ASSISTIVE TECHNOLOGY

FOR LEARNING

Your Essential Guide

Hi,

James here. Firstly, thanks for signing up to our Assistive Technology Guide. I truly believe that assistive technology is the essential factor/component that make things possible for many of our kiddos that find learning a challenge. You are the one that supports them daily; with this in mind, I have included some information here on the main types of technology that may help.

This is not an extensive guide by any means, but a good starting point. You do not need to download all the software or apps mentioned in this guide. More so, pick and choose what you need depending on the child you are currently supporting.

I hope you find this guide beneficial.

JAMES NORTHRIDGE
MSc (Rehabilitation & Disability Studies), Marie Curie Research Fellow

I'm James Northridge, the Founder of UrAbility.

I have Dyslexia and understand the learning challenges that students face. I love to empower students to reach their full potential and believe that technology has the power to level the playing field for all!

I've worked with hundreds of families across Ireland and the United States to help them use technology more effectively for learning.

I recently completed a Marie Curie fellowship at UMass Medical School, Boston. Where I carried out over two years of research into Assistive Technology for students with Autism.

Who is UrAbility?

At UrAbility, we use our expertise to leverage technology to help students learn, master and thrive, whatever their abilities and goals. We are creating a space where those requiring training and advice on assistive technology can get it through our content, training events, and online courses.

You can find out more information on www.UrAbility.com or why not follow us on Facebook.

This handy guide to Assistive Technology (AT) offers an overview of:

What is AT? ⊙	Tablets and Laptops - the differences ⊙
Technology to Support Learning ⊙	Useful AT Resources ⊙

WHAT IS
ASSISTIVE TECHNOLOGY
(AT)

AT is any item, piece of equipment, software, or system that is used to maintain, improve, or increase the functional capabilities of persons with disabilities. The Department of Education and Skills (DES) characterises AT as any technology that enhances the performance of a learner with special educational needs by overcoming barriers in terms of presence, participation (engagement) and learning.

AT includes a wide range of tools, from simple low-tech options like a pencil grip which is very low tech. Or a very complex communication system, such as the one Stephen Hawking used. And everything in between.

Children with both diagnosed and undiagnosed disabilities, whether visible or invisible, can benefit from appropriate AT.

For students without disabilities, technology makes things easier. For students with disabilities, technology makes things possible.

TABLETS AND LAPTOPS
THE DIFFERENCES

The main devices on which AT is used are laptops and tablets.
We have outlined some of the key differences below.

TABLETS vs LAPTOPS	TABLETS	LAPTOPS
Operating Systems	Apple Mac/iOS (e.g. iPad)	Apple Mac/iOS
	Microsoft Windows (e.g. Samsung, Surface, etc.)	Microsoft Windows
	Android (e.g. Samsung, Lenovo, etc.)	Chrome
Weight	Lighter	Heavier
Battery life	Very Good (10hrs for iPad)	Average to Good** **only higher-end laptops have very good battery life
Portability	More portable	Less portable
Typing	Small keyboard, may need a wireless keyboard	Better option for students who will type notes/exams
Creativity	With a front and rear camera far more options, including AR	Limited options
Price	Starting at €399 for an iPad	Depends on features

Most software is available for use with both Apple Mac and Microsoft Windows. However, the variety of applications (apps) available on both can vary. Today students seem to show a preference for tablets as they are ultra-portable, ultra-functional and present with a wide variety of apps.

NOTE We are only referring to Apple iPad and Microsoft laptops. This is mainly because these devices and their apps/software are well supported by developers. That is not to say other options don't work well.

THINGS TO REMEMBER

WHEN SELECTING A DEVICE

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- Does the device meet your student's needs?

- Is the technology easy to use and setup?

- Is the size and weight of the device manageable for the student?

- Does the student need training on using the product?

- Is training and support available?

TECHNOLOGY
TO SUPPORT LEARNING

Most laptops and tablets now come with some type of accessibility features built into them which can help children with learning difficulties and disabilities.

Additionally, software and apps that help children with a variety of learning needs and skills are also available to download on tablets and laptops.

BELOW IS A LIST OF SOME OF THE MOST USEFUL BUILT-IN FEATURES, AND SOFTWARE AND APPS TO HELP CHILDREN IN 4 MAIN AREAS:
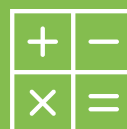
READING

WRITING

ORGANISATIONAL AND STUDY SKILLS

MATHEMATICS

READING

To help children who have difficulties in reading, Text To Speech (TTS) is very useful. As the name suggests, TTS converts text into spoken voice output.

