TECHnology and Literacy for Adolescents With Disabilities

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In today’s increasingly technology-savvy world, technological devices provide a wide range of tools that educators can use to promote literacy learning. These classroom technologies (e.g., electronic tools, devices, software, hardware) are used to create accessible classrooms that promote differentiated instruction and student response, multimodal teaching and evaluation, and student engagement as the norm (Pitler, Hubbell, Kuhn, & Malenoski, 2007).

Adolescents with disabilities, who already have problems with oral language, vocabulary acquisition, reading comprehension, and written communication skills, can benefit when responsive instruction, whether technological or otherwise, is used to help them learn more and learn faster. This technology can be universally beneficial for all students as a vehicle for learner engagement or conveyance of instructional content, and it can also promote participation, learning, and performance by students with disabilities.

Secondary educators may be aware that some students with disabilities have specific technology noted on their Individualized Education Programs (IEPs), such as use of computer software for writing or digital texts for reading, but may not be clear about how those technologies differ from those they use with all students. For students with disabilities who need to use a particular type of technology to access the curriculum and reach learning outcomes, the support is considered assistive technology and is identified on that student’s IEP, which describes the student’s required special education services and supports (Edyburn, 2006).

For example, an electronic picture board with voice output might be considered assistive technology for a student whose disability included significant oral language deficits. This student needs to use the technology to communicate with peers and other school personnel. The same device might be considered classroom technology if it is programmed with science pictures and terms for all students’ use as a practice activity. The distinction between assistive and classroom technology is based on the student’s need: If the student needs the technology to function, it is assistive technology (Individuals with Disabilities Education Act, 2004, § 602). If the student benefits from
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using the technology but can function without it, then it is classroom technology.

The same framework can be used for educators’ selection and decision making about which type of technology to access. Among the decision-making processes is the TECH mnemonic. TECH describes a framework designed to assist teachers in determining what assistive or classroom technology could be used to promote learning for students with disabilities, and what the impact of the technology’s use is on students’ learning (King-Sears & Evmenova, 2007).

The importance of using some type of decision-making framework is multipurpose. First, technology should not be used independent of purposeful instructional goals. For example, students who access games on computers should be learning, reviewing, or practicing content directly related to specific goals. Absent such instructional contexts, the technology may be unnecessary or, worse, detrimental to learning. Second, accessing technology can require availability of specific tools as well as educators knowing how to use those tools. For example, developing lessons on PowerPoint for use with a large group of students means not only having access to a computer in the classroom that has the PowerPoint software, but also having the projection system that enables the whole class to view the presentation, and knowing the steps for using the computer, software, and projection system. When examining technology to make decisions about selection, the cost, availability, and dependability are a few factors that need to be considered.

Finally, when multiple educators are working with students (such as in a cotaught classroom), the rationale for which and when technologies are used for specific learning purposes needs to be clear among teachers so that opportunities for students to use technology occurs as an integrated activity.

Whether selecting assistive technology or classroom technology, a framework such as TECH can promote logical decision making. Moreover, TECH begins and ends with a focus on the targeted learning outcome, because any technology’s use occurs as a complement for, or a medium toward, student learning. That is, a student’s use of technology is not independent of a clear learning goal. TECH’s four steps are as follows:

1. Target the students’ needs and the learning outcome.
2. Examine the technology choices, then decide what to use.
3. Create opportunities to integrate technology with other instructional activities.
4. Handle the implementation and monitor the impact on students’ learning.

TECH as a Framework for Selecting and Using Technology

The use of TECH as a framework for choosing and using technology places the focus initially on targeting what students’ literacy needs are related to the learning outcome. Next, TECH focuses on examining which technology may be used to fulfill the specific literacy needs. This includes examining whether less costly and less intrusive technology may fit the student’s needs, as compared with more expensive and complex technology (e.g., reading pen versus digital textbook).

The third step in the TECH framework is creating opportunities to use the technology within the context of instruction. For example, computer software that features instructional games on math problem-solving skills can be used as one of several guided practice activities. Finally, TECH ends with the important tasks of handling the implementation (e.g., What are the logistics of the students’ use of technology?) of selected technology and determining how to monitor students’ literacy learning as it relates to the targeted learning outcome. Next, the TECH framework is described. Then two scenarios featuring how teachers used TECH to make decisions for two students with disabilities are described.

