Chapter 8
Blended and Online Learning

Learning Outcomes

After reading this chapter and completing the learning activities, you should be able to:

8.1 Describe the characteristics, benefits, challenges, and integration strategies of blended learning models for relevant instructional situations. (ISTE Standards for Educators: 1—Learner; 2—Leader; 3—Citizen; 4—Collaborator; 5—Designer; 6—Facilitator; 7—Analyst)

8.2 Describe the characteristics, benefits, challenges, and integration strategies of online learning models for relevant instructional situations. (ISTE Standards for Educators: 1—Learner; 2—Leader; 3—Citizen; 4—Collaborator; 5—Designer; 6—Facilitator; 7—Analyst)

8.3 Identify tools, strategies, and procedures to teach and build an online course. (ISTE Standards for Educators: 1—Learner; 2—Leader; 3—Citizen; 4—Collaborator; 5—Designer; 6—Facilitator; 7—Analyst)

Technology Integration In Action: Virtual Health

GRADE LEVEL: High school

CONTENT AREA/TOPIC: Health Education

LENGTH OF TIME: One semester

PHASE 1 Analysis of Learning and Teaching Assets and Needs

Step 1: Analyze problems of practice (POPs)

One state's department of education recently mandated that all eighth graders take a health education course. It provided a scope and sequence for the curriculum, standards and objectives, and a written exam each student had to

(*Continued*)

pass to receive credit. However, it left the format of the course up to individual school districts. District administrators contacted Ms. Haas, the district's health and physical education curriculum specialist, to discuss this challenge; they knew they didn't have enough teachers in each district middle school certified to teach health education, especially in the rural schools.

Step 2: Assess technological resources of students, families, teachers, and the school

The district was large in that it covered 300 square miles and had a number of rural schools with few students. In the last decade, the district had used federal funds to establish high-speed Internet access and robust computer labs in all its schools. The community was also supportive of web access, so the district established mobile Wi-Fi hotspots on buses that were parked overnight in rural communities, but not all students had Wi-Fi-supported digital devices. Ms. Haas had taken two online courses in her master's degree program and knew other teachers in the district who had taken other online courses. Most of the PE/Health teachers were moderately technology-savvy but tended to not use much technology in their courses.

Step 3: Identify technological possibilities

Ms. Haas had never developed an online course, but she thought that an online course might be a possibility for this new required course. The Wunderkind School District school administrators noted that they didn't have enough certified teachers to teach health education in each school, and many of the smaller schools had few eighth grade students. The administrators decided to provide the course online because they could combine students from across schools into courses taught by the two certified health educators in the district. They planned to offer it as a supplemental online course, and students could access the course either at home or school and could have maximum flexibility on when they finished it. They asked Ms. Haas to oversee the task of locating or creating the online health education course. She reviewed three such courses available from various virtual school providers. She especially liked one that had been created by a well-known virtual school with franchises across the United States, but it did not exactly match the state's required curriculum. The district gave her a small budget to have teachers work with her on revising the course, so she selected two science teachers who had taught courses for the virtual school in their spare time and who were familiar with the health education curriculum. She knew she would be learning a lot in this project, but she felt confident that her team could develop a quality course.

PHASE 2 Design of the Integration Framework

Step 4: Decide on learning objectives and assessments

The state had already provided standards, objectives, and an end-of-course assessment. Ms. Haas and her team decided that in addition to ascertaining the number of students dropping or completing the course and failing or passing the final exam, they also wanted to gauge progress in various parts of the course so they could determine which topics presented the most difficulties. They also wanted to measure student and teacher attitudes toward the class and its online format. The outcomes and measures that they decided on were as follows:

Outcome: Achieving passing grades on the end-of-course exam.

- **Objective**—At least 90% of all students taking the course will achieve a passing score (70% or better) on the final exam.
- **Assessment**—Graded exams.

Outcome—Achieving passing grades on unit tests.

- **Objective**—At least 90% of all students taking the course will achieve a passing score (70% or better) on each unit test.
- **Assessment**—Graded tests.

Outcome—Teacher attitudes toward the course.

- **Objective**—All teachers will evaluate the course on an attitude survey to determine their attitudes.
- **Assessment**—Likert scale attitude survey.

Outcome—Student attitudes toward the course.

- **Objective**—The students will communicate their attitude toward the online approach with at least 90% of students completing the attitude survey.
- **Assessment**—Likert scale attitude survey.

Step 5: Design integration strategies and determine relative advantage

Ms. Haas and her team compared the online course from the course provider with the state-mandated health education course curriculum and found that two of the five units would have to be modified to match the state's requirements. They liked the interactive activities in all units, which included:

- Small-group discussions on health-related issues
- Exercises to do after viewing brief videos of guests including health experts, doctors, and other children
- A collaborative wiki-building activity for students to gather and analyze various kinds of information for children and young people from online sites
- Apps to download and use to support healthy lifestyles
- A final small-group project to develop healthy living plans

Their revisions would require developing some additional activities and posting them in the course as well as changing course grading criteria to meet the new assessment strategies.

Relative Advantage

With the online course planned, Ms. Haas and her team determined the relative advantage by RATifing the new course. Figure 8.1 shows how offering the online supplemental course impacted aspects of instruction, student learning, and curriculum. The video guests and the apps were aspects that could be implemented in a blended course, but they noted them in the RAT matrix. They felt the online course did not change the curriculum but would amplify students' learning and require restructuring the teacher's role. The team members were interested to see whether the online health course was successful, and they felt there was enough relative advantage to offer it.

Step 6: Prepare instructional environment and implement lesson

Ms. Haas knew that preparing parents and students as well as schools for the requirements of the course would be key to the success of the program. The team's preparation tasks included:

- **Development of new activities**—New learning activities were created, field-tested with students, and added to the course space.
- **Preparation for parents**—Ms. Haas wrote a letter to the superintendent to sign and send out to principals for distribution to parents of eighth grade students who would be taking the health course. It described the reason for the course, the new online format, and how the district would prepare and support the students to be successful in the course.
- **Preparation for students**—The teachers created an orientation to online learning that all eighth grade students would take prior to being allowed to register for the course. The team based their orientation on others they had located and tailored it to review the online course space they would be using.
- **Course handbooks**—To make sure everyone had a summary of course content, procedures, and FAQs in a format they were used to (i.e., print), the team developed a handbook and emailed copies to each teacher and principal. They also posted it on the online course space and sent printed copies to each of the computer labs.

Figure 8.1 Ms. Haas' RATified Lesson

	Instruction	Learning	Curriculum
Replacement Technology is a different means to same end.			• Online curriculum meets required standards-based health content
Amplification Technology increases or intensifies efficiency, productivity, access, capabilities, etc., but the tasks stay fundamentally the same.	• Expert guests on video re-reviewable 24/7	• Students have 24/7 access to course activities • Students interact with students outside their school (but within the district)	
Transformation Technology redefines, restructures, reorganizes, changes, and creates novel solutions.	• One teacher teaches more students	• Students use real-life apps to implement health choices	

(Continued)

- **Computer lab scheduling**—The team decided that schools should provide a class period in their computer labs dedicated to students who were taking the course. Facilitators would staff each lab to help students with any problems they might encounter. Students would also be required to take the end-of-course exam in the school's computer lab.
- **Personnel training**—Teachers and lab facilitators were brought in for hands-on training on how to support students and troubleshoot common problems they would encounter.

PHASE 3 Post-Instruction Analysis and Revisions

Step 7: Analyze lesson results and impact

The first time that the course was offered students were asked to complete a required midcourse feedback instrument to gather comments on what was and was not working well. From these comments, it became apparent that some students were not prepared for the amount of time they had to spend completing some assignments and had not allocated their time very well. Also, some links were not working consistently, and some students experienced problems that facilitators seemed ill prepared to handle. Links were corrected immediately. At the end of the semester, the team gathered and reviewed the mid-semester comments, unit test results, and end-of-course evaluations.

Step 8: Make revisions based on results

From the mid-course comments and attitude surveys, it was apparent that facilitator training had been inadequate, so adjustments were made to the instructor and facilitator preparation to allow additional hands-on training. The two online teachers reported positive attitudes but also expressed the need for good facilitators because the teachers had about 60 students in each class. Unit test grades met the specified criteria in all but the final unit, where it was clear that additional time had been needed. The single greatest problem was that approximately 25% of all students had either not entered the course space or had stopped posting and completing assignments after the first unit; these students either dropped or failed the course. The design team felt that more emphasis and preparation on time management requirements had to be added to the orientation to prepare students for taking an online course. They also decided to have a follow-up procedure in place for students who did not "appear" by the end of the first week or failed to post any required assignment. Teachers were to email students, call them at home if they received no reply within a week, and report all follow-up procedures and results to Ms. Haas.

Step 9: Share lessons, revisions, and outcomes with other peer teachers

The design team met with the online teachers, a few students, and administrators to share what they had learned in the first semester. All felt the course was worth continuing, and they decided to implement the new measures for the second semester and review data again at that time.

Introduction

This chapter introduces two forms of **digital learning**, blended learning and online learning, also known as *virtual learning*. All digital resources described in this book, such as software and hardware for productivity, instructional software, web-based content, and web-based communication, collaboration, design, creation, and making resources, assist in building blended or online learning experiences. The designs for blended or online learning that are most likely to transform learning prioritize constructivist and student-centered instruction (Powell et al., 2015). Some designs capitalize on ways in which technology can personalize, differentiate, and individualize learning for competency and mastery (McRae, 2015). Table 8.1 offers a summary of the differences between blended and online learning in terms of educational dimensions (iNACOL, 2011b).

Blended Learning

Some organizations such as universities and large school districts adopt policies that designate a course as being classified as online if a certain percentage of its activities

Table 8.1 Blended and Online Instructional Models

Educational Dimensions	Blended Instruction	Online Instruction
Digital instructional materials	Materials expand or enhance curriculum.	Materials are required to teach content, curriculum, and instruction.
Assessment	Instruction combines classroom-based and online assessments.	Instruction involves mostly online assessments, some of which provide immediate data for students and teachers to guide instruction.
Communication among students and teachers	Instruction mixes synchronous and asynchronous communication in the classroom or beyond.	Instruction uses primarily asynchronous online communication except in case of a synchronous online course model.
Attendance	Students attend physical school 5 days a week and sometimes work online.	Students tend to have no or flexible attendance requirements.
Student role	Teacher controls pace, content, and place of learning.	Student assumes more active role in learning by setting pace and sometimes has flexibility with digital content.
Individualization	Students have some individually targeted content or may control consumption of content.	Students have multiple pathways through content; curriculum can be competency based and not tied to academic calendars.
Instructional model	Teacher is director or facilitator of student learning with some use of digital resources.	Teacher is the guide or coordinator of student learning with exclusive reliance on digital resources.
Instruction schedule	Instruction is provided in physical and online venues, typically within the brick-and-mortar school hours.	Instruction is flexibly scheduled in online course area available 24/7.
Academic support	Teacher supports learning during school hours.	Multiple modes of instructional and technical support are available 24/7.
Technology infrastructure	Instruction uses school technologies during school day and requires occasional home-based technologies.	Instruction requires 24/7 school-based online course environment and home-based technological access.

