SEVENTH EDITION

Integrating Educational Technology into Teaching

M. D. Roblyer
Nova Southeastern University

PEARSON

Boston Columbus Indianapolis New York San Francisco Upper Saddle River
Amsterdam Cape Town Dubai London Madrid Milan Munich Paris Montréal Toronto
Delhi Mexico City São Paulo Sydney Hong Kong Seoul Singapore Taipei Tokyo

9

Joan E. Hughes and M. D. Roblyer

Teaching and Learning with Technology in English and Language Arts

Learning Outcomes

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

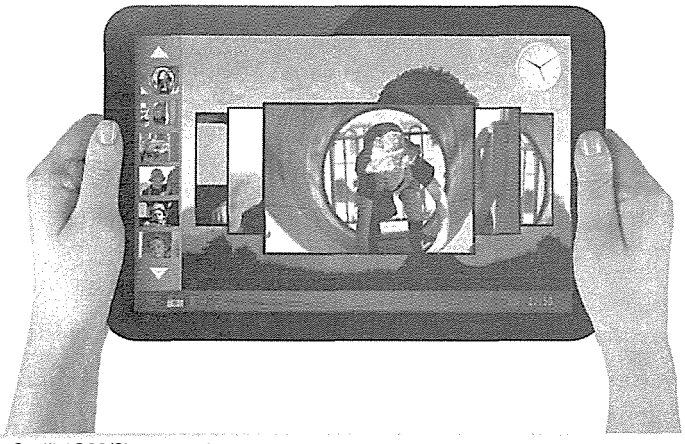
1. Identify implications for technology integration of each current issue faced by English/language arts teachers. (ISTE Standards•T 4, 5)
2. Select technology integration strategies that can meet various needs for instruction in English/language arts curricula. (ISTE Standards•T 2, 5)
3. Design a strategy for how to build teacher knowledge and skills in technology integration for English and language arts. (ISTE Standards•T 5)

Vladgrin/Shutterstock

TECHNOLOGY INTEGRATION IN ACTION MY SIDE OF THE STORY: TEACHING DIGITAL LITERACIES WITH A MULTIMEDIA STORYTELLING PROJECT

GRADE LEVELS: 6–8 • CONTENT AREA/TOPIC: English/language arts, literature, creative writing • LENGTH OF TIME: Three weeks

PHASE 1 ANALYSIS OF LEARNING AND TEACHING NEEDS



Suslik1983/Shutterstock

Step 1: Determine relative advantage.

Mr. Caruso is a seventh grade teacher who teaches literature and composition. He had been reading about the new "digital literacies" that required skills in using many different media to communicate information in a variety of ways, in addition to print. He also thought this might be a good way to confront a perennial problem he has with teaching literature: getting students to connect more with characters in stories by analyzing their traits, motivations, conflicts, points of view, and relationships with others. He felt character analysis was one of the most powerful and instructive aspects of literature, since it teaches students about why they and others act as they do in various situations and how different people can view the same situation in very different ways. The project he had in mind would ask students to choose a character in a popular story and create a different telling of the story from the point of view of that character. This approach would require his students to analyze the characters more closely and use narration and images they select to illustrate the "new and improved" version they create. He had also been using blogs to encourage students' journaling, and he liked the idea of posting all the stories online and using blogs to allow students to critique each other's work. This would give them an audience for their stories other than himself, which he felt would be very motivating.

Step 2: Review required resources and skills.

Mr. Caruso knew his strategy would hinge on having continuing and frequent online access and use of software tools. He arranged for a set of tablets to be on hand for the duration of the project. He felt that if the project were successful, he would secure funding for a permanent set of tablets.

PHASE 2 PLANNING FOR INTEGRATION

Step 3: Decide on objectives and assessments.

Mr. Caruso identified state and national language arts standards he wanted to help achieve with this project. Since he wanted to make sure students really achieved what he had in mind, he identified the following project outcomes, objectives, and assessments:

Outcome: Create a multimedia presentation that takes a different perspective on a popular story.
Objective: At least 90% of students will achieve an 80% or better rubric score on a multimedia project designed to tell a popular story from the perspective of one of the characters.
Assessment: Rubric to assess the quality of character analysis, narration, and images in the project.

Outcome: Make blog posts that reflect good character analysis.
Objective: At least 90% of students will post at least five comments, including at least one that reflects insights on a character in the original or revised versions of the story.
Assessment: Checklist of requirements for blog posts.

Step 4: Design integration strategies.

Mr. Caruso designed the following sequence of daily activities for the three-week project:

Days 1-2: **Introduce the unit.** The teacher introduces the project by having students read and discuss *The True Story of the Three Little Pigs* by Jon Scieszka, which tells the traditional fairy tale through the wolf's

eyes. The teacher leads a discussion on character traits and motivations reflected in the story and how this influences the narrative and plot. Then the teacher asks students to analyze another story that is currently popular with young people of their age. Again, they discuss how one of the characters might tell the same story from a different perspective. Finally, the teacher introduces the project and hands out and discusses the assessment rubric.

Days 3–4: **Library work and individual meetings.** The teacher takes students to the library/media center to review books and stories he has selected. He asks them to select a story for their project focus from a set he has identified; or they may identify one of their own choosing. As the students are ready to identify selections, he meets with them and confirms that their idea will work for the project.

Day 5: **Demonstration of a presentation software template and copyright discussion.** Using a template designed for the project, the teacher shows students the interactive and narration features they will use and shows how to "grab" images from the Internet and insert them into their presentation. He discussed copyright and Creative Commons and how to credit shareable works they use in their projects.

Days 6–10: **Individual student work on projects.** Students work on classroom computers to create their projects. The teacher circulates around to each student, answering questions and offering assistance and suggestions.

Days 11–14: **Project posting and blogging.** As students complete their projects, they upload them to the school server. All students review all story presentations and select at least five on which to post comments and suggestions. Students may revise their projects as they read the comments.

Day 15: **Project review and discussion.** The teacher leads a wrap-up discussion on what the students learned about character analysis from the project and how they might look at stories differently in the future. He asks students to vote on a "best-of-class" project to be placed on the school website for special recognition.

Step 5: Prepare instructional environment.

Mr. Caruso did the following tasks to prepare for the project:

Select stories for student review. He reviewed a variety of stories students might like to use for their project and asked the librarian to make copies available on the days students needed them.

Schedule library. He scheduled the library for a two-day period and asked the library/media center director to be available to assist his students.

Computer preparation. He made sure the presentation software was available and working on each of his classroom tablets and set up a special blog area for this project.

Prepare assessments. He created a rubric for grading the assignments and a checklist for reviewing blog posts.

PHASE 3 POST-INSTRUCTION ANALYSIS AND REVISIONS

Step 6: Analyze results.

As Mr. Caruso reviewed the rubric scores, he realized he had met his objectives for the project. All but two students achieved a score of 80% or better. Most points were lost on criteria related to image use and copyright. As usual, students were most enthusiastic about blogging. Every student had commented on more than the required five projects, and each had posted at least one comment that reflected good insights about character portrayals. He knew he was on the right track with the project.

Step 7: Make revisions.

Based on results from the projects, Mr. Caruso knew he would have to spend more time teaching students about effective and legal use of images. He decided to provide some good and bad examples of image use from the projects submitted by this group of students. He had also encountered an unexpected problem when students wanted to record narrations. The noise level in the classroom did not allow good, clear recordings, and he had to allow students to record in other rooms. He planned to provide for this ahead of time the next time he taught this unit. Finally, he decided to look for funding for his own classroom set of tablets so he could carry out this project and ones like it in the future.

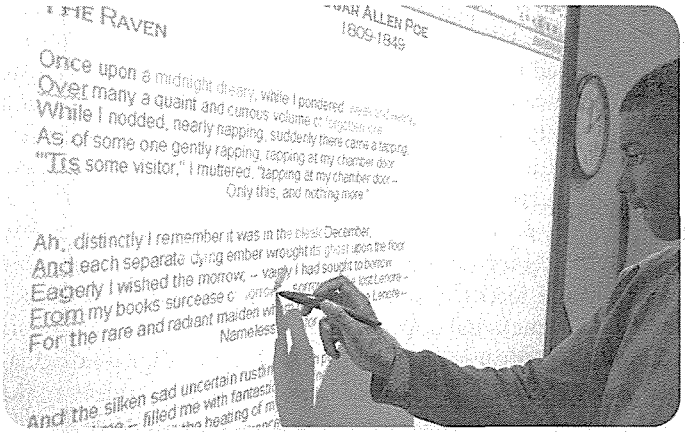
Source: Based on a concept from the Hot Chalk Lesson Plans Page lesson, "What Really Did Happen?" at: http://www.lessonplanspage.com.

CHAPTER 9 BIG IDEAS OVERVIEW

Before you begin reading the rest of this chapter, listen to the Chapter 9 Big Ideas Overview. It will give you a brief audio overview of main concepts to look for and help prepare you to work through information and exercises to achieve this chapter's outcomes.

ISSUES AND CHALLENGES IN ENGLISH AND LANGUAGE ARTS

Reading, writing, speaking, listening, and critically analyzing written and oral language are considered fundamental skills for a literate person, and technologies have much to offer teachers as they help their students develop these skills. However, technologies have also brought about dramatic changes in the format and types of communications and activities that literate people must deal with, thus presenting an array of new challenges to English and language arts teachers. This section discusses the types of issues English and language arts teachers must confront when teaching literacy skills and integrating technology into literacy topics.



▲ To be able to teach the new literacies, teachers must become proficient in the new tools that help define literacy in the 21st century and develop possible strategies to teach it. (Photo courtesy W. Wiencke)

Teachers' Changing Responsibilities for the "New Literacies"

The definition of *literacy* has changed dramatically in the United States over the course of its history, from being able to sign your name, to being familiar with certain canonical texts, to being able to read and write and make meaning from the written word, to being proficient in 21st-century literacies. The English and language arts discipline is guided by a prominent theory, **new literacies**, which describes an ever-shifting definition of literacy. Other terms, such as *21st-century skills, media literacy, digital literacy*, and *information literacy*, describe similar intersections of digital technologies and literacy and are prevalent terms used in general education contexts.

Leu, Kinzer, Coiro, Castek, and Henry (2013) explained how the forms and functions of literacy have always been changing and are shaped by current society. Currently, the global economy, the omnipresent Internet in society, and the co-mingling of literacy and the Internet in policy, such as national and state standards, are shaping the definition of literacy. While the core of new literacies rests upon the fact that literacy changes constantly, Leu et al. described the central principles that underlie the theory. The core technology underlying new literacies is the ubiquitous Internet (and technologies it supports) in our global society, which requires additional literacies. These literacies are always changing, are "multiple, multimodal, and multifaceted" (p. 1158), and require critical thinking. New strategic knowledge and social practices will be required, and finally, teachers' roles in New Literacy classrooms will be shifting and extremely important. For example, students will now need to seek meaning across a range of media, such as text, video, images, sounds, animations, and interactive elements, oftentimes presented simultaneously online or in apps. In addition, students will need to develop strategies to decipher and learn from global information sources that could introduce new social and cultural knowledge. Hypertextual structures and aesthetic differences in Internet-based technologies may require strategic knowledge for students to optimally seek, critique, and use information. New social practices include shifts in ways students can learn, express, share, and consume information. Students and teachers may take on new roles, such as those in a **distributed knowledge network**, in which some individuals are more expert than others on certain skills/knowledge but all participants in the classroom use social activities to maximize everyone's learning.