Target the Students’ Needs and the Learning Outcome

Any technology choices must be based on an individual student’s needs. One student’s need may be in the area of reading, while a different student’s need may be
Create Opportunities to Integrate Technology With Other Instructional Activities

Although more common in the past, it is still important that teachers plan for how technology is integrated within instructional activities versus using technology as a stand-alone activity. Web 2.0 applications, the current generation of web-based programs and tools, are characteristically interactive and allow the user to be both a producer and consumer of content and information. Students could blog their reactions to a text as they read, post a video critique of the work, and design an online poll to solicit feedback about other readers’ opinions of the text. The incorporation of these strategies not only addresses the presentation of content across multiple modalities of learning, but also recognizes the reality of electronic media as a new multiliteracy, which can be particularly motivating for students with and without disabilities (Kress, 2003; Pitcher et al., 2007).

Another example of creating opportunities to integrate technology with instruction is the growing application of hypertext functionality in teaching literacy through teacher-designed WebQuests. Using basic word-processing software, or any of the free Internet resources such as www.teacherweb.com, a teacher can direct students to various websites through hyperlinks to garner background information on a text, research authors, or read and contribute to online literary criticism. These quests are often styled as scavenger hunts in which students retrieve information and perform tasks at the various sites to receive credit.

Examine the Technology Choices, Then Decide What to Use

Technology choices are constantly changing, which can make it difficult to keep up with what is the latest and the most cost effective. Schools or school systems typically have technology specialists, or teachers interested in exploring new technologies, who are excellent resources for informing others about available technology.

Consider the range of technology choices available in this research by Wanzek et al. (2006): word prediction software, adapted keyboards, word-processing programs, automatic speech recognition (ASR) technology, and word processor text-to-speech synthesis. The researchers found that students with disabilities who used computer-based instruction improved their spelling when writing compositions using one of these technologies that matched their learning needs.

Innovations of technology and market feasibilities for publishers have dramatically improved the practice of providing traditional print text through a variety of electronic media to address multiple modalities of learning. E-book readers, books on CD and other mobile devices, and sophisticated text-to-speech software on desktops, laptops, and even smartphones have become or will soon become common classroom technology.

Handle the Implementation and Monitor the Impact on Students’ Learning

Once a technology choice is made, then details about what equipment is needed, where it will be located in the classroom, and how an individual, small group, or whole class of students access the technology need to be handled. Sometimes it is not just one technological item that is needed. Digital videos enable teachers and students to create their own narrated videos that can be uploaded to the Internet. Allowing students, particularly reluctant writers, to create their own video literary criticisms can be an effective way to engage learners while generating a product for evaluation.
Whatever decisions are made about students’ use of technology, it is important that teachers acquire some evidence of the added value of its use.

Whalen, Massaro, and Franke (2009) identified numerous technology interventions, most notably the comprehensive website www.teachtown.com, that use opportunities for repeated practice with immediate positive reinforcement, enabling students and teachers to know the impact on students’ learning. Low-cost or no-cost technology is particularly desirable, such as Microsoft’s Movie Maker or Apple’s iMovie, which have free downloads for operating systems. For video literacy chats in the classroom, consider digitalbooktalk.com. Regardless of what is selected, teachers should expect a learning period for themselves and students about how the technology implementation occurs.

Whatever decisions are made about students’ use of technology, it is important that teachers acquire some evidence of the added value of its use. For example, if students are accessing software that is appealing for them to use but not enhancing their learning of the outcomes identified initially in TECH, reconsider what is being used or how it is being used. Students with disabilities who have problems reading content area texts may increase their performance on grade-level material when they listen to the content on a CD-ROM versus a more traditional audio book.

So how is that performance being monitored? Is it based on comprehension questions answered accurately or on contributions during class discussions? Identify some way to monitor the impact on the students’ learning. Albright (2002) found that students read higher level selections when given the technological support provided by the audio textbook. Likewise, the practice of using audiobooks is akin to the practice of teacher read-alouds, a strategy once thought of as being limited to elementary students, but one that is gaining attention as being advantageous to adolescent students as well.

In the next sections, we illustrate how educators can use the TECH framework for guidance when determining what technology can be used for enhancing literacy learning for students with disabilities and ways to monitor students’ performance to determine how the technology increases the quantity and complexity of what students are learning.

