



Embedded Supports to Differentiate Instruction for Struggling Students

Center for Technology Implementation

Overview

Many of your students with learning disabilities, or those who are struggling, may be anywhere from two to five years behind their peers in reading and writing.

To ensure that your students are prepared to meet the high expectations set by the **Common Core State Standards**, you may need to incorporate a variety of supports into your English language arts (ELA) instruction, including Universal Design for Learning (UDL), explicit instruction of evidence-based strategies, and the use of technology tools. Focusing on literacy is critical at the upper elementary and middle school levels in order to help address these gaps before students move into high school.

Learn how technology tools can support struggling students and those with learning disabilities in acquiring background knowledge and vocabulary, improving their reading comprehension, and making connections between reading and writing.

Using in Your Classroom

The use of embedded or readily available digital learning supports and tools has been shown to be an effective way of addressing the needs of diverse students, particularly those with disabilities.

For many students who struggle with reading or writing, the act of decoding, or puzzling out correct spelling, requires significant effort. Built-in tools that provide just-in-time supports relieve the cognitive load on students, allowing them to focus more of their attention on comprehension or generating written content.

Using Technology to Build Background Knowledge and Vocabulary

As students move from learning to read in earlier grades to “reading to learn” in upper elementary and middle school, specific background knowledge and content-area vocabulary become even more important. Preteaching and explicit instruction of key vocabulary are critical elements in helping your students become more successful readers. This is especially true for students who are **English language learners** (ELLs); even if their spoken English is proficient, technical and content-specific vocabulary may be completely unfamiliar.

Explicit instruction building on the principles of UDL can help your struggling students connect new vocabulary with sounds and spelling patterns. These students also should be given multiple opportunities to use and hear new words in context.

Is it “soda” or “Coke”?

Classrooms are becoming increasingly diverse, with many students likely to be multicultural or multilingual. It is important that you review your curriculum for assumptions made around background knowledge and vocabulary. Consider regional differences in language—a can of soda may be “pop” for one student, while others may have grown up calling all soda “Coke,” regardless of the brand.

You can help your students build background knowledge and vocabulary through demonstrating relationships between words and concepts, engaging student interest, and providing a variety of supports and scaffolds, including technology tools.

- ▶ **Online reference materials**, including dictionaries, thesauruses, and encyclopedias, can provide students with instant access to definitions, translations, and explanations of unfamiliar terms and concepts. Look for **tools with text-to-speech (TTS) capabilities** so that students can hear words and definitions read aloud.
- ▶ **Multimedia supports**, including video, how-to diagrams, animated illustrations, and other visuals, are useful tools for building background knowledge, especially for ELLs. Sites such as **How Stuff Works** include content-specific illustrations to help learners grasp sequences, interactions, and relationships. Maps and diagrams showing relationships between words and concepts also can help students connect new words to those they already know.

Using Technology to Teach Comprehension Strategies

All students can benefit from ongoing instruction in comprehension strategies as expectations continue to differ across content areas and technical writing styles in texts for different subjects vary. Although students may not struggle with comprehension in ELA classes, they may have difficulty with denser science texts or when reading historical documents. Providing all students with strong comprehension strategies for content area reading is critical, especially for your struggling students. Your struggling readers may have difficulty with decoding text, staying focused, monitoring their understanding, making inferences, or generalizing information. They need many opportunities for guided practice, seeing and hearing strategies modeled, and frequent prompts to employ appropriate strategies.

A variety of technology tools are available that can help support your instruction of research-based comprehension strategies for all learners, including those with disabilities:

- ▶ **Digital text**, whether scanned by a teacher or in the form of a digital textbook, offers many advantages for teachers looking to differentiate reading instruction. Digital text can be read aloud using TTS software and customized to meet the visual needs of students with print-based disabilities or other challenges accessing text (e.g., enlarged fonts, background colors).
- ▶ **Text-to-speech (TTS)** software with built-in electronic references can support learners’ comprehension and vocabulary development by providing them with the opportunity to hear text read aloud while following along on the page. Many students with dyslexia have better listening than reading comprehension. Struggling readers may spend much of their energy trying to decode a text, leaving little attention for comprehension. TTS software frees up attention so that students can focus on building understanding. Look for programs that highlight text as it is read so that students can follow along and practice using scanning and tracking skills as they read.

- ▶ **Annotations** and study skill features are included in many literacy software programs and digital textbooks. These tools can help your students become more active readers. Teach your students how to annotate texts with virtual sticky notes, bookmarking, highlighting, and color coding. Such tools also can help you differentiate instruction for students who struggle by making more use of built-in supports. Making these tools available to all of your students also helps them take ownership of their learning and access tools as they need them.