Defining competencies and focus for 21st-century literacies.

The National Council of Teachers of English (NCTE, 2013) also recognizes these rapid changes in literacy and adopted in 2008 (and updated in 2013) a 21st Century Literacies Framework that says a literate person should have many kinds of literacy. Given our global society, NCTE aims for learners to:

1. Develop proficiency and fluency with the tools of technology;
2. Build intentional cross-cultural connections and relationships with others so to pose and solve problems collaboratively and strengthen independent thought;
3. Design and share information for global communities to meet a variety of purposes;
4. Manage, analyze, and synthesize multiple streams of simultaneous information;
5. Create, critique, analyze, and evaluate multimedia texts; and
6. Attend to the ethical responsibilities required by these complex environments (NCTE, 2013).

In this definition of 21st-century literacies, NCTE introduces six competencies that also reflect examples of the new strategic knowledge, social practices, and critical thinking that are required in New Literacies theory.

As described in Chapter 1, the terms **digital literacy** and **information literacy** are also widely used in general education contexts to describe the required skills in using technologies and information. According to the American Library Association (ALA), **information literacy** requires people to recognize when they need information, to know how to locate and evaluate it, and to be able to use it effectively. Because English and language arts focus on reading and writing, information literacy is inherent in the New Literacies theory and NCTE's 21st-century literacies. Information literacy involves critical thinking and analysis of online information, described later in this chapter as a key instructional strategy.

Regardless of the preferred "literacies" term used in your teaching context, a key understanding in new literacies or digital literacy is that these literacies capture more than the ability to use computer devices and software tools to locate and use information. These literacies call upon teachers to develop new instructional and learning strategies to assist students in finding, understanding, critiquing, and contributing to multimodal, global digital information using social learning practices. Patricia Edwards, when she was serving as president of the International Reading Association (IRA) in 2010, pointed out that students have to adapt the ways they read and write if they are to be successful socially, politically, and economically.

Materials to develop literacy.

Information now comes to students via email and e-books; Web pages and podcasts; blogs, vlogs, and wikis; instant messages and Twitter feeds; curation apps like Pinterest; social knowledge management like Diigo; and movies and streaming video. The term **blog** is short for "Web log" and refers to a Web page that serves as a publicly accessible location for discussing a topic or issue. Blogs began as personal journals, but their use rapidly expanded to a public discussion forum in which anyone could post opinions on the topic. A **vlog**, a combination of video and blog is a video version of the blog in which posts are video clips instead of text entries. A **wiki**, on the other hand, is a collection of web pages located in an online community that encourages collaboration and communication of ideas by having users generate or modify content. Thus, wikis contain the ongoing work of many authors. **Twitter** is a social networking **microblog** technology that allows users to express 140-character micromessages (i.e., a Tweet) that may include links, video (e.g., Vine, an app that allows users to make and share six-second videos), or pictures (e.g., Instagram, an app that allows users to share photos and, if they wish, add filters to change the appearance of their photos). Users may create an identity, follow other users, and set privacy settings.

Materials to organize information.

Other features like Replys, Favorites, Retweets, and Lists allow users to communicate more and organize people and information. **Pinterest** is a **curation tool** that allows users to collect (pin) and organize Internet-based information on boards into their account. Users create an identity, follow other boards or co-create boards, and set privacy settings. **Diigo** has developed from a social bookmarking technology towards a sophisticated knowledge management tool that supports work with Web-based information.

Diigo users have a library into which they can add links, screenshots, and pages during Web browsing. Annotation tools allow users to highlight or add sticky notes. Users can organize their information using tags or lists and can easily share any information using social networking tools (e.g., Twitter, Facebook). Again, users have privacy tools and collaboration features in which groups of people can contribute or subscribe to knowledge repositories.

Technologies such as those described above have been created through contemporary social forces within our global society. These ever-shifting technologies challenge teachers to constantly rethink the literacies they teach in order to make their 21st-century students truly literate. Edwards (2010) and Leu and Forzani (2012) remind us of the constant changes that will occur with technologies and literacy.

Research is starting to gauge the impact on comprehension of students reading digital text in e-books versus in print media. Connell, Bayliss, and Farmer (2012) found that college students tended to read faster in print environments, and studies by Schugar, Smith, and Schugar (2013) and Schugar and Schugar (2014) found that comprehension of K–6 students was significantly less in e-books when compared to print texts. These early findings point to the need for instructing students in optimal use of digital text. Based on their findings to date, Schugar and Schugar (2014) concluded that such instruction must become an essential component of today's digital literacy instruction.

New Instructional Strategies to Address New Needs

Educational policy has begun to recognize the strength of the current societal forces, mainly globalization and the Internet, which are changing how people learn. National standards for English and language arts recognize integration of the Internet and digital technologies into curriculum and instruction. The National Council of Teachers of English (NCTE) and International Reading Association (IRA) Standards for the English and Language Arts (1996 and reaffirmed in 2013; see Figure 9.1) emphasize the importance of students having opportunities and resources to use technology to develop their language skills, as reflected in expectations that "Students read a wide range of print and nonprint texts . . ." (Standard 1), "Students apply knowledge of . . . media techniques . . . to create, critique, and discuss print and nonprint texts" (Standard 6), and "Students use a variety of technological and informational resources (e.g., libraries, databases, computer networks, video) to gather and synthesize information and to create and communicate knowledge" (Standard 8) (p. 3). The Common Core State Standards (Common Core, 2010) for English Language Arts & Literacy in History/Social Studies, Science, and Technical Subjects outline standards in reading, writing, speaking, listening, and language. Digital technologies are explicitly mentioned in five of the general, cross-disciplinary Common Core State Standards: College and Career Anchor Standards (see Table 9.1). Drew (2012) argued that the CCSS do not acknowledge sufficiently the changing nature of literacy and how the Internet has become "a central text" (p. 321). New literacies require a high level of critical sophistication from our students, and it is only through instruction and experiences with new technologies that they will develop these skills. However, teaching students to use new technologies calls for an array of new instructional strategies that are not prescribed by the NCTE/IRA or CCSS. Fortunately, many new tools are available to support these strategies, including the **Top Ten Must-Have Apps for English and Language Arts**.

New strategies to foster reading and writing skills.

Many readers are now doing the majority of their reading online. Serafini (2012) explained how novice readers are challenged by multimodal texts that include a range of text, visual images, links, sounds, and other design features. He encourages teachers to shift from teaching readers to be only reader-decoders (of written texts) to be reader-viewers (of multimodal texts). This calls for them to employ four roles: (a) navigator, (b) interpreter, (c) designer, and (d) interrogator, as needed. Readers still need decoding skills but also will need skills to navigate and interpret multimodal texts that are frequently online and do not have linear paths. Readers are also called on to design their own (multi)paths through multimodal texts and actively construct meaning. Finally, readers can develop personal meanings and identify culturally-mediated public meanings—all of which may differ for each person. Texts that naturally position readers as reader-viewers of

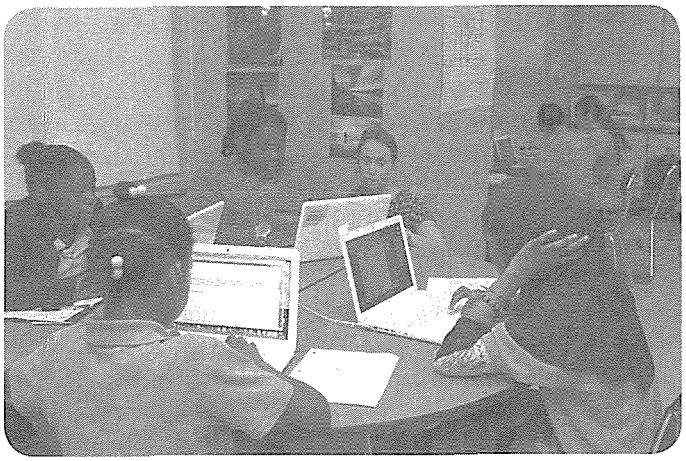
FIGURE 9.1 NCTE/IRA Standards for the English Language Arts

1. Students read a wide range of print and non-print texts to build an understanding of texts, of themselves, and of the cultures of the United States and the world; to acquire new information; to respond to the needs and demands of society and the workplace; and for personal fulfillment. Among these texts are fiction and nonfiction, classic and contemporary works.
2. Students read a wide range of literature from many periods in many genres to build an understanding of the many dimensions (e.g., philosophical, ethical, aesthetic) of human experience.
3. Students apply a wide range of strategies to comprehend, interpret, evaluate, and appreciate texts. They draw on their prior experience, their interactions with other readers and writers, their knowledge of word meaning and of other texts, their word identification strategies, and their understanding of textual features (e.g., sound-letter correspondence, sentence structure, context, graphics).
4. Students adjust their use of spoken, written, and visual language (e.g., conventions, style, vocabulary) to communicate effectively with a variety of audiences and for different purposes.
5. Students employ a wide range of strategies as they write and use different writing process elements appropriately to communicate with different audiences for a variety of purposes.
6. Students apply knowledge of language structure, language conventions (e.g., spelling and punctuation), media techniques, figurative language, and genre to create, critique, and discuss print and non-print texts.
7. Students conduct research on issues and interests by generating ideas and questions, and by posing problems. They gather, evaluate, and synthesize data from a variety of sources (e.g., print and non-print texts, artifacts, people) to communicate their discoveries in ways that suit their purpose and audience.
8. Students use a variety of technological and information resources (e.g., libraries, databases, computer networks, video) to gather and synthesize information and to create and communicate knowledge.
9. Students develop an understanding of and respect for diversity in language use, patterns, and dialects across cultures, ethnic groups, geographic regions, and social roles.
10. Students whose first language is not English make use of their first language to develop competency in the English language arts and to develop understanding of content across the curriculum.
11. Students participate as knowledgeable, reflective, creative, and critical members of a variety of literacy communities.
12. Students use spoken, written, and visual language to accomplish their own purposes (e.g., for learning, enjoyment, persuasion, and the exchange of information).

Source: Standards for the English Language Arts, by the International Reading Association and the National Council of Teachers of English, Copyright 1996 by the International Reading Association and the National Council of Teachers of English. Reprinted with permission.

