and use various assessment tools. Thus, formative assessment is a valuable tool for both the instructor and the student.

Summative assessment

End-of-unit or end-of-semester testing or projects assess students' overall understanding of the content as a whole. It allows the instructor to revisit areas of the content addressed earlier in the term and help students draw upon their knowledge to generate a complete understanding of the content.

Online assessments

Technology can support many different types of assessments. The primary issue is how error-critical the information is for students. If students must demonstrate specific skills or sets of knowledge, there may be a better approach than using an online format for testing. The instructor needs to consider the students' experience in terms of assessment procedures and technology. A student unfamiliar with multiple-choice formats for testing may be uncomfortable with an online test. However, this same student can learn to overcome those feelings when provided "practice" taking an online test. It is the instructor's responsibility to be sure that any assessment procedure is familiar to the students and that when using technology, the students can easily access and complete the assessment.

A significant advantage of using technology to administer traditional assessments (e.g., multiple-choice, short-answer, etc.) is that certain limitations can be imposed. For example, one way to control cheating, a concern of instructors, is to have a timed test. Limiting the time necessary for a student to take a test makes it less likely that students will try to use resources or materials to help select responses. It is possible to have more items in a test bank, thus ensuring that there are random items, thus making it more difficult for two students to have the same test in the same order. An instructor can limit the test access options (e.g., no preview option, no printing option, etc.). There are many ways in which a traditional test can be administered electronically and still maintain the integrity of the testing situation. There are now online proctoring tools and plagiarism tools instructors can use, such as SafeAssign, Turnitin.com, or general technology such as screen sharing or video. However, keep in mind that educators increasingly criticize some of these tools for violating student privacy or highlighting problems with traditional forms of assessment.

Alternative assessments

Alternative assessment formats used in the traditional instructional setting can be adapted easily to a distance learning environment (Simonson et al., 2019). When using alternative assessment formats, it is essential to consider the resources and access available for students. Can they obtain the materials they will need to prepare the product that will demonstrate their learning? Further, technology can be used to prepare and submit these types of alternative assessment devices. For example, students can prepare web pages with their materials. Or they can create a portfolio using Google Drive or Dropbox, or a website tool like Google Sites. As with traditional testing approaches, instructors need to be sure that their students have experience and sufficient practice before using a new tool for any high-stakes testing.

Evaluation of Class Effectiveness

Distance education aims to evaluate technology as an effective way to provide a learning experience. There must be more than assessing learner outcomes to declare distance learning effective. Online educators should consider conducting self-evaluations and having their students complete end-of-course evaluations. Three important things to consider when evaluating online or distance courses are the instruction, the course content, and the technology.

Instruction

Teacher self-evaluations should be both formative and summative. Formative evaluations are conducted during the course of instruction, ranging from daily reflection to a more formal periodic assessment. Summative evaluations are conducted to draw conclusions about course effectiveness. These evaluations will result in the enhancement of the quality of learning.

In the formative evaluation process, two questions need to be considered. The first relates to reflection on the action or activity that occurred: "Is this working?" (Schön, 1987, p. 125). To evaluate effectivenss, distance educators need to consider what has happened within the instructional event. All experiences, both those considered to be positive or negative, have some element of surprise. It may be that expectations were achieved; it may be a serendipitous event that led to another altogether different, albeit pleasant, outcome. Whatever the nature of the event, it is essential to reflect upon what has happened.

Reflection may take the form of a critical assessment of the events, satisfying curiosity about the nature of those events. It may consider the success of the learning situation. Reflection brings the teacher into a state of knowing about the learning event. It is now possible to move into the second question of the formative evaluation process, considering how to improve the situation.

The second question is, "How can I improve this?" The instructor needs to examine the instructional event in terms of what worked and what appears to have been a problem. The second phase of the formative evaluation is concerned with helping the teacher ensure a more successful educational experience for students. The teacher needs to consider issues such as the learning task, the instructional materials, and the teaching strategies and where the technology may play a role in the instruction.

When examining effective instruction, it is essential to look at how the technology impacted the delivery of instruction. The teacher must consider the hardware elements and their effect on the students. If a problem occurs with the lesson because of the system's hardware components, what is the nature of the problem? Was the problem a temporary issue? Can the hardware be improved? Can things be done to the interactive instructional resources to aid instruction in the future?

If the problem does not relate to the hardware, then what was the problem? Perhaps the students need to be better informed about how to use the equipment. It may be that students needed preparation for the lesson. Perhaps the teacher may need to prepare other types of handouts manipulatives, or orientation videos to ensure students can accomplish the tasks. The instructor may need to select an alternative teaching strategy to improve interactivity and student outcomes.

Because many different factors affect the interactive learning environment, reflective teaching practices play an even more significant role in developing effective teaching practices. To consider what has transpired and how to change it creates a dynamic educational experience for both the teacher and the learners. Formative evaluation is essential for successful interactive instructional experiences.

Summative evaluation is an overall judgment at the end of the course. The teacher reflects on how well the instructional experience went. Considerations about teaching strategies, types of materials, and assessment are among those things a teacher needs to consider for determining the instruction's success. A summative evaluation provides closure to the instruction and a basis upon which to build when offering a course through distance education in the future.

Course Content

Evaluation is a critical part of any curriculum. Distance educators need to examine the content, sequence, and lesson design to ensure that the content aligns with the larger curriculum. In any distance learning environment, one particular issue, time constraints, makes it necessary to examine the essential elements of the course content closely. The instructor must balance content with limited time for learning activities and remove extraneous nonessential information.

Sequencing of information also needs examination. Several variables, characteristics of the learners, the essence of the content, time, and the number of students in various locations, are all critical when deciding the order of presentation. Because the instructor and some or all of the class are separated, the material must be sequenced logically.