Based on: iNACOL. (2011b). *National standards for quality online courses* (No. Version 2). International Associate for K-12 Online Learning (iNACOL).

(e.g., over 50% to over 80%) are online. But in practice, any instructional units that combine online and **face-to-face** activities are actually **blended learning**, so there is really a continuum of subtly different blended course models in operation. This section describes characteristics of four blended learning models and reviews the benefits, challenges, and integration strategies for blended learning.

Blended Learning Models

Based on research (Horn & Staker, 2014), there are four major blended learning models for K–12 classes and programs: (1) rotation, (2) flex, (3) à la carte, and (4) enriched virtual (Christensen Institute, n.d.; Powell et al., 2015). The rotation and flex models call for blending face-to-face and online, web-based learning experiences within a given face-to-face course whereas à la carte and enriched virtual models combine online courses with face-to-face elements.

ROTATION MODEL In a course or subject area, the **rotation model** positions learners to transition among face-to-face and online learning modalities, sometimes on a fixed schedule or at the teacher's direction. For example, a student can engage in some online or web-based learning activity followed by small-group learning, whole-group class discussions, hands-on activities, or individual class work. This model typically integrates any of the digital learning resources already described in this book within a face-to-face course. For example, a 10th grade chemistry teacher could set up four stations in his classroom, cycling students through an online simulation, a physical experiment, small group discussion, and a quiz.

The rotation model includes four subtypes: station rotation, lab rotation, flipped classroom, and individual rotation.

1. **Station rotation**—This model rotates all students through all the stations (at least one of which includes online learning activities) in a classroom. Horn and Fisher

Video Example 8.1 Using the Rotation Model

In this video, a principal describes the blended learning rotation model.

(2017) indicate this is one of the most popular and increasingly used approaches to blended learning, especially in elementary schools. Tucker (2017) provides excellent tips on how to integrate stations into a high school class using teacher-led, online, and offline stations.

2. **Lab rotation**—In this model, students go to a computer lab for the online learning portion of the rotation. This is practical for teachers who have access to a computer lab, a computer cart, or a one-to-one computing setting.
3. **Flipped classroom**—In this model, students complete the online learning rotation off the school site, typically as homework outside of class time. The online learning portion typically is the main delivery of content, and the time in the physical classroom engages students in teacher-guided, hands-on activities in which students apply the content. Lo and Hew (2017) argued that the use of audio or video materials that include instruction pertaining to concepts in advance of face-to-face class meetings is a necessary element of a **flipped classroom**. However, Bergmann and Sams (2014) indicate that the preclass activity does not need to be a video but can center around any of a number of **learning objects** or self-contained, single-purpose instructional components that can be reused a number of times in different learning contexts, such as online simulations, virtual or augmented reality experiences, and online field trips or expeditions.
4. **Individual rotation**—This model provides students with an individualized rotation schedule determined by the teacher or computing algorithms (i.e., those built into adaptive or personalized learning technologies). Students will have different rotations with some students not rotating to all stations. Horn and Fisher (2017) describe a school that uses station rotation but at the station for online learning, students can participate in different activities based on their teacher's analysis of completed student work.

Application Exercise 8.1 Using a Flipped Classroom Model

FLEX MODEL In the **flex model**, online learning is the main learning modality for students, but the learning occurs in a face-to-face setting with a teacher present to help,

oversee projects, or lead discussions. Students progress through the online learning individually based on their own learning needs. This model typically integrates online personalized learning systems described in Chapter 5. For example, in a brick-and-mortar school, eighth grade students can take an online English language arts course using ThinkCERCA software while participating in teacher-led activities, all overseen by a teacher in the students' school. Many flex models are school district operated although some are offered by for-profit **education management organizations (EMOs)**, such as K12 Inc. and Nexus Academies; the largest of these is run by a nonprofit EMO, Rocketship Education.

À LA CARTE MODEL With an **à la carte model**, students take a fully online course with an online teacher along with their other face-to-face courses at brick-and-mortar educational setting or off site. For example, a student might take an online course in Chinese at home and then attend his high school for the rest of his courses. Horn and Fisher (2017) describe an Indiana high school that turned around failing students by implementing an à la carte model that allowed students to achieve credit recovery by enrolling in the needed online course at any time and progressing at their own pace instead of waiting to enroll the next semester or year. Some refer to this as taking **supplemental online courses**.

ENRICHED VIRTUAL MODEL In an **enriched virtual model**, students learn predominantly through fully online coursework but also have required face-to-face, rich content learning experiences with a teacher. In this model, students meet face-to-face less often than in the flipped classroom model. For example, a 10th grade student enrolls in a virtual school to take her fully online courses but meets face-to-face with other students and her teacher at a physical location occasionally for content-rich learning experiences, such as a field trip or to meet with her teacher individually to learn through minilessons (Davis, 2012). Davis noted that these events inject a personal connection that helps keep students engaged.

Benefits of Blended Learning

There is so much variability in the implementation of each blended model and the ever-expanding web-based resources available for integration that there is no definitive, large-scale research study on the comparative impact of blended learning versus face-to-face (Fulton, 2014; Sparks, 2015). However, Lo and Hew (2017) reviewed 15 studies of the flipped classroom model, mostly set in high schools, in which audio or video preclass activity was required. All the studies found either positive or no impact on student achievement, although not all the studies were methodologically robust. They found that students liked learning from video and appreciated their ability to repeatedly view it and use the on-demand stop and start functions, both of which assisted note taking.

Blended learning maximizes class time for active learning (Fulton, 2014; Lo & Hew, 2017), student-centered learning (Clark, 2015; Powell et al., 2015), and individual assistance (Lo & Hew, 2017). Stevens (2016), who describes the ways blended learning changed his classroom spaces, believes that his middle school students learned to self-regulate their learning and behaviors and become more analytical and more interested in content. McRae (2015) emphasizes the need for blended learning to create learning opportunities for learners to be active, relational, inquiry oriented, and empowered and warns of blended learning approaches that could decrease opportunities for learners to engage with each other, such as when students use adaptive learning systems independently all the time. Within the rotation model, teachers implement any web-based resources already described in this book, and thus should consult those sections (e.g., web-based content in Chapter 6 and creating virtual reality in Chapter 7) to revisit the specific resources, benefits, and challenges in their use.

Advancements in computing algorithms and learning analytics underlie adaptive learning software's key benefits of instructional personalization, differentiation, and individualization. In terms of the blended learning approaches that take advantage of adaptive learning software, such as the individual rotation or flex model, small studies show that teachers using them are able to move students toward higher academic proficiency (Fulton, 2014). For example, Schechter, Macaruso, Kazakoff, and Brooke (2015), who conducted a comparative study, found significantly improved reading abilities among grade 1 and 2 students in the teacher-led and technology-based blended learning group versus students in a teacher-led-only group. The lowest performing English language learners had the highest gains in reading comprehension. A meta-analysis by Gerard, Matuk, McElhaney, and Linn (2015) found the automated, adaptive guidance feedback was more productive in reaching learning gains than typical teacher-led guidance in face-to-face instruction, especially for those students with low or moderate prior knowledge. The studies in this meta-analysis typically involved mathematics, science, and literacy content in grades 5–8. The guidance supported tasks such as written explanations, drawing concept diagrams, and math operations.

Challenges of Blended Learning

There are student, faculty, and institutional challenges to establishing blended learning approaches within schools and districts. Student challenges include the following:

- **Student accountability**—For success with blended learning, students need self-discipline and accountability measures to encourage completion of the outside-of-class activities, especially in the flipped classroom (DeSantis, Van Curen, Putsch, & Metzger, 2015; Fulton, 2014). Raths (2013) notes the importance of teaching students how to watch videos for instructional purposes, which is far different than viewing for entertainment. In a flipped classroom model, not completing the preclass activities negatively impacted in-class activities (Chen, 2016).
- **Disinterest in video lectures**—Lo and Hew's (2017) review of literature of flipped classrooms with video lectures found some studies in which students reported videos being too lengthy, boring, or unable to draw their attention.
- **High workload**—Some students report that out-of-class required activities were time consuming and overwhelming (Lo & Hew, 2017).
- **Motivation**—Even with an in-class rotation model, Stevens (2016), a middle school teacher, described the challenges he faced motivating students to engage with well-planned online activities only to discover the students were motivated by collaborative activities, not independent online work.
- **Poor performance**—Recent research indicates that the flex model of blended learning underperforms academically in comparison to face-to-face learning in national public schools (Miron & Gulosino, 2016). The data reveal that only 14% of blended schools outperformed the state average achievement scores of all schools that met or exceeded proficiency benchmarks. It is important to note that school district-run blended schools performed best with 27% outperforming the state average achievement scores, and for-profit blended schools performed the worst with 0% outperforming the state average achievement scores.

Teacher challenges include the following:

- **Openness to instructional change**—Horn and Fisher (2017) note that teachers who are accustomed to delivering content through lectures are less prone to become blended teachers, especially with the flex or à la carte models that position teachers as more knowledgeable about online courses than others who guide and support learning. Stevens (2016), the middle school teacher referred

to earlier, initially thought that learning technical skills was the most difficult part of becoming a blended teacher, but later realized that learning to notice and meet the students' learning needs was the most difficult shift in his work and the most rewarding.

- **Poor pedagogy becomes poor blended learning**—Blended learning is not inherently good instruction. Poor instruction simply moved online reveals itself rapidly (Plough, 2017). It is always important to implement a blended learning model that matches an instructional need in the classroom.
- **Resources for blended learning**—Creating or finding web-based materials to support blended learning is time consuming (Lo & Hew, 2017).

Institutional challenges include the following:

- **Vision for blended learning**—Powell et al. (2015) emphasize the importance of developing and communicating a coherent vision for blended learning for students, teachers, staff, and the community. Communication with the community and stakeholders is key to success. Raths (2013) suggests getting student and parent buy-in.
- **Increased class sizes**—McRae (2015) warned that blended learning models can be used to introduce adaptive learning software that McRae argues shifts instructional expectations away from the value of small class sizes and of certified teachers for improving student learning. This concern reinforces the need for clarity of vision for blended learning.
- **Technological constraints and digital equity**—The blended models have different technological demands for students' homes and classrooms or schools. Thus, along with a clear vision, schools need to ensure adequate access and resources to technological infrastructure and software in the school and community (Lo & Hew, 2017; Powell et al., 2015). Without this assurance, issues of digital inequity will arise.
- **Accessibility**—As with all digital learning resources, it is necessary to ensure that all learning resources are accessible to all learners. For example, videos used in a flipped classroom model should provide closed captioning for the hearing impaired and transcribed to support screen readers for visually impaired students. See the Adapting for Special Needs for more information on accessibility concerns and blended learning.