TABLE 9.1 Technology-Related Common Core State Standards (Common Core, 2010)

Anchor Standards (A.S.)	Applicable to:		
	K–5	6–12	History/Social Studies, Science, and Technical Subjects
Reading: **A.S.** 7. Integrate and evaluate content presented in diverse media and formats, including visually and quantitatively, as well as in words.	✓	✓	✓
Writing: **A.S.** 6. Use technology, including the Internet, to produce and publish writing and collaborate with others.	✓	✓	✓
Writing: **A.S.** 8. Gather relevant information from multiple print and digital sources, assess the credibility and accuracy of each source, and integrate the information while avoiding plagiarism.	✓	✓	✓
Speaking/Listening: **A.S.** 2. Integrate and evaluate information presented in diverse media and formats, including visually, quantitatively, and orally.	✓	✓	
Speaking/Listening: **A.S.** 5. Make strategic use of digital media and visual displays of data to express information and enhance understanding of presentations.	✓	✓	



▲ Teachers see the range of digital technology tools available to students as expanding opportunities for self-expression. Pearson Education

multimodal texts include postmodern picturebooks, such as *Black and White* (Macaulay, 1990) for children in grades K-3, graphic novels, such as *Anne Frank: The Anne Frank House Authorized Graphic Biography* (Jacobson & Colón, 2010) for children in grades 6–8, and web-based texts of all sorts to which children of all grades gravitate.

Likewise, print-centric texts and the dominant mode in schools of communicating ideas though writing are important but no longer sufficient for learners. Alvermann, Hutchins, and McDevitt (2012) described a range of digital literacy practices, including students writing and publishing a fan fiction prequel to *Of Mice and Men*, and said, "Multimodal texts that combine language, imagery, sounds, performance, and the like are what students deserve and expect, coming as they are from a world rich in multimedia" (p. 40). Teachers see the range of digital technology tools available to students as expanding opportunities for self-expression, increasing writing frequency and formats, and broadening the audiences for whom students write, yet these AP and National Writing Project teachers also highly value "formal writing," which they see as essential (Purcell, Buchanan, & Friedrich, 2013).

New strategies for information literacies. Beach (2012) said that informational/accessibility literacies allowed students to access, acquire, and evaluate the quality of online information, as well as using, synthesizing, and communicating what they find. The most common way of teaching these skills, a "one-shot" library session (Artman, Frisicaro-Pawlowski, & Monge, 2010), is not sufficient. Students often rely on simple Google searches (Jonker, 2011), which are inefficient. Teachers teach students how to use the most effective **keyword searches** to search educational online databases, such as InfoTrac Junior Edition or EBSCO Host, as well as in search engines.

As students find informational sources online, they need explicit instruction in how to think critically and evaluate what they find (Castek, 2012). Rheingold (n.d.) advised students to analyze critically the author, publisher, timeliness, audience, and argument structure of the material, as applicable. Rheingold (n.d.) provided grade-appropriate critical questions in each of the areas for analysis. When teachers select and vet the websites students will use, it is recommended that teachers model or review Rheingold's critical thinking steps to model how the sites were chosen. Next, students must employ critical thinking skills to determine the accuracy, reliability, and bias of the information sources. Roland Paris (n.d.) suggested students use the C-L-E-A-R model for critical reading, as shown in Figure 9.2. Learning these strategies will require more time than a one-shot library session. However, they are important activities to spend time on. This is because research shows that students have difficulty processing information once they have found it online (Salmerón & García, 2011). Also, they may read superficially, be paralyzed by information overload (Carr, 2011), or struggle with website text readability that is way above the grade level (Dalton & Smith, 2012).

FIGURE 9.2 The CLEAR Model

1. **CLAIMS:** What are the main claims or arguments in the text? What is the author's main point?
2. **LOGIC:** How does the author reach these conclusions? What are the steps in the author's reasoning or logic? Is this logic sound?
3. **EVIDENCE:** What evidence does the author present to support the argument(s)? Does the author offer enough evidence? Is this evidence convincing? Can you think of any counter-evidence that would challenge the author's claims?
4. **ASSUMPTIONS:** Does the author rely on hidden assumptions? If so, are these assumptions correct?
5. **ALTERNATIVE ARGUMENTS:** Can you think of alternative arguments that the author has not considered?

Source: Reproduced with permission from the website of Professor Roland Paris, University of Ottawa: http://aix1.uottawa.ca/~rparis/critical.html.

New strategies to address social interaction. New literacies are much more contingent on social interactions with others than traditional literacies. According to the Standards for the English Language Arts (1996), teachers should begin "giving students the enjoyment and pride of sometimes being their teachers' teachers" (p. 40). Technology offers a natural setting in which students can be positioned as the experts, helping redefine the student–teacher and student–student relationships. The new forms of literacy and students becoming experts illustrate the power of people working together and are grounded in the social constructivist theory proposed by Vygotsky (Davydov, 1995), which asserts that learning occurs through interactions with others.

Another reason that new literacies demand a more social environment is that teaching and learning are no longer confined to a traditional classroom context. Today thanks to the Internet, the classroom is a worldwide location in which networked technologies for literacy enable us to communicate with people anywhere. We transmit and receive information in various formats and from many different people. These interactions provide a tremendous multicultural benefit to our classrooms that has never existed before. One strategy that makes use of this new social environment allows students to socially curate and bookmark online sources using apps such as Pinterest and Diigo. These social sites allow selective sharing that supports collaboration. Another strategy is having students share their work products with the world by publishing them online in blogs, wikis, Web pages, and e-books. By sharing their work, students to are able to comment on or annotate each other's posted works, thus engaging in a collaboration that makes them part of an ever-growing and changing community of learners.

Redesigning classroom spaces into learning commons or flipped/inverted classrooms is another type of instructional strategy. **Learning commons** are areas in a school that integrate school media centers and ELA classrooms around knowledge sharing and can even involve parents, student peers, counselors, administrators, and other teachers. **Flipped classrooms** invert individual instruction, lecture, and practice as homework while class time is reserved for collaborative creation, sharing, and discussion.

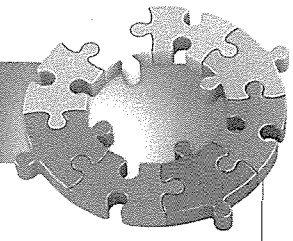
Challenges of Working with Diverse Learners

Schools have more diverse student populations today than ever before. This cultural and linguistic diversity creates classrooms that are richer yet more complex. Although we value and celebrate the opportunity to interact with students of different nationalities, races, and ethnicities, this creates new challenges for English and language arts teachers. This is especially true when working with students who are learning English as a second or third language. It is also true when working with struggling readers. Often when students experience literacy problems at a young age, they continue to have reading difficulties throughout their schooling. Students who typically experience this problem include children who begin school without a solid literacy foundation, learn English as a second language, live in literacy-impoverished homes, have attention deficit/hyperactivity disorder, or do not receive appropriate instruction in school. Because many students need additional instruction in literacy, appropriate use of technology (e.g., audio books and e-books, websites, iPods/iPads, and software) can support their growth.

Challenges of Motivating Students to Read and Write

The more students read, the better developed their language and writing skills become. However, teachers find it an ongoing challenge to motivate students to read—either for study or for pleasure. While youth aged 8–18 actually increased their leisure time spent reading print books from 21 to 25 minutes per day from 1999–2009, computer use, which methodologically included reading online, rose from 27 minutes to 73 minutes per day (Rideout, Foehr, & Roberts, 2010). Thus, teachers are turning to the interactive and visual qualities of software and websites to increase motivation for reading and writing. In fact, use of e-books on e-readers, which have interactive features, led to middle school boys who were reluctant readers to value reading more and increase their self-concept of reading ability (Miranda, Williams-Rossi, Johnson, & McKenzie, 2011). The Adapting for Special Needs feature provides information on how to support students who struggle with reading and writing.

Adapting for Special Needs



Reading and Writing Tools

Writing Tools

Students with disabilities may struggle in many English and Language Arts classrooms because of the emphasis on reading and writing skills; these are common deficit areas for many students with disabilities. As a result, it is important to consider how technology might be used to scaffold and support each student's literacy development. One common approach for supporting diverse learners is to provide a specialized word processor specially designed with features that support poor writers. These include:

- Clicker5 (at the Crick software website)—Word processor with point-and-click access to whole words, phrases, and pictures to insert into writing.
- Co: Writer (at the Don Johnston website)—Word prediction software that assists a user during word processing by "predicting" and inserting a word the user intends to type.
- PixWriter (at the SunCastle Technology website)—Program that assists writing by allowing users to select text from pictured buttons.
- Read, Write Gold (at the Texthelp website)—A program with a toolbar that integrates with applications such as Microsoft Word, allowing students to access support tools that highlight and read aloud text from within these programs.

Another tactic is to compensate for poor writing and spelling skills by changing the writing production task from written drafting to dictation. Several tools are available that alter the nature of the text generation process and allow students to move into the revision phase of writing.

- Dragon Speech Recognition Software (software and app)—This software can be trained to recognize one's voice.
- iDictate (at the iDictate website) and Speak-Write (at the SpeakWrite website)—These are transcription services that accept voice recordings and email a text transcription.

Reading Tools

When students struggle to read grade level content independently and fluently, text-to-speech products may be useful to allow students to listen to the information. They use these tools to play back any given text selection in a spoken voice. Free text-to-speech tools include the following:

- Natural Reader (at the NaturalReader website)
- Snap & Read (at the Don Johnston website)

—Contributed by Dave Edyburn

Teachers also find it an ongoing challenge to motivate students to express themselves in writing. Students especially resist the labor involved in revising research papers and compositions. In addition to word processing, which has been in use for many years, a variety of technology tools and strategies have emerged to spur students' desire to write, to improve the quality of their written products (e.g., email projects, blogs), to provide authentic publication sources (e.g., fan fiction), and to engage in purposeful, social communications (Dredger, Woods, Beach, & Sagstetter, 2010). Reviews of research have found the use of blogs and wikis have led to more student–student and student–teacher collaborative idea sharing, more consideration of audience in writing, and higher motivation and reading retention (Beach, 2012). Ultimately, writers need to see value in writing tasks.

Teachers' Growth as Literacy Professionals and Leaders

The position statement published by the International Reading Association (2009) clearly states what literacy teachers need to know about integrating technology into the curriculum. According to the IRA, students have the right to have:

- Teachers who use information and communication technologies (ICTs) skillfully for teaching and learning
- Peers who use ICTs responsibly and who share their knowledge
- A literacy curriculum that offers opportunities for collaboration with peers around the world
- Instruction that embeds critical and culturally sensitive thinking into practice

- Standards and assessments that include new literacies
- Leaders and policymakers who are committed advocates of ICTs for teaching and learning
- Equal access to ICTs (Reprinted with permission of the International Reading Association.)