Students can provide insight into the design of lessons. Students can give feedback on lesson design and instruction delivery. The instructor can examine the information from all students involved in a distance class to determine if the presentation mode was effective for everyone. Evaluating these responses gives the teacher the learners' perception of the content.

Technology

Assessing the use of technologies in a distant setting is essential. In any distance learning environment, technology becomes the most critical concern for the instructor. The teacher must be familiar with the hardware and the nuances of the technology to use it effectively. Once the technology becomes transparent in the learning setting, the instructor can reflect on the lesson quality and outcomes and plan for subsequent lessons.

The instructor must consider several elements when teaching in a distance learning mode. First are the basic operations of the equipment. In an online course, the instructor needs to be familiar with the software used to deliver the course and be able to help students troubleshoot when they cannot access the resources or course materials. Further, the instructor must ensure that the distant student has the hardware and software resources to access the course materials without undue burden. The teacher needs to know the processes for communicating with all students and to ensure that the course runs smoothly, keeping the technological issues to a few unanticipated problems.

Evaluating the equipment should be ongoing throughout the lessons. The instructor must be aware of the consequences of any technology choices made in the lesson. The types of interactivity possible within the lesson are another consideration. Upon

completing the lesson, the teacher should assess the quality of the lesson in terms of the types of experiences provided and how different these experiences might have been from other choices in the types of technologies used.

Finally, the teacher must be prepared with alternatives for each lesson in case of problems. What will the students do during the lesson if the technology is not operating correctly? The teacher and students must be prepared for times when the entire platform is not working correctly. Preplanned contingencies should continue the learning process even though the technology is malfunctioning. Alternative lessons must always be ready, but hopefully never needed. Students need to be able to move into the subsequent phases of the learning process while maintaining time and patience with the course. Organizing the alternatives for learning as backup or contingent on system failures is critical. Students need to understand that they are expected to participate in the planned activities, not to withdraw from them using technology as an excuse not to participate. If the technology is operating appropriately, students should be expected to use the original plan for the learning event.

But, sometimes, there are problems. For example, if you have a Zoom session set for a specific time, but students are unable to log in, or Zoom isn't working, make sure your students know ahead of time your alternative plan (e.g., a backup platform or watch their email for a message from you). Remind.com is one tool that allows the instructor to text the entire class (provided they signed up ahead of time; we suggest doing this on day one) without the students knowing the instructor's private cell phone number. https://www.remind.com/ Remind has two-way communication, and the free version currently lets you have up to 10 classes at a time. Another possible backup plan to an LMS is to store files in Google Drive; you could share them with the students just by sharing a folder. You could then use other Google tools to discuss, write documents, or other interactive activities with your students. Whatever you choose as your backup plan, make sure it is in place at the beginning of the course, and your students know what it is, so it is ready when you need it.

Table 4.6

Sample Teaching Evaluation Form

Please use the following scale to critique the lesson: **1=Not Applicable; 2=Needs Improvement; 3=Average; 4=Very Good; 5=Excellent**
Design 1. Developed content [1 2 3 4 5] 2. Prepared instructional materials [1 2 3 4 5] 3. Encouraged student participation [1 2 3 4 5] 4. Enhanced retention and transfer [1 2 3 4 5] 5. Provided assessment criteria [1 2 3 4 5]
Implementation 1. Used effective teaching strategies [1 2 3 4 5] 2. Gained the attention of the learner [1 2 3 4 5] 3. Informed the learners of the objective(s) [1 2 3 4 5] 4. Connected to prior learning [1 2 3 4 5] 5. Asked probing questions [1 2 3 4 5] 6. Provided for learner interactivity [1 2 3 4 5] 7. Checked for understanding [1 2 3 4 5] 8. Summarized the lesson [1 2 3 4 5]
Assessment/Evaluation 1. Provided verbal and/or written feedback [1 2 3 4 5] 2. Offered timely feedback [1 2 3 4 5] 3. Used effective assessment techniques [1 2 3 4 5] 4. Solicited student feedback to ensure learning [1 2 3 4 5] 5. Used assessment data for evaluation [1 2 3 4 5] 6. Frequent reflection on instructional effectiveness [1 2 3 4 5]
Personal

Please use the following scale to critique the lesson:
1=Not Applicable; 2=Needs Improvement; 3=Average; 4=Very Good; 5=Excellent

1. Kept within the time frame [1 2 3 4 5]
2. Created a positive learning setting [1 2 3 4 5]
3. Balanced interaction among participants [1 2 3 4 5]
4. Created good rapport with students [1 2 3 4 5]
5. Used good "listening" techniques [1 2 3 4 5]

Technology

1. Used a variety of media effectively [1 2 3 4 5]
2. Provided visualization of lesson content [1 2 3 4 5]
3. Operated the equipment with ease [1 2 3 4 5]

Classroom Management

Poor classroom management can inhibit the best-planned instruction. Classroom management involves establishing an environment in which learning can occur. Educators make decisions related to the organization and structure of any class, as well as how to manage or handle situations when things don't go well. In the distance setting, the issue of classroom management becomes an even more critical issue to address because of the separation of instructor and students.

What is effective class management? Merriam Webster's Dictionary (2020) defined it as: "(1a) control gained by enforcing obedience or order," and "(5) a rule or system of rules governing conduct or activity." These varying definitions illustrate the divergent views on the topic. However, elements of good disciplinary techniques are often viewed as necessary strategies for managing any class. For example, establishing guidelines for appropriate responses, routines, and expectations, as well as timelines and due dates, will help to facilitate the management of the class (Starko et al., 2003).

