Inclusive School Practices Toolkit

Assistive Technologies in Schools

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## Introduction

Assistive Technology (AT) is an umbrella term for any device or system that allows individuals to perform tasks they would otherwise be unable to do, or increases the ease and safety with which tasks can be performed[[1]](#footnote-2). Evidence-based AT, when correctly prescribed and implemented, can break down many of the barriers that prevent students with learning and behavioural needs from accessing education on the same basis as their peers and maximise inclusion within the classroom and beyond[[2]](#footnote-3).

It is hard for schools to keep up to date with the wide range of ATs available in Australia and new AT products are developed regularly. This tool provides information about evidence-based ATs used in schools and links to AT products that may be suitable for students with a range of additional learning and behavioural needs. This tool is useful for school staff (as well as students and parents/caregivers) to explore how AT can assist a student or group of students to engage, socially and academically, and to reach their full potential.

## Ideas

## *What is Assistive Technology?*

*Assistive Technology (AT) is any device, system or design used by individuals to perform tasks that might otherwise be difficult or impossible. AT range from simple household items like a jar opener to the more complex items like pressure care mattress that prevents pressure sores. In short, anything that assists individuals to perform daily activities can be considered assistive technology.[[3]](#footnote-4)*

Low-tech AT: “devices or equipment that don't require much training, may be less expensive and do not have complex or mechanical features.”[[4]](#footnote-5) Some recommend that low-tech ATs should be considered first as they are often lower in cost and require less training for effective use[[5]](#footnote-6).

Medium-tech AT: “may have some complex features, may be electronic or battery operated, may require some training to learn how to use and are more expensive than the low-tech devices.”[[6]](#footnote-7)

High-tech AT: “the most complex devices or equipment, that have digital or electronic components, may be computerized, will likely require training and effort to learn how to use and cost the most.”[[7]](#footnote-8)

## *Examples of Assistive Technology in Schools*

It is important that AT is evidence-based and suited to each student’s individual needs so that money and valuable learning time is not wasted trying AT that will not work for an individual[[8]](#footnote-9). Educators should not only consult and collaborate with students and their parents/caregivers about ATs that they believe may be beneficial, but also with relevant members of students’ support teams such as allied health professionals including Occupational Therapists (OT) who can complete an AT assessment and provide assistance to select, source and trial AT to best meet a student’s needs.

The AT field is constantly expanding with new devices and equipment being developed. Schools must keep up to date with the wide range of ATs being used in Australia, whilst also assessing the individual and collective needs of their students and their school context. Below is a summary of common, evidence-based ATs used in Australian schools as well as links to more information, products and suppliers.

*Communication, Speech and Language* Augmentative and Alternative Communication (AAC) devices, ranging from low-tech communication boards to high-tech text-to-speech software (such as TextHelp Read&Write) and speech-generating devices (such as the Intelligaze Eye Gaze System), can be used by students to increase their ability to communicate and participate within the classroom[[9]](#footnote-10).

* Communication boards: <https://ilcaustralia.org.au/products/search?utf8=%E2%9C%93&q=communication+board>
* Eye control communication systems: <https://ilcaustralia.org.au/search_category_paths/964>
* Text-to-speech software: [https://ilcaustralia.org.au/products/search?utf8=%E2%9C%93&q=text+to+speech](https://ilcaustralia.org.au/products/search?utf8=%E2%9C%93&q=text+to+speech%22﷟HYPERLINK%20%22https://ilcaustralia.org.au/products/search?utf8=%E2%9C%93&q=communication+board)

## *Hearing Impairments and Auditory Processing*

Students with hearing impairments or auditory processing disorder may benefit from FM systems (such as the Phonak ‘Roger Focus’ system) where the teacher or other students can wear a microphone that connects to a student’s hearing aids or another receiver. Similarly, voice amplification systems can be used to amplify the teacher’s voice to all students. Closed captions are a common AT that should be used when watching videos or movies in the classroom[[10]](#footnote-11).

* FM system - Phonak Roger Focus: <https://www.phonakpro.com/au/en/products/wireless-accessories/roger-focus/overview-roger-focus.html>
* Voice amplification systems: <https://ilcaustralia.org.au/search_category_paths/756>

*Learning Difficulties e.g., dyslexia and dysgraphia*Highlighters are low-tech, low-cost AT that is readily available and can be used to segment large chunks of text to help students identify key points in order to aid their comprehension and memory. Erasable highlighters can be used for textbooks and library books[[11]](#footnote-12). Similarly, e-books can be highlighted electronically[[12]](#footnote-13). Students who have difficulties with writing neatly may benefit from pen/pencil grips (such as the RingPenUltra) and bold-line writing paper or writing guides[[13]](#footnote-14).