TECH-in-Action Scenario 1: Brian

Target Brian’s Needs and His Learning Outcomes

Brian (student names are pseudonyms) is a bright and outgoing seventh-grade student with a learning disability who becomes easily frustrated with writing assignments. Although he enjoys reading and sharing his ideas during class discussions, his dysgraphia, a neurologically based inability to easily transfer thoughts into writing, causes him extreme difficulty with written expression. He can struggle for hours writing and rewriting just a few simple sentences. Brian’s written assignments are usually incomplete and characterized by slashed words, smudge marks, and erasure holes.

Unlike his enthusiastic demeanor during class discussions, where it is clear his oral language skills are very good, Brian appears perpetually dissatisfied and embarrassed with his writing efforts and grows anxious in anticipation of the next assignment. He is in a cotaught English class. Both the special and general educators are worried that this otherwise confident young man will experience even greater frustration and loss of confidence as writing demands increase across all subjects. Brian’s teachers are focused on helping him develop skills along the continuum of the writing process (i.e., prewrite, draft, revise, edit, publish) to produce quality written work.

Examine Technology Choices for Brian, Then Decide What to Use

Brian’s teachers see two compelling needs that will guide the selection of an appropriate technology intervention—the solution must allow Brian to transfer his thoughts into writing without bringing unwanted attention from his classmates. Past attempts to give Brian specialized assistive technology keyboarding devices, such as an AlphaSmart for word processing, were unsuccessful because he refused to use equipment that exposed his writing difficulties to his peers.

In addition, Brian’s typing is slow and labored; the energy he exerts in the task of typing often
causes him to lose the thoughts he is trying to convey. Consequently, Brian’s teachers consider technology that does not require typing, yet enables him to get his thoughts into writing. They are examining technologies in which he can orally dictate thoughts, and then the technology device translates those verbal ideas into written language. When examining choices, some considerations are equipment cost and how conspicuous the technology is. Desirable is that the device is inexpensive and does not spotlight Brian’s use of technology so that he feels more comfortable using it in class.

Fortunately, technology is commonplace among today’s high school students. Many technological devices are infused within the fabric of everyday functioning, incorporating features that offer an array of embedded supports for struggling writers. For instance, increasingly sophisticated smartphones are equipped routinely with ASR, a speech-to-text functionality that allows users to command computer programs orally without keystrokes. Likewise, there is a growing array of low-cost applets that turn the simple cell phone into a dictation and transcription device using common word-processing software (see Table 1 for specific examples).

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**Table 1**  Technology Choices Matched to Literacy Learning