Integration Strategies for Blended Learning

This section provides an overview of integration strategies that can be instituted within the district/school, by the teacher, and in the classroom.

Box 8.1: Adapting for Special Needs

Blended Learning

As teachers and administrators work to implement new blended learning environments, it is increasingly important to ensure that the digital learning resources are accessible. The following websites are maintained by online learning and accessibility experts and feature a wealth of resources.

- Center for Online Learning and Students with Disabilities (COLSD)
- Knowbility website
- Usability.gov
- Web Accessibility in Mind (WebAIM) website

—Contributed by Dave Edyburn

DISTRICT/SCHOOL INTEGRATION STRATEGIES Teachers interested in integrating blended learning models should connect with the school or district technology specialist to assess the district's or school's context for blended learning. Based on reviews of several blended learning approaches across schools and school districts (Lo & Hew, 2017; Powell et al., 2015), consider the following four supports for success with blended learning:

1. **A school climate for continuous improvement**—Optimally, a districtwide blended learning initiative and a climate geared toward continuous improvement of teaching and learning exists.
2. **Defined blended learning goals**—Blended learning is a continuum of practices, so the teacher's district or school should define what the model means for the school's learning environment and goals, such as personalized learning for academic achievement, increased student engagement, credit recovery or optional electives or advanced placement courses, and/or student-centered curriculum.
3. **Teacher professional development**—Although blended learning can provide teachers new flexibility and creativity to meet students' needs, teachers can be unfamiliar with new pedagogical approaches. Without clear expectations, learning goals, and professional support, teachers can become discouraged.
4. **Reduced barriers to implementation**—Districts or schools should reduce problematic technological access, infrastructure, and software issues, or low-quality online content both in the school district and for students with limited access. Lo & Hew (2017) suggest the use of a **learning management system (LMS)** with **gamification** elements to support and track the online learning.

A teacher should use these four support areas to learn more about the school's or district's commitment (or lack thereof) to blended learning. Then, the teacher should assess his or her own knowledge, skills, and dispositions toward blended learning to identify areas of professional development needed using the teacher competencies described next.

COMPETENCIES OF TEACHERS IN SUCCESSFUL BLENDED LEARNING ENVIRONMENTS iNACOL, a leading international organization focused on online learning, has framed teacher competencies that describe knowledge, skills, and dispositions that enable a more successful transition to teaching in a blended learning environment (Powell, Rabbitt, & Kennedy, 2014). The four organizing domains and a summary of the twelve competencies for blended learning environments follow:

- **Mindsets/beliefs**—Blended teachers need:
  - A vision for teaching and learning that values student-centered learning as a pedagogy that assists in meeting all students' learning needs.
  - A change orientation to instructional models and continuous improvement.
- **Qualities/personal characteristics**—Blended teachers should possess:
  - Deliberate, ambitious goals and the persistence to make progress toward goals.
  - Openness in their data-based progress.
  - Interest in learning collaboratively with colleagues.
- **Adaptive skills**—Blended teachers should:
  - Engage in reflective practices.
  - Use data and feedback for continuous improvement and innovation.
  - Expand communication channels beyond the classroom.
- **Technical skills**—Blended teachers need:
  - Data literacy to examine assessment data to inform instruction.
  - Data-rich instructional practices and digital literacy to guide students toward appropriate multimodal creative expressions.

- Management skills for blended experiences, digital citizenship, and technical troubleshooting skills.
- Access to LMSs, assistive technologies, and other effective tools to support learning.

Teachers can review each of the twelve competencies and their corresponding standards at iNACOL's website to provide further guidance in preparation for blended learning.

CLASSROOM INTEGRATION STRATEGIES Hamdan, McKnight, McKnight, and Arfstrom (2013) believe that for the flipped classroom rotation model to achieve the goal of revitalizing and improving instructional methods, flipped learning activities must have four features they refer to as the "four pillars of F-L-I-P" (pp. 5–6) that are listed and briefly summarized here. Other integration strategies for blended learning models (i.e., those by Bruno & Kennedy, 2016; Plough, 2017) correspond with the four pillars of FLIP, so teachers should consider the following FLIP pillars as broadly applicable to all blended learning models:

1. **Flexible learning environments**—Students have some degree of autonomy in learning, such as choosing the time, place, pace, or path of their learning, and teachers (and although not named, probably also school leaders) acknowledge that the learning environment will not necessarily be orderly and quiet (Bruno & Kennedy, 2016). Teachers allow for flexibility in learning and assessment timelines, and they measure progress in ways that are most meaningful for them and their students.
2. **Learning culture shift**—There must be a transition from objectivist principles to more constructivist ones: moving from students as passive receivers of knowledge to students' active involvement in their own learning and assessment paths with scaffolding from what they already know to higher skill levels. Plough (2017) emphasizes the importance of learner interactions and suggests creating communities of inquiry for discussion and debate and project-based activities with high levels of teacher interaction and feedback. Lo and Hew (2017) emphasize the need for teachers to communicate, introduce, and demonstrate the new pedagogy with students before implementation.
3. **Intentional content**—Bruno and Kennedy (2016) emphasize starting with clear educational goals and choosing sound instructional practices. Teachers must continually analyze content for the selected blended content portion of classroom activities. Any video-based content should be about 6 minutes in length; use a conversational, informal, first-person format; and emphasize key ideas. Narrated **slide decks** or **screencasting** are optimal (Lo & Hew, 2017). Depending on the grade level and topic, classroom activities should be active instructional methods such as problem-based learning (PBL), mastery learning, or Socratic methods.
4. **Professional educators**—Finally, this pillar calls for an acknowledgement of the indispensable role of teachers in instruction and asserts that professional educators are reflective, collaborative, and know how to accept criticism that can improve their practice (Bruno & Kennedy, 2016). Teachers can join communities, such as iNACOL, ISTE-affiliated organizations, and the Flipped Learning Network (FLN), to access a wealth of classroom materials, lesson ideas, and other teachers.

See Technology Integration Example 8.1 for an example of a flipped classroom lesson.

Technology Integration

Example 8.1

TITLE: Student-Generated Flipped Review Exercises

CONTENT AREA/TOPIC: Social studies

GRADE LEVELS: 5th grade

ISTE STANDARDS•S: Standard 3—Knowledge Constructor; Standard 6—Creative Communicator

CCSS: CCSS.ELA-LITERACY, RH.6-8.1, CCSS.ELA-LITERACY, RH.6-8.4 CCSS, ELA-LITERACY, RH.6-8.7

DESCRIPTION: To help students prepare for social studies end-of-semester or end-of-course final exams, organize small groups and assign each group a part of the content that will be examined. Each group is to use available movie equipment and software to make a movie (or series of brief clips) about the assigned content. The class watches each video at home the night before the review, and students post questions of the other groups. In class, they discuss what they learned from the videos and the questions that were posted about them. Make sure that the directions clearly state that the video lessons should cover main ideas instead of incidental ones.

Based on ideas in George Phillip's Flipped Classroom Blog, "Reversing Instruction in Social Studies."

Check Your Understanding 8.1

Online Learning

Online learning has roots in distance education, which in its earliest form was courses completed by postal mail and then later by videotaped correspondence between a student and teacher. Online learning is still a form of distance education, but now students take online courses that are taught fully online by an online instructor who is physically distant from the student, and the students have some or complete control over the time, place, path, and pace of learning. These online courses are offered through **online schools**, which are also referred to as **virtual schools** and **cyberschools** (Evergreen Education Group, 2015; Saultz & Fusarelli, 2017); in this book, we use the term *online school* and occasionally *virtual school* when a source uses that term. The latest data from the U.S. Department of Education's National Center for Education Statistics found that 55% of U.S. school districts had students enrolled in distance courses, representing 1.8 million student enrollments, in 2009–2010 (Queen, Lewis, & Coopersmith, 2011). In 2015, Evergreen Education Group (2015) estimated that 2.7 million students were enrolled in online courses, including supplemental courses or full-time online school, which accounts for 5% of all K–12 students. Miron and Gulosino (2016) reported that about 260,000 students were enrolled full-time in virtual schools in 2014–2015, which reflected their continual growth since 2000. This section describes types of online learning and reviews the benefits, challenges, and integration strategies for online learning.

Online Courses and Schools

Students who engage in online learning do so by enrolling in online courses, which are offered through online programs and online schools. An online course is a full educational course, such as biology, English I, or Algebra II, taught by a certified teacher. In these courses, all instruction and learning experiences take place online in an online course space enabled by an LMS, such Moodle, Canvas, Google Classroom, Schoology, or Blackboard. K–12 students can take supplemental online courses, which involve about one or two courses per year that complement or extend their education.

Supplemental courses can assist with credit recovery when a student has failed a class or can offer a course topic or advanced course not available at the student's

brick-and-mortar school. 84% of supplemental courses serve high school students (Evergreen Education Group, 2015). Other students are **full-time online students** all of whose educational courses are online. Full-time online students are evenly distributed across all K–12 grade levels (Evergreen Education Group, 2015). Of online courses, 74% are core subjects, such as language arts, mathematics, science, and social studies, and 26% are in other areas, such as electives, health and physical education, world languages, and arts (Evergreen Education Group, 2015).

ONLINE COURSE MODELS Just like any face-to-face course, online course formats vary based on the teacher, the content, and the available resources. However, Roblyer's (2015) classification system of online course structures provides four models from which to broadly categorize online courses.

1. **The noninteractive online model**—This is the most basic online course model, which consists of content presentations with built-in assessments. Students read and study the information in the form of text, links to online sites, videos, simulations, and/or self-led exercises, all contained within an LMS and then take online tests to demonstrate mastery of the material. Although students in noninteractive courses do interact with content designed by content experts (who could be instructors), they have no interaction with instructors or other students during the course. Noninteractive courses are not as common as other online courses.
2. **The interactive, asynchronous online model**—This is the most common online course model used at all levels of education. Students meet and interact with their instructor (and often with other students) in the LMS. Courses are usually designed using the available features in an LMS. The nature of activities in interactive online models varies, but many include whole-class and/or small-group discussion boards, individual and/or small-group assignments, materials to read and study, practice exercises to complete, and assessments of various kinds. All activities are completed asynchronously.
3. **The interactive online course with synchronous events model**—Less common, some online courses have interactive, synchronous, real-time class meetings.

Video Example 8.2 A Synchronous Online Course

This video demonstrates a synchronous online course in which a student presents her learning followed by a whole-class survey.

The synchronous learning activities occur in the LMS with the aid of webcams, microphones, and online **videoconferencing** tools, such as Adobe Connect or GotoMeeting. In this model, students and the instructor either see each other using cameras connected to the computer or only hear each other through the computer. Usually these courses combine these meetings with asynchronous online activities described in the previous section.