In our ever-shifting global society with changing expectations for literacy, 81.6% of U.S. literacy educators report a lack of professional development on technology integration (Hutchison & Reinking, 2011). This is not surprising given in 2011–2012, only 67.2% of public school teachers (U.S. DOE, 2011–12) and 55.2 % of private school teachers (U.S. DOE, 2011–12b) reported participating in professional development focused on using computers in instruction in the last twelve months. Literacy teachers identified four ways professional development about technology integration could be improved, including:

1. Time to learn, explore, and develop literacy lessons
2. Access to the technologies
3. Access to more knowledge and knowledgeable others
4. Continued, direct support (Hutchison, 2012)

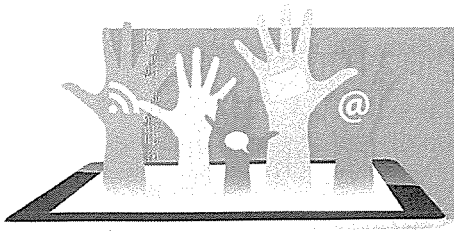
When professional development is not provided or does not meet optimal conditions noted above, one solution is for teachers to grow as a literacy professional by developing themselves into a connected educator who interacts with professional educators around the world in order to construct new knowledge and deepen understanding (Wong, 2013). Nussbaum-Beach and Hall's (2013) informative book recommends teachers assume personal responsibility for professional learning through organized professional communities (e.g., at NCTE's Connected Community website), teacher-selected **personal learning communities**, and interest-based communities of practice (e.g., at the English Companion Ning site). Wong (2013) suggests Twitter, selective listservs, blogging, digital portfolios, and RSS feeds may be technologies that help educators identify new trends, connect with other educators, share and receive ideas, build relationships, and ultimately become connected educators that know both the affordances and challenges of using digital tools (Beach, 2012) and support the development of new literacies.

Begun in October 2012, the Office of Educational Technology's Connected Educators initiative sponsored "Connected Educator Month" which involved more than 300 online events, such as keynotes, panel discussions, courses, webinars, tours, chats, forums, and workshops that accounted for thousands of hours of online professional development. In October 2013, Connected Educators Month's online learning opportunities expanded beyond the USDOE to include events curated from existing sources. Becoming a connected educator allows you to join the online participatory culture from which you will gain valuable knowledge.

Finally, the connected educator must also know students' current digital literacy practices, as well how much high-speed access they have to the Internet (Alvermann et al., 2012). The latter is needed to facilitate the development of literacy activities that are of value to students. Wohlwend (2010) notes that though digital tools are increasingly being developed and used throughout society, U.S. schools are "clamping down rather than ramping up" (p. 144). Teachers who are in tune with the need for a revised definition of literacies can lead the way for new policies in schools, policies that embrace technologies, rather than fear them.

QWERTY Keyboarding: To Teach or Not to Teach?

The most common way to write using a computer requires input through a regular **QWERTY keyboard**, so named because of the first six letters in the top letter line of a typewriter keyboard. There is an ongoing discussion of whether we should teach keyboarding instruction as a prerequisite to the use of computers for writing. Those in favor argue that students will learn bad habits if they use the keyboard without proper training, that these bad habits might become permanent, and that failure to learn proper fingering will inhibit fluent and speedy keyboarding. Those against requiring keyboarding instruction as a prerequisite argue that too much student time and computer resources are spent on getting students trained to type quickly, that students need only basic keyboard familiarization, and that keyboarding instruction would likely be a waste of time unless students have real-world applications in which to use the computer. Both



Hot Topic Debate
Should Word Processing Replace Cursive Writing?

Take a position for or against (based either on your own position or one assigned to you) the following controversial statement. Discuss it in class or on an online discussion board, blog, or wiki, as assigned by your instructor. When the discussion is complete, write a summary of the main pros and cons that you and your classmates have stated, and put the summary document in your Teacher Portfolio.

In light of the increasing use of word processing in school learning, higher education, and the workplace, some people feel that elementary school time learning cursive writing is not well spent. Others feel that many benefits remain for teaching cursive writing. (See a discussion of the debate in Long's [2013] article "Does Cursive Need to Be Taught in the Digital Age?" in *NEA Today*.) In light of the switch to typed writing in about sixth grade, would time spent teaching cursive writing in elementary school be better spent teaching keyboarding and word processing software functions? What evidence can you present that cursive writing does or does not deserve a prominent place in 21st-century elementary school curriculum? What would be the impact on school students if these skills were to be replaced by instruction in word processing?

arguments are legitimate, and most teachers have resolved the issue, at least temporarily, by favoring keyboarding instruction if it is available and needed but not preventing students from using the computer if they do not yet have good keyboarding skills. It is important to note that the CCSS for ELA expect third through sixth grade students and older to be able to "demonstrate sufficient command of keyboarding skills to type a minimum of one page [in fourth grade] in a single setting" (Common Core, 2010, p. 21). Expectations for typed page length increase by one page each for fifth and sixth grade levels.

The Cursive Writing Controversy

An issue that is related to questions about keyboarding is whether time spent teaching cursive writing would be better spent on other educational priorities. Critics of this long-taught skill argue that it is no longer used enough to justify its place in the elementary school curriculum. Some feel that this time would be better spent teaching writing with word processing. Supporters of cursive writing instruction point to its effect on shaping fine motor skills, its use in legal matters, and the need to be able to read historical handwritten documents. Some states (e.g., Tennessee) have responded to this controversy by introducing laws requiring cursive writing be taught. Read more about this issue in the Hot Topics for Debate feature.

TECHNOLOGY LEARNING CHECK

Complete TLC 9.1 to review what you have learned from this section about issues that determine how technology is used in English and language arts education.

TECHNOLOGY INTEGRATION STRATEGIES FOR ENGLISH AND LANGUAGE ARTS

Thanks in part to strong support for technologies by professional organizations such as the International Reading Association and the National Council of Teachers of English, the last decade has seen a growing emphasis on the use of technologies to support literacy instruction. This section focuses on integration strategies that support the following four English and language arts areas: word fluency and vocabulary development; comprehension and literacy development; the teaching of writing; and learning about literature. Strategies and resources under these four headings are summarized in Table 9.2.

TABLE 9.2 Summary of Technology Integration Strategies for English and Language Arts

Technology Integration Strategies	Benefits	Sample Resources and Activities
Support for Word Fluency and Vocabulary Development		
Online practice in matching letters and sounds	Offers motivating environment for practice	International Reading Association (IRA) website
Online practice in matching words and meanings	Offers motivating environment for practice	Brainpop PBS Kids
Online tools to engage students in vocabulary learning	Offers motivating environment for engaging students with words	Endless Alphabet & Endless Reader (see iTunes) Wordle Wordsift Visual Thesaurus
Support for Comprehension and Literacy Development		
Using digital text to encourage engaged reading	Allows more flexibility to interact with text; scaffolds emerging reading skills	E-books Interactive stories iBooks (see iTunes)
Supported reading with software and portable assistive devices	Devices and software read words aloud to students; especially helps struggling students	Talking word processors, such as Write: OutLoud (Don Johnston, Inc., and Kurzweil 300 Handheld devices such as Audiobooks (see iTunes)
Support for Writing Instruction		
Strategies for preparing to write (prewriting)	Helps students organize their thoughts prior to writing	Electronic outlining Concept mapping Curation apps, such as FlipBoard, Pinterest, and Diigo Notetaking with Evernote
Strategies to encourage writing	Provides environments for modeling, supporting good writing	Websites such as the Academy of American Poets Story starters Blogs and wikis Serious games, such as Dafur is Dying; Ayiti: The Cost of Life; and Quest Atlantis
Strategies to produce written drafts	Offers more flexibility to revise while writing	Various word processing software packages (e.g., Microsoft Word, GoogleDocs) Speech to text: Dragon Dictation Bibliography: Zotero
Modeling to support revising and editing written drafts	Provides environments for modeling editing process and offers more editing flexibility	Interactive whiteboards Word processing features: spell-checkers and grammar checkers Screencasting, such as ExplainEverything and ShowMe
Providing feedback with grammar, spell-check, and thesaurus features	Provides visual, immediate support and feedback during revision of drafts	Word processing features such as grammar-check, spell-check, and thesaurus
Providing feedback on student writing with editing tools	Provides supportive environment for demonstrating revision needs	Word processing features: autocorrect and track changes features Annotation software, such as iAnnotate and Highlighter
Multimodal communication and publishing	Gives students an authentic purpose, audience for their multimodal works	Figment Fan fiction sites KidPub Your Student News website iBook Author Center for Digital Storytelling Celtx Script Gamemaker: Studio (from YoYo Games) GameStar Mechanic

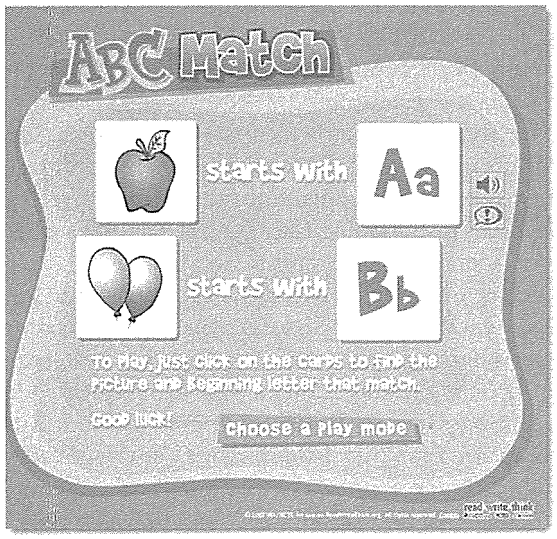
TABLE 9.2 Summary of Technology Integration Strategies for English and Language Arts (continued)

Technology Integration Strategies	Benefits	Sample Resources and Activities
Support for Literature Learning		
Accessing online free copies of published works	Offers students free access to reading materials	International Children's Digital Library Free Books for Children (see iTunes) OverDrive Media Console: Library e-books and audiobooks Google Books Online Project Gutenberg Poets.org Shakespeare Online The Literature Page The Literature Network The Bible Gateway Qur'an website
Accessing online background information on authors	Offers quick access to a wealth of information on authors	Famous People website Poets.org Biblio website
Support for literary analysis	Allows visual demonstrations, interactions to support analysis activities	Interactive whiteboards E-readers Ngram Viewer

Strategies to Support for Word Fluency and Vocabulary Development

Literacy begins at the word level, with fluency in decoding, reading, and understanding individual words. Several technology-enhanced strategies support student growth in these skills, including practice in matching letters and sounds, matching words with meanings, and vocabulary growth. Many strategies described here can be implemented with free websites, only a few of which are mentioned here as examples.

FIGURE 9.3 Sample ReadWriteThink .org Letter-Sound Exercise

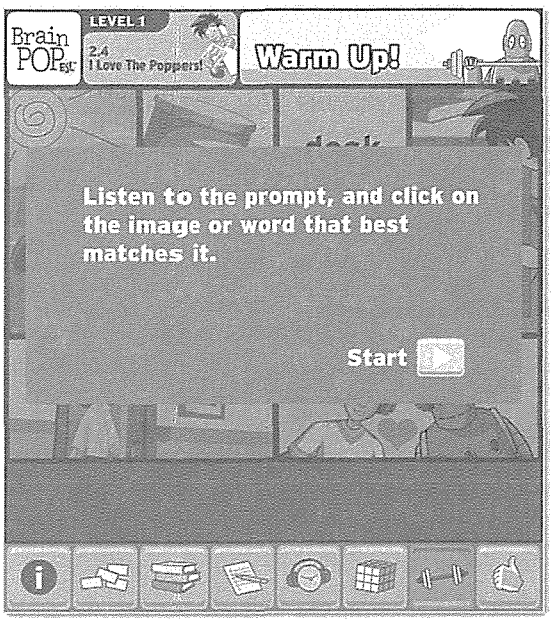


Source: ReadWriteThink.org is a nonprofit website maintained by the International Reading Association and the National Council of Teacher and English, with support from the Verizon Foundation. We publish free lesson plans, interactive student materials, Web resources, and standards for classroom teachers of reading and the English language arts. Retrieved from www.readwritethink.org/files/resources/interacitves/abcmatch/. Reprinted with permission.

