

Literacy Technology in the Elementary Classroom
A Quick Look at the Possibilities

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If you are teaching in an elementary classroom, you will be faced with students with literacy issues. If you are teaching in a middle school classroom, you will be faced with students with literacy issues. If you are teaching in a high school classroom, you will be faced with students with literacy issues.

In the world of American education nothing is considered more important than literacy. In some states a student who might be on top of his class in every other measure of academic achievement may be retained in third grade simply because of reading test scores. In every classroom across the nation students who fail to master effective literacy are isolated, fail to progress in other subjects, suffer with significant self-esteem issues, and within a few years, are far more likely to find themselves as drop-outs and even as convicted criminals.

Can technology help?

There is very little current research on utilizing the newest reading and writing support technologies with younger students, but research into literacy issues raises the likelihood that high-tech accommodations can provide significant and effective support.

Florida State University's Joseph K. Torgesen, in *Individual Differences in Response to Early Interventions in Reading: The Lingering Problem of Treatment Resisters* (2000), stated, "What is the best method, or combination of methods, of instruction for these children, and how much special instruction will they require? At this point in the development of our field, we have the beginnings of a consensus about the first question but are still far from a consensual answer to the second. For example, we know that approaches featuring systematic, explicit instruction in phonemic awareness and phonetic decoding skills produce stronger reading growth in children with phonological weaknesses than do those that do not teach these skills explicitly (Brown & Felton, 1990; Felton, 1993; Foorman et al., 1998; Hatcher, Hulme, & Ellis, 1994; Lovett, Borden, Lacerenza, Benson, & Brackstone, 1994; Torgesen et al., 1997; Torgesen, Wagner, Rashotte, Rose, et al., 1999; Tunmer & Nesdale, 1985). It also seems clear that these phonemically explicit approaches should include careful instruction to help children apply their phonetic decoding skills to real words and that they should provide many opportunities to read connected text for fluency and meaning (Foorman et al., 1998; Gaskins, Ehri, Cress, O'Hara, & Donnelly, 1997; Lovett et al., 1994; Vellutino, Scanlon, & Tanzman, 1994)."

Russell Gersten, Ph.D., and Scott Baker, Ph.D., in *Reading Comprehension Instruction for Students with Learning Disabilities: A Research Synthesis* suggest that, "Finding ways to help students generalize their newly acquired reading comprehension skills is

essential. It's important to learn how these skills can be transferred to other academic areas and what needs to be done to make sure that students either continue using the specific strategies they've learned after the instructional intervention ends or internalize the essential parts of the strategy so that improvements in reading comprehension continue." They also say the following, "Students with LD often show signs of giving up too quickly when faced with a difficult passage. This so-called task persistence, a skill that must be acquired by all readers, is especially important for successful reading of expository text, such as history and science textbooks, newspapers, and voter pamphlets." They continue, "Children with LD, who have a history of academic difficulties, have documented gaps in grade-appropriate knowledge of history, geography, and other subjects. These knowledge gaps interfere with their understanding of material they encounter in new texts and compound their reading comprehension problems."

There is also urgency. This from the Fall 2004 issue of the *American Educator*, the quarterly journal of the American Federation of Teachers. "In the simplest terms, these studies ask: Do struggling readers catch up? The data from the studies are clear: Late bloomers are rare; skill deficits are almost always what prevent children from blooming as readers. This research may be counter-intuitive to elementary teachers who have seen late-bloomers in their own classes or heard about them from colleagues. But statistically speaking, such students are rare."

The University of Wisconsin-Milwaukee's James Gee speaks of research showing about how a kindergartener's spoken specialized (non-vernacular) vocabulary correlates with 3rd/4th grade reading comprehension levels, and that "The only realistic chance students with poor vocabularies have to catch up to their peers with rich vocabularies requires that they engage in extraordinary amounts of independent reading."

Faced with these facts, and a classroom of between twenty and thirty elementary students, how can a teacher start to compensate for hours of missed parent-child reading sessions, or at-home exposure to specialized learning? How can a teacher make sure that struggling readers stay engaged with content learning so that students do not fall behind in every subject area? How can teachers provide extra phonological support, writing skill support, and reading support without cloning themselves and providing one-on-one work with a dozen students at a time?

This is where contemporary assistive technology software can help, and contemporary computer software adapted to special needs can help.

How can technology help?

With simple personal computer based solutions teachers can use technology to increase "read-to" time, allow students to work with sophisticated stories that might hold their interest, engage them more actively in the world of books, and improve student access to informational text and thus content learning. Technology can also provide skill-building support for phonological awareness, word shape recognition, and the understanding of how sounds in English translate into English spelling.

The classroom computer, properly equipped can "multiply" the teacher, by providing "non-staffed" support in these situations.

What types of technology will help?

Technology can dramatically increase "read-to" time: WYNN, Microsoft Reader, Kurzweil 3000, all allow a book to be read to students. The student sees and hears the specific word as it is read (the word is highlighted, in WYNN and Kurzweil the sentence can also be "sub-highlighted"). This reinforces reading skills just like "mom" sitting with the child and reading to them. Any book can be scanned in to WYNN or Kurzweil (complete with illustrations), any Word document can be converted into Microsoft Reader – a more limited, but wonderfully effective and completely free software package.