4. **The Massive Open Online Course (MOOC)**—The MOOC model originally aimed at large-scale, global participation and allowed anyone anywhere to register for the course for free. The MOOC model has changed to allow either open enrollment or enrollment limited to members of a sponsoring organization with optional paid enrollment by other participants who want formal credit. The pedagogical approach used in a MOOC model varies considerably but usually involves viewing videos of professors' lectures and demonstrations interspersed with practice and interactive activities, such as simulations or problem solving, and whole-class or small-group online discussions, ending with assessments. Although MOOCs represent a trend within education, they have had little penetration or impact in K–12 education (Evergreen Education Group, 2015). Eng (2015) warned that MOOCs could broaden learning gaps because the lecture-based formats are not motivating and require broadband connections that many students do not have at home.

Figure 8.2 offers characteristics of another classification system based on the types of interactional elements and their degree of approximate realism (Simonson, Smaldino, Albright, and Zvacek, 2012).

Schools and school districts can develop and offer their own online courses, but more often online courses are purchased from educational companies that provide (a) the instructional content, (b) the instructional management and tracking software, such as an LMS, (c) student data and administrative tools, such as a **student information system (SIS)**, and (d) services, such as professional development for online teachers (Evergreen Educational Group, 2015). Furthermore, the instructional content developed and offered by educational companies now typically uses learning analytics to adapt to the learner, such as the personalized learning software described in Chapter 5. A recent study found positive correlation with student growth in reading when curriculum was provided by an EMO and a negative correlation when the curriculum was developed by individual course instructors or the teacher of record (CREDO, 2015). Teachers could be called on to build, teach, or review online courses.

ONLINE (VIRTUAL) SCHOOLS Online courses are offered through a range of entities, which broadly are called *online* or *virtual schools*. Online schools have no physical

Figure 8.2 Classification System for Online Learning by Types of Interaction

	Types of Interaction	Delivery Methods
Most abstract, least realistic	• One way, print based • Recorded or broadcast audio • One-way, synchronous audio from instructor to students • Two-way, synchronous audio between students and instructor • Recorded or broadcast video (no synchronous interaction with instructor) • Text and multimedia interactions • Live video from instructor to students (with synchronous audio interaction) • Two-way synchronous video between instructor and students	• Correspondence courses via postal mail and/or fax • Prerecorded audio (e.g., online podcasts) • Broadcast radio • Audio-conferencing telephone systems • Broadcast television: microwave or satellite link • Web-based course management systems • Teleconferencing • Videoconferencing
Most realistic, least abstract		

facilities and teachers and students are physically distant from each other, but the teachers have responsibility for students' education, including overseeing state assessments and granting course credit. Online course providers can include the following types (Evergreen Education Group, 2015):

1. **Single-district virtual schools**—These are created by a district and serve only that district's students. Large districts are more likely to own their own LMSs and create their own course content. They might offer supplemental or full-time coursework.
2. **Full-time online charter schools**—These operate in 25 states; most students attend virtual charter schools supported by for-profit EMOs, such as K12 Inc. or Connections Academy, the largest EMOs. Online charter schools account for the majority (83%) of full-time online students, and their number is increasing (Miron & Gulosino, 2016).
3. **Multidistrict, fully online schools**—These schools are the primary providers for their students who might (but need not) attend a physical school for part of their education. District virtual schools account for 17% of student enrollment (Miron & Gulosino, 2016).
4. **Consortia**—Two or more schools or districts can create a consortium that combines resources in order to serve their students more efficiently by offering online learning. Some operate regionally, statewide, or nationally.
5. **State-supported online schools**—These include two different subcategories of online options: state-run virtual schools (e.g., the Florida Virtual School) that serve students both inside the state and elsewhere, and course options that allow students in the state to take courses from any of a number of different providers.
6. **Private/independent schools**—These are nonpublic schools that develop online options with private funds or endowments.
7. **University online high schools**—These are accredited high schools connected to universities that provide full-time and supplemental online courses.
8. **Blended/hybrid schools**—In these schools, many of which are charter schools run by EMOs, attendance is required at a physical site during the school year, but the curriculum is delivered using the enriched virtual blended model.

Video Example 8.3 Students Who Benefit From Online Learning

In this video, a principal discusses her observations of some students who have benefited from online learning.

Students participate in virtual school courses from various locations. For example, some students take them from home or a library whereas others attend a school computer lab for a regularly scheduled session each day to access their online courses.

Benefits of Online Learning

Much of the rhetoric among school advocates in the popular literature and in some research about online learning (e.g., Kamenetz, 2015; Picciano, Seaman, & Day, 2015; Toppin & Toppin, 2015) touts the following potential advantages for students, teachers, and schools:

1. **Path to credit recovery and graduation**—For students who have not completed courses due to failure, illness, mobility, or other scheduling conflicts, supplemental online courses provide a popular path for credit recovery. If completed, these courses can contribute to students graduating on time.
2. **Bridge to advanced or elective coursework**—Online courses also increase logistical access to university-level elective coursework for advanced students. Some students can earn up to a year's worth of college credits before even graduating from high school. For rural or inner-city schools, students are accessing online courses to expand their elective or advanced placement course options (Evergreen Education Group, 2015).
3. **Cost effectiveness**—With streamlined, scalable online curriculum, some consider that larger enrollments are possible, resulting in the need for fewer teachers. In addition, virtual schools do not have a physical plant with maintenance costs. Finally, small classes can be combined online with students from other schools or districts. On average, virtual schools pay $370 per course for semester enrollment (Evergreen Education Group, 2015). For an average student enrolling in seven online courses per semester, the annual cost is $5,180 compared with an average total annual cost of $12,296 per pupil in public elementary and secondary schools in 2012–2013 (U.S. Department of Education & National Center for Education Statistics, 2015).

Video Example 8.4 How Online Learning Benefits Students' Schedules and Learning Pace

In this video, an online learners explain how their online courses allow them flexibility and control.

4. **Student agency in learning**—Many students seek online learning for the ability to work at their own pace and have more control and agency in their own learning than in face-to-face courses.

In terms of effectiveness of online learning, there is some evidence that online schools outperform brick-and-mortar schools. For example, students enrolled in both supplemental courses and full-online programs in the Florida Virtual School, the oldest and largest statewide virtual school in the United States, outperformed the state average achievement in end-of-course Biology 1, Civics, and U.S. history exams in 2015 (Evergreen Education Group, 2015). In addition, Gill et al. (2015) found that 33% of online charter schools use Roblyer's (2015) noninteractive learning model in which students engage in self-paced, individualized courses. A longitudinal study identified that self-paced instruction in online schools had a significant positive correlation with academic gains in reading across all K–12 levels (CREDO, 2015). However, the most recent and comprehensive research studies (CREDO, 2015; Miron & Gulosino, 2016) indicate significant challenges to online learning, which are outlined in the next section.

Challenges of Online Learning

During the past two decades, hopes were high that online learning would mean better access to quality education for all students regardless of location and economic status. As comprehensive and long-term research studies have been conducted, these hopes have not been universally realized, and challenges have emerged: poor academic performance, high student–teacher ratios, high withdrawal rates, low graduation rates, uncertain funding, unclear family expectations, and widening social justice issues. Because online schools are having an increasing impact on the operations of all schools, teachers should understand each of these issues.

POOR ACADEMIC PERFORMANCE Several recent studies have indicated that overall school performance for online schools is not as successful as that of traditional public schools. Miron and Gulosino (2016) built on their earlier reports (Miron, Horwitz, & Gulosino, 2013; Miron & Urschel, 2012) with new data from 67 full-time, public virtual schools in 2014–2015, including those operated by for-profit and nonprofit EMOs, states, or districts. They discovered that only 19% of full-time virtual schools met grade-level proficiencies on state tests, only 30% of all virtual schools met acceptable school performance ratings (i.e., an annual state accountability rating), and only 23% of virtual schools run by private EMOs met acceptable ratings. Miron and Gulosino note that new assessments as a result of new ESSA policy during 2014–2015 indicated that performance data had limitations. Therefore, Miron and Gulosino suggest that the data and results to be cautiously considered rather than taken as causal findings.

Further, one of the most comprehensive longitudinal studies of online, public, and full-time online charter schools conducted at Stanford University (CREDO, 2015) found full-time online students had significantly weaker academic gains in reading and mathematics than comparable students in traditional brick-and-mortar schools. The lower overall gains were equivalent to 72 fewer days learning in reading and 180 fewer days learning in mathematics (which is an entire school year) than students in traditional schools. The gains in reading and mathematics were even lower for all race-ethnic subgroups, children in poverty, English learners, and special education students. The only exceptions were in Wisconsin and Georgia where CREDO (2015) found online students' gains in reading achievement were higher than that of students in brick-and-mortar schools.

HIGH STUDENT–TEACHER RATIOS Student–teacher ratios are also higher in online schools. Miron and Gulosino (2016) found 35:1 ratio in fully online schools, 19.5:1 in schools run by nonprofit EMOs, and 44:1 in schools run by for-profit EMOs whereas the

ratio in public schools is 16:1. CREDO (2015) found that average class sizes for online elementary, middle, and high schools were 39, 60, and 71 students, respectively.

HIGH WITHDRAWAL AND LOW GRADUATION RATES There is also no doubt that online students tend to withdraw at higher rates than students in face-to-face courses (Breslow et al., 2013). CREDO (2015) found that on average, students stayed in online charter schools for 2 years; about 40% of students left after the first year, often returning to traditional public schools. Overall, students of all race-ethnicity subgroups enrolled in public online charter schools showed high mobility rates, indicating more instability after enrolling in online schools. Ultimately, the 4-year graduation rate for virtual schools was 40.6% whereas the national average for brick-and-mortar schools was 81% (Miron & Gulosino, 2016).

UNCERTAIN FUNDING Huerta, Rice, and Shafer (2013) and Saultz and Fusarelli (2017) found that funding formulas for online schools and online courses vary considerably from state to state, but public funding for a child generally follows the child. Two funding issues these researchers cite are the need to tie funding to actual virtual school costs and the need to prevent "profiteering" by for-profit EMOs, which serve a majority of full-time virtual school students. In fact, CREDO (2015) found that one in five students enrolled in an online charter school return to a traditional setting, sometimes within the year; therefore, funds are in flux. Furthermore, errors in enrollment counts can be costly to public educational institutions as was the case when an Ohio charter school over-reported enrollment and the state required the school to repay it $800,000 (Siegel & Candisky, 2016). Lawsuits that have arisen over online schools' use of public funds sometimes point to the fact that home-schooled students who use online school courses do so at public expense. Thus, researchers recommend a greater state-level role in auditing online course use and allocating funds accordingly.

