Assistive Technology and Students with Dyslexia

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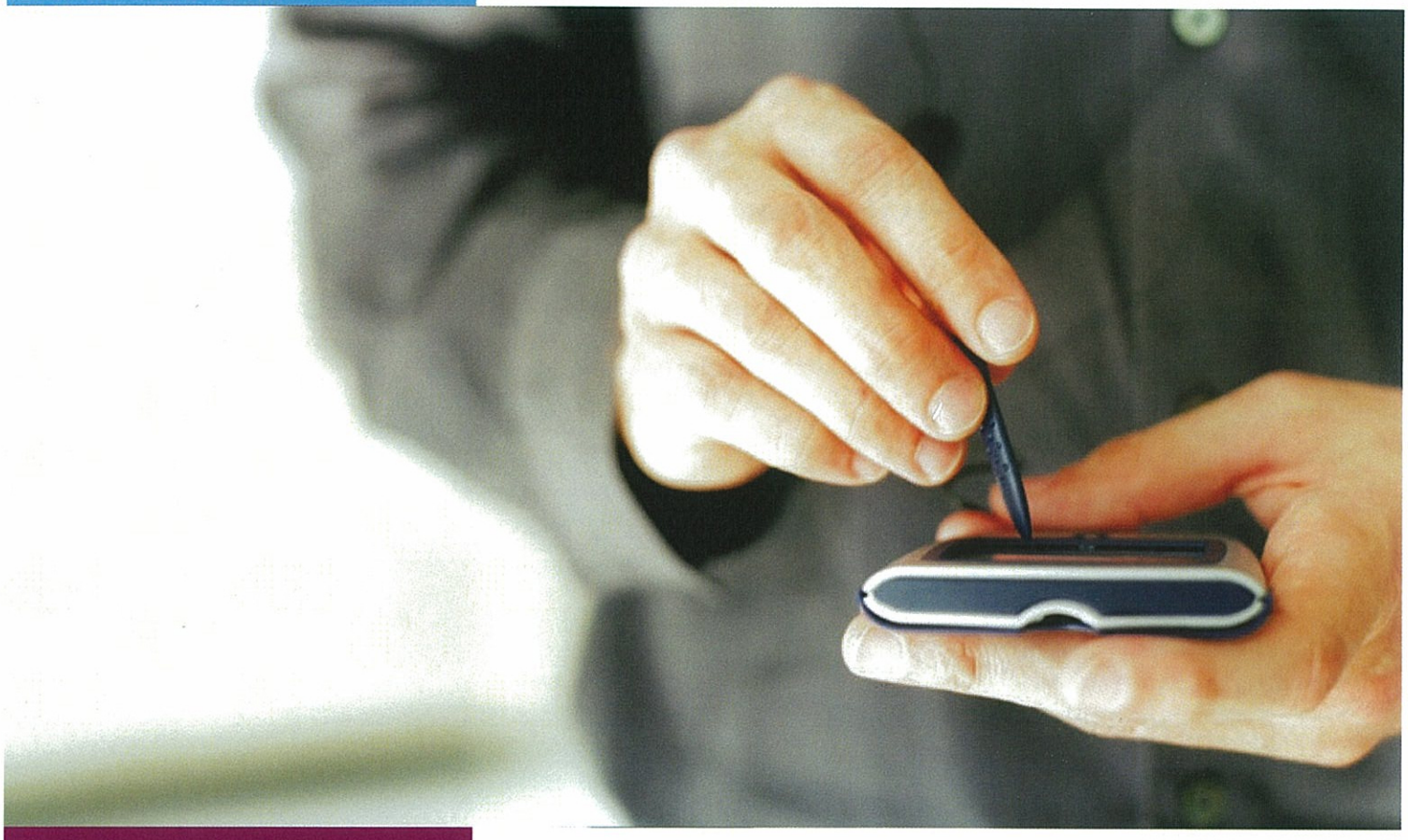

Douglas Adams (1952 - 2001), the author of *The Hitchhiker's Guide to the Galaxy,* developed a set of rules about how we view and react to technology.

1 Anything that is in the world when you're born is normal and ordinary and is just a natural part of the way the world works.

2 Anything that's invented between when you're fifteen and thirty-five is new and exciting and revolutionary and you can probably get a career in it.

3 Anything invented after you're thirty-five is against the natural order of things.

Of course, Adams has used humour to bring into sharp focus something we have known for a long time; technology is a generational issue. Technology is easy and second nature for some, and for others it is a struggle.

There are few places where this can be observed more acutely than in education and especially the education of students with special needs such as dyslexia. These students need technology in order to transform inaccessible information into formats they can use. Assistive technology is a generic description given to a range of technology products from simple everyday devices such as an MP3 player, through to specialised hardware and software options designed specifically for people with a print disability.

For educators, recognising that you are in group 3 can present challenges, but there are still many ways to embrace technology. With the understanding that assistive technology can greatly benefit students with

dyslexia, educators can choose to change the student/teacher relationship to one where they become a "co-learner". Often they will bring many skills and resources to that relationship that are beyond the actual mastery of the product; including how to get help and support, appraising what type of technology suits the individual, and linking the technology feature to the educational goal. In a general sense, the educator needs to know ABOUT the technology whereas the student needs to know HOW it works.

