

Technology Options to Support Students with Learning Disabilities

A significant percentage of students are unable to perform to their full potential because they are unable to read and write at a level equivalent to their intellectual ability. In this age of technology there are numerous pieces of equipment and software available to assist all students. To avoid creating further areas of stigma and in the interest of equal opportunity, these technologies and the training to use them, should be available to all. These technologies range from freeware to high end expensive products.

Alternate Format (Formats other than print)

If texts are available in electronic format (e.g. Microsoft Word doc or unlocked PDF) they can readily be converted to audio files or read aloud with text to speech programs. Such alternate formats can be included within education systems as part of an overall instructional materials strategy. Alternate formats can be produced nationally, locally within schools and regions, or they can be produced by individuals. To be readily accessible to the modern student these need to be available in digital format for use on a multitude of portable devices. There is a move to digital talking books in most developed countries which has enormous benefits for people with dyslexia.

To avoid duplication of time and effort there needs to be a central electronic library housing books in suitable formats which eligible students can access. It is useless having the software and the hardware if the texts needed by students with all forms of print disability are not readily accessible at a reasonable price. Currently few students in mainstream education have access to DAISY books unless they are sight impaired. There is a great variation in the quality of voices available in text to speech. In general, free voices are of lesser quality, although there are now some like Microsoft Anna - English which are quite acceptable. Higher quality voices are available for purchase but still sound electronic and have no intonation. For longer texts it is far preferable to listen to a natural recorded voice than an electronic one.

DAISY (Digital Accessible Information SYstem) is an international standard for the production of digital talking books. Currently there are around 30 commercially available products for the production of DAISY format; and around 15 software products and 15 hardware products available for reading information in DAISY format. DAISY format provides the reader with access to the structure of a book and facilitates moving to a selected page, jumping to the index or table of contents or any other part of a document. It enables equal access to printed content in an electronic form.

DAISY functionality is being adopted into mainstream applications and products, such as Microsoft Word and mobile phones.

Applicable technology:

Software for creating Daisy content

Products range from simple freeware and shareware programs through to sophisticated expensive products used by publishers.

Software for reading Daisy content

There is a variety of freeware and commercially available software programs for reading Daisy files for both Windows and Macintosh operating systems.

Hardware for reading Daisy content

There is a variety of products available using standard CD media or solid state devices into which Daisy content is downloaded electronically.

Assistive Technology Software

1. Software to support phonics and spelling

These kinds of programs usually offer a range of games or activities to practice skills in reading high frequency words, phonics and spelling. They usually use selected lists or a structured program. This software varies from extremely poor to high educational value and purchasers would benefit by a rating or review system.

2. Software to support numeracy.

Software programs, especially for early learners that introduce numbers and mathematical concepts in a structured program often using games and related activities. This software varies from extremely poor to high educational value and purchasers would benefit by a rating or review system.

3. Software to support literacy.

Specifically created for people with learning disabilities. These programs include a wide range of tools and features that support reading writing and studying. In Australia the most commonly commercial programs of this type include TextHELP, Claro Read, Textease CT Essentials, PenFriend, WYNN, Kurzweil 3000 and EasyTutor. There is also an increasing number of free software packages such as MS Word Talk, Natural Voice reader, and the computer's inbuilt text to speech features.

These programs include the following features, some of which are also available as discrete software applications.

Software to support reading –

Automatically convert text to speech (text to speech)

Choice of synthetic voices

Adjust speech qualities such as rate, pitch, volume and pause.

Ability to select reading quotient (line, sentence, paragraph, continuous)

Highlighting of text as it is spoken.

Create individual reading preferences (visual presentation)

Choose font size and colour, line spacing, page layout

Use of colour overlays

Use of differential colouring to highlight word fragments

Selective masking of page to simplify complex documents.

Software to support Writing

Word Prediction.

Intelligent predictive text learns vocabulary and style of user. Word options spoken and inserted in text using single key or mouse click.

Homophone discrimination.

Provide spoken feedback of all homonyms/homophones in a document with definitions.

Voice or Speech Recognition Software

Speak to microphone, all words converted to text.

Talking Spell Check, Dictionary and Thesaurus

4. Software to support Study

Planning Software

Development of summary/outline using mind mapping principles

Word Processors/Talking Word Processors

Standard word processing applications contain many features that support students with dyslexia.

Assistive Technology Hardware

This includes specialist devices that have been specifically designed for the needs of dyslexic students, as well as more mainstream technologies that are becoming more prevalent in education.

Interactive Whiteboards

Some Interactive Whiteboards can present information in enhanced formats such as large print and with coloured overlays. Some also enable information on the board to be sent directly to a student's laptop where it can be further modified to meet individual needs.

Portable Devices

Some of these include specific features that may be included in broader software products, but offer greater portability and specificity to an individual's needs. Included are products like the Franklin electronic dictionaries, Reading Pens and Smart Pens

Word Processors and Writing Aids

These include portable note-taking devices that have keyboard, small display and a range of features that support writing and personal PCs.

Voice Organisers/ Recorders

Standard voice recorders enable students to record all spoken information for later review. Other uses include leaving reminders to self, verbalizing content prior to writing, summarising or paraphrasing in own words, and doing a 'brain dump' prior to finishing lesson or test.

Personal Digital Assistants/iPods/MP3 players

These are increasingly incorporating features that benefit students with dyslexia, including the reading of e-books and DAISY content, voice recording, and speech recognition.