UNCLEAR FAMILY EXPECTATIONS The Stanford study found a positive correlation with academic growth when parents verified seat time; in other words, when they made sure that their child was engaging in their online courses(s) (CREDO, 2015). However, some online charter schools' expectations that parents take a role in instruction had significant negative correlations with student growth. Thus, online schools should not expect parents to assume instructional roles for which they might not be prepared.

WIDENING SOCIAL JUSTICE ISSUES In terms of student demographics, online schools enroll fewer students of color and those in poverty than do national public schools (Miron & Gulosino, 2016). Recent studies (Ritzhaupt, Liu, Dawson, & Barron, 2013; Xu & Jaggers, 2013) show that although more students are using the Internet and other online resources, children from underserved populations (i.e., low-income and some minority students) still have far less access to these resources at home and school than other students have. Leu, Forzani, and Kennedy (2015) found that gaps in online reading skills were linked to family income. In addition, online schools must adhere to the Individuals with Disabilities Education Act (IDEA), such as providing web site accessibility as well as appropriate accommodations for students with disabilities (Samuels, 2016b), which is a significant commitment for all online schools. Some of these schools have had complaints filed against them regarding this requirement (Samuels, 2016a). Persisting gaps could signal future problems in providing equitable access to the resources that online learning offers, especially when the rhetoric of online learning is its turn-around benefits for at-risk students (Archambault, Kennedy, & Freidhoff, 2016).

Integration Strategies for Online Learning

Despite the challenges in online learning, it continues to expand in K–12 schools. Thus, teachers need to have the knowledge to guide their activities related to online learning, such as advising students, considering opportunities to teach online, and reviewing

online courses. This section introduces information about the characteristics of students, teachers, and online courses that increase success in online learning contexts.

STUDENTS' READINESS FOR ONLINE LEARNING Some researchers have tried to identify student capabilities or other factors that could predict whether a student might drop out, be less satisfied, or not perform as well in an online activity. A study conducted by Patterson and McFadden (2009) concluded that no single theory can fully explain student attrition in online learning; students likely drop out because of a combination of variables, and Wladis and Samuels (2016) found that readiness surveys can have low predictive validity and more important, if used, could dissuade students who might benefit from learning online. Geiger, Morris, Subocz, Shattuck, and Viterito (2014) examined variables related to student readiness and their impact on student success in a well-designed online course (specifically one that met the Quality Matters Standards that will be described later in this chapter) and taught by an experienced online teacher. Only typing ability and reading rate/recall were correlated with completion. Thus, good design of the course and highly experienced teachers can be more important than identification of student characteristics that might dissuade students from pursuing online learning opportunities. Therefore, consider the following characteristics only as *possible* contributors toward a student's readiness to learn online:

- **Desire to learn online**—Self-motivation and the ability to structure one's own learning is important (Robinson & Sebba, 2010), so students should have a choice in pursuing online courses.
- **Technological competence and self-efficacy**—Previous experience with technology can assist online students (Johnson, Gueutal, & Falbe, 2009), and studies support a correlation between increased computer self-efficacy and improved outcomes in online courses. For example, Alshare, Freeze, Lane, and Wen (2011) found that students' level of comfort with online learning and self-efficacy in using the web could predict their satisfaction in online courses. Yet, students can also learn to use new technological tools while they engage in an online course.

Video Example 8.5 Reasons to Learn Online

In this video, online students share why they wanted to attend a virtual school.

Video Example 8.6 Technology Skills and Online Learning

In this video, an online learner explains how technology plays a role in his learning.

- **Interest in subject content**—A good attitude toward course subject matter can assist online learners (Hung, Chou, Chen, & Own, 2010).
- **Internal locus of control**—Online learners who believe they can control events that affect them can assist in developing intrinsic motivation (Vandewaetere & Clarebout, 2011).

COMPETENCIES OF SUCCESSFUL ONLINE INSTRUCTORS Effective online teachers not only need to know how to teach an online course, but also need to have personality traits and communication skills that lend themselves to online work. For example, teachers must know techniques for communicating well with students whom they never see and knowing which students need special assistance. Stansbury (2014) noted that hiring online teachers is different from hiring traditional ones. In addition to the

Video Example 8.7 What Online Learning is Like

In this video, a virtual school principal discusses some misperceptions of online learning as well as barriers to it that previous students have encountered.

usual characteristics of good teachers, online teachers must be even more self-directed and possess extremely strong technology and people skills. Teachers must also have frequent professional development to build their online skills. Diehl (2016) reviewed the ample research on online instructor and teaching competencies. A comprehensive source is the iNACOL (2011a) research-based national standards for quality online teaching that describe comprehensive knowledge, understandings, and abilities that online teachers should possess in order to support success in student learning. The iNACOL competencies include 11 overarching standards describing knowledge in the following areas:

1. Effective online instruction and learning experiences
2. Digital technologies for learning and engagement
3. Online strategies for active learning, interaction, and collaboration
4. Clear expectations and frequent, fast feedback
5. Legal, ethical, and safe online behavior
6. Learning accommodations in online settings
7. Reliable and valid assessment processes
8. Standards-based learning
9. Data literacy
10. Professional communications
11. Instructional design

Review the full standards (iNACOL, 2011a) to examine the specific knowledge, understanding, and abilities that contribute to fully meeting each standard. This chapter and all the contents in this textbook prepare teachers with the knowledge, understanding, and abilities identified in these standards for online teachers.

COURSE CHARACTERISTICS THAT AFFECT SUCCESS The majority of studies focus on how course characteristics affect attitudes of online students who complete online learning courses. Researchers agree that the following factors are the major contributors to course satisfaction (Beauchamp & Kennewell, 2010; Robinson & Sebba, 2010):

- **High interaction**—The single greatest determinant of satisfaction across studies is the amount of interaction between teacher and students (Beauchamp & Kennewell, 2010; Clayton, Blumberg, & Auld, 2010; Ravenna, Foster, & Bishop, 2012). Lacking face-to-face contact with engaging teachers, students need hands-on activities that require frequent interaction (Stansbury, 2014). A study examining a statewide virtual high school conducted by Oliver, Osborne, Patel, and Kleiman (2009) indicated that online students value high levels of interaction and feedback from teachers, content that is delivered in multiple modalities, and a mix of opportunities to communicate both synchronously and asynchronously with others. An in-depth study of K–12 virtual school teachers' beliefs and practices conducted by DiPietro (2010) indicated that increased interaction with the teacher and others leads to increased perceptions of students' engagement with the content, and ultimately, a more positive learning experience.
- **Preparation for the course**—The practice of required course orientations is becoming more common to increase retention in online courses (Blumenstyk, 2011). Training students in how to use the course technology and making sure that they know what they have to do to pass the course can make the difference between success and failure (Stansbury, 2014). Also, Colucci and Koppel (2010) suggest that meeting students face-to-face for the first class meeting helps establish a rapport that can lead to better interaction throughout the course.

Video Example 8.8 The Importance of Teacher Communication

In this video, online learners explain the value of teacher communication.

- **Support during the course**—Many studies show that students value and profit from teacher and other support, both technical and logistical, during their course experiences from registration through course activities and evaluation. DiPietro (2010) observed that supportive interactions help establish a sense of community among learners, resulting in both increased engagement and motivation. Conversely, McBrien, Cheng, and Jones (2009) found that feelings of isolation or disconnectedness from the teacher and classmates, as well as frustration with technology problems, can negatively affect course satisfaction.
- **Minimal technical problems**—Consistent evidence exists that technical problems can doom the best-planned course (Kerr, 2011; Ko & Rossen, 2010; McBrien et al., 2009). Successful courses are those that minimize technical problems so that the student can focus on the learning rather than on computer and technical issues. Not having to mediate technology problems also frees the teacher to spend more time on instruction and accommodating student needs.

Later sections of this chapter describe ways to ensure that the preceding characteristics exist in online courses.

ASSESSING THE QUALITY OF ONLINE COURSES Given the research indicating poor performance of online schools and the continuing increase in K–12 online courses and schools, the need for quality, well-designed online courses has never been more important. Several rubrics are available to guide design and assess the quality of online courses. Given the importance of high interaction in online courses, Roblyer's rubric in Figure 8.3 focuses on five characteristics to promote interaction: social/rapport-building designs, instructional designs for interaction, interactivity of technology resources, evidence of learner engagement, and evidence of instructor engagement.

iNACOL (2011b) developed national standards for quality online courses and an aligned rubric for review of online courses. These standards assess a course in relation to its:

- **Academic content**—This includes assessments, course descriptions, legal policies, resources for the instructor, and multiple pathways to content mastery.
- **Instructional design**—This supports active learning responsive to individual learning needs and promotes communication among teachers and students.

Figure 8.3 Rubric for Assessing Interactive Quality of Online Courses

RUBRIC DIRECTIONS: The rubric shown below has five (5) separate elements that contribute to a course's level of interaction and interactivity. For each of these five elements, circle a description below it that applies best to your course. After reviewing all elements and circling the appropriate level, add up the points to determine the course's level of interactive qualities (e.g., low, moderate, or high).

Low interactive qualities	**1–9 points**
Moderate interactive qualities	**10–17 points**
High interactive qualities	**18–25 points**

