



# WORKING WITH MEMORY DEFICITS

**Strategies to increase working memory in  
struggling readers**

By **Jenny Nordman**



**Jenny Nordman**

(jnordman@regis.edu) is an assistant professor of reading and literacy at Regis University in Denver, CO, where she coordinates the Master of Education in Reading program. She has been an ILA member since 2004.

*f*or proficient readers, generating meaning from text comes so automatically that overlooking the complex processes that are involved in learning how to read is easy. Although reading may appear effortless for some, even reading basic material requires the brain to simultaneously process and retain information regarding word recognition, word meaning, sentence structure, content, and relevance.

With this in mind, it is understandable that learning how to read can be arduous for some children. Students with working memory deficits, in particular, tend to struggle because they have difficulty holding onto information while



they are engaged in an active cognitive activity.

Deficits in working memory can affect reading performance in a number of ways. A child who is not able to hold at least 5–7 sounds in his working memory will not be able to effectively blend the sounds from longer words in order to decode. Likewise, working memory deficiencies can affect how a reader processes long sentence constructions because this requires thinking about syntax and word meaning while reading. Most significant is that students with working memory deficits often lack comprehension because they struggle with holding onto meaning while dealing with the mechanics of reading.

## Methods for building working memory

Given what we know about the negative impact of working memory deficits on reading, what can be done to address this issue?

A variety of strategies can be implemented to help students exercise their working memory in order to increase overall reading proficiency. The following are three examples:

**1. Play memory games.** The good news is that this type of reading practice does not have to actually involve *reading*. Playing games to build working memory, specifically auditory memory, can be effective in building reading skills, while being motivating at the same time. Suggestions follow:

■ **I'm Going on a Picnic.** This is a classic road trip game. To play, the student lists something he or she would like to bring on a picnic. The other players add to that list, but must repeat all of the previous items before contributing his or her own item. Keep track of how long of a list you can achieve.

■ **Animal Sounds.** This game is a favorite because it is silly. A teacher gives the student several animal sounds that the student must then repeat, with the intent being to accurately remember and repeat as many animal sounds as possible. Here is an example: *moo-moo-quack-hiss-quack-meow-meow-oink.*

*Building working memory will also aid students in other academic content areas, such as math and writing, and will help to create more confident, effective learners.*

■ **Disappearing Picture.** This is a good game to build visual memory, which is important for orthographic recognition and spelling. To play, the teacher draws a picture with at least five or more related items. An example might be a picture of a beach with a sun, palm tree, picnic basket, water, sand, and shovel. The student looks at the picture for 30 seconds, and then the picture is taken away. The student must then try to re-create the picture, including object details and placement, as accurately as possible.

### 2. Practice makes perfect.

Repeated practice helps to build automaticity and also lightens the load for working memory. Rather than reading a passage once, read it multiple times. One way to make this more motivating is through timed repeated readings. The student will complete an initial, timed cold read. She or he will then reread the same passage, trying to beat her or his initial time. This builds automatic word recall skills, processing speed, and overall reading fluidity.

**3. Do two things at once.** One way to help students build working memory is to set up exercises that require them to multitask.

They must practice holding information in their working memory while they are in the process of completing another activity. Examples follow:

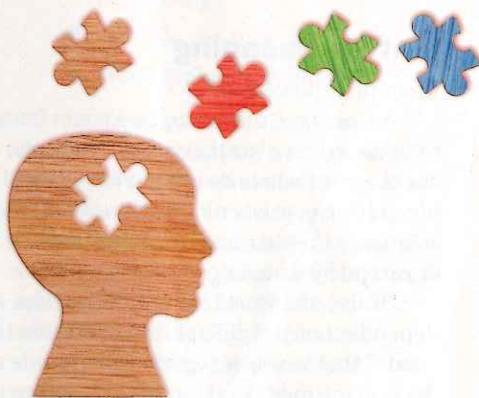
■ **Clap and Chant.** These types of rhyming and movement activities are great because they help to build working memory capacity while students participate in an engaging, active task. Students should recite a rhyme, poem, or short song while also keeping rhythm by clapping, patting, and so forth. This requires the students' brain to do two things at once because they must hold the rhyme in their working memory while carrying out the accompanying motions.

■ **Reading, marching, and questioning.** For this activity, the student will read out loud while marching in place. At the end of every page or paragraph, he or she should then pose a question about what he or she has just read. This activity requires multitasking of reading, thinking, speaking, and movement.

## A positive impact

Research has shown that students who find reading problematic often have working memory deficits; they have difficulty decoding words and remembering content at the same time. Thus, by providing students with opportunities to build their working memory, teachers can help those who struggle with this important cognitive skill to become more effective readers.

As a bonus, building working memory will also aid students in other academic content areas, such as math and writing, and will help to create more confident, effective learners. ■







**Kristin Ziemke**

(@KristinZiemke), an ILA member since 2005, is a teacher, staff developer, and Apple Distinguished Educator. She is coauthor of *Amplify: Digital Teaching and Learning in the K–6 Classroom* and *Connecting Comprehension and Technology* (Heinemann).



**Don Goble**

(@Dgoble2001), an ILA member since 2016, is an award-winning multimedia instructor, author, and international speaker on media literacy.



# BEYOND TEXT

## Literacy for a digital culture

By **Kristin Ziemke & Don Goble**

With these simple words—*you have a story to tell*—Don Graves crafted the writer’s workshop to guide classroom experiences.

Around the same time, P. David Pearson recognized multimodal interactions and the role of active literacy.

Later, Stephanie Harvey and Harvey “Smokey” Daniels sought a curriculum of inquiry where questions connected schoolwork to real-world living.

Today, our classrooms build upon this strong foundation of pedagogy to fully leverage text, images, and video. The result is the opportunity for teachers and students to redefine literacy.

### Shifts in meaning

Imagine this scenario:

*Students sit on the rug as Kristin launches a minilesson. She teaches them how to “view to learn” as they watch a video to study and question a selection of media. As she teaches them to do with informational text, she invites students to draw or write about their new learning and questions. She guides them to apply many of the same strategies they use with print text such as “turn and talk” to deepen understanding or reread by watching the video again.*

Today, the world is our curriculum. Access to information is no longer dependent on a child’s ability to decode text. Images, music, and video are diverse “texts” that we layer together to provide multiple entry points to learning. Partnering media and print text, we see this new era as an opportunity to engage