Proactive strategies imply anticipating situations and planning appropriate measures to avoid situations rather than assuming a reactive approach to class discipline issues (Starko et al., 2003). When taking the time to consider the types of students who enroll in the course, an instructor can design the instructional strategies and the appropriate response patterns to ensure that the course will move along smoothly.

People are different, settings are different, and both are constantly changing. Class management procedures that effectively outline student performance need to reflect those differences. One set of procedures cannot always be effective. The more the instructor knows about the learners prior to beginning instruction, the more likely he or she will be in selecting appropriate class management techniques. This information can be gathered through discussions with prior instructors or pre-course questionnaires.

Table 4.7

Management Guidelines - Quick Tips

1. Work with students to establish class rules.
2. Prepare a few rules prior to meeting students.
3. Keep the list of rules limited in number and scope.
4. Establish and maintain class routines.
5. Maintain a sense of humor.
6. Learn about the members of the class.
7. Learn the policies of other institutions if they are involved.
8. Use video when possible.
9. Privately address concerns to individuals.
10. Be yourself.
11. Use reasonable requests.
12. Vary class activities.
13. Avoid over-generalizing responses.
14. Be cautious about using sarcasm.
15. Be a positive, active model.
16. Be aware of personality conflicts.
17. Recognize students who are having problems and contact them individually.
18. Be aware of differences among the students.
19. Be cautious of expectations at sites when you don't have enough information.
20. Spend time anticipating issues and plan for them.

Additional Reading and Resources

https://roomtodiscover.com/online-classroom-management/

https://www.teachthought.com/pedagogy/online-classroom-management/

https://www.edutopia.org/article/extending-classroom-management-online

https://journals.lww.com/nursingmadeincrediblyeasy/fulltext/2016/07000/online_class_teaching_tips.2.aspx

Chapter Summary

In this chapter, you learned about the multifaceted process of designing interactive distance education. You specifically learned more about things such as the importance of developing goals and objectives for instruction, preparing students for learning, and the role of formative and summative assessment and evaluation. In the next chapter, you will learn more about distance education learning environments.

5

Environment

Blended Learning | Open Education | Online Learning | Hybrid Learning | HyFlex | Collaboration | Learning Management Systems | Internet | WWW | Computer-Mediated Communication | Cooperation | Web 2.0 | Messaging Tools | Whiteboard Tools | Social Networking Tools | Video Communication Tools | Online Content | Assistive Technology

Online learning offers students flexibility, connectedness, and choice in their educational path. Technology can connect people and resources anytime and anywhere around the world. The beauty of the fluid nature of the technologies allows the instructor to plan for a variety of learning opportunities.

There are many different types of distance education environments today. However, the most common are online learning courses administered in some type of learning management system. Given this, this chapter focuses predominantly on online learning.

Online Learning

Increasingly, learners are demanding any time and place educational opportunities. In fact, even before COVID-19, over 30% of students took at least one online course a year in the United States. Thus, institutions are responding by offering more courses and programs online.

Online learning offers students flexibility, connectedness, and choice in their educational path. The transition to a fully online environment is not a trivial matter. Faculty members must reconfigure their courses to consider the interface between the user and technology and between the content and those participating in the course. Students must get used to the fact that the environment in which they live, work, or sleep is now their classroom. They can spend many hours sitting in front of a computer or cell phone screen instead of interacting with others in person.

While distance learning now comes in many different forms, its history is rooted in the connection between instructor, learner, and content mediated by technology. Computers have been used in education for a variety of instructional activities. Advanced fiber optic systems, broadband, cellular data, etc., are bringing educational opportunities to those who would have previously traveled to attend classes. Technological advances have made it possible for institutions, organizations, and all types of educators to use online education in new and expanded ways like never before. Now, instead of thinking of learning spaces as confined within the four walls of a classroom, it is possible to use technology to connect people and resources anytime and anywhere around the world.

Hybrid (Blended) Learning Environments

At the same time, even before COVID-19, educators have tried to use online learning environments and communication technologies to offer local students hybrid or blended learning environments. For instance, it is possible today to arrange for some face-to-face types of sessions while part of, if not the bulk of, the instruction takes place online. The beauty of the fluid nature of the technologies allows the instructor to plan for a variety of learning opportunities for students.

The hybrid distance learning environment can be defined as any situation in which a variety of technologies are used to mediate portions of a course. For example, an instructor might meet for three weeks in a row in person with students and then turn the class over to an online venue for the rest of the semester. Or there might be optional face-to-face meetings for students monthly so that students can connect with the instructor or peers.

HyFlex Learning Environments

As mentioned earlier, the newer HyFlex (hybrid + flexibility) learning environment is a blend of multiple learning environments from which the students enrolled in the course can choose (Beatty, 2019). For example, the instructor can offer two or three equivalent ways in which the class content will be provided (in-person synchronous, online synchronous, online asynchronous), and the students will choose which method they prefer (either weekly or topically), allowing them to switch between the environments throughout the semester.

Teaching and Learning Online

Educators have discovered that the design and implementation of distance education require a reexamination of the teaching and learning process. Teaching online is a multifaceted process that can include access and investigation of information, interactive collaborative learning groups, email advising, worldwide guest speakers, and presentation of part or whole courses online. Unique opportunities and challenges emerge when teaching online because communication and learning/teaching differ from traditional classroom methods. Sometimes, the activities are so different that they require new communication techniques and new understandings of how people learn. Underlying online education's use in education is Computer-Mediated Communication (CMC) or what some now refer to as electronically mediated discourse.

