Closing The Gap

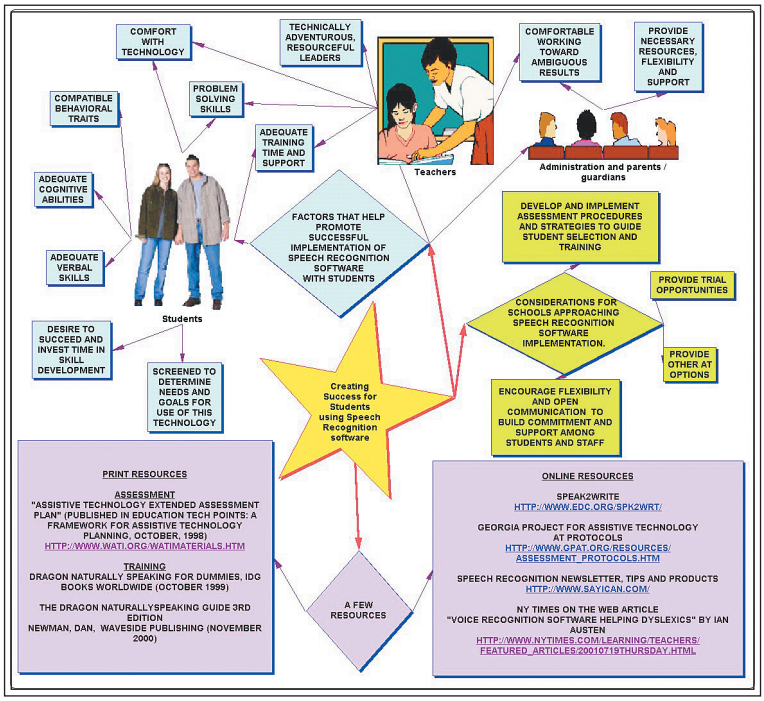
Computer Technology in Special Education and Rehabilitation

Speech recognition software: Does it belong at your school?

By Janet Hopkins

Is your school under pressure to implement speech recognition software for students who have computer access or composition challenges? This may be an issue that your staff is facing or will have to look at eventually.

Once technology becomes visible and available at retail stores, its allure can have quite an influence on the expectations of parents, students and educators. In 1997, the mother of one of my severe learning disabilities program students became enthusiastic about her 14-year-old son using speech recognition software. We decided to give IBM's Simply Speaking a try. No one else in our district was working with these products, so we felt as though we were breaking new ground.



Does speech recognition belong at your school?

Our experience with speech recognition

All of the boys in my program were interested in working with speech recognition. I installed it and trained my own voice on the software after school one day. During the next week I had the students train their voices into the program. They quickly started to experiment by dictating word lists, spontaneous content, textbook paragraphs and their own work.

The initial enthusiasm for this technology wore off quickly. The early speech recognition products were discrete speech versions that required users to pause briefly after speaking each word. Virtually all of the students found this pattern of speech, and the inconsistent word recognition of this product, to be annoying. Although we appreciated the technology, we came to the conclusion that it wasn't yet ready for our needs.

I decided to keep my eye on the speech recognition industry to see what improvements were in the works. Once continuous speech products became available, I decided we should give it another shot. This time I purchased Dragon Naturally Speaking Preferred-Version 2. We installed it on our LD classroom computer and went through the training process again. There was a general feeling that the speed and recognition accuracy of this product was better. The students continued to use this software over the next few months. There was a degree of "high tech status" involved for this group, as they were able to impress their friends with the new input device. Anything that made these students feel excited about coming to school was fine with me.

However, after a while, most of the students went back to typing their assignments and used speech recognition less frequently. The recognition remained quite inconsistent for many of these students. As most of my students had difficulty with spelling, we had hoped that the software would remedy that problem. As long as the students

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could correctly pronounce their words, the software would correctly spell them. The problem was that very often these boys would not pronounce words clearly or consistently enough to produce accurate recognition. There were usually more recognition errors made than when they did their own typing.

Speech recognition was faster than typing for all of the students, but the recognition errors cancelled out this benefit. When the students misspelled a word while typing, the word processing software identified the error visually on the screen with a red line underneath. When the Dragon software made a recognition error, it substituted a correctly spelled incorrect word. These recognition errors would not be identified for correction when spell checking was performed. We found that the recognition errors in dictated documents required more time to correct than spell checked errors in typed documents.

Some of my students were able to work quite well with speech recognition, so I continued to upgrade to Dragon Naturally Speaking Preferred Versions 3, 3.5 and 5.0. This software also provided me with a valid reason to request and receive the hardware upgrades that I needed to support more sophisticated products entering the market. Speech recognition software requires a fast processor and adequate RAM. As with any software purchase, it is important to carefully check the system requirements before buying a product.

Over the four years that I trained students to use speech recognition software, I noticed that most who had sufficient keyboarding abilities would eventually abandon the technology and go back to typing. Although this technology was not the answer for many of my students during their high school years, I encouraged a number of them to reconsider the use of speech recognition later in their lives. A different setting and a little more maturity combined with product improvements could be the factors that lead to speech recognition success for these individuals.