Online practice in matching letters and sounds. Phonemic awareness remains a foundational skill in learning to read, and many websites provide interactive practice in these important skills. For example, the ReadWriteThink website maintained by the IRA and NCTE offers a number of matching-letters-to-sounds exercises like the one shown in Figure 9.3. To make this practice more accessible to children outside of school, apps are available with this focus. Apps for iPhones and iPads can be downloaded from the iTunes store, and apps for the Android phones may be downloaded from numerous sites. For example, Little Stars – Toddler Games (available on iTunes) offers practice with first words, letter names, and letter sounds. It is customizable, including custom recording and adaptive play, which shows content that learners need to practice. See other apps to support English and language arts in the Must-Have Apps feature.

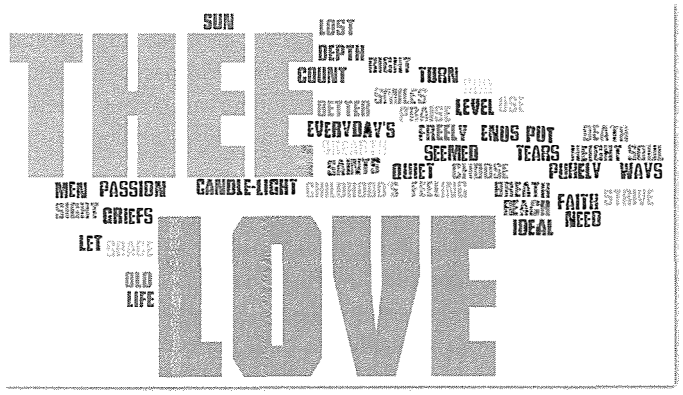
Online practice in matching words with meanings. As Glenberg, Goldberg, and Zhu (2011) remind us, many children, especially those learning English as a second or third language, can learn to sound out words, but without visual prompts, they may not connect these words to images from their own experience. Websites such as Brainpop are among those that offer exercises to give students practice in linking words and images so that emerging readers and new English language learners can begin to make those associations. See an example Brainpop exercise in Figure 9.4. PBS KIDS offers a range of online games and apps that target a range of literacy activities.

FIGURE 9.4 Brainpop Practice in Matching Words and Images



Source: http://www.brainpop.com. Copyright 199-2011 by BrainPOP. All rights reserved. Reprinted by permission.

FIGURE 9.5 Example Word Cloud Created with Wordle



Source: Word cloud created from Sonnet #43 from *Sonnets from the Portuguese* by Elizabeth Barrett Browning. Wordle created at http://www.wordle.net.

Online tools to engage students in vocabulary learning.

A growing number of innovative and fun sites are available for encouraging vocabulary growth. For early literacy, Endless Alphabet and Endless Reader helps build vocabulary and "sight words" through interactive puzzle games, talking letters, and definitional animations. Dalton and Grisham (2011) also offered some specific examples, such as Wordle, Wordsift, and Visual Thesaurus. One of these strategies calls for students to use Wordle to create a "word cloud" based on the frequency of words used in a text (see an example in Figure 9.5). These technologies are diverse in their approaches but all serve to engage students with words in motivating ways.

Strategies to Support Reading Comprehension and Literacy Development

Technologies offer a variety of ways to support both traditional reading comprehension and emerging literacies. Those described in this section include encouraging engaged reading with digital text, collaborative reading, and supporting reading with portable assistive devices.

Using digital text to encourage engaged reading.

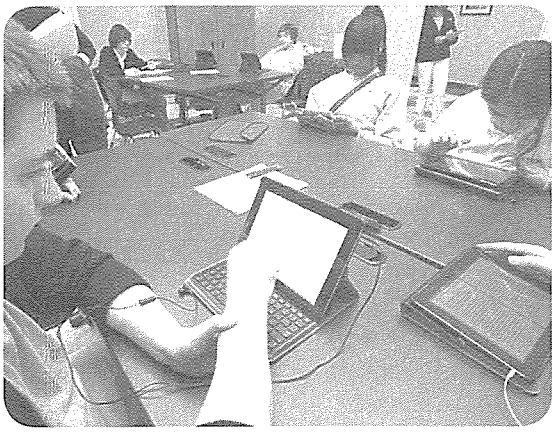
E-books and interactive stories serve to engage readers by allowing them to notate and interact with digital versions of text as they read. In their review of research on using computer-assisted methods to support learning for struggling readers, Stetter and Hughes (2010) found that students profit most from supported use of text in digital tool such as e-books. They found that e-books and interactive versions of stories, especially those that offer audible reading on demand, offer students scaffolds for their emerging reading skills. The iBooks app allows downloading books, including children's picture books and classics, word search features, audio speaking of words, highlighting, notetaking, and sharing quotes/thoughts through social networking. Many books that are in the public domain (e.g., *Call of the Wild* by Jack London) may have singular apps created for the one text with special features. Students can also check out e-books and audiobooks from public or school libraries using the OverDrive Media Console app.

Collaborative reading that is facilitated in online spaces leads readers to share ideas and consider alternative perspectives on the reading topic. This contrasts with individual readers who focus on compiling facts (Leu et al., 2011). Such perspective broadening is important in new literacies.

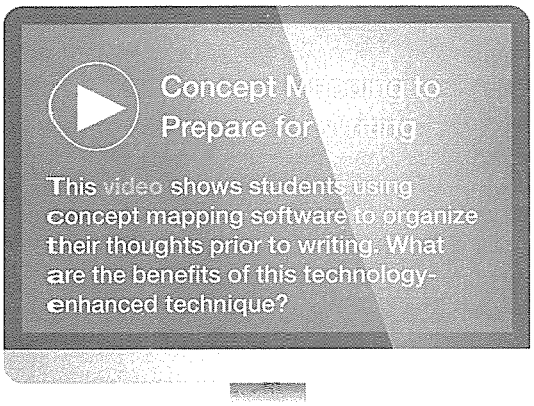
However, as teachers encourage reading and foster these new literacies, they are also responsible for making sure that students are reading e-books and other digital formats in ways that best support reading comprehension. As research by Schugar and Schugar (2014) revealed, students have a tendency to skip over important passages in digital environments and, as a result, can have significantly lower comprehension than they would in print environments. Teachers must help students develop digital literacy skills that specifically address and counter this tendency.

Supported reading with software and portable assistive devices.

To aid student reading, software is available to read passages aloud using handheld devices (e.g., smartphones, e-readers, tablets, iPod) are available to give definitions or to pronounce unfamiliar words aloud. These materials are particularly useful for students with reading difficulties or those for whom English is not a first language. Larson (2010) describes how e-book and e-reader reading behaviors differ from behaviors with print text. With e-books, students can make notes and



▲ To aid student reading, software is available to read passages aloud using handheld devices. (Photo courtesy of W. Wiencke)



comments directly on what they are reading, which helps them better comprehend its meaning. They can also adjust font size, access a built-in dictionary to examine word meanings and pronunciations, and use a text-to-speech feature to listen to or reread passages they find difficult. The device "reads" the word as the student points to it. Some devices and websites give a printed definition on the small screen or pop-up; others offer audio pronunciation. Still others are available to translate words to other languages. A**udiobooks** can be paired with print-based texts to support reading.

Talking word processors are software packages that read typed words aloud. They have proven especially useful for students with disabilities. Two examples of these are Write: OutLoud from Don Johnston, Inc., and the Kurzweil 300. Computer operating systems may also have built-in accessibility features for vision, hearing, physical and motor skill challenges that can be leveraged for support in reading and writing activities.

Strategies to Support Teaching the Writing Process

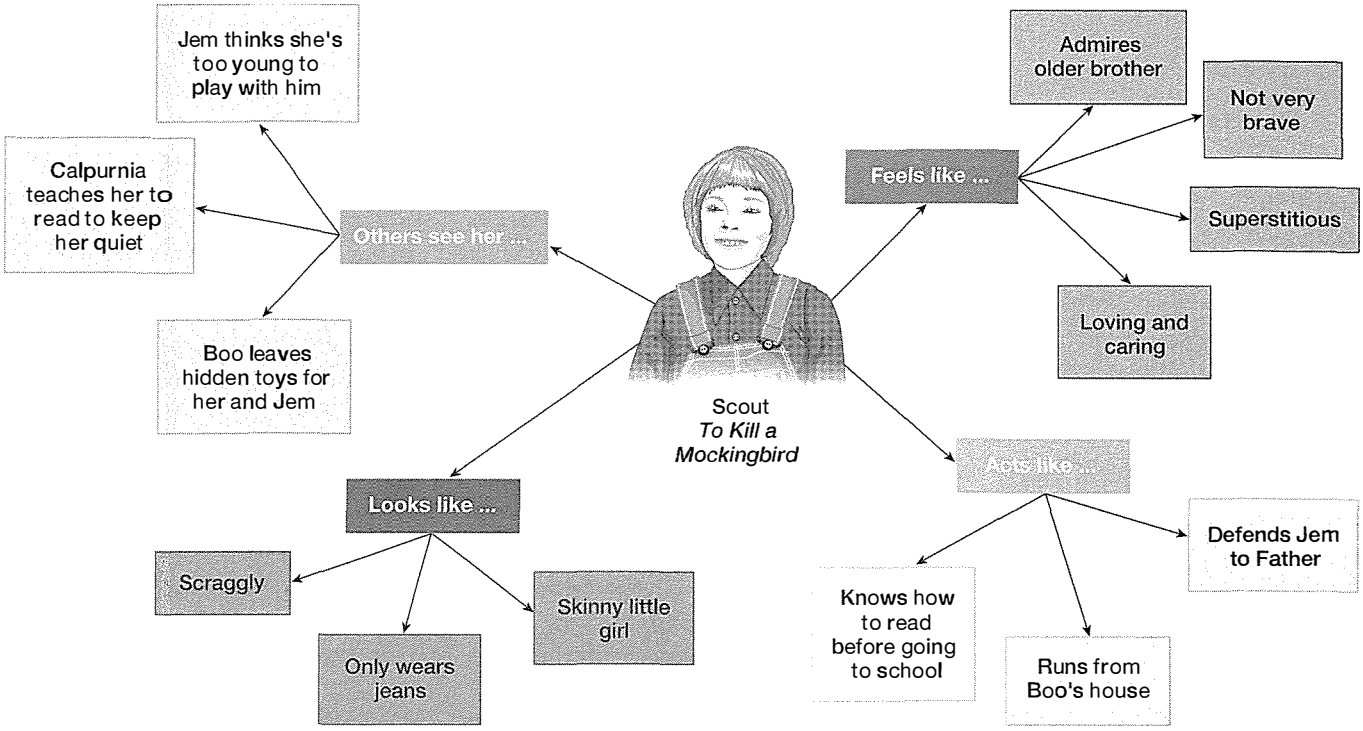
A plethora of technologies offer unique capabilities to help writers prepare to write and to improve the quality of their written work and creation of multimodal texts. Strategies are described here for each phase in the writing process, including preparing to write (prewriting); drafting, revising, and editing; and publishing student work.