Scale (see points below)	Element #1: Social/ Rapport-Building Designs for Interaction	Element #2: Instructional Designs for Interaction	Element #3: Interactivity of Technology Resources	Element #4: Evidence of Learner Engagement	Element #5: Evidence of Instructor Engagement
Low Interactive Qualities (1 point each)	The instructor does not encourage students to get to know one another on a personal basis. No activities require social interaction, or activities with social interaction are limited to brief introductions at the beginning of the course.	Instructional activities do not require two-way interaction between the instructor and students; they call for one-way delivery of information (e.g., instructor lectures, text delivery) and student products based on the information.	Web pages or other technology resource allows one-way delivery of information (text and/ or graphics).	By the end of course, most students (50–75%) *reply to* messages from the instructor, but only when required; messages are sometimes unresponsive to topics and tend to be either brief or wordy and rambling.	Instructor responds only randomly to student queries; responses usually take more than 48 hours; feedback is brief and provides little analysis of student work or suggestions for improvement.
Minimum Interactive Qualities (2 points each)	In addition to brief introductions, the instructor requires one other exchange of personal information among students, (e.g., written bio of personal background and experiences).	Instructional activities require students to communicate with the instructor on an individual basis only (e.g., asking/responding to instructor questions).	Email, listserv, conference/bulletin board or other technology resource allows two-way, asynchronous exchanges of information (text and graphics).	By the end of course, most students (50–75%) *reply to* messages from the instructor and other students, both when required and on a voluntary basis; replies are usually responsive to topics but often are either brief or wordy and rambling.	Instructor responds to most student queries; responses usually are within 48 hours; feedback sometimes offers some analysis of student work and suggestions for improvement.
Moderate Interactive Qualities (3 points each)	In addition to providing for exchanges of personal information among students, the instructor provides at least one other in-class activity designed to increase communication and social rapport among students.	In addition to requiring students to communicate with the instructor, instructional activities require students to communicate with one another (e. g., discussions in pairs or small groups).	In addition to technologies used for two-way asynchronous exchanges of information, instant messaging, SNS, or other technology allows synchronous exchanges of primarily written information.	By the end of course, all or nearly all students (90–100%) are *replying to* messages from the instructor and other students, both when required and voluntarily; replies are always responsive to topics but sometimes are either brief or wordy and rambling.	Instructor responds to all student queries; responses usually are within 48 hours; feedback usually offers some analysis of student work and suggestions for improvement.
Above Average Interactive Qualities (4 points each)	In addition to providing for exchanges of personal information among students and encouraging communication and social interaction, the instructor also interacts with students on a social/ personal basis.	In addition to requiring students to communicate with the instructor, instructional activities require students to develop products by working together cooperatively (e.g., in pairs or small groups) and sharing feedback.	In addition to technologies used for two-way synchronous and asynchronous exchanges of written information, additional technologies (e.g., teleconferencing) allow one-way visual and two-way voice communications between the instructor and students.	By the end of course, most students (50–75%) *both reply to and initiate* messages when required and voluntarily; messages are detailed and responsive to topics, and usually reflect an effort to communicate well.	Instructor responds to all student queries; responses usually are prompt (i.e., within 24 hours); feedback always offers detailed analysis of student work and suggestions for improvement.
High Level of Interactive Qualities (5 points each)	In addition to providing for exchanges of information and encouraging student–student and instructor–student interaction, the instructor provides ongoing course structures designed to promote social rapport among students and the instructor.	In addition to requiring students to communicate with the instructor, instructional activities require students to develop products by working together cooperatively (e.g., in pairs or small groups) and share results and feedback with other groups in the class.	In addition to technologies to allow two-way exchanges of text information, visual technologies such as two-way video or videoconferencing technologies allow synchronous voice and visual communications between the instructor and students and among students.	By the end of course, all or nearly all students (90–100%) both *reply to and initiate messages*, both when required and voluntarily; messages are detailed, responsive to topics, and are well-developed communications.	Instructor responds to all student queries; responses are always prompt (i.e. within 24 hours); feedback always offers detailed analysis of student work and suggestions for improvement, along with additional hints and information to supplement learning.
Total Each:	**___ pts.**	**___ pts.**	**___ pts.**	**___ pts.**	**___ pts.**
TOTAL:	**___ pts.**				

- **Student assessment practices**—These include multiple options for showing progress and optimizes frequent feedback.
- **Technology**—Resources are user-friendly, selected to match content and learning needs, and meet all accessibility, legal, and data privacy requirements.
- **Support**—A consistent resource provided to both online teachers and online students.
- **Effectiveness**—Courses are consistently evaluated for redesign, content updates, and technology upgrades.

The Quality Matters program, which requires membership, is a faculty-centered, peer review process designed to certify the quality of online learning courses. Quality Matters has developed a set of 41 elements that are distributed across the following nine general standards. The course design rubric is applicable for courses created locally or that have been significantly modified from publishers:

1. Course Overview and Introduction
2. Learning Objectives (competencies)
3. Assessment and Measurement
4. Instructional Materials
5. Course Activities and Learner Interaction
6. Course Technology
7. Learner Support
8. Accessibility and Usability
9. Compliance Standards

Check Your Understanding 8.2

Shared Writing 8.1 Optimal Contexts for Online Learning

Teaching Online Courses

Decisions about the design of a course space are intertwined with decisions on how the course will be taught. For example, setting up communications, assignments, assessment strategies, and paths students should take through the course determine in large part how instruction will take place. Then the teacher's role becomes one of managing the interactive activities set up in the course space. To teach online, teachers must understand required technology infrastructure and support resources and how to work with small groups because high interaction is an important factor in online courses. Some teachers have the ability to design and develop their own courses. Each of these topics is discussed in this section.

Technology Infrastructure and Support Resources for Online Teaching

Online teachers must ensure they have access to all necessary elements of infrastructure and support to teach online courses. Some of these resources deliver content and allow an online space in which students and teachers can interact. Others are designed to ensure that learners have as trouble-free an online learning experience as possible.

Video Example 8.9 Day in the Life of an Online Teacher

In this video, an online teacher of supplemental online courses describes her daily schedule.

LEARNING MANAGEMENT SYSTEMS (LMS) LMSs have become the most common means to design and deliver online courses. A school or district usually buys a license for an LMS, and its faculty uses the system's features to design and deliver online courses. LMS examples such as Canvas, Google Classroom, Schoology, Moodle, and Blackboard provide an online environment that contains tools for teaching an online course, such as:

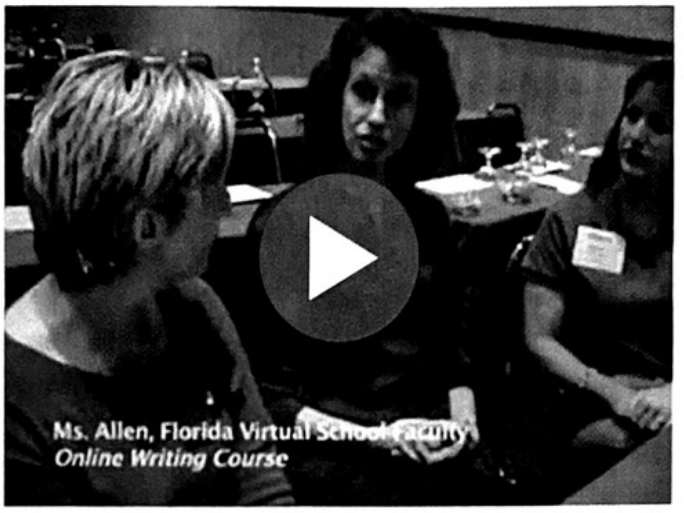
- Support for any type of digital files: graphics, video, PDFs, presentations
- Videoconferences
- Whiteboards
- Discussion forums
- Email
- Web linkages
- Wikis (or collaborative writing areas)
- Web pages
- Assessment and student-tracking features

A school or district can also purchase content from a vendor, such as a publisher or EMO, which could provide the instructional content within an already designed LMS.

THE ROLE OF COMMUNICATION SUPPORT TOOLS When planning for online courses, whoever is selecting or creating them should be aware of the other communication tools available to supplement LMS features. However, most LMSs include their own versions of communication tools including audio or videoconferencing environments, such as GoToMeeting and Elluminate Live. Videoconferencing allows groups of individuals to hear and see each other and exchange information such as presentations. Synchronous audio conferencing and asynchronous lecture recordings, such as screencasts, have shown significant positive correlations with learning growth in reading and mathematics (CREDO, 2015). Some online courses also use **social networking sites (SNS)** such as blogs, microblogs, wikis, and other social media tools that can be in or outside the LMS. Instant messaging had a negative correlation with learning growth in reading (CREDO, 2015).

Video Example 8.10 A Virtual Classroom

In this video, an online English teacher describes her virtual classroom set within an LMS.



THE IMPORTANCE OF TECHNICAL SUPPORT FOR ONLINE TEACHING Research on what makes online courses successful has indicated that providing continuous technical support and troubleshooting are as important as knowledgeable, trained teachers and students who are ready to learn in the less-structured environment of online courses. The teacher needs to ensure that all links and features work for students. Some reputable organizations provide a help call center that students and instructors can contact in the event of problems with any aspect of the online course environment.

RESOURCES TO MONITOR STUDENT PROGRESS Because teachers cannot rely on a student's verbal responses or body language to indicate difficulties, monitoring tools must be in place to indicate when students are having problems with assignments. This is crucial because studies have shown that students who fall behind are more likely to drop the course. One feature available in most LMSs is a **data dashboard,** or a location that summarizes course data in ways that allow instructors to track student participation and progress. For example, a data dashboard summarizes statistics about each student and his or her assignment completion, discussion participation, frequency of system logins, content access, and sometimes **learning analytics**, such as analysis of learning-content interactions with suggested learning pathways. Macfadyen and Dawson (2010) and Stansbury (2014) found that data dashboards are valuable for tracking progress and task completion and to predict learning problems and help instructors identify which students might need extra help. For example, a data dashboard can identify **lurkers**, or students who sign on to and spend time in a course space but never post anything. There are various reasons for this behavior, but because it is nonproductive, it signals to the instructor that a personal communication with that student is in order.

RESOURCES TO SUPPORT STRUGGLING STUDENTS Although monitoring tools can provide feedback, teachers and **mentors** are the ones who must interact with students to address their needs. Districts often have on-site mentors who can help students with everything from how to log in to how to use the technology required to take the class. For example, one administrator reported that her district provides three tiers of support—an online teacher, a content teacher or learning mentor, and an online tutor—available round the clock every day (Stansbury, 2014).

RESOURCES TO SUPPORT STUDENTS WITH SPECIAL NEEDS Online courses must be accessible to students with special needs such as those with vision, hearing, and physical impairments. Enhancements include:

- The ability to enlarge text
- Alternatives to mouse controls, such as special switches and joy sticks for students with mobility issues
- Alternative keyboards
- Alternatives to videos (e.g., podcast descriptions) for students with visual deficits
- Alternatives to audio (e.g., transcripts or closed captioning) for students with hearing impairments
- Alternatives to text presentation (e.g., podcasts or text readers) in all areas for students with visual deficits.

See the Adapting for Special Needs feature for more on this kind of support. All online courses must include these capabilities to meet **Universal Design for Learning (UDL)** requirements.

RESOURCES AND STRATEGIES TO ENSURE ACADEMIC INTEGRITY Academic dishonesty is one of the main concerns with online courses. Instructors and administrators want tools in place that can help ensure that the students who are signed up for a course are actually the ones submitting work and taking tests. Some common strategies for ensuring this integrity are given here. Some programs use a combination of all these methods:

1. **Honor codes**—Some courses include an honor code, noted in the course syllabus and discussed, that students must agree to before beginning the course. The instructor asks students to sign and submit a signed honor code via email or in an online posting.
2. **Information about plagiarism**—It is also helpful to include in the syllabus information and/or to create a learning experience that describes and provides examples of plagiarism and indicates the repercussions for students who commit them. Students do not always know what is and is not permitted, so this information often proves instructive.
3. **Student discussions about academic integrity**—Some courses have an initial online discussion about the importance of academic integrity. The discussion could be for the whole class or small groups and can pose a question such as "Who does cheating cheat?" or "A person of integrity: What does that mean?"