Being in group 3 is also challenging because the technology is constantly changing. This can foster a tendency to find one product, to master it and then to only use it exclusively from that point forward. This is compounded when education systems fail to provide the training and professional development needed to keep educators abreast of the increasing array of technology options.

Having options and choices of assistive technology for students should be a priority for all education systems. Not only can assistive technology provide the tools students need to transform and access information independently, it can be an important part of how we change expectations of, and for, students with dyslexia.

Given the opportunity to use technology most students will "master" it without elaborate or extensive training. It is a feature of belonging to group 1 that technology is not a barrier, but part of the natural order of their lives.

Describing every technology option that may benefit a dyslexic user is beyond the scope of this article. However, it is worth mentioning that there are many options that are free or cost very little, generally referred to as freeware and shareware. Often these products can be used to initially "play" with options, to test the water and see if a specific function is useful for an individuals needs. Whether these free and shareware options will provide the on-going utility and meet educational needs has to be determined on a case by case basis. Most people who use freeware and shareware products eventually move to a commercially available product because of the level of support they receive, the extent to which the product changes and keeps current and the policies of the educational institution they are in.

Software products in use in Australia which are designed specifically for students with dyslexia contain a variety of product features covering tools for reading, writing and study. Product names include Kurzweil, WYNN, easyTutor and Read&Write.

If you created a list of features from all these products you would find a great deal of commonality. What distinguishes one product from another is how these features are presented to the user, and this is known as the 'user interface'.

The user interface is a good starting point in assessing whether any product is going to meet an individual's needs. There are two very distinct design philosophies around the type of user interface that best supports students with dyslexia, which are briefly described as follows:

1. An individualised learning environment. This is a user interface customised around each user's needs which avoids interaction with the Windows environment (in which drop down menus, dialogue boxes and other conventions can provide additional barriers to reading). Products that offer this type of user interface are WYNN and Kurzweil.
2. A floating toolbar, which is added into the user interface of whatever application is being used. This enables the student to use the applications that their peers and families may be using and is often viewed as being "less different". Products that offer this type of user interface are easyTutor and Read&Write.

Understanding the distinction between these two approaches is critical when assessing the best option for students. If assessing the needs of an individual, most products will have trial or demonstration versions available and hence the student can be involved in evaluating what works best for them.

It is more difficult when you are assessing the best options for a wide range of students, such as a school or district wide assessment. In addition to dyslexia you will need to consider all students that may benefit from assistive technology, and this includes the simple needs of ESL students (requiring only text to speech and highlighted word to reinforce reading), to the more complex needs of children with other disabilities (such as ASD, ADHD, low vision etc).

It is also important to note an apparent contradiction that complex needs can often mean a very simple user interface is required with the flexibility to add and remove menu options to suit individual needs. For example a student with autism may need many of the same reading tools as a student with dyslexia, however the user interface for a student with autism may need to be very simple, with only one or two menu options, for example. Similarly, product features that appear simple, such as the number of mouse clicks needed to perform a particular task, can actually become a key issue when considering school wide options.

When beginning the assessment process for a school or district implementation, the concept of an "abilities spectrum" is a key consideration. An "abilities spectrum" helps define the full range of abilities that need to be catered for across a population of students. Once defined, policies can then be implemented in which assistive technology tools are included as a standard part of all computers in the school or region.

Since no single product can ever meet all needs, assistive technology options need to be assessed as to where they fall in this spectrum. The products that cover a wider part of the spectrum will therefore typically represent the best value to a school or school district.

Providing assistive technology options throughout a school will also benefit students who don't have a disability. For example introducing the class to prefixes or suffixes can be greatly enhanced by having all instances of a chosen suffix or prefix highlighted in a different colour automatically. There are many literacy tools that all students will benefit from, and some (such as word prediction) will already be used by students who have a mobile phone. In this sense, assistive technology is introducing 21st Century tools for learning to all students.

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In addition to software, students with dyslexia can also benefit greatly from having printed information converted into other formats, a process generally referred to as alternate format production. This has been most dramatic in audio, where a new international format has been adopted called DAISY (Digital Accessible Information System). The DAISY format is being used to create a new generation of talking books (or any printed information).

In the past, analogue recording onto cassette provided limited access to the structure of a book and was therefore most useful for recreational reading only (start at the beginning and read to the end). However, DAISY now enables full equivalent access to printed material (flip to desired page, jump to index or table of contents etc).

Earlier this year Microsoft added a Save As Daisy function to WORD, indicating how mainstream this is becoming. Unfortunately, DAISY is yet to be embraced by education systems in Australia. One of the largest producers of DAISY books is an organisation in the US called the RFB&D (Recordings for the Blind and Dyslexic). Approximately 15 years ago the majority of the talking books they produced were for people with vision impairment. Today they estimate that over 70% of their clients are people with Learning Disabilities such as dyslexia.

There are many assistive technology options around DAISY including software to produce DAISY books, and hardware and software options for reading them.

In Australia today the vast majority of students with dyslexia do not have access to assistive technology or DAISY talking books. This is a major challenge that will require all stakeholders; parents, teachers and the students themselves, to be responsible for changing.

Douglas Adams told us how to hitchhike to a new galaxy. Our new galaxy is one where each student receives the appropriate intervention and receives the assistive technology tools that they need. To get to this new world we need to be more than hitchhikers, we have to be the pilots!

Future editions of the Bulletin will feature examples of assistive technologies and how they can assist in the supporting and accommodating individuals with dyslexia.