Computer-Mediated Communication

Communication via the Internet has traditionally been labeled Computer-Mediated Communication (CMC). CMC identifies all types of functions where computers facilitate and support human communication. CMC helps to break down location and time barriers. It can allow for interpersonal communication at a distance, enabling students to access information in a self-paced exploratory fashion, reinforce learning, and create environments for self-directed and collaborative learning.

CMC can be used anywhere an individual's computer (or smartphone) is connected to the internet. Some of the advantages to using computer-based learning environments include:

- Facilitation of self-paced learning.
- Integration and utilization of multimedia to improve student learning.
- Development of interactive and collaborative learning environments.
- Increased access enables students and teachers to attend class from almost any location.

Due to increased computer use, public internet access, and smartphone adoption and use, this type of activity has grown exponentially in the last twenty years, providing expanding learning opportunities for education.

Advantages and Limitations of Internet Use

As with any educational tool or setting, using the Internet has advantages and limitations. Benefits of Internet use in education include:

- Time savings: both place-shifting and time-shifting of instruction are available options
- Idea exchange: students gain multiple perspectives from experts in the field and other students worldwide
- Cost: costs are nominal, considering the amount of access afforded
- Information access: students can connect to human and information resources in the community and worldwide.

Limitations of internet use in education include:

- Access: the user must have a way of connecting to a (high-speed) network
- Learning curve: all educational technologies have some learning curve
- Support: Lack of technical support can prohibit student learning
- Lack of immediacy: Asynchronous communication can easily drift from the planned subject, be dominated by a few participants, allow participants to become lurkers who are listening but not contributing, or disappear due to lack of facilitation

Awareness of the advantages and limitations will assist teachers and instructional designers as they create their computer-mediated learning environments.

Collaborative/Cooperative Learning with the Internet

Using computers for online education has made it easier for students to study, problem-solve, and work in groups, with the computer used to facilitate the process. Collaborative/cooperative learning consists of small groups of students who investigate, research, discuss, present facts and opinions, and arrive at a consensus regarding a topic assigned by the instructor or agreed on by the group and the teacher. This can involve a wide range of cooperative activities requiring active peer involvement and participation using shared resources, resulting in a common experience. Given the massive, open-ended data found on the internet, rather than just selecting facts memorized from a traditional lecture, educators can require students to find and process information in a method not unlike the world awaiting them when they leave school. Information processing models such as Pathways to Knowledge (Pappas, 2000) and the Big Six (Eisenberg & Berkowitz, 1990) provide guidance for finding, using, and evaluating information. They can assist students in dealing with the plethora of information found on the internet. Students who learn to effectively process information, collaborate with others, and take responsibility for personal learning will acquire lifelong learning skills.

The role of the teacher in the collaborative/cooperative CMC learning environment (sometimes called the Community of Inquiry) is to facilitate the learners' knowledge acquisition by assisting in developing learning exploration paths, asking reflective questions, and participating in learning negotiations. The teacher is also responsible for establishing a positive climate for collaboration through the introduction to the purpose, process, and goals of the group before students begin working together. Following the introduction, the teacher must step back and allow the groups to function. The amount of teacher intervention following the introduction will depend on the student's expertise; the more students can take responsibility for the learning process, the less the teacher needs to intervene.

The role of the student shifts from relatively passive listener, notetaker, observer to the position of explorer, contributor, discussant, problem-solver in individual or group work, from competitor to collaborator, and from learning independently to learning interdependently. This atmosphere can prepare students for the "real world," where effective interdependence and consultation are expected and required for success.

The World Wide Web

The World Wide Web (WWW) represented a significant advance in making information retrieval on the Internet quick and efficient. The ability to publish on the web opened doors and removed barriers to information dissemination. However, the WWW has evolved over the years from a static environment in which only a few people can create and share content to an environment where nearly anyone with an internet connection can publish, edit, share, and revise content online for anyone to see.

Learning Management Systems

During the 1990s, as the web grew, companies began creating online applications referred to as learning management systems (LMSs). Some of the first LMSs were FirstClass, WebCT, and Blackboard. There are hundreds of LMSs available today; common ones include Blackboard, Moodle, Desire to Learn, and Canvas. Even companies like Adobe or Articulate have developed their own LMSs as a way for customers to host eLearning created with their products (e.g., Adobe Captivate, Articulate Storyline). As helpful as LMSs can be, they can be expensive (e.g., even an open-source LMS requires hosting and support) and limited in the tools available for interaction and collaboration. They have also been criticized for restricting access to educational materials for only a given time for a limited number of people.

Web 2.0

During the mid-2000s, several technologies emerged that have been described as Web 2.0 technologies (to differentiate them from earlier forms of publishing on the Web). These new technologies (e.g., Blogs and Wikis, and even website creation tools like Wix and Weebly) began enabling people to create and share content easily. Educators turned to these technologies, especially early on, because they simplified the process of creating and sharing content with students from a distance. However, educators quickly realized students should also create and share content online. Thus, there began and continues today interest in using Web 2.0 technologies to deliver content for students at a distance and to get students to create content to share with the world.

Open Education

In many ways, web 2.0 and social networking technologies (discussed below) helped further democratize the web and increase the interest in open education. Educators began offering massive open online courses (MOOCs) using Web 2.0 and social networking technologies or learning management systems provided by companies such as Coursera and EdX.

Internet Tools for Interactivity

Online learning has been defined by its ability to enable students to interact with instructors, fellow students, and content. For most of its history, people differentiated online learning by how people interacted—that is, synchronously or asynchronously. Early online courses, as well as most online courses still to this day, relied heavily, if not exclusively, on text-based asynchronous communication such as email and discussion forums in LMS. As internet access improved, educators began using text-based synchronous communication (e.g., chat) and video-based synchronous communication (e.g., web conferencing applications). However, today, there are many different internet tools for interaction.