<table>
<thead>
<tr>
<th>Technology</th>
<th>Product examples</th>
<th>Literacy learning for students with disabilities</th>
</tr>
</thead>
<tbody>
<tr>
<td>Word prediction software</td>
<td>■ Co:Writer&lt;br&gt; ■ Kurzweil 3000&lt;br&gt; ■ *PhraseExpress Autotext Click-N-Type</td>
<td>Students who have language or vocabulary issues may benefit by having choices of words that might fit what they are writing.</td>
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<td></td>
<td>(<a href="http://www.freedownloadmanager.org/downloads/word_prediction_software/">www.freedownloadmanager.org/downloads/word_prediction_software/</a>)</td>
<td></td>
</tr>
<tr>
<td>Adapted keyboards</td>
<td>■ Varied levels of adaptations available at <a href="http://www.infogrip.com/">www.infogrip.com/</a></td>
<td>Students who have motor difficulties may find a modified keyboard or mouse helpful in producing written work.</td>
</tr>
<tr>
<td>Automatic speech recognition</td>
<td>■ Dragon Naturally Speaking&lt;br&gt; ■ MacSpeech&lt;br&gt; ■ Voxie applet—iPhone&lt;br&gt; ■ *XVoice (<a href="http://www.capterra.com/speech-recognition-software">www.capterra.com/speech-recognition-software</a>)</td>
<td>Students who have difficulty producing written or typed communication can dictate their thoughts for transcription.</td>
</tr>
<tr>
<td>technology</td>
<td></td>
<td></td>
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<tr>
<td>Text-to-speech</td>
<td>■ *CLiCk,Speak (clickspeak.clcworld.net/)&lt;br&gt; ■ Kurzweil 3000&lt;br&gt; ■ *Natural Reader (<a href="http://www.naturalreaders.com/">www.naturalreaders.com/</a>)&lt;br&gt; ■ *WordTalk (<a href="http://www.wordtalk.org.uk">www.wordtalk.org.uk</a>)</td>
<td>Students who need assistance decoding words can have the computer read print from a screen, including many websites.</td>
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<tr>
<td>E-Readers and electronic texts</td>
<td>■ *Bookshare (<a href="http://www.bookshare.org">www.bookshare.org</a>): Accessible digital books and periodicals for readers with print disabilities. Free for qualified users.&lt;br&gt; ■ iPad&lt;br&gt; ■ Kindle&lt;br&gt; ■ Nook</td>
<td>Students who need integrated multimedia supports and any of the above supports can access these through an expanding array of devices that present text in electronic and picture-supported formats.</td>
</tr>
<tr>
<td>Graphic organizer software</td>
<td>■ *Bubbl.us (bubbl.us)&lt;br&gt; ■ Inspiration/Kidspiration (<a href="http://www.inspiration.com">www.inspiration.com</a>)&lt;br&gt; ■ *SmartDraw (<a href="http://www.smartdraw.com/specials/graphic-organizer.htm">www.smartdraw.com/specials/graphic-organizer.htm</a>)</td>
<td>Students who have difficulty organizing their thoughts or discerning key points when reading can use online graphic organizers that offer greater flexibility than traditional print organizers.</td>
</tr>
<tr>
<td>Video capture and editing</td>
<td>■ *iMovie&lt;br&gt; ■ *Virtual VCR (<a href="http://www.virtualvcr.sourceforge.net">www.virtualvcr.sourceforge.net</a>)&lt;br&gt; ■ *Windows Movie Maker</td>
<td>Students can create their own video responses to readings and demonstrate understanding of plot, narrative, character development and other concepts through their own created content.</td>
</tr>
<tr>
<td>software</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Podcasting, audio capture</td>
<td>■ *Audacity&lt;br&gt; ■ *My Podcast (<a href="http://www.mypodcast.com">www.mypodcast.com</a>)&lt;br&gt; ■ *PodBean.com</td>
<td>Students can create their own text narrations, character studies, and use audiotapes as an alternative assessment products.</td>
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<td>and editing software</td>
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*Note.* Items marked with an asterisk are free resources.
Completing the writing process. The challenge for his teachers is to develop multiple learning opportunities for improving his writing skills within the standard curriculum framework. These learning opportunities need to be part and parcel of routine instruction to ensure Brian is building his facility in using the ASR tool to successfully meet writing demands.

Brian’s teachers acknowledge that using “natural classroom technology” is critical, particularly because Brian is prone to rejecting specialized interventions. Consequently, his teachers do not identify the ASR software as assistive technology for Brian, but rather instructional technology that can support the learning of all students. The addition of speech-to-text technology to the repository of strategies for teaching the writing process assists Brian while helping other struggling learners bridge writing achievement gaps.

With a broader implementation of ASR technology, more students enjoy access and use of computers. This wider reach of computers for producing content—written and otherwise—eventually becomes commonplace for all students, and this “support anonymity” subsequently benefits Brian immensely. The classroom culture of computer access allows Brian to use the ASR technology without embarrassment, significantly improving his attitude toward adoption of the tool.

After Brian develops more confidence and skills in prewriting and drafting, his teachers will focus on using functions such as tracking changes, inserting comments, and text highlighting to support the next stages of the writing process—revising, editing, and publishing. Furthermore, as Brian continues to express interest in social-networking technology such as podcasting, blogging, and posting on discussion forums, his teachers are prepared to provide writing assignments around these Internet tools for use with the whole class.

Brian’s interest in this social-networking technology is in line with the zeitgeist, particularly among the adolescent demographic, and may provide that subtle leverage for engaging him in activities that result in quality written products. Supporting Brian in editing and publishing his own work secures his mastery of the entire writing process.
Handle the Technology Implementation With Brian, and Monitor the Impact on His Learning

Brian’s teachers are infusing Web 2.0 tools into writing assignments when possible to pique Brian's and his classmates' interest. Each teacher is able to use ASR technology effectively across numerous writing activities, particularly during the prewriting and draft stages. The special education teacher checks in with Brian every Monday to assess how well the ASR tool is working. Information and data related to efficacy of the tool can be documented to guide the development of his IEP, including the selection of appropriate assistive technology. Together, Brian and his special education teacher set weekly goals for using the ASR.