Box 8.2: Adapting for Special Needs

Online Learning

Web accessibility is a critical aspect of effective website development and web page design. Federal law requires all agencies receiving federal funds to demonstrate compliance with web accessibility standards. When website designers fail to consider the needs of individuals with disabilities, they might use inappropriate design techniques, such as the following:

- Text is inside an image, which makes it impossible to enlarge.
- Colors cannot be adjusted to improve text-to-background contrast.
- Alternatives to mouse controls are not provided for navigation.
- Text descriptions do not accompany visual images.

In these situations, equitable access is denied to individuals with disabilities because they are prevented from accessing the information that is available to their peers who do not have special needs. The following sites give useful information on how to design web pages and websites for maximum accessibility:

- WAVE (at the Web AIM website)—A free, web-based tool to help web developers make their web content more accessible.
- Mercury Reader (Postlight Labs)—A browser **extension** that removes extra information and turns web content into readable pages.

—Contributed by Dave Edyburn

Video Example 8.11 Academic Dishonesty in Online Courses

In this video, a virtual school principal explains that academic dishonesty in online learning environments is an ongoing issue.

4. **Physical monitoring systems**—Some technologies make possible ascertaining the identity of individuals who complete assessments for online courses. Video monitoring systems can be used to proctor student work at a distance (Shaffer, 2012). Other tools fall under the general heading of **biometric monitoring systems**, tools that take physical readings from a student's body to ascertain identify. Rodchua, Yiadom-Boakye, and Woolsey (2011) describe systems for fingerprint, retina, and facial identification.
5. **Plagiarism detection software**—Some online schools make software such as Turnitin or iThenticate available for teachers to check that student work is original. Some LMSs have detection software built in to automatically check all assignments. Another simple way in which teachers can check for text copied directly from online resources or some books is to copy the text from a student's paper, enclose it in quotes, and search for it in Google's search engine. If the text is verbatim from another source, you will find it.

Management of Online Small Group Activities

Small group work is a frequently used strategy in interactive online courses, but it is not easy to accomplish effectively. Some students dislike it because other students in their group could have incompatible schedules or work at a pace that differs from their own. Several practices support group work in ways that make this efficient and productive. The following recommendations are based on Roblyer (2015):

1. Assign the group a clearly stated problem, and show them how they will be graded.
2. Assign roles and specific responsibilities for each group member.
3. Have groups begin by agreeing on some "norms" (e.g., how they will resolve issues such as someone not doing her or his "job" and when to ask an instructor for help).
4. Encourage group cohesion by asking the group members to agree on a group name.
5. Monitor all group activities but intercede in group work only when necessary.

If one of the course objectives is for students to learn how to work collaboratively to solve a problem or produce a product, several instruments are available to assess this

ability. Visit Collaboration Rubrics at the website, Kathy Schrock's Guide to Everything: Assessments and Rubrics (Schrock, n.d.).

Designing and Developing an Online Course in an LMS

Designing online environments takes considerable expertise in applying a variety of different strategies for presenting instruction and assessing learned skills. As with the Technology Integration in Action example that opened this chapter, sometimes those who teach the course have little to no control over the course design. When they are able to design "from scratch," designers can use the following recommended 10-step sequence, based on Roblyer's (2015) recommendations.

STEP 1: SELECT THE ONLINE MODEL Review the types of online courses described earlier. Each model, such as a noninteractive online course, will have a far different design than an interactive one. Thus, the decision on which model to use has a far-reaching impact on other choices related to course structure and design.

STEP 2: DESIGN AND DOCUMENT LEARNING ACTIVITIES This step also calls for making a critical set of decisions on the instructional design of the course: what students will need to do to achieve course objectives. There is no cookbook-type strategy for completing this set of activities. If a course is being transferred from in-person to online format, it will likely retain some of the structural aspects (e.g., objectives, how many content units there are, and the order in which students will go through them), but most actual learning activities to support learning in the online format change substantially. See Roblyer (2015) for key concepts and advice on making informed instructional design decisions for online environments.

After activities are designed, they are documented in a detailed course syllabus, which provides an overview of course structure, requirements, and expectations. A comprehensive syllabus usually includes:

- Instructor name and contact information (e.g., email, twitter, phone)
- Office hours and meeting dates and times (if any)
- Course description, topics, and objectives
- Required and recommended course materials
- Learning activities and assessment formats
- Assessment criteria, scale, and rubrics
- Weekly course schedule
- Policies governing academic integrity, confidentiality, and appropriate behavior in the course space
- Other information such as access guidelines for students with disabilities and how to drop a course

Ko and Rossen (2010) say that the syllabus should also make clear how often students are required to visit or interact in the course space.

STEP 3: CREATE COURSE SPACE STRUCTURE In this step, the decisions made in Step 2 take shape in the course space. Studies show that the single most important quality of an effective course space is how it encourages and manages interaction (Roblyer & Wiencke, 2004). Moore (1986) was the first to identify three kinds of interaction: learner and content, learner and instructor, and learner and learner. In noninteractive models, interaction is exclusively learner–content. Moore (1986) also reported that activities must be structured to address what he called **transactional distance** or the potential gap in communications between instructors and learners that must be bridged for most

students to learn successfully. Online courses bridge this distance by using the following types of communication and information posted in the course space.

Learner–content interaction. The course space must be designed to require and support students to engage with materials that convey the course content. This usually means that students cannot merely read text or view videos; they must do activities that show they have understood them, such as creating **multimodal** content representations. The course space must communicate clearly what the activities are, where they are located in the course space, and what students are required to do with them. This is the only type of interaction that is required for all course models. One popular way to begin students' engagement with the content is through a scavenger hunt that requires them to locate items such as words or images in various parts of the course space. As they locate items, they also learn the course space structure and where various kinds of resources are located. Their first assignment in this activity would be to create a representation that shows the scavenger hunt answers and submit it in the required area.

Learner–instructor interaction. In most online or blended courses, learners also interact with instructors. The course space must provide locations for this to occur (e.g., discussion boards, email, instant messaging) and make sure that students know where these are and how to use them. Some courses also announce **virtual office hours** during which the instructor is available (usually within the course space, such as in a videoconference) to answer questions immediately. To keep from having to answer the same question multiple times for different students via email, it is a good idea to have an asynchronous area of the course, such as a discussion board, where students and instructors can interact with posted messages. In this space, when a student asks a question, everyone sees both the question and the instructor's answer. If a student emails a question instead of posting it in the course space, the instructor thanks the student for the question and asks him or her to post it in the designated course space so that everyone will see the question and answer. After one or two such emails, students learn to communicate in the "Ask the Instructor" space.

Learner–learner interaction. The final kind of interaction is not required in every course but has become more popular as studies have confirmed the power of student learning with and from each other. Opportunities for social interaction in course spaces are also important because non-online students often learn from each other in situations outside class such as libraries and coffee shops. Online courses are often designed to emulate and promote this social interaction. It is important to clearly define expectations regarding participatory activities; such clarity has been positively correlated with learning growth in reading (CREDO, 2015). The following are some ways to accomplish learner–learner interaction:

- **"Introduce yourself" forum**—Just as in-person courses sometimes open with an activity to help students get to know each other, effective course spaces provide an engaging opening activity that encourages students to talk to each other on a social level. See Figure 8.4 for example introduction strategies. They give students nonthreatening, hands-on experiences in how an online discussion works.
- **A "learner lounge" forum**—This is a location for social talk on anything of interest to the students, such as movie reviews, recipes, links to topics of interest, and comments about what they are learning. Students can post items of interest there throughout the course.
- **Discussion groups**—With the exception of social forums such as the learner lounge, it is difficult to engage in a whole-class discussion because threads can get very long and hard to follow. Instead, effective courses break up students into small groups of three to six and post discussion topics there.

Figure 8.4 Example Opening Activities to Promote Social Interaction in Online Courses

Ask students to post the following (as a textual response, graphical, and/or video-based response if students do not have any hearing or audio impairments) and reply to each other as they see common links:

- Make an acrostic with the letters of their first name. Each word should be something that could describe them.
- Explain why they want to become a teacher (or whatever they are studying to be).
- Provide a link to where they work, go to church, or another location that is important to them and give a little background on it.
- Post a photo of themselves (or an image or cartoon character they want to represent them) and give a paragraph of personal background.
- Post a photo of their pet(s) and tell a little about them.
- Post two things they feel are most important to know about them.
- Describe their proudest (or scariest, most inspiring, etc.) moment.
- Tell their three most important life goals.
- Name their favorite book and why they liked it.
- Tell which sports teams they cheer for and why.

STEP 4: CREATE LEARNING MODULES Teachers can create modules with activities and assignments organized by a certain timeframe, such as a week, or for a content unit, such as a lesson or chapter. In a module, teachers create a step-by-step sequence of activities that communicates to students the course structure and the required activities. As teachers continue developing materials in the following steps, they should add materials to the requisite module. For example, they might create a course that has 15 modules with each one matching the 15 content topics covered in the course.

STEP 5: CREATE ASSESSMENT MATERIALS All products and activities for which students are assessed must have an instrument, such as an assessment rubric, that lets students know the expectations; this includes discussion assignments. Review Chapter

Video Example 8.12 Benefits of Discussion Boards

In this video, a teacher provides the benefits of using discussion boards.

2 for background on assessments and Chapter 4 for administrative technologies that support assessment. All instruments must be placed in course space locations that are clearly labeled so students will know where to locate them. Figure 8.5 is an example rubric for assessing student performance in online discussion forums. Note that the ROLE Model at the bottom of the figure provides helpful **netiquette** guidelines for posting messages online to demonstrate courtesy and regard for other users. Chapter 6 includes thorough information on digital citizenship.

STEP 6: CREATE CONTENT REPRESENTATION MATERIALS This step involves developing ways to represent content information. In online courses, new information can be presented in written or published web documents; content representations, such as graphics, images, presentations; data representations; instructional software; online archived, interactive, synchronous, educational content; demonstration through web-based communication, collaboration, creation; and offline resources, such as textbook reading assignments. Engaging curriculum is one that keeps students interested and provides a variety of methods of delivering content (Stansbury, 2014).

