

Reading with Symbol Supports—Help or Hindrance?

Symbols have become a mainstay of assistive technology—they are used for communication, writing, and reading. But did you know that in certain contexts, pairing symbols with words may actually make it more difficult for students to learn the words? Here we focus specifically on when (and when not to) use symbols for reading. Karen Erickson, Penny Hatch and Sally Clendon researched the topic extensively in their journal article "Literacy, Assistive Technology, and Students with Significant Disabilities" in the journal *Focus on Exceptional Children* (Erickson, KA., Hatch, P., & Clendon, S. (2010). *Literacy, assistive technology, and students with significant disabilities. Focus On Exceptional Children* , 42(5), 16.). In this excerpt from the article they discuss symbol use for reading.

Picture-Supported Text: An Example

The use of picture-supported text is one AT approach that is used widely with students who have significant intellectual disabilities. It provides a specific example of an approach with the potential to provide access to content while impeding access to learning reading skills. Picture-supported text involves pairing or replacing text with picture symbols (Downing, 2005). Software programs such as Boardmaker v.6 (Mayer-Johnson, 2006), PixWriter v.3 (Slater Software, 2008), and Writing with Symbols 2000 v.2.6 (Widgit Software, 2002) allow the user to type in or import running text and automatically or easily produce a picture symbol paired with each word. Although this practice is intended to provide access to text that a student could not read otherwise, it potentially makes it more difficult for the student to develop reading and writing skills (Pufpaff, Blischak, & Lloyd, 2000; Rose & Furr, 1984; Saunder & Solman, 1984).

For multiple reasons, pairing picture symbols with words may limit access to learning to read. Pictures actually may increase confusion, especially when they represent abstract concepts, have multiple meanings, or serve more than one grammatical function (Hatch, 2009). This is particularly true when words do not have obvious picture referents, as is the case with verbs such as *do* and *is*. Because they do not have picture referents, they must be represented by abstract, arbitrary symbols (see Figure 1).

FIGURE 1

Boardmaker Picture Communication Symbols for the Verbs *Do* and *Is*



Source: *Boardmaker* (Version 6) software (Pittsburgh: Mayer-Johnson, 2006).

While the orthographic (print) representation of these words is also abstract, printed words appear much more frequently and are understood more broadly than are abstract picture symbols. As a result, students learning to read the words rather than recognize the abstract picture symbols have more opportunities to encounter the words and interact with others who understand them.

Picture symbols may also make learning to read more challenging when they represent multi-meaning words such as *back* and *play*. Each of these words has a consistent spelling across its multiple meanings, and neither spelling conjures a visual image that is related more closely to one meaning than another. In contrast, picture symbols representing these words offer visual representations of a single meaning. Consider the word *back*, which has a single spelling for its noun, verb, and adjective interpretations. The reader must use the words that surround it to know for certain which form is being used. In contrast, picture symbols might represent just the noun form of this word by illustrating a person's *back*, the *back* of a room, book, or building, or the athlete who is in the *back* position on the field.

These are just a few of the options for representing only the noun form of this word, and each choice communicates a clear meaning that may or may not match the intended use in a given context. Although today's software offers the option to select specific symbols for each use, words such as *back* and *play* would require students to learn literally dozens of symbolic representations with varying abstractness.

Beyond the potential confusion introduced when pictures are paired with words, pairing pictures with words seems to make it more difficult for students to learn to read the words. More than four decades ago, researchers began investigating the impact of pictures on the development of word identification for readers with and without disabilities of all ages. In the earliest of these studies (Samuels, 1967), first graders were more successful during training when pictures were paired with words, but the advantage of pictures disappeared when the students were asked to read the words without the pictures. With pictures, these students seemed to be learning more successfully during instruction, but in the end, they found it easier to read the words they learned without the benefit of pictures. In a follow-up study, other first graders receiving reading instruction that included pictures paired with words learned more slowly than did their peers who did not have pictures.

In a subsequent study (Singer, Samuels, & Spiroff, 1973-1974), more than 160 first- and second-grade students were randomly assigned to one of four intervention groups: picture + word; no picture + word; picture + sentence; and no picture + sentence. All of the students engaged in trials until they could identify the words without pictures present. The students had more correct responses during the training and learned words in fewer trials in the word-only conditions (no picture + word, no picture + sentence) than they did in the conditions that included pictures. These findings were replicated later for kindergarten non-readers without disabilities (Blischak & McDaniel, 1995).

Research involving children and adults with intellectual disabilities has supported the findings

of these studies involving typical primary-grade students. For example, Singh and Solman (1990) investigated the impact of pictures paired with words on the word reading skills of eight students with intellectual disabilities. All of the students read the fewest number of words correctly when they learned those words when paired with pictures. Similarly, the adults with intellectual disabilities studied by Pufpaff et al. (2000) learned to read printed words more easily than they learned to read words paired with pictures or words printed in enhanced ways with the picture embedded in the printed word.

A study by Fossett and Mirenda (2006) provided some guidance on how pictures should be used in reading instruction for students with intellectual disabilities. The authors used pictures to teach two students with intellectual disabilities to read individual words. In one method, the students were taught to read the words when they were paired directly with the pictures, and the second method required students to match the pictures to the printed words. The students were more successful when they actively matched pictures to printed words than they were when the words were paired with the picture.

Implications

Given the evidence suggesting that pairing pictures with words makes it more difficult to learn to read the words, educators must be clear regarding their goal when they choose to use technology to produce picture-supported text. If the goal is merely to provide access to content and careful attention is paid to selecting picture symbols that reflect the meaning of the words in the text, it is reasonable to expect that pictures will increase access to content that otherwise would not be accessible. If the goal is to improve reading skills, however, pairing pictures with text is likely to slow the rate at which students develop those skills. The research provides clear evidence that pictures should not be paired with words that students are expected to learn to read or spell. In either case, AT decisions require that we consider both access to content and access to learning if we want to ensure that students achieve their goals.