Of course, documentation of a support technology is only as valuable as its implementation efforts, so the more crucial strategy is to actively promote classwide adoption of the ASR technology by Brian’s other teachers. However, a reasonable standard needs to apply as ASR is used in other subjects. For example, though writing one sentence in math class may prove as difficult for Brian as writing an essay in English, it is not reasonable to expect the math teacher to send all students to computers to generate their responses for the sole benefit of normalization of support for Brian.

Because Brian may be faced with not having the ASR tool available in math or other content area classes, the teachers decide to take a page from today’s tech-savvy generation who are adept at quick and short communication (e.g., texting, tweeting, e-mailing). Brian’s teachers decide to teach him to use a customized shorthand, which includes a system of abbreviations for words and thoughts so he can focus on math concepts instead of struggling with note-taking.

Finally, and perhaps most significant, Brian’s willingness to use the ASR tool is key to his continued and effective use of the technology. Providing him with many opportunities to use ASR in a structured and supported setting, like the cotaught English class, allows him to gain a level of proficiency without fear of drawing unwanted attention to his writing difficulty.

This setting greatly increases the odds of Brian recognizing the value of the technology and becoming a self-advocate for it and additional supports, such as customized shorthand, in his other classes. With these types of supports, Brian is no longer hindered by the act of writing and is now free to produce quality work that truly represents his understanding of the content.

TECH-in-Action Scenario 2: Michelle

Target Michelle’s Needs and Her Learning Outcomes

Michelle is a 10th-grade student with Asperger’s syndrome, a high-functioning autism spectrum disorder. Her classmates and teachers find her intriguing because of Michelle’s unique personality and depth of knowledge in her areas of interest, such as television trivia. Michelle knows the words to numerous television jingles. Her math teacher fancies himself a classic television aficionado, and every day his students begin the class trying to be the first to fill in the missing line from a theme song that a classmate has picked. Michelle wins hands down, much to the encouragement of her classmates and the chagrin of her teacher.

Asperger’s syndrome is characterized by individuals who seek to construct their lives with routines in the form of clear rules and procedures to order situations. This daily classroom routine is comforting to Michelle because it creates a predictable beginning to each class. This shared experience between Michelle, the teacher, and the class also serves a greater need, as many children with Asperger’s syndrome experience difficulty in large group situations.

Giving Michelle a regular opportunity to demonstrate her strengths within the class community helps her to build confidence and positive social interaction with her peers. Though she possesses genius-level intelligence, Michelle often struggles to understand social and language complexities. When this occurs, it impedes her from grasping concepts or a lesson, particularly when reading.

Michelle’s vocabulary skills are on grade level, but her comprehension skills are instructionally at the third-grade level because of her problems in making inferences from reading passages. In math class, although Michelle has excellent computation skills, she struggles with discerning required computation in word problems. When reading comprehension is removed as a factor, Michelle’s performance increases;
Michelle’s math teacher opts to use the free Thinking Blocks math tool from www.mathplayground.com. Using guided models and independent practice, the tool allows a student to use a virtual “part-part-whole” math manipulative while explaining how to create her own pencil-and-paper models. The teacher instructs Michelle in developing a visual model based on the written word. He then demonstrates how to do this using the application at her computer.

The teacher establishes the use of the virtual manipulative as a self-check on Michelle’s reading comprehension. In particular, he wants Michelle to visually depict the word problem so she can double-check her interpretation—a necessity to avoid pitfalls posed by confusing terminology such as less than constructions where the math syntax does not follow standard written English.

Create Opportunities to Integrate Michelle’s Use of Technology With Class Instructional Activities

Michelle’s math teacher introduces the use of virtual manipulatives into instruction at every classroom computer station. He models for the entire class how to use the software to check for understanding as they interpret the mathematical meaning of the word problem. He also shows the class how to replicate the visual models using pencil and paper in the absence of the computer program.

As with all reading, the math teacher knows that fluency comes from repeated opportunities for supported practice with corrective feedback. To this end, he assigns daily homework from the subscription-based, online practice applications found at www.studyisland.com and skillstutor.com. These web-based applications allow Michelle and her classmates to practice word-problem skills through timed and untimed quizzes and games that track performance, provide immediate feedback, and offer progress reports. Michelle’s math teacher supplements these with free online WebQuests and resource sites like www.purplemath.com. These sites offer high-interest topics using popular characters like Harry Potter to practice solving problems while receiving feedback on answers.