Using Technology to Support Connections Between Reading and Writing

Content-area reading and academic literacies become more important as students move into high school, but content-specific writing tasks may also pose challenges for your students. Although students may feel comfortable writing a personal narrative or creative story, they may struggle to write an acceptable lab report or analytical essay. Struggling readers are often struggling writers who need explicit instruction and guided practice to become proficient and flexible authors.

Your students must be able to write for multiple audiences and purposes, alone or collaboratively, and be able to use a variety of tools and platforms to do so. Students with disabilities may struggle with many of the components of writing, including spelling, handwriting, planning, revising, and editing. Many technology tools are available that can support your students in these tasks:

- ▶ **Spelling and grammar checkers**, including newer contextual spell checkers, can be useful tools for students with learning disabilities. Although they are common elements of every word processor and many Web browsers and e-mail programs, students may need strategies for using them effectively. Students should know how to attempt a spelling in order to generate a list of suggestions, how to skim a list of suggested words, and how to identify the correct word from that list. Students with dyslexia may be prone to making errors in their writing that are not picked up by spell checkers (using a correctly spelled word in the wrong context). For these students, contextual spell-check programs not only check for errors in spelling, but also highlight areas of mistaken word choice.
- ▶ **Word-prediction software** programs are built on common patterns of English writing and misspellings and may have the ability to “learn” from users’ mistakes. As a student types, these programs make predictions and offer suggested next words or phrases. Corrections are often more accurate than a traditional spell checker.
- ▶ **Graphic organizer software** with outlining and drafting capabilities can be used to support struggling writers in a number of ways. The programs can be used as presentations to whole groups for a discussion of relationships and concepts or by individual students as organizers before and during reading assignments to aid comprehension. Mapping relationships visually can help students make abstract connections more explicit. Programs that then convert these maps to outlines or drafts can help your learners apply their thinking to their writing.
- ▶ **Voice-recognition software** can be helpful for students with dysgraphia, spelling disabilities, or other motor issues that may inhibit their writing. Voice recognition offers students an alternative way of getting their thoughts down on paper and may be especially useful for those students who would traditionally need to use a transcriber for writing tasks.

What the Research Says

Millions of youth lack the literacy skills they need to succeed in postsecondary education and the workplace, and the trajectory of achievement in secondary schools for struggling, reluctant, or English language learners point to this as a continuing need (Alliance for Excellent Education, 2009). Those with learning disabilities (LD) are among the least prepared. Students labeled as “struggling” are generally considered to be two or more years behind grade-level expectations. According to Cortiella (2011), among students with learning disabilities:

- ▶ One fifth are five or more grade levels behind.
- ▶ Nearly 50 percent test more than three grade levels behind (in both reading and mathematics).
- ▶ Almost 25 percent are one grade level behind.

Youth who struggle with academics, including those with LD, will likely benefit from focused attention on their background knowledge and vocabulary as part of literacy instruction (Heller & Greenleaf, 2008). As learners move from general survey courses in middle and high school to more in-depth disciplines and career training topics, specific background knowledge and vocabulary assumed in reading materials and preparation tasks become even more important. Preteaching and making explicit the background knowledge and vocabulary assumptions needed for success in a training program are keys to helping young learners engage the material thoughtfully. This is especially true for students who are ELLs; even if their oral English is quite proficient, the content areas and specific job-related vocabularies are often completely unfamiliar (Short & Fitzsimmons, 2006). Learners with LD need explicit, multisensory instruction that helps them connect new vocabulary with the sounds and spelling patterns as well as many opportunities to use and hear new words in context.

Research on increasing student engagement with reading and writing tasks has shown that tapping into their interests can energize youths’ motivation to do the extra work required to be successful. Several studies of youth and adults have found that even severely dyslexic learners reported reading a significant amount of text and actively engaging in inquiry for extended periods when driven by their interests (Ito et al., 2008; Kamil et al., 2008).

All students benefit from ongoing comprehension strategy instruction throughout their academic careers (Kamil et al., 2008) as the texts and expectations continue to change dramatically across content areas (for example, a biology lab report is constructed and written quite differently than a history text) (Biancarosa & Snow, 2004). A variety of comprehension strategies are appropriate for all readers, but struggling readers often have a very limited repertoire. They need explicit modeling and guided practice to learn new strategies or apply different strategies appropriate for specific texts (Kamil et al., 2008; Torgesen et al., 2007). Supporting and reinforcing comprehension instruction requires a deliberate increase in the amount and quality of time devoted to open, sustained discussion of reading content. Far from watering down expectations, this recommendation calls on instructors of all types of courses to increase the intellectual intensity with which they engage their learners in discussions of text and modeling of comprehension (Kamil et al., 2008). This discussion time can be used to model and role play thoughtful, respectful conversations and critical thinking skills—soft skills that struggling students often lack and that workforce development programs and employers identify as key to workplace success.

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