Reading made easy with your device

You can easily activate TTS built into your devices by following the steps below:

iPad

1. If using an iPad with iOS12, Go to Settings ⚙️ > General > Accessibility > Speech.

2.

3. If using an iPad with iPadOS 13, Go to Settings ⚙️ > Accessibility > Spoken Content. 🔗

4. Finally, slide the Speak Selection toggle to "ON" 🔗

Windows (version 10) Laptop / Tablet

Windows 10 has a built-in text to speech feature. For an overview of how this works, check out the details on the link here. 🔗

Technology for Reading

In addition to activating text to speech built into your device, you can also download apps and software on your tablet/laptop that aid with reading. These can be downloaded from App Store (iPad) and/or Microsoft Store (Windows).

TEACH YOUR MONSTER TO READ

AGE:
AGE: 3 – 6 (OR OLDER DEPENDING ON THE CHILD)

COST:
FREE TO €5.49

AVAILABLE ON:

This is a beautifully made and entertaining resource for young children to learn phonic sounds. They design a monster and take it on an adventure around a magic area to find the letter sounds and fix a spaceship. The storyline is good, and the activities are educational and motivational.

It has 3 different games, as they progress, they practice a range of essential reading skills; matching letters to sounds, blending, segmenting, tricky words and reading full sentences.

VOICE DREAM READER

AGE:
6+

COST:
€16.99

AVAILABLE ON:

This is a must have app for students struggling with reading. It reads aloud text that can be pulled from PDFs, web browsers and Word documents. The whole experience can be customised for the student, including the voice, speech rate, sentence pause, visual layout (background colour) and even the font type (Open Dyslexic).

One key stand-out feature is the "Lines Visible" option - you can control the amount of content displayed for a student who struggles to follow a line of text; this is super.
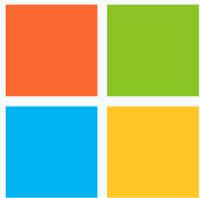
CLAROPDF PRO

AGE: 6+

COST: €10.99 (FREE)

AVAILABLE ON:

ClaroPDF Pro allows students to access books that are in PDF format. It contains a built-in reader and has a highlighting function. It allows materials to be opened from all internet-based storage. Users can select from a choice of voices, speed of voice and colour of highlighting according to their preference.

There is a free version available too, which has limited functions, but could be a good starting point.

MICROSOFT LEARNING TOOLS (IMMERSIVE READER)

AGE: 6+

COST: FREE WITH OFFICE 365 SUBSCRIPTION

AVAILABLE ON:

This is a game changer for me, I just love the ease of use and it is now my go-to option for struggling readers. The Immersive Reader tool allows those with reading and writing difficulties the ability to have content read aloud to them, setting adjustments to break words into syllables/parts of speech, and adjust text size/background colours.

Another plus, it's free! This tool from Microsoft helps to improve reading, writing, and comprehension when you are using an Office 365 subscription. It implements proven techniques to improve reading and writing for people regardless of their age or ability.

READ&WRITE

AGE: 6+

COST: €208 - WITH A 30 DAY FREE TRIAL

AVAILABLE ON:

Read&Write lets the student hear text read aloud, look up words in the dictionary or picture dictionary with a click, write with word prediction, highlight and collect information from the web, and proofread with a grammar, spelling and confusable words checker.

This a 12-month subscription and can be accessed for Windows, Mac and all tablet devices. It also gives you access to the Read&Write for Google Chrome extension. This toolbar targets reading, writing, and organising while working seamlessly with Google Docs. Tools such as text-to-speech, speech-to-text, colour highlighting, and word prediction are just some of the features to boost confidence for students.

WRITING

Children with learning challenges can greatly benefit from voice recognition or Speech to Text. As the name suggests, they can talk to the computer and their words appear on the screen. It is an alternative to typing on a keyboard and can help children to write confidently.

For students who find it difficult to get their thoughts down on paper by handwriting or word processing due to visual impairment, literacy or physical difficulties, using speech recognition can open up a whole world of possibilities and allow them to produce work that reflects their cognitive ability.

Reading made easy with your device

You can easily activate Voice Recognition built into your devices by following the steps below.

iPad

1. Tap the **Microphone** button on the iPad's on-screen keyboard.

2. Talk. The iPad will listen to your voice and turn it into text as you talk.

3. Tap the "Done" button that appears on