Messaging Tools

Early text-based chatting tools prompted LMS companies to offer some type of chat room in their applications to hold synchronous group chats. While nearly every LMS (and even many social networking tools) provides some type of chat room, the continual development of third-party instant messaging applications like Google Chat, WeChat, or even more recently, Slack has helped popularize this interaction between teachers and students.

Whiteboard Tools

Many LMSs and web conferencing applications offer some type of whiteboard tool where one can draw, type, or solve problems as they would on a whiteboard in a classroom. However, more recently, companies have developed offshoots of these tools like whiteboard.fi, Padlet, Lucidspark, or FigJam by Figma that enable learners to interact on a shared space or “board” either synchronously or asynchronously.

Social Networking Tools

Educators have also increasingly used social networking tools to get students to interact with each other, content, and/or the larger community. For instance, Twitter, Facebook, or LinkedIn groups can enable students to interact and collaborate with each other and their larger communities of practice. Some educators, especially people promoting open education, even prefer to have students interact in public, with public communication tools, instead of behind the lock and key of an LMS.

Video Communication Tools

Text-based communication is often criticized for being too lean and filtering out visual cues. Distance educators today interact and collaborate with students using a variety of video-based, synchronous, and asynchronous communication tools. Synchronous video-based communication tools, like Zoom, Webex, Google Meet, or Microsoft Teams, enable educators to meet in real-time, see each other via Webcams, and interact using text, audio, and video. However, less known are asynchronous video-based communication tools like Flipgrid and Voicethread that enable educators to communicate via a computer or phone by recording short videos and commenting on the videos of others.

Other Interaction Tools

And yet, there are still many interaction tools available, and more to come for educators. For instance, educators regularly use tools such as Google Docs and Google Sheets to co-create documents and presentations and tools like Hypothesis to socially and collaboratively annotate documents together.

These environments, platforms, and interaction tools provide opportunities for discussions free of preconceived notions about participants, as is often found in a face-to-face setting. However, they do need monitoring and usually active facilitation by the teacher to ensure the discussion remains appropriate to the task.

Creating Online Content

Due to the development of learning management systems and the rise of Web 2.0 technologies, teachers and students find themselves creating content for various online environments. The following are some rules of thumb to follow when creating online content:

- Be clear to ensure readability
- Add a clear keyword-driven title
- Use headings and subheadings to structure content
- Use short sentences
- Be brief for ease of message interpretation
- Supply links to new pages for each new subject
- Establish a common pattern for pages designed to work together
- Put like items together
- Use harmonious colors that contrast with backgrounds
- Establish the right tone for the intended audience
- Content intended for businesses should reflect a business-like tone
- Content intended for fun are open to vision of the designer
- Attention should be paid to number of items, positioning, and color selection in relation to the audience
- Increase active engagement
- Web users have short attention spans, so pages must grab their attention and entice them to think about the message
- Clarify purpose or objective early on
- Use journalistic tricks of the trade
- Write a great lead sentence or headline
- Put all pertinent information in the first paragraph or two

Assistive Technology Elements

Online instructional materials should contain assistive technology or universal design for learning (UDL) properties so all users can access them. Common disabilities include visual, hearing, motor skills/physical, photosensitive, and cognitive, among others. Assistive technologies such as screen readers or speech recognition software can be used to help the user work around any issues or accommodate special needs. Therefore, to allow these technologies to work, you should consider including the following:

- Closed captioning and transcripts for videos/audio
- Alternative (alt) text for images
- Unique, descriptive names for links
- Caution with color use and contrasting colors
- Keyboard input
- Use tables intentionally and only when needed

Additional Reading and Resources

- Beatty, B. J. (2019). Hybrid-Flexible Course Design (1st ed.). EdTech Books. https://edtechbooks.org/hyflex
- The 20 Best Tools for Virtual and Distance Learning https://www.prodigygame.com/main-en/blog/virtual-learning-tools/
- 75 digital tools and apps teachers can use to support formative assessment in the classroom https://www.nwea.org/blog/2021/75-digital-tools-apps-teachers-use-to-support-classroom-formative-assessment/
- Center for Applied Special Technology https://www.cast.org/

Chapter Summary

This chapter addressed different distance education environments–specifically, topics such as learning management systems, web 2.0, and open education, as well as internet tools to use for interaction in the online classroom. Make sure the course is inclusive by using assistive technology or universal design for learning (UDL) practices. In the next chapter, you will learn more about distance education copyright.

6

Copyright

Fair Use | Creative Commons | Copyrighted Works | Attribution and Acknowledgement | Licenses and Contracts | Teach Act

> *The Fair Use Guidelines for Educational Multimedia were adopted as nonlegislative reports by the Subcommittee on Courts and Intellectual Property, Committee on the Judiciary, U.S. House of Representatives, on September 27, 1996. These guidelines represent an agreed-upon interpretation of the fair use (https://www.copyright.gov/title17/92chap1.html#107) provisions of the Copyright Act.*

Copyright is an important topic for any instructional situation, especially when teaching in distance education settings. The use of copyrighted materials can be affected by the types of materials and the types of technologies that are being employed. The following chapter will cover the basics of fair use so that an educator can make informed decisions when selecting copyrighted materials. When in doubt, seek legal advice!

