

ASSISTIVE TECHNOLOGY FOR STUDENTS WITH LEARNING DISABILITIES

Research studies and practical experience continue to show the of speech recognition for helping students with learning disabilities — dyslexia, dysgraphia, working memory issues and other cognitive challenges — that interfere with their ability to read, write and spell. Speech recognition tools like Dragon can generate a new excitement for writing and learning among students who were previously unable to write or produce written work due to learning disabilities. The technology accomplishes this feat by:

- Enabling them to more easily transfer their ideas into print
- Circumventing the most frustrating aspects of text generation, including brainstorming, outlining, and spelling
- Providing remedial reading assistance for both decoding and comprehension

Dragon enables students with a wide range of learning disabilities to reach their full potential. It allows students to create work through speech and vastly improves output for students living with disabilities involving written language.

Transforming thoughts into written words

Students with language-based learning problems or working memory difficulties can benefit from using voice recognition software to transfer their ideas into printed words. Since these students have trouble expressing their thoughts on paper, they often convey less sophisticated ideas in their written work, use a simplified vocabulary, or avoid writing tasks altogether. Learning disabilities researchers consistently found that use of speech recognition technology can make a significant difference for dyslexic students because it enables them to communicate more efficiently and effectively.

Enable greater independence

In the past, many students with learning disabilities have depended on other people — parents, teachers, instructors or friends — to transcribe their papers and other assignments as they dictate. This traditional approach, however, presents some serious drawbacks. First, it makes the student dependent on another person to accomplish academic tasks. Secondly, it hampers writing skills development; without a draft to read and reread as each sentence development, the student lacks a comprehensive sense of the writing flow.

Speech recognition software provides an attractive alternative to a dictation buddy. It allows students to speak into their computers at a natural pace and watch their spoken words appear on the screen as text. Students with learning disabilities are now able use voice recognition to gain new levels of independence as writers, readers and learners.

Free up cognitive space

For many students with language-based learning disabilities, getting the first couple of sentences down on the page can be the most difficult part of the writing process. For example, dyslexic student often face reading and spelling challenges, which present enormous hurdles to written expression. Difficulties with working memory prevent other students from managing more than one aspect of the writing task at a time. As a result, completion of reports and other writing assignments can be a frustrating and extremely time-consuming endeavor.

Dragon NaturallySpeaking frees up cognitive space in the brain to jumpstart the writing process, allowing these students

“Educators should not hesitate to integrate technology features into instruction for students who struggle with academic tasks. These approaches can support learning by building literacy and language skills and independence...Use speech recognition technology to help struggling writers and spellers get their ideas on paper. The immediacy of the dictation process reinforces the vocabulary and use of writing conventions and punctuation... If you haven’t tried speech recognition software lately you will find vastly improved capabilities, reduced training requirements and better microphones available at very reasonable costs. “

“Research Matters/Technology to Help Struggling Students” by Heidi Pacuilla and Steve Fleischman, Educational Leadership, Feb. 2006, Volume 63, Number 5

Dragon can generate a new excitement for writing and learning among students who were previously unable to write or produce written work due to learning disabilities.

“To ensure a computer literate society, each child must be able to communicate using a variety of digital tools. As the ‘tools’ change, communication skills will be the driver. We need to teach the appropriate use of communication tools as our nation continues to evolve into the Information Age. The traditional Keyboarding class is the perfect home to introduce the new digital input technologies.”

*Ci I figure behind
the Washington State DigiTools curriculum*

to get their thoughts on the page without worrying about reading and spelling. As students dictate their thoughts, Dragon automatically turns speech into correctly spelled text. Furthermore, Dragon’s playback function enables students to hear - rather than read - what they’ve written, so they can make edits as needed. By listening to their writing, some students become more aware of issues like missing verbs, awkward phrasing or poor sentence structure that require revision.

In fact, studies have shown that students with learning disabilities who used speech recognition tools to independently produce typed essays were able to complete assignments with results that were indistinguishable from the work of their non-disabled peers. (See sidebar)

Improve reading and spelling

Research also suggests that the use of speech recognition by dyslexic students has actually generated significant improvement in reading, decoding, spelling and comprehension. It gives students the opportunity to practice their reading skills and can positively influence sound-character awareness. Studies have shown that Dragon promotes improved spelling and word recognition as students watch the words they speak get transcribed, word by word, on the computer screen. This “say-and-see” approach helps students better understand the relationship between what a word looks like and how it sounds.

AN EMERGING COMPONENT OF SECONDARY SCHOOL BUSINESS CURRICULUM

Across the nation, speech recognition is being integrated into traditional middle school, secondary and post-secondary business courses, which typically address keyboarding, computer applications, data input, and business technology. In fact, it is a vital component of newly developed digital communications courses in states like Washington, Nebraska, North Carolina, Virginia, Mississippi, and Indiana, which have already added speech recognition skills to the instructional mix in coordination with the national standards on input technologies like keyboarding.

Business Education initiated the blending of speech and handwriting recognition with keying input instruction shortly after the National Business Education Association (NBEA) updated its IT curriculum standards in 2001. According to those guidelines, students should “develop proper input techniques (e.g., keyboarding, scanning, speech recognition, handwriting recognition, and the use of a touch screen or mouse), including safety methods to avoid repetitive strain injury.” (Page 85, National Standards for Business Education, www.nbea.org, ISBN 0-933964-56-0)

In 2003, the National Business Education Association (NBEA) Policies Commission took a powerful position on the injury prevention issue with the following statement:

“We believe that students must be made aware of the importance of an integrated approach to text and data input. Research indicates that carpal tunnel syndrome and other repetitive strain injuries may be linked to occupations that require repetitive use of the hands (i.e., keyboarding and mouse operations). Varying the use of computer-input technologies reduces the risk of repetitive motion injuries.”

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Over the past several years, early adopter states like Washington, which replaced its long-standing CTE Keyboarding