Word prediction software and spelling and grammar checkers, such as those inbuilt into Microsoft Word and TextHelp Read&Write software, can help take the focus off spelling and grammar for students with writing and spelling difficulties, to enable them to focus solely on getting their ideas down efficiently[[14]](#footnote-15).

Speech-to-text software (such as Dragon Naturally Speaking) can aid students with writing difficulties to get their ideas down efficiently by minimising frustration and exhaustion. This software has been found to provide immediate curriculum access at the student’s current level, whilst also building neuro-connections[[15]](#footnote-16). For students with reading difficulties, the added text-to-speech component of software (such as TextHelp Read&Write) can increase students’ phonological awareness and aid reading comprehension through its playback feature, which highlights words whilst reading them aloud connections[[16]](#footnote-17).

* Bold-line writing paper: <https://ilcaustralia.org.au/products/2917>
* Word prediction software: <https://ilcaustralia.org.au/search_category_paths/705>
* Writing guides: <https://ilcaustralia.org.au/products/1858>

# *Physical Impairments*

Height adjustable desks can be useful for students who use wheelchairs or seating that is of non-standard height, whilst other students with physical disabilities may benefit from ergonomic seating and the use of cushions, arm and wrist supports, and footrests to increase support and comfort[[17]](#footnote-18). Students who have impaired fine motor skills with difficulties writing may benefit from pen/pencil grips (such as the RingPenUltra) as well as sloped desks, typing rather than writing, and voice recognition software and speech-to-text software (such as Text-Help Read&Write and Dragon Naturally Speaking)[[18]](#footnote-19). Ergonomic and adaptative keyboards to operate computers for accessing texts, taking notes, and writing assignments can maximise students’ productivity, comfort and independence[[19]](#footnote-20).

* Arm and wrist supports: [https://ilcaustralia.org.au/search\_category\_paths/430](https://ilcaustralia.org.au/search_category_paths/430%22%EF%B7%9FHYPERLINK%20%22https%3A//ilcaustralia.org.au/search_category_paths/539)
* Ergonomic and adaptive keyboards:
<https://ilcaustralia.org.au/search_category_paths/447>
* Ergonomic seating: https://ilcaustralia.org.au/search\_category\_paths/539
* Footrests: <https://ilcaustralia.org.au/search_category_paths/1035>
* Height adjustable desks:
<https://ilcaustralia.org.au/search_category_paths/439>
* Pen/pencil grips: <https://ilcaustralia.org.au/search_category_paths/211>
* RingPenUltra pen/pencil grip: <https://www.pencilgripsplus.com.au/product/ring-pen-ultra>
* Sloped desks: <https://ilcaustralia.org.au/search_category_paths/441>
* Voice recognition and speech-to-text software: [https://ilcaustralia.org.au/products/search?utf8=%E2%9C%93&q=speech+to+text](https://ilcaustralia.org.au/products/search?utf8=%E2%9C%93&q=speech+to+text%22﷟HYPERLINK%20%22https://ilcaustralia.org.au/search_category_paths/441)

*Sensory Processing and Regulation*Students with sensory processing issues should be allowed to engage in healthy, non-destructive sensory regulation behaviours, as these behaviours are believed to help students self-regulate their emotions to allow them to feel calmer and better concentrate[[20]](#footnote-21). Within the classroom, low-tech AT can be used to encourage healthy sensory regulation behaviours that reduce the impact on other students within the classroom. These AT can include wobble chairs (such as the Hokki Stool), quiet fidget toys (such as fidget spinners or cubes and chewable jewellery), noise-cancelling headphones for individual work, non-distracting music, and elastics around desk legs for students to bounce their legs on without moving the desk or making noises that could distract other students[[21]](#footnote-22).