Because word problems are abstract until or unless made visual or concrete, students with autism have difficulty with this abstract reasoning.

that is, she performs better when problems are represented with pictures or concrete objects.

As noted by Grandin (2006), some people with autism find word problems difficult because they may be visual thinkers. Because word problems are abstract until or unless made visual or concrete, students with autism (and other students as well) have difficulty with this abstract reasoning. Michelle, however, is resistant to using manipulatives if the other students are not using them. According to Michelle, “Only babies use toys to do problems.” She continues to demonstrate a high rate of errors when doing math word problems, and her general education math teacher is concerned that Michelle will never pass the state test in mathematics.

Examine Technology Choices for Michelle, Then Decide What to Use

Michelle’s literal interpretation of language causes her extreme difficulty with translating concepts embedded in word problems and determining the appropriate mathematical operation. It is no surprise that this difficulty with applying contextual meaning to her reading is evident across all of Michelle’s content area classes, so her math teacher seeks advice from the district reading specialist. After reviewing Michelle’s strengths and weaknesses with the reading specialist, they decide to explore how technology tools may augment tried-and-true visual text-support strategies.

The reading specialist, knowing that students with Asperger’s syndrome have a propensity for stronger visual modality learning, suggests using computer-based virtual manipulatives to provide Michelle with the concrete reinforcement she needs. These free, online visual supports (nlvm.usu.edu/en/nav/vLibrary.html) act as stepping stones toward bridging the wide gap between reading and understanding the word problem and choosing the mathematical operation. From base blocks and algebra tiles to scales and balances, math visuals and objects can be accessed and manipulated online using computer animation technology.

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Michelle uses the virtual manipulatives to self-check understanding as she completes activities at these sites. The immediate positive feedback for correct answers helps her to grow more confident in her comprehension of the word problem. Over time, she begins to automatically recognize the math functions associated with the vocabulary she encounters in the word problems, and she gradually finds she no longer needs to use the visual supports to check her understanding as her interpretations are correct.

Handle the Technology Implementation With Michelle, and Monitor the Impact on Her Learning

For Michelle, the technology selections matched her needs for thought-out support that is highly structured, prescriptive, and clearly defined. The math teacher guides and models the use of the virtual manipulatives to develop Michelle’s math literacy until she is able to independently apply the skills practiced through the computer-based instruction in non-supported situations.

Find Your TECHnique

Technological tools provide all students with a multitude of techniques that enable them to learn and use literacy skills. Barriers to adoption in schools, though still present, are becoming fewer with more web-based or “cloud computing” options that allow school districts to leverage software, and even hardware, across multiple users and locations for less cost. Likewise, the technology itself is growing more sophisticated and commonplace, so the opportunities afforded by adoption of devices and software outweigh the constraints.

In a pedagogical context, the definition of literacy in the digital age is at once dramatically shifting while retaining the core standards of competency (Kress, 2003). Teachers’ adoption of technology into daily instruction allows the targeting of fundamental literacy skills while addressing the realities of multiliterate learners. Moreover, these skills are not just applicable in school settings. Word processing, speech recognition, visual demonstrations and supports, and research skills are marketable in many careers.

Although the advantages to all students are clear when classroom technology is employed in a purposeful way, assistive technology, noted on students’ Individualized Education Programs, is essential for some students with disabilities to reach their literacy capacity. In addition, the technology enables the students to become adept with a range of tools and devices. When their teachers are more familiar with the available technologies and how to make decisions regarding which technology to use, students with disabilities are more likely to be provided access to them. As Web 2.0 tools continue to evolve and become universally available, students with disabilities will benefit from the common practice of multimodal learning and responding, lessening the reliance on more conventional “assistive technologies” to foster literacy.

Furthermore, teachers who embrace current technologies and have an eye on the rapidly approaching wave of Web 3.0 technologies will not only be creating universally accessible learning environments that advance literacy, but will also be preparing students for tomorrow’s high-tech workforce. This ever-increasing range of technologies intensifies the need for a guiding framework, such as TECH, to help educators make decisions so that more students with and without disabilities use assistive and instructional technologies that promote their literacy skills both now and in their future.

References


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