Advice for educators

Schools considering the implementation of speech recognition products may be looking for direction on how best to proceed. There are many variables and no guarantees that the results of one program can be duplicated in a different setting.

As many educators have introduced students to speech recognition products, some of their experiences and observations may provide assistance. Information to the following four questions has been contributed by professionals familiar with speech recognition use in schools.

What factors lead to successful outcomes?

Educators appear to be in agreement that it is important to identify students who have a need for speech recognition. Are there unmet performance goals and objectives that the student may be capable of achieving with this technology? Students' cognitive, communication and behavioral traits could determine their level of success with speech recognition software. The abilities to communicate using clear, consistent speech patterns and to independently develop content are viewed as contributors to success. Students who are willing to devote the necessary time to the development of speech recognition skills are seen as more likely to succeed than students who expect instant results. Students who demonstrate patience, flexibility, problem-solving skills and tolerance to frustration are frequently mentioned as strong candidates.

Paula Walser is a statewide consultant for the Wisconsin Assistive Technology Initiative. She has used speech recognition herself and with students for seven years. She provides lectures and workshops across the United States. Walser identifies five factors that she believes contribute to successful outcomes:

"1. Training of both teachers and students. Teachers who use speech recognition technologies themselves on a regular basis are most able to use this technology effectively as a writing tool.

2. Quality of microphones.

3. Student training – student needs to know the basics of how to write. Often our students with mild disabilities have never seen themselves as writers and often have not received instruction in writing when they have had an appropriate tool to express themselves by writing. Students also need to learn the appropriate correction techniques. Students need to learn the difference between dictation and writing.

4. Trials of speech recognition need to occur using the latest version of the software and on hardware that is sufficient to run it in conjunction with Office or whatever productivity software is being used.

5. Awareness that all aspects of the writing process are critical and that the speech recognition is just the tool."

How should schools approach implementation?

Schools must provide the necessary resources to support teacher/student training needs. These include the required technology, time and flexibility. It makes sense to initiate speech recognition on a trial basis. It is important for the staff and students involved to allow trials to proceed without feeling pressured to reach predetermined outcomes. It should be accepted that training investments might not lead to continued use of speech recognition for all students who go through the process. Speech recognition training should be viewed as a learning opportunity and not be made the only option available. Students will decide for themselves whether the technology is a good match for their needs.

Walser recommends a trial approach. "As with any assistive technology, the child should be provided with a trial use of the software with clearly definable objectives for the trial period."

Which school systems have successfully implemented speech recognition technology?

The August/September 2001 issue of *Closing The Gap* included a feature article on speech recognition implementation in the Fairfax County Public Schools. "You can talk to your computer, but will it listen" provides valuable information and insights gained from five years of school-based experience.

"I know of students with learning disabilities, students with physical disabilities etc., using speech recognition all over the place," adds Walser. "It is always based on individual need."

What advice / support / resources are available to educators?

Tom Johnson, an AT Specialist in the Lodi Unified School District, says that requests for speech recognition often come from parents of high school students who present

with low reading and written language scores. "Keyboarding is slow due to the difficulty with editing via the keyboard – spelling mistakes, grammar, and punctuation errors abound. Homework takes "forever" and parents are tired of fighting with the student to get assignments in. Speech recognition software (SRS) appears as a panacea. They've heard about it, it's technology, it's "computer", it bypasses having to work through the problem with written language. I typically go into other software applications for written language rather than going through the arduous process of SRS for this type of client. SRS, to be successful, requires a huge time commitment, a disciplined mind, structured practice, ability to read, ability to recognize errors, etc."

Schools may find that the availability of both discrete and continuous speech products offers the best selection for students with diverse needs. "Students with physical impairments such as CP, TBI, spinal cord injuries, etc. are great candidates for either continuous or discrete SRS, depending on their needs (which version to use)," notes Johnson.

Walser recommends implementing a process to determine if the trial use of the technology works. "I personally use the format developed by Penny Reed and Gail Bowser for general assistive technology trials called "Assistive Technology Extended Assessment Plan" (published in *Education Tech Points: A Framework for Assistive Technology Planning*, October, 1998). The Speak2Write Project provides me with collegial support and information that is incredible."

Does speech recognition software belong at your school? That may depend on whether your school is prepared for it. Attitudes, school culture and multiple learning environments are complex issues that will all play a role in determining the success of speech recognition and other innovative technology initiatives.

Resources

Visit the Web pages listed below for additional support and product information.

Speaking To Write: Realizing the Potential of Speech Recognition For Secondary Students With Disabilities. <www.edc.org/spk2wrt>

National Center to Improve Practice in Special Education Through Technology, Media and Materials. <www2.edc.org/NCIP>

Lernout & Hauspie Speech Products USA, Inc., 52 Third Ave Burlington, MA 01803; Phone: 781-203-5000; Fax 781-238-0986; Web site<www.lhsl.com/naturallyspeaking>

IBM Corporation, 1133 Westchester Ave., White Plains, NY 10604; Phone 800-IBM-4YOU; Web site <www-3.ibm.com/software/speech>