* Fidget toys: <https://www.sensoryoasisforkids.com.au/product-category/fidgets-chews/>
* Hokki Stool: <https://ilcaustralia.org.au/products/18602?search_tree=539>

## *Vision Impairments*

Firstly, a variety of large print, high contrast and braille keyboards are available to enable efficient keyboard use for students with differing levels of vision. For students with some vision, AT such as enlarged print texts, physical magnifiers for enlarging physical texts, and magnification software for enlarging electronic texts can increase students’ ability to access a variety of texts[[22]](#footnote-23). For students with little to no vision, braille texts and screen reading programs (such as JAWS) that convert text to speech can be used by students to access texts[[23]](#footnote-24). Similarly, other forms of text-to-speech and speech-to-text software (such as Text-Help Read&Write and Dragon Naturally Speaking) can be used by students to read and write independently by eliminating the need for someone to read or scribe for them[[24]](#footnote-25).

Reading gadgets (such as the C-Pen Reader Pen) that convert text into speech can enable students to ‘read’ texts that they would otherwise be unable to access, such as those that are unavailable electronically, in braille, or in enlarged print[[25]](#footnote-26).‘Talking’ utensils and equipment, such as calculators that verbalise the answers to calculations and thermometers that verbalise temperature readings, can significantly increase students’ independence in a variety of classes including maths, science, and home economics[[26]](#footnote-27). Tactile graph paper, graphics, and math manipulatives can increase access to the mathematics curriculum for students with vision impairments[[27]](#footnote-28).

* Braille and large print books: <https://ilcaustralia.org.au/search_category_paths/952>
* Large print, high contrast and braille keyboards: <https://ilcaustralia.org.au/search_category_paths/670>
<https://shop.visionaustralia.org/search?keywords=keyboard>
* Magnification software: <https://ilcaustralia.org.au/search_category_paths/1008>
* Physical magnifiers: [https://ilcaustralia.org.au/search\_category\_paths/214](https://ilcaustralia.org.au/search_category_paths/214%22%EF%B7%9FHYPERLINK%20%22https%3A//ilcaustralia.org.au/search_category_paths/1008)
* Reading gadgets: <https://ilcaustralia.org.au/search_category_paths/759>
* Talking calculators: [https://ilcaustralia.org.au/products/search?utf8=%E2%9C%93&q=talking+calculator](https://ilcaustralia.org.au/products/search?utf8=%E2%9C%93&q=talking+calculator﷟HYPERLINK%20%22https://ilcaustralia.org.au/search_category_paths/759%22)

## Actions

Before implementing any AT, it is crucial that you consider the individual needs of your student(s) and collaborate with them, their parents/caregivers, and relevant members of their support team, such as OTs. Below are reflection and discussion questions to help educators assess the suitability of AT for a student or group of students in their classroom. Remember, the purpose of AT in education settings is to enhance engagement and learning and enable inclusion for all students. When appropriate, ATs can be available universally to all students in your classroom rather than designated to the student/students identified with disability. For example highlighters, fidget toys, speech-to-text software, and ergonomic seating are beneficial for a broad range of students.

The following questions may help you identify individual needs within the classroom and help you prepare for discussions with your student(s), their parents/caregivers, and their healthcare team. The questions can be answered by the educator privately or used to guide a conversation with a student, their parents/caregivers, and their support team altogether.

*Reflection and Discussion Questions*

1. What are your student’s main strengths within the classroom?
2. What are your student’s main challenges within the classroom?
3. What AT could help to capitalise on your student’s strengths and/or minimize their challenges within the classroom?
4. In what ways do you think your student may benefit from this AT?
5. What questions do you have about this AT?
6. What are the barriers to accessing and implementing this AT for the student you have in mind?
7. Is there a way for this AT to be available universally to all students in the class rather than only the student with the identified need?
8. What resources and support would need to successfully implement this AT in your classroom?

## More Information

**Independent Living Centres Australia** database of assistive technologies <https://ilcaustralia.org.au/search_category_paths> and info line 1300 885 886

**Vision Australia Online Store** <https://shop.visionaustralia.org/?gclid=CjwKCAjwvtX0BRAFEiwAGWJyZAVuG42kDKx3IcCoxxD5bUgVVN3vSPKNbPB0dsp1i6wuA8oLfWDsEhoCayMQAvD_BwE> and info line 1300 847 466

**Royal Society for the Blind** online adaptive technologies store <https://www.rsb.org.au/shop?page=1&action> and hotline 1300 944 306

Video of Dragon Naturally Speaking being used by a student, Bethany <https://www.youtube.com/watch?v=JvgUx9tu-0g>

Video of Dragon Naturally Speaking being used in combination with TextHelp Read&Write <https://www.youtube.com/watch?v=KOG_Si2Y2SU>

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