Figure 8.5 Online Discussion Participation Rubric

Rubric for Guiding and Assessing Online Discussion Participation					
	Dimension #1: Timeliness of Interaction	**Dimension #2: Frequency of Interaction**	**Dimension #3: Direction of Interaction**	**Dimension #4: Language Quality and Voice**	**Dimension #5: Quality of Contribution**
Level 1: Basic (Assign 1 point for each dimension at this level)	Joins discussion later than deadline.	Posts only one comment.	Posts only own comment(s); does not respond to anyone else's comments.	Comment(s) are poorly written and difficult to understand, too wordy, too terse, and/or at least one does not observe the ROLE Model.*	Comments are general and/or unrelated to discussion topic (e.g. "I agree!" or "I hear what you're saying.").
Level 2: Low (Assign 2 points for each dimension at this level)	Joins by the deadline, but late enough that it does not leave time for good participation in the discussion.	Posts two comments but only at the beginning or end of the discussion period.	Posts own comments and responds once to another person's comment.	Comments are sometimes poorly written and difficult to understand, or are too wordy and rambling or terse.	Offers comments related to the topic but do not clearly reflect knowledge of topic or required content.
Level 3: Medium (Assign 3 points for each dimension at this level)	Joins by the deadline, but is late in responding to other's postings.	Posts more than two comments but only at beginning or end of discussion period.	Posts own comments and responds more than once to others' comments or questions.	Comments are usually understandable but at least one is either wordy and rambling or terse.	Offers comments related to the topic and required content, but comments are not always very logical or helpful.
Level 4: High (Assign 4 points for each dimension at this level)	Posts well before the deadline to leave time for good participation in the discussion; responds fairly promptly to others' postings (within a day).	Posts more than two comments interspersed throughout the discussion period.	Posts own comments and responds more than once to others' postings and to any other questions directed at her or him.	Comments are always well formulated and articulate.	Offers comments that are directly related to the topic and content and are helpful, logical comments.
Total = ____/20 possible points	**Timeliness of Interaction Level = ____ of 4 points**	**Frequency of Interaction Level = ____ of 4 points**	**Direction of Interaction Level = ____ of 4 points**	**Language Quality and Voice Level = ____ of 4 points**	**Quality of Contribution Level = ____ of 4 points**

***The Rules of Online Learning Etiquette (ROLE) Model**

1. Make postings and responses friendly and helpful.
2. Allow for differences of opinion; disagree in a professional way.
3. Always assume benign intent; request clarification when necessary.
4. Avoid sarcasm, which can often be misinterpreted.
5. Never use profanity or "flaming" language, regardless of the situation.

Grading Scale

18–20 points = Very good, A work
16–17 points = Good, B work
14–15 points = Average or C work
Under 14 = Work below standards

STEP 7: CREATE SMALL GROUP ACTIVITIES Discussion activity has already been mentioned as a way to promote learner–learner interaction. Other small group activities (e.g., research, representation, or creation projects) can be placed in appropriate modules. These can be designed to be seen only by group members in their own area, or they could be set up so that all groups are free to see each other's work. Each group's area must be clearly labeled with tasks and responsibilities for each group and group member.

STEP 8: CREATE AND ORGANIZE RESOURCE LINKS AND OTHER MATERIALS Resource links to websites outside the course space can be added to modules as needed. Most assignments can be built into the LMS by adding the generated link to the module. For example, an assignment that requires a student to upload a file can be created and added to the module. When submitted, the document is added immediately to the LMS gradebook and is ready for assessment. Teachers can add either more modules or course pages containing other materials, such as technical or syllabus, assessment, and gradebook information.

STEP 9: DECIDE ON AND SIGNAL THE COURSE PATH To a student who enters a course space for the first time, nothing is self-evident; every course space is like entering a new town for the first time. Students who have used previous course spaces can usually figure out what to do, but there is no such thing as a course space that is too clear. To help students navigate, the instructor must signal a clear path by telling the student where to go first and how to learn where materials and activities are located in the space. This is usually done with an introductory email, announcement, or a screencast. An introductory email can be sent to students a week or two before the course opens and welcomes them and explains where to get a username and password, how to sign on and where to go first, and how to get technical assistance for sign-on issues. An announcements page appears automatically when the student signs on and gives detailed instructions on what to do. A screencast can provide students a narrated, video-based tour of the space.

STEP 10: DETERMINE AND DOCUMENT COURSE LOGISTICS AND REQUIREMENTS Finally, decisions must be made and documented about how to deliver the course. These include:

Video Example 8.13 Submitting Assignments in an Online Course

This video shows an online teacher explaining how to submit assignments.

- **A timetable for displaying course components**—Decisions that must be made at this point include:
  - Should the entire course be shown all at once or should a specific part be shown at a determined time?
  - After one part (e.g., a unit or discussion) is complete, should it be locked or removed from student view to prevent further comments or work?
  - Should discussion boards require student posts prior to showing the contents of the discussion?
- **Midcourse feedback**—Anonymous feedback from students gathered using LMS survey tools and solicited during the course helps to spot problems or issues that could have an impact on coursework.
- **Requirements to visit course space**—Students must know how often and when they are expected to visit the course space. Decisions on this requirement depend on the content and the assignments that require interaction with other students.

Check Your Understanding 8.3

Shared Writing 8.2 Ways Students Use Technology to be Academically Dishonest

Chapter 8 Summary

The following is a summary of the main points covered in this chapter.

1. Blended learning combines online and face-to-face learning activities.
   - Blended learning models include rotation (station rotation, lab rotation, flipped classroom, and individual rotation), flex, à la carte, and enriched virtual.
   - Benefits include the ability to review learning materials on demand, maximization of active learning during class time, student-centered learning, individual assistance, and personalized learning.
   - Challenges involve students, teachers, and the institution. Student challenges include self-discipline and accountability measures, disinterest in video lectures, heavy workload, low motivation, and poor performance. Teacher challenges include openness to instructional change, pedagogical approaches, and finding resources. Institutional challenges include creation of a vision, increased class sizes, technological constraints, and accessibility.
   - Integration strategies involve the district, teacher, and classroom. District/school strategies include establishing a climate for continuous improvement, defining blended learning goals, providing professional development, and reducing implementation barriers. The integration strategy for teachers is to develop the knowledge, skills, and dispositions outlined in iNACOL competencies that enable more success with blended learning. Classroom integration strategies include creating a flexible learning environment, developing a constructivist learning culture beginning with intentional content, and being a reflective and collaborative professional educator.
2. Online learning is a form of distance education in which students take fully online courses taught by an online instructor who is physically distant from the student.
   - Online courses can be supplemental or full-time. Course models include (a) the noninteractive online model, (b) the interactive, asynchronous online model, (c) the interactive online classroom with synchronous events, and (d) the MOOC model. Online course providers include single-district virtual schools, full-time online charter schools, multidistrict fully online schools, consortia, state-supported online schools, private/independent schools, university online high schools, and blended/hybrid schools.

- Benefits of online learning include a path to credit recovery and graduation, a bridge to advanced or elective coursework, cost effectiveness, and student agency in learning.
- Challenges include poor academic performance, large student—teacher ratios, high withdrawal and low graduation rates, uncertain funding, unclear family expectations, and widening social justice issues.
- Integration strategies involve students, teachers, and courses. Possible contributors to student readiness include a desire to learn online, technological competency or self-efficacy, interest in the subject content, and internal locus of control. The integration strategy for teachers is to develop the knowledge, understanding, and abilities outlined in iNACOL standards for quality online teaching. Online courses should involve high interaction, prepare students for the course, offer technical and logistical support, and minimize technical problems. Online courses should be reviewed for quality using one of several available rubrics.

3. Teaching online requires an understanding of required technology infrastructure and support resources, facilitation of small groups, and the ability to design and develop a course or course elements.
   - Technological infrastructure and supports include (a) learning management systems (LMS), (b) communication support tools, (c) technical support, (d) resources to monitor student progress, (e) support for struggling students, (f) support for students with special needs, and (g) resources and strategies to ensure academic integrity.
   - Managing small group work in online courses requires the following: assigning the students a clearly stated problem and showing them how they will be graded, assigning roles and specific responsibilities for each group member, having groups begin by agreeing on some "norms," encouraging group cohesion by asking the group members to agree on a group name, instructor monitoring of all groups, and instructor intervention in group work only when necessary.
   - Designing and developing an online course in an LMS involves 10 steps: Step 1: Select the online model, Step 2: Design and document learning activities, Step 3: Create course space structure, Step 4: Create learning modules, Step 5: Create assessment materials, Step 6: Create content representation materials, Step 7: Create small group activities, Step 8: Create and organize resource links and other materials, Step 9: Decide on and signal the course path, Step 10: Determine and document course logistics and requirements.

Technology Integration Workshop

1. Apply What You Learned

In this chapter, you learned about blended and online learning. Now apply your understanding of these concepts by completing the following activities:

- Reread Ms. Haas' *Virtual Health* lesson at the beginning of this chapter. Pay close attention to Step 3 of her TTIPP when she identifies the technological possibilities for her problem of practice: teaching a newly required health course. Using your knowledge about blended and online learning models introduced in this chapter, generate at least one new technological possibility for targeting Ms. Haas' problem of practice.
- Review how Ms. Haas RATified the lesson in Step 5 of her TTIPP as represented in Figure 8.1. Use the RAT Matrix to analyze the role(s) and relative advantage that your new technological possibility (identified in the previous step) would play in the lesson. You must reflect on the roles your identified technological possibilities play as replacement, amplification, and/or transformation of instruction, student learning, and/or curriculum. Do you feel your proposed technology would provide relative advantage?

2. Technology Integration Lesson Planning: Evaluating Lesson Plans

Complete the following exercise using the sample Technology Integration Example 8.1, any lesson plan you find on the web, or one provided by your instructor.

a. Locate lesson ideas—Identify three lesson plans that use any of the blended or online learning models you learned about in this chapter, for example:
   - Blended models (rotation, flex, à la carte, enriched virtual)
   - Online: Noninteractive asynchronous, interactive asynchronous, interactive synchronous, or MOOC

b. Evaluate the lessons—Use the Technology Lesson Plan Evaluation Checklist and the RAT Matrix to evaluate each of the lessons you found. Based on

the evaluation and your RATification of the lessons, would you adopt these lessons in the future? Why or why not?

3. Technology Integration Lesson Planning: Creating Lesson Plans with the TTIPP Model

Review the way to implement the TTIPP Model (see Figure 2.6) for technology integration planning and use Ms. Haas' lesson *Virtual Health* in this chapter as a model. Create your own technology-supported lesson that uses blended or online approaches by completing the following activities:

a. Describe Phase 1—Analysis of Learning and Teaching Assets and Needs:
- What is the problem of practice or main content topic in your lesson?
- What are the technology resources that your students, their families, you, and your school could bring as assets to the lesson?
- What are the technological possibilities for helping to solve the identified problem of practice? Identify the technology(ies) you will integrate into the lesson to ensure that you have the skills and resources you need to solve the problem.

b. Describe Phase 2—Design of the Integration Framework:
- What are the objectives of the lesson plan?
- How will you assess your students' accomplishment of the objectives?
- What integration strategies will you use in this lesson plan?
- What is the relative advantage of using the technology(ies) in this lesson?
- How would you prepare the learning environment?

c. Describe Phase 3—Post-Instruction Analysis and Revisions:
- What strategies and/or instruments would you use to evaluate the success of this lesson in your classroom to determine any needed revision?
- Create descriptors for your new lesson (e.g., grade level, content and topic areas, technologies used, ISTE standards, 21st-century learning standards).
- Save your lesson plan with all its descriptors and TTIPP Model notes and share with your peers, teacher, and others.

When you use your new lesson with students, be sure to assess it using the Technology Impact Checklist.