Fair Use Guidelines for Educational Multimedia

The Fair Use Guidelines for Educational Multimedia were adopted as nonlegislative reports by the Subcommittee on Courts and Intellectual Property, Committee on the Judiciary, U. S. House of Representatives, on September 27, 1996 (Moorehead & Schroeder, 1996) and are still being updated today. These guidelines represent an agreed-upon interpretation of the fair use (https://www.copyright.gov/title17/92chap1.html#107) provisions of the Copyright Act by a large majority of institutions and organizations affected by educational multimedia. However, only the courts can decide whether a particular use of a copyrighted work falls within the fair use exemption; these guidelines represent a consensus view of what constitutes the fair use of a portion of a work that is included in a multimedia educational project. The specific portion and time limitations are meant to help educators, scholars, and students identify whether using a portion of a certain copyrighted work constitutes a fair use of that work. The more one deviates from these guidelines, the greater the risk that the use of a work is not fair use and that permission must be obtained.

For the full Title 17 Copyright Law of the United States Code, see: https://www.copyright.gov/title17/title17.pdf

Multimedia Fair Use Guidelines

(See https://copyright.columbia.edu/basics/fair-use.html for more detailed information).

The multimedia fair use guidelines apply to the use, without permission, of portions of lawfully acquired copyrighted works in educational multimedia projects that educators or students create. This creation must be part of a systematic learning activity attached to nonprofit educational institutions. Educational multimedia projects created under these guidelines incorporate students' or educators' original material together with various copyrighted media formats,

including, but not limited to, motion media, music, text material, graphics, illustrations, photographs, and digital software, which are combined into an integrated presentation.

For the purposes of the guidelines, educators include faculty, teachers, instructors, and others who engage in scholarly, research, and instructional activities for educational institutions. The copyrighted works used under these guidelines can be considered lawfully acquired if they were obtained by the institution or individual through lawful means such as purchase, gift, or license agreement, but not pirated copies. Educational multimedia projects, which incorporate portions of copyrighted works under these guidelines, may be used only for educational purposes in systematic learning activities. The activities can be used by teachers with students enrolled in courses at non-profit educational institutions for non-commercial curriculum-based learning and teaching activities, or in any other way allowed by the rules. Both students' and educators' uses are addressed within these guidelines.

Preparation of Educational Multimedia projects using Portions of Copyrighted Works

These uses are subject to the Portion Limitations and should include proper attribution and citation. We have only included permitted use for teachers/instructors in this section. Please see more comprehensive rules for what students can use.

Educators may incorporate portions of lawfully acquired copyrighted works when producing their own educational multimedia programs for their own teaching tools in support of curriculum-based instructional activities at educational institutions. Uses of educational multimedia projects created under these guidelines are subject to Time, Portion, Copying, and Distribution Limitations.

Online educators may perform and display their own educational multimedia projects created under these guidelines. For curriculum-based instruction, provide a password-protected learning environment (with some limitations).

Limitations: Time, Portion, Copying, and Distribution

The preparation of educational multimedia projects incorporating and using copyrighted works under these guidelines is subject to limitations. We describe some of these limitations below, but before you move forward, we suggest you follow up to see if they have changed or are still applicable where you live.

Time Limitations

Educators may use their educational multimedia projects created for educational purposes under these guidelines for teaching courses for a period of up to two years after the first instructional use with a class. Use beyond that time period, even for educational purposes, requires permission for each copyrighted portion incorporated in the production.

Portion Limitations

Portion limitations mean the amount of copyrighted work that can reasonably be used in educational multimedia projects under these guidelines, regardless of the original medium from which the copyrighted works are taken.

Motion Media

Up to 10% or 3 minutes, whichever is less, in the aggregate of a copyrighted motion media work may be reproduced or otherwise incorporated as part of a multimedia project created under these guidelines.

Text Material

There are several issues associated with text materials:

- Up to 10% or 1000 words, whichever is less, in the aggregate of a copyrighted work consisting of text material, may be reproduced or otherwise incorporated as part of a multimedia project created under these guidelines.
- An entire poem of less than 250 words may be used, but no more than three poems by one poet or five poems by different poets from any anthology may be used.
- For poems of greater length, 250 words may be used, but no more than three excerpts by a poet or five excerpts by different poets from a single anthology may be used.

Music, Lyrics, and Music Video

As with text, there are limitations associated with music, lyrics, and music video materials. Up to 10%, but in no event more than 30 seconds, of the music and lyrics from an individual musical work (or in the aggregate of extracts from an individual work), even if the musical work is embodied in copies or audio or audiovisual works, may be reproduced or otherwise incorporated as a part of a multimedia project created under these guidelines.

Illustrations and Photographs

The reproduction or incorporation of photographs and illustrations is more difficult to define with regard to fair use because fair use usually precludes the use of an entire work. Under these guidelines:

- A photograph or illustration may be used in its entirety, but no more than 5 images by an artist or photographer may be reproduced or otherwise incorporated as part of educational multimedia projects created under these guidelines.
- When using photographs and illustrations from a published collective work, not more than 10% or 15 images, whichever is less, may be reproduced or otherwise incorporated as part of an educational multimedia project created under these guidelines.

Important Reminders

Other considerations need to be addressed when incorporating copyrighted materials. The use of the internet can present an interesting challenge for educators when using copyrighted materials.

Attribution and Acknowledgement

Educators and students are reminded to credit the sources and display the copyright notice © and copyright ownership information if this is shown in the original source for all works incorporated as part of the educational multimedia projects prepared by educators and students, including those prepared under fair use. Crediting the source must adequately identify the source of the work, giving a full bibliographic description where available (including author, title, publisher, and date of publication). Traditionally, the copyright ownership information includes the copyright notice (©, year of first publication, and copyright holder's name).

The credit and copyright notice information may be combined and shown in a separate section of the educational multimedia project (e.g., credit section) except for images incorporated into the project for the uses described in these guidelines.