Technology can enhance the connection between word shape and word sound: WYNN, Microsoft Reader, Kurzweil 3000, by linking the word's shape-image to its sound builds this essential reading skill and allows dramatic improvements in new vocabulary acquisition. WYNN, and to a slightly lesser extent Kurzweil, also add in dictionaries, thesauruses, and other grammatical tools.

Technology can offer direct confirmation of the connection between sounds and spelling in English: ViaVoice, an IBM voice-to-text solution, allows a student with low phonological skills to dictate to the computer and watch the words appear. Thus, saying a word will reveal its spelling. The software does require unique voice training for every student, but may offer the possibility of dramatically improving language understanding.

Technology can offer content, information-reading, access to non-readers, pre-readers, and weak readers: WYNN, Microsoft Reader, Kurzweil 3000, all provide students with book reading possibilities that might otherwise be out-of-reach. This can allow students to not just keep up with content-area learning, but to investigate informational texts that match up with the student's unique interests.

Technology can offer sophisticated story access to non-readers, pre-readers, and weak readers: WYNN, Microsoft Reader, Kurzweil 3000, allow student reading groupings based in affinity instead of specific reading capabilities. This also allows students to work on comprehension issues as they work on decoding issues.

Technology can offer full web access to non-readers, pre-readers, and weak readers: WYNN, FoxyVoice (in the Firefox browser), and other tools allow students to engage in web research and web-based communication at levels equal to their classmates with stronger reading skills.

Technology can provide testing accommodations: WYNN's Test Talker can read tests and record student answers. WYNN itself, through its notetaking component can do the same. Even Microsoft Reader can, if tests are converted from Word, allow notes to be

added, thus providing testing possibilities (though Reader cannot accept spoken answers the way WYNN and Test Talker can).

What blocks technology in the classroom?

Assistive technology software can spread the benefits of literacy to students struggling with decoding and other reading skills. It can provide content and interest access. It can solve testing issues and support skill development. So what prevents teachers from utilizing these solutions?

- (a) A lack of access to the software and hardware. Some technology is free, meaning there is little excuse, but other solutions require budget re-prioritization. Scanners and other hardware like headsets are also costly. Teachers, however, report a major issue is ability to use these products even when free: school tech support is too often unwilling to install any "non-standard" applications or to allow teachers to install software in their classrooms. In many school districts negotiating skills are essential to getting assistive technology in place.
- (b) A lack of knowledge. Too few teachers have the experience with this software that is necessary to establish comfort. Teacher education programs, both pre-service and in-service have simply failed to provide training in these essential skills.
- (c) Teachers are not always comfortable applying technology to instruction, and most are not comfortable learning new software packages on their own. Studies in both the United Kingdom and Ireland show that despite teachers' home use of computers, use of technology in instruction is not "automatic." In addition teachers simply lack the time to "play" with new software on their own.
- (d) The "privileging" of certain types of reading. Educators tend to believe that reading is not really reading if it is not done by looking at ink on paper. Tests are often considered less valid if heard instead of read. An audio book is considered But if a student cannot access the traditional book, is it fair to leave them out of the world of communication and information? Besides, digital literacy is becoming vital. "The book, says the QCA report, is "not defunct, but learners need to acquire new literacy skills. On-screen texts are increasingly multimedia and non-linear"." Says the UK's *Guardian* newspaper in an article titled "Print is not dead - but it is fast fading away."

How to increase technology use?

Schools must begin to include continuous training in technology, including assistive technology, for all teachers – not just those involved in special education. If districts will not lead on this, individual teachers may do it, bringing in assistive technology trainers or attending seminars as buildings, or grade-level or departmental teams. These seminars are best held in computer labs where teachers can have hands-on experience with the software, and should be linked to follow-up sessions that answer questions once classroom use has begun. Pre-service teachers can also seek out seminars, or push their colleges to bring effective trainers to campus. Technology training should come from trained professionals, and not from salespeople working for specific software solutions

(Depending on sales staff recommendations often leads schools to purchase the most expensive solutions instead of the most effective ones).

There are also on-line information sources. These include CAST [<http://www.cast.org/>], LDonline [<http://www.ldonline.org/>], WATI (the Wisconsin Assistive Technology Initiative) [<http://www.wati.org/>], the Assistive Technology Training On-line Project from the University at Buffalo [<http://atto.buffalo.edu/>], Do-It at the University of Washington [<http://www.washington.edu/doi/>], and many others.

The biggest solution is likely to be the comfort of teachers with the possibilities of the technologies' help in student achievement. This will require teachers who are more willing to explore new solutions with their students, teachers who become better at judging what types of solutions are most likely to work with individual students, and then for schools to be better at being true "learning communities," to improve the sharing of success stories within buildings, districts, and states.

Technology is not "the solution," but it can be a vital part of your toolbox. Explore the potential, and share your experiences.

Notes

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