Instructing students who are preparing to write (prewriting).

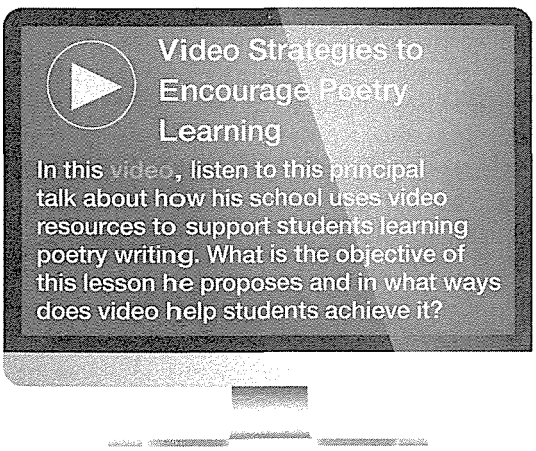
Getting started is often one of the most difficult aspects of writing, and young writers find it particularly onerous. During the prewriting stage, teachers communicate to students the format, audience, topic, purpose, and assessment method for the writing assignment. During this stage, students need to organize their thoughts graphically. For instance, if students are writing a fictional story, they need to brainstorm ideas for the story line, setting, and major characters; refine and organize those ideas; and generate a plan for presenting each story element in an intriguing manner. If the assignment is to write a report, then students need to gather information on the topic from a variety of sources; synthesize and arrange this information into categories or subtopics; and generate a plan for presenting the information in a logical way. All types of prewriting activities can be facilitated by using information organizing software, such as concept mapping, note-taking, content curation, and electronic outlining apps or features, and various strategies to encourage student writing.

- **Concept mapping.** Concept mapping software is popular as a prewriting planning tool, allowing students to produce an outline as a visual map (see Figure 9.6). The most popular concept mapping programs are Kidspiration for grades K–3 and Inspiration for grades 4 and above (Inspiration Software, Inc.); both products have electronic tools for both outlining and diagramming. (See an example concept map created with Inspiration in Figure 9.6.) The diagramming side of the program can be used to create a variety of graphic displays, all of which are useful for students who like to think and plan using visual representations of their ideas. For example, students can easily brainstorm a cluster map of ideas for a story and then rearrange or expand on the ideas for later development. Students can also use the program to generate a hierarchical map of key concepts to be explored for a research paper and link those concepts with labels that demonstrate their conceptual relationship. MindMeister is a powerful iPad collaborative mindmapping app that synchronizes with online MindMeister.
- **Note-taking.** Note-taking occurs during classtime as well as in preparation for larger writing projects. Many apps are available to support flexible note-taking online or mobiles. Evernote serves multiple computing platforms and allows users to easily type written notes, take photos, record audio, and save Web pages. It allows users to organize all these materials and share notes or collaborate with others.

FIGURE 9.6 Concept Map for *To Kill a Mockingbird*

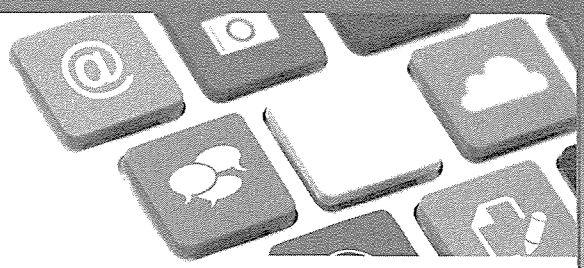


- **Curation.** Curation involves research, reading, and organization. For reports, students can curate their online resources using curation apps that were described earlier (e.g., Flipboard, Pinterest, or Diigo). These tools allow users to collect information that is pertinent to their writing project, organize it, and even share it with others. The sharing features support peer or teacher formative assessment during planning stages of a writing task.
- **Electronic outlining.** Electronic outlining is now integrated into almost all major word processing programs and is easily accessible as a planning tool. Electronic outliners automatically generate headings and subheadings from typed information. The advantages to using them are that new headings/subheadings can be easily inserted anywhere in the outline, headings/subheadings can be shifted around quickly to reflect a student's thinking and planning, and the prefixes serving as organizational clues are automatically changed to reflect revisions to the outline's organization.



Using modeling, programs, and websites to encourage writing. It is critical that teachers both model the type of writing expected and provide environments that motivate students to write. For modeling, Internet sites offer rich sources of poetry examples (e.g., the website of the Academy of American Poets) and examples of student writing (e.g., see student models at The Write Source website). In addition, several kinds of programs and websites are available to help the slow-to-write student get started, including story starters, like Scholastic's whiteboard-ready site Story Starters, and Scholastic's Poetry Idea Engine (both listed in the Open Source Options feature). Many language arts and writing teachers encourage student writing by assigning journaling. This assignment can be made more motivational by assigning blog posting, wiki interactions, or collaborative writing rather than on-paper journals. GoogleDocs and EtherPad support real-time collaborative writing and editing.

OPEN SOURCE OPTIONS *for English and Language Arts*



TYPES	FREE SOURCES
Free word processing software	AbiWord: abisource.com Google Docs Writer: google.com/ Writer: openoffice.org/download/ Zoho Writer: writer.zoho.com
Story starters	Scholastic's Story Starter site: (search for the "Scholastic Story Starters" website)
Blogs and wikis	Blogger (now hosted by Google): blogger.com Wikispaces: wikispaces.com
Design Internet-based reading and research experiences	CAST Strategy Tutor cast.org/learningtools/strategy_tutor/
Collaborate writing and editing	Etherpad: etherpad.org

See Technology Integration Example 9.1 for a variety of ways blogs can encourage student writing. Email and website projects are also a way to connect student writers with distant audiences. Electronic pen pal (sometimes called key pal) projects are popular and provide creative and authentic opportunities for communication. The ePALS Global Community connects millions of students and educators in 200 countries who want to work together. Finally, the use of game-based instruction may support writing. Barab, Pettyjohn, Gresalfi, Volk and Solomon's (2012) research indicated game-based instruction in argumentative writing led to

TECHNOLOGY INTEGRATION

Example 9.1

TITLE: "My Pet is Special" Blog

CONTENT AREA/TOPIC: Language arts, writing

GRADE LEVELS: All grades

ISTE STANDARDS•S: Standard 1—Creativity and Innovation; Standard 2—Communication and Collaboration; Standard 4—Critical Thinking, Problem Solving, and Decision Making; Standard 6—Technology Operations and Concepts

CCSS: CCSS.ELA-LITERACY.W.4.1, CCSS.ELA-LITERACY.W.4.3.B, CCSS.ELA-LITERACY.W.4.10, CCSS.ELA-LITERACY.W.8.2.A, CCSS.ELA-LITERACY.W.8.3.B

DESCRIPTION: Blogs are a popular way to help students engage with text and provide opportunities for an authentic writing experience. One way to encourage writing in this way is to set up a classroom blog in which students exchange information about their current or desired pet. The teacher models how to use the blog by writing about his or her own pet and what is so special about it. Then students are encouraged to submit daily or weekly updates, including images and/or videos, to their posting and respond to each other's posts.

SOURCE: Based on concepts from Lorrie Jackson's "This Bird Can Blog: Online Writing with a Twist" article on blogs at the Educational World website: http://www.educationworld.com.

better writing quality, more student engagement, and more on-task behavior, as compared with a story-based approach. However, Beach (2012) argued that digital games are not necessarily required to have the same impact; he advocates the use of online role-play to encourage writing.

Free sites to set up blogs and wikis are listed in the Open Source Options feature. With blogging and wiki exchanges, students have an audience for their writing and their posts become, as Bromley (2010) said, "dynamic sites for conversation" (p. 100) with their colleagues, rather than just products for a grade in school.

Working with word-processed written drafts.

As students draft their papers, they continue to plan, rethink, and reorganize their work, even while producing more text. Word processing programs aid drafting by allowing students to make changes as they write, thus making drafting a more fluid process. It is preferable if students learn to draft directly into a digital format, rather than handwrite their drafts, since it facilitates later revision and editing. When computer access is a concern, teachers sometimes ask students to handwrite their drafts, then type them into the computer when a computer becomes available. However, this is not the most efficient approach to drafting and should be avoided, if possible, since it provides a poor model for future work using word processing. While it might be optimal for students to learn to draft directly in word processing, access to word processors may not always be available. Teachers need to support technologies that best support writing in their context. Students have used cell phone texting, instant-messaging, and email to write collaboratively. Speech-to-text technologies, such as Dragon Dictation, could support moving thoughts or writing into a digital format for flexible integration into digital works. For students completing research-based writing, Zotero will support citation of sources and automatic building of bibliographies within word processing programs.

Modeling to support revising and editing written drafts.

Revising is the stage during which students make changes in content or structure that reflects decisions about how to improve overall quality. To revise well, students have to move from composing text to analyzing it, looking for what needs to be added, deleted, or rearranged. One of the best ways for teachers to assist in this process is to project a student's typed draft onto a screen or whiteboard and then model the thinking and decision making that goes into analyzing and revising the text. If projected in this way, students can make changes to the text as other students watch. Another strategy teachers can use is videoconferencing, audio recording, and archiving any of the above, along with subsequent student revisions, as examples on a wiki or other sharing site so students may access them for guidance at any time. They may also use **screencasting**, or capturing movements on a computer screen with a software like Camtasia. ExplainEverything or ShowMe apps may support the modeling and enable archiving.

Editing, as opposed to revising, is the process of refining a paper so that it adheres to standard conventions for spelling, syntax, punctuation, and style. Editing is a far more superficial task than revising but no less important. All word-processing programs have features that support the editing process, including spell-checkers and grammar-checkers, as well as electronic search capabilities to verify consistency of word usage, tone, and tense. Once again, the teacher can model the editing process, and students can then edit each other's papers. The teachers may ask students to use color to highlight elements, such as the thesis sentence, supporting sentences, and transition sentences within a passage. This makes the structure more visible and aids editing and revising.

Providing feedback with grammar, spell-check, and thesaurus features.

Most word processing programs have automatic grammar- and spell-check features that flag problems in written text. For example, Microsoft Word underlines in red any words it perceives as misspelled and underlines passages in green to highlight possible grammar problems. Word-processing programs do not always offer correct "advice," but teachers can show students how to use these prompts to check for and correct mistakes in their writing. To improve written vocabulary use, students can also access the program's thesaurus, which offers a variety of alternative synonyms to given words.

Providing feedback on student writing with editing tools.