More recently, educators (influenced in part by Creative Commons) will list the title of the material, the author, and the source (i.e., where it is from) when providing attribution.

Licenses and Contracts

Educators and students should determine whether specific copyrighted works or other data or information are subject to a license or contract. Fair use and these guidelines shall not preempt or supersede licenses and contractual obligations.

Creative Commons

Creative Commons was founded in 2001. This non-profit organization provides “Creative Commons licenses and public domain tools that give every person and organization in the world a free, simple, and standardized way to grant copyright permissions for creative and academic works; ensure proper attribution; and allow others to copy, distribute, and make use of those works” (https://creativecommons.org/about/, section 1). They currently offer over 2 billion resources that the public can share and use. Some of the resources can be modified and used, so be sure to check out the type of CC license on the resource to provide appropriate attribution. https://creativecommons.org/about/cclicenses/

Teach Act

The "Technology, Education and Copyright Harmonization Act" was signed into law in 2002 (ALA, 2019). TEACH redefined the terms and conditions on which accredited, nonprofit US educational institutions may use copyright-protected materials in distance education, including on websites and by other digital means, without permission from the copyright owner and without payment of royalties. This law greatly expanded educators’ use of copyrighted materials in closed-circuit broadcast settings, replacing the previous version of Section 110(2). The new version of Section 110(2) offered these clear improvements: (a) expanded range of allowed works, (b) expansion of receiving locations, (c)storage of transmitted content, and (d) digitizing of analog works (ALA, 2019).

The TEACH Act permits the display and performance of nearly all types of work. Most types of work can now be displayed or performed under the new Teach Act requirements. However, some works remain excluded, and uses of some types of works are subject to quantity limitations. The TEACH Act does not replace Fair Use.

Alternatives to the TEACH Act

While the TEACH Act improves the previous version of Section 110(2), the law still contains many requirements for distance education that reach far beyond the limits of the traditional classroom. Educators should be prepared to explore alternatives when the TEACH Act prevents them from using copyrighted material. Those alternatives include:

- Using alternative methods for delivering materials to students, including the expansion of library services.
- Obtaining permission from the copyright owners for the use of materials beyond the limits of the law.

Additional Reading and Resources

For more information, see:

- https://www.copyright.com/wp-content/uploads/2015/04/CR-Teach-Act.pdf
- https://libguides.ala.org/copyright/teachact
- https://www.dmca.com/

Chapter Summary

Remembering to attribute any works made by others is an important part of using resources from the internet in distance courses. Always cite the original source, speak to a copyright lawyer and/or other informed persons at your institution if you are unsure if you can use something or how to attribute something appropriately.

7

Conclusion

Conclusion

The term distance education has more commonly been called online education in recent times. The use of the internet (whether by computer, tablet, or cell phone) has taken over as the primary form of distance education. A well-designed course using the tools available will better prepare our learners.

As we mentioned in Chapter 1, these are exciting times. People can learn nearly anything they want from a distance, often at any time or place. The term distance education has more commonly been called online education in recent times as the use of the internet (whether by computer, tablet, or cell phone) has taken over as the primary form of distance education. Whether to reach rural learners or because of a world-wide pandemic, online education is here to stay. However, the faster version of putting face-to-face education in an online format (i.e., emergency remote teaching) isn't necessarily the best way to utilize the tools we have at our fingertips. A well-designed course using the tools available will better prepare our learners and having interaction in that course helps lead to better socialization, collaborative learning, and well-rounded learners.

To be an effective distance educator, using the aforementioned topics as a starting point, whether using high-tech or low-tech, you can start slowly – implementing one new thing at a time, if you wish, until they become second nature in your distance classroom.

Since many of the extra resources and readings we've provided are URL links, we hope to update this book every few years. We openly ask for feedback and input on other sections you, the reader, deem necessary to better create and facilitate distance education with the reminder that the hope for this book is to be used worldwide by all levels of distance educators. The first edition of this book was written in 1997, and over the years, the tools and technology have greatly changed, and as such, this book will continue to evolve as technology evolves. This book is meant to serve as a basic introduction to distance education. We hope it can be used as a resource for teachers, teacher educators, trainers, faculty developers, instructional designers, and curriculum developers new to distance education.

To reach the authors, please email:

Cindy York cindy.york@niu.edu

and

Patrick Lowenthal patricklowenthal@boisestate.edu

References

References

References cited in text.

American Library Association (ALA). (2019). Copyright: Distance education and the TEACH Act. http://www.ala.org/advocacy/copyright/teachact/distanceeducation

Anderson, T. (2003). Getting the mix right again: An updated and theoretical rationale for interaction. The International Review of Research in Open and Distributed Learning, 4(2). http://www.irrodl.org/index.php/irrodl/article/view/149

Bader, J., & Lowenthal, P. R. (2018). Using visual design to improve the online learning experience: A synthesis of research on aesthetics. In I. Bouchirka, N. Harrati, & P. Vu (Eds.), Handbook of research on learner experience and usability in online education (pp. 1-35). IGI Global. http://dx.doi.org/10.4018/978-1-5225-4206-3.ch001

Beatty, B. J. (2019). Hybrid-flexible course design. Implementing student-directed hybrid classes. https://edtechbooks.org/hyflex

Bloom, B. S. (1956). Taxonomy of educational objectives. Vol. 1: Cognitive domain. McKay.

Bloom, B. S. (1994). Reflections on the development and use of the taxonomy. Teachers College Record, 92(2), 1-8.

Bruner, J. (1986). Actual minds, possible worlds. In M. Levin (Ed.). Professional practice schools: Linking teacher education and school reform. Teachers College Press.

California Distance Learning Project (2005). What is distance education? http://www.cdlponline.org/index.cfm?fuseaction=whatis

Cohen, P., Ebeling, B., & Kulik, J. (1981, Spring). A meta-analysis of outcome studies of visual-based instruction. Educational Communications and Technology Journal, 29, 26–36.

Conrad, R., & Donaldson, J. A. (2011). Engaging the online learner: Activities and resources for creative instruction. Jossey-Bass.

Dede, C. J. (1990). The evolution of distance learning: Technology-mediated interactive learning. Journal of Research on Computing in Education, 22, 247-264.

Dobrovolny, J., & Lowenthal, P. R. (2011). Using reflection surveys to improve teaching and learning. In P. R. Lowenthal, D. Thomas, A. Thai, B. Yuhnke, M. Edwards, & C. Gasell. (Eds.). The CU Online Handbook, 2011 (pp. 97-113). Lulu.

Duchastel, P. (1994). Learning environment design. Journal of Educational Technology Systems, 22(3) 225-233.

Duffy, T. M., & Jonassen, D. H. (2013). Constructivism and the technology of instruction: A conversation. Routledge.

Eisenberg, M. B., & Berkowitz, R. E. (1990). Information Problem-solving: The Big Six Skills Approach to Library and Information Skills Instruction. Ablex.

Garrison, D. R., Anderson, T., & Archer, W. (2000). Critical inquiry in a text-based environment: Computer conferencing in higher education. The Internet and Higher Education, 2(2-3), 87-105.

Golombisky, K., & Hagen, R. (2013). White space is not your enemy: a beginner's guide to communicating visually through graphic, Web and multimedia design. Routledge.

Hannafin, M. J. (1992). Emerging technologies, ISD, and learning environments: Critical perspectives. Educational Technology Research and Development, 40(1), 49-63.

Herring, M., & Smaldino, S. (1997). Planning for interactive distance education: A handbook. AECT.

Herrington, J., Oliver, R., & Reeves, T. C. (2003). Patterns of engagement in authentic online learning environments. Australasian Journal of Educational Technology, 19(1).

Hodges, C., Moore, S., Lockee, B., Trust, T., & Bond, A. (2020). The difference between emergency remote teaching and online learning. Educause Review. https://er.educause.edu/articles/2020/3/the-difference-between-emergency-remote-teaching-and-online-learning

Johnson, D. W., Johnson, R. T., & Smith, K. A. (1991). Active learning: Cooperation in the college classroom. Interaction Book Co.

Lincoln, Y. S., & Guba, E. G. (2016). The constructivist credo. Routledge.

Lowenthal, P. R., Greear, K., Humphrey, M., Lowenthal, D. A., Conley, Q., Giacumo, L. A., & Dunlap, J. C., (2020). Creating accessible and inclusive online learning: Moving beyond compliance and broadening the discussion. Quarterly Review of Distance Education, 21(2), 1-21.

Lowenthal, P. R., Lomellini, A., Smith, C., & Greear, K. (2021). Accessible online learning: A critical analysis of online quality assurance frameworks. Quarterly Review of Distance Education, 22(2), 15-29.

Lowenthal, P. R., Snelson, C., & Dunlap, J. C. (2017). Live synchronous web meeting in asynchronous online courses: Reconceptualizing virtual office hours. Online Learning Journal, 21(4), 177-194.

Lowenthal, P. R., Wilson, B., & Parrish, P. (2009). Context matters: A description and typology of the online learning landscape. In M. Simonson (Ed.), 32nd Annual proceedings: Selected research and development papers presented at the annual convention of the Association for Educational Communications and Technology (pp. 161-172). AECT.

Marra, R., & Jonassen, D. (1993). Whither constructivism. In D. Ely & B. Minor (Eds.), Educational media and technology yearbook. Libraries Unlimited.

Marzano, R. J., & Kendall, J. S. (2008). Designing and assessing educational objectives: Applying the new taxonomy. Sage.

Merriam Webster. (2020). Merriam Webster's Dictionary. Retrieved from https://www.merriam-webster.com/dictionary/discipline

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, J. L., Dickson-Deane, C., & Galyen, K. (2011). e-Learning, online learning, and distance learning environments: Are they the same?. The Internet and Higher Education, 14(2), 129-135.

Moorehead, C. J., & Schroeder, P. (1996). Nonlegislative report of the subcommittee on courts and intellectual property committee on the judiciary US House of Representatives. https://files.eric.ed.gov/fulltext/ED402920.pdf

Pappas M. L. (2000). Pathways to inquiry. School Library Media Activities Monthly, 16(9), 23-27. https://eric.ed.gov/?id=EJ611698

Poplin, M. S. (1988). Holistic/constructivist principles of teaching/learning process: Implications for the field of learning disabilities. Journal of Learning Disabilities, 21, 401-406.

Savenye, W. (2004). Alternatives for assessing learning in web-based courses. Distance Learning: A Magazine for Leaders, 1, 29-35.

Schön, D. A. (1987). Educating the reflective practitioner: Toward a new design for teaching and learning in the professions. Jossey-Bass.

Sener, J. (2015, July). Updated E-Learning Definitions. OLC Insights. https://onlinelearningconsortium.org/updated-e-learning-definitions-2/

Simonson, M., Zvacek, S., & Smaldino, S. (2019). Teaching and learning at a distance: Foundations of distance education (7th ed.). Information Age Publishing.

Starko, A., Sparks-Langer, G., Pasch, M., Frankes, L., Gardner, T., & Moody, C. (2003). Teaching as decision making. (3rd ed.). Merrill/Prentice Hall.

Williamson, J. (2016). Effective digital learning environments: Your guide to the ISTE standards for coaches. International Society for Technology in Education.