Dunford and Fink (2011) offered advice on how to use three of Microsoft Word 's built-in revision and

automation tools to give students useful feedback on their word-processed drafts. These tools include

- **Autocorrect.** This is a built-in feature that automatically detects and corrects misspelled words and incorrect capitalization. Dunford and Fink explained how to insert other automatic changes into the standard set that Word uses.
- **Track changes.** This is an editing command that can be turned on from one of the program's drop-down menus to show changes as they are made to an original document. Changes can either be accepted or rejected later.
- **Comments.** This is a feature that allows a teacher to insert notes for the student in "balloons." The comments appear in the margins of a document to remark on specific words or sentences. The use of the comments feature is preferable to handwritten comments because they are often easier to produce and read and because they stand out from text so that students can see them more clearly.

Each of these built-in features can save teachers editing time and make writing problems and mistakes more visible to students. Highlighter and iAnnotate apps support annotation and sharing features that can facilitate collaborative feedback and editing.

Strategies to Support Literature Learning

The other area of traditional literacy after reading and writing instruction is learning about great works of literature and learning to read literature with a discerning, critical, and appreciative eye. Three strategies for using technologies to support literature learning are described in this section: accessing free copies of published works, accessing information about authors, and support for literary analysis.

Accessing online copies of published works.

Many authored works whose copyrights have expired are now available free from online sources. In addition, Google has undertaken a project to digitize a large number of copyrighted and uncopyrighted texts of all kinds. Allowing students to access these digital versions of texts promotes reading by making texts less expensive and more easily accessible. Copyrighted books may be available to students by checking e-books out from public or school libraries using the OverDrive Media Console app, iMLS HD, or AccessMyLibrary: School Edition, depending on the library's adopted technologies. Many books in the iTunes bookstore are free; the iBooks, Google Play Books, or Kindle apps allow easy access with features that scaffold reading. As previously stated, many books that are in the public domain (e.g., *Call of the Wild* by Jack London) may have singular apps created for the one text with special features.

Accessing background information on authors.

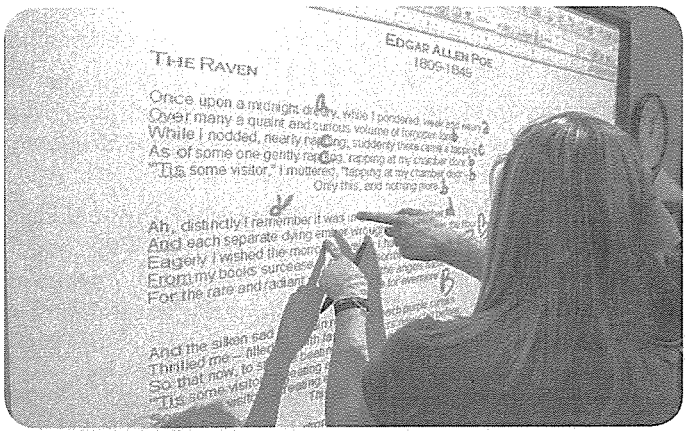
Since an author's life usually affects the choice of writing topics and may also affect his or her style, teachers often want students to learn about authors' backgrounds as a path for understanding the authors' written works. Again numerous websites are available. Teachers must choose these sites judiciously, since not all offer accurate or unbiased information. As with all websites, teachers and students can evaluate quality by noting the legitimacy of the sponsoring organization, how frequently the site is updated, if the site author can be contacted, and spot-checking the accuracy of information. Most contemporary writers have their own websites or blogs and may even offer online reading clubs or guest appearances.

Accessing support for literary analysis.

When teachers want to engage students in reading and analyzing written works, they frequently ask students to focus on key words or phrases or look for patterns, such as meter. Two technology strategies support this kind of literary analysis:

- **Projecting text for analysis.** Projecting text onto an interactive whiteboard is a great way to demonstrate analysis for the whole class. For example, see Figure 9.7, which shows students indicating meter in Edgar Allan Poe's *The Raven*.

FIGURE 9.7 Students Using Whiteboard for Literary Analysis



▲ Projecting text on an interactive whiteboard makes literary analysis exercises more interactive and visual. (Photo courtesy of W. Wiencke)

- **Using digital texts for analysis.** Using digital texts, such as on an e-reader device or a PDF file, students can do searches and count instances of words or phrases that indicate mood or metaphor (e.g., search for the word *dark* in Poe's works). Depending on the digital format capabilities, students can also make notations directly on the text or quantitatively analyze the patterns. A larger scope analysis is facilitated by Google's Ngram Viewer, which allows quantitative analysis of words or phrases in a historical corpus of books from 1500 to 2008 (Michel et al., 2010).

Enabling Multimodal Communication and Digital Publishing

New literacies also lead students to engage in multimodal communication, which involves accessing, reading, listening, writing, creating, producing, and publishing written texts, digital portfolios, digital video/stories, podcasts or vodcasts, and video games. A major challenge for students who use multimodal communication is considering the aesthetic features of the digital materials (e.g., fonts and backgrounds) and thinking about how to use these features in ways that engage their audience.

Sharing multimodal texts.

As mentioned earlier, students find it more motivating to write when they know their work will be shared with others. Now students can share their written works in forums such as websites, Fan fiction sites, electronic books, multimedia slide shows, and news broadcasts. Students appear to be highly motivated when engaging in collaborative **relay writing** (a.k.a., **chain writing**) a novel, in which one student or group of students writes a part and sends it on to the next student or group to add to. They also find it motivating to construct hypermedia digital stories and e-zines. Each of these activities involve students extending and adding to each other's writing (Beach, 2012).

Teachers should look for sites set up especially for publishing student work (e.g., Figment, Fan Fiction, KidPub, and Your Student News). Students and teachers can also publish their own multimodal digital books using iBooks Author. To collect and maintain student work, teachers can facilitate the use of e-portfolios so that over time, they and their students can, analyze it and reflect on learning and identify ways to improve in the future. E-portfolios can be created in systems such as Three Ring or using Adobe Acrobat Professional, websites, blogs, and wikis.

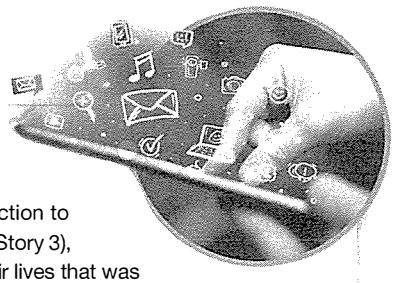
Digital storytelling.

Digital storytelling is the process of using images and audio to tell the stories of lives, events, or eras. The Center for Digital Storytelling site says that a digital story is a narrative someone tells in the first person in video format. Thesen and Kira-Soteriou (2011) and Rule (2011) are among many teachers who advocate using digital storytelling with students in order to enrich their literacy development. Thesen and Kira-Soteriou (2011) also offered detailed advice on how to implement this strategy in a classroom. Students engage in scriptwriting (e.g., using Celtx Script app), storyboarding ideas, and video/photo production and publish their work often as videos in which they can distribute as vodcasts or audio podcasts. Many multimodal communication activities lead students to examine their identity or try alternative identities, contribute to diversifying students' views, examine authentic social or cultural issues, and are highly motivating. Further information and professional development opportunities are available at the Center for Digital Storytelling site. Also, see the Technology Integration Example 9.2 based on the approach described by Thesen and Kira-Soteriou (2011).

Video game design.

While some teachers are using game-based instruction, others are creating opportunities for students to design and create their own video games using software such as GameMaker: Studio, Gamestar Mechanic, Scratch, or Alice. Again, in the process, students engage in new literacies, such as script writing, drawing, and animating.

TECHNOLOGY INTEGRATION



Example 9.2

TITLE: Important Moments: A Narration

CONTENT AREA/TOPIC: Language arts, digital literacy

GRADE LEVEL: 2

ISTE STANDARDS•S: Standard 1—Creativity and Innovation; Standard 2—Communication and Collaboration; Standard 6—Technology Operations and Concepts

CCSS: CCSS.ELA-LITERACY.RF.2.3, CCSS.ELA-LITERACY.W.2.3, CSS.ELA-LITERACY.W.2.5, CCSS.ELA-LITERACY.W.2.6

DESCRIPTION: Students begin by viewing digital stories previously produced by other children and learning the elements of telling a story. After an introduction to the software they will use (PhotoStory 3), students choose a moment in their lives that was significant to them and write a short narrative about it. They learn how to put expression in their voices to convey emotions. They work with a partner to review their written narratives and give each other feedback. They record the narration, learning how to use tempo, rate, and silences. Finally, they put their stories together and create drawings to illustrate them. The movies "premier" in the classroom, complete with popcorn, and the teacher gives each student a digital copy of the stories to take home.

SOURCE: Based on concepts from Thesen, A., & Kira-Soteriou, J. (2011). Using digital storytelling to unlock student potential. *New England Reading Association Journal, 46*(2), 93–101.

TECHNOLOGY LEARNING CHECK

Complete TLC 9.2 to review what you have learned from this section about strategies for integrating technology into English and language arts education.

TEACHING ENGLISH AND LANGUAGE ARTS TEACHERS TO INTEGRATE TECHNOLOGY

This section gives recommendations for how teachers can prepare to integrate technology effectively into instruction for English and language arts. Many teachers in this content area are faced with a significant amount of learning and relearning. The communications tools and social media technologies that arrived on the scene in the last dozen years have already had a revolutionary impact on English and language arts curriculum and practice, and teachers graduating from today's teacher education programs enter classrooms much transformed from those they would have encountered in 2000. Today's teachers are as likely to see students composing on blogs and wikis as on paper, and both teachers and students are more likely to get their information online as from any other medium. Today's technologies have not only offered new and distinctive capabilities that have changed the definition of what it means to be literate, they have also changed what it means to be an effective English or language arts teacher. As this chapter has demonstrated, teachers are continually challenged to keep up with the new requirements they must teach their students; often, teachers must first learn these new resources and skills themselves.

Rubric to Measure Teacher Growth in English and Language Arts Technology Integration

Begin by reviewing the rubric in Figure 9.8 to measure teachers' progress in effectively integrating technology in English and language arts instruction. Part I of the rubric addresses knowledge of issues and challenges, and Part II addresses English and language arts technology integration strategies.

FIGURE 9.8 Rubric to Measure Teacher Growth in English/Language Arts Technology Integration

Part I: Teacher Knowledge of English/Language Arts Issues and Challenges			
	Basic Knowledge (1–2 points)	**Intermediate Knowledge (3–4 points)**	**Advanced Knowledge (4–5 points)**
Teachers' changing responsibilities for the new literacies	I can articulate the nature of the issue.	I can both articulate the nature of the issue and some of the possible ways to address it.	I can articulate my own plan for addressing the issue in my own teaching.
New instructional strategies to address new needs	I can articulate the nature of the issue.	I can both articulate the nature of the issue and some of the possible ways to address it.	I can articulate my own plan for addressing the issue in my own teaching.
Challenges of working with diverse learners	I can articulate the nature of the issue.	I can both articulate the nature of the issue and some of the possible ways to address it.	I can articulate my own plan for addressing the issue in my own teaching.
Challenges of motivating students to read and write	I can articulate the nature of the issue.	I can both articulate the nature of the issue and some of the possible ways to address it.	I can articulate my own plan for addressing the issue in my own teaching.
Teachers' growth as literacy professionals and leaders	I can articulate the nature of the issue.	I can both articulate the nature of the issue and some of the possible ways to address it.	I can articulate my own plan for addressing the issue in my own teaching.
QWERTY keyboarding: To teach or not to teach?	I can articulate the nature of the issue.	I can both articulate the nature of the issue and some of the possible ways to address it.	I can articulate my own plan for addressing the issue in my own teaching.
The cursive writing controversy	I can articulate the nature of the issue.	I can both articulate the nature of the issue and some of the possible ways to address it.	I can articulate my own plan for addressing the issue in my own teaching.
Part II: Teachers' Technology Integration Strategies for English and Language Arts			
	Basic Knowledge (1–2 points)	**Intermediate Knowledge (3–4 points)**	**Advanced Knowledge (4–5 points)**
Strategies to support for word fluency and vocabulary development	I can describe the strategies and identify technologies to carry them out.	I have designed at least 1–2 activities based on these strategies to enhance my teaching and my students' learning.	I have designed plans for how I will integrate these strategies throughout my curriculum to enhance my teaching and my students' learning.
Strategies to support reading comprehension and literacy development	I can describe the strategies and identify technologies to carry them out.	I have designed at least 1–2 activities based on these strategies to enhance my teaching and my students' learning.	I have designed plans for how I will integrate these strategies throughout my curriculum to enhance my teaching and my students' learning.
Strategies to support teaching the writing process	I can describe the strategies and identify technologies to carry them out.	I have designed at least 1–2 activities based on these strategies to enhance my teaching and my students' learning.	I have designed plans for how I will integrate these strategies throughout my curriculum to enhance my teaching and my students' learning.
Strategies to support literature learning	I can describe the strategies and identify technologies to carry them out.	I have designed at least 1–2 activities based on these strategies to enhance my teaching and my students' learning.	I have designed plans for how I will integrate these strategies throughout my curriculum to enhance my teaching and my students' learning.
Enabling multimodal communication and digital publishing	I can describe the strategies and identify technologies to carry them out.	I have designed at least 1–2 activities based on these strategies to enhance my teaching and my students' learning.	I have designed plans for how I will integrate these strategies throughout my curriculum to enhance my teaching and my students' learning.
Total points	**_____ of 60 possible points**		

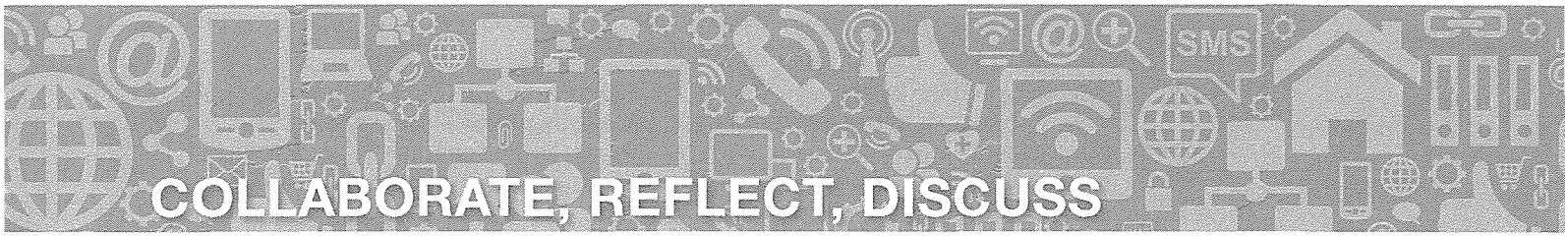
Learning the Issues and Applications

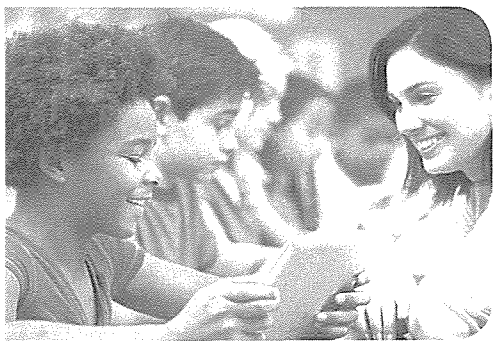
The first step in technology integration is to become acquainted with the issues and challenges discussed in this chapter and how they shape teachers' uses and applications of technologies. Then teachers can begin developing capabilities to address instructional standards and curriculum goals. The following is a suggested sequence of learning activities.

- **Issues and challenges in English and language arts instruction.** After reviewing the information in this chapter, go to the websites of the English/language arts and reading professional organizations—the National Council for Teachers of English (NCTE) and the International Reading Association (IRA)—and review the standards. See professional development resources the sites offer, and decide on which can help you gain insight into the issues and challenges outlined in this chapter. Discuss and reflect on the two questions under the Collaborate, Discuss, Reflect feature at the end of the chapter. Complete Part I of the rubric in Figure 9.8 before you begin this sequence and again at various points in your progress.
- **English and language arts technology integration strategies.** After reviewing the information in this chapter, review examples of the technologies suggested in the Open Source Options feature and the websites and projects described under each section, and do the lesson evaluation and lesson development activities outlined in the Technology Integration Workshop at the end of this chapter. Reflect on how you will plan for implementing these strategies in your own classroom using the TIP model. Complete Part I of the rubric in Figure 9.8 before you begin this sequence and again at various points in your progress.

TECHNOLOGY LEARNING CHECK

Complete TLC 9.3 to review what you have learned from this section about how English/language arts teachers can develop their knowledge and skills in technology integration.





Monkey Business/Fotolia

The following questions may be used either for in-class, small-group discussions or may be used to initiate discussions in blogs or online discussion boards:

1. In an article, "Will We Ever Allow Computers to Grade Students' Writing?" Berkowicz and Myers (2014) discuss the controversies arising from proposals to allow computer grading of students' written work. Programs to rate and give feedback on written text have advanced to the point that many assessment experts consider them reliable instruments. However, Berkowicz and Myers noted that while educators are almost unanimously opposed to the practice, increasingly greater loads encountered by teachers and others charged with assessment make it impossible to give meaningful feedback to every student's writing assignment, unless computer grading programs are employed. What evidence can you cite that this practice is growing? Has it proven a valid and reliable way to grade students' work and give them meaningful feedback? What are the arguments against the practice?

2. Many educators believe that budgeting for computer equipment, software, and infrastructure can be defended because digital and information literacy are as important—if not more important than—traditional reading-and-writing literacy. What evidence can you cite that this is true? What information and/or conditions in today's schools do you feel should inform policy makers on the relative priority of these "old and new" kinds of literacy?

Chapter 9

Summary

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

1. **Issues and Challenges in English and Language Arts.** Each of these current issues has implications for how teachers can and should integrate technologies. These include: teachers' responsibilities for the new literacies, the need for new instructional strategies, challenges of working with diverse learners, challenges of motivating students to read and write, teachers' growth as literacy professionals and leaders, to teach or not to teach QWERTY keyboarding, and the cursive writing controversy.
2. **Technology Integration Strategies for English and Language Arts.** Integration strategies include the following activities to address language-learning needs:
   - To offer support for word fluency and vocabulary development support, teachers can use online practice in matching letters and sounds and matching words with meanings, and online tools to engage students in vocabulary learning.
   - To support comprehension and literacy development, teachers can use digital text to encourage engaged reading, support reading with software and portable assistive devices, and use talking word processors to scaffold reading development.
   - To support teaching the writing process, teachers can use the following: prewriting strategies that include concept mapping, note-taking, content curation, and electronic outlining apps or features; strategies to encourage writing that include story starters, word-processed written drafts; whiteboard modeling to support revising and editing written drafts, to provide feedback on student writing with editing tools, and to provide feedback with grammar, spell-check, and thesaurus features.
   - To meet needs for multimodal communication and digital publishing, teachers may employ strategies for sharing written texts such as using fan fiction sites, e-books, multimedia slide shows, and news broadcasts; and they may employ digital storytelling and video game design.
   - To meet needs for literature learning, teachers can access online copies of published works and get online background information on authors. They can also support literary analysis by projecting text on interactive whiteboards for analysis and use digital texts.
3. **Teaching English and Language Arts Teachers to Integrate Technology.** Teachers can begin by consulting the rubric provided in this chapter to measure their own growth in English and language arts technology integration. After that, they may review issues and challenges in English and language arts instruction and use chapter resources to learn technology integration strategies they will use to address the issues and challenges.

TECHNOLOGY INTEGRATION **WORKSHOP**

1. APPLY WHAT YOU LEARNED

To apply the concepts and skills you've read about throughout this chapter, go to the Chapter 9 Technology Application Activity.

2. TECHNOLOGY INTEGRATION LESSON PLANNING: PART 1—EVALUATING AND CREATING LESSON PLANS

Complete the following exercise using the sample lesson plans found on any lesson planning site that you find on the Internet.

a. Locate lesson ideas—Identify three lesson plans that focus on any of the tools or strategies you learned about in this chapter. For example:

- Online practice in matching letters and sounds or matching words with meanings
- Supporting prewriting with concept mapping, note-taking, curation, or electronic outlining
- Using grammar, spell-check, and thesaurus features to provide students with feedback on their writing
- Digital storytelling
- Promoting literacy through video game design
- Using digital tools to carry out literary analysis

b. Evaluate the lessons—Use the Technology Lesson Plan Evaluation Checklist to evaluate each of the lessons you found.

c. Create your own lesson—After you have reviewed and evaluated some sample lessons, create one of your own using a lesson plan format of your choice (or one your instructor gives you). Be sure the lesson focuses on one of the technologies or strategies discussed in this chapter.

3. TECHNOLOGY INTEGRATION LESSON PLANNING: PART 2—IMPLEMENTING THE TIP MODEL

Review how to implement the TIP model in your classroom by doing the following activities with the lesson you created in the Technology Integration Lesson Planning exercise above.

a. Describe the Phase 1—Planning activities you would do to use this lesson in your classroom:

- What is the relative advantage of using the technology(ies) in this lesson?
- Do you have resources and skills you need to carry it out?

b. Describe the Phase 2—Implementation activities you would do to use this lesson in your classroom:

- What are the objectives of the lesson plan?
- How will you assess your students' accomplishment of the objectives?
- What integration strategies are used in this lesson plan?
- How would you prepare the learning environment?

c. Describe the Phase 3—Evaluation/Revision activities you would do to use this lesson in your classroom: What strategies and/or instruments would you use to evaluate the success of this lesson in your classroom in order to determine revision needs?

d. Add lesson descriptors—Create descriptors for your new lesson (e.g., grade level, content and topic areas, technologies used, ISTE standards, 21st Century Learning standards).

e. Save your new lesson—Save your lesson plan with all its descriptors and TIP model notes.

4. FOR YOUR TEACHING PORTFOLIO

Add the following to your Teaching Portfolio:

- Reflections on Hot Topic Debate.
- Summary notes from the Collaborate, Discuss, Reflect activity.
- Lesson plan evaluations, lesson plans, and products you created above.
- Your *Apply What You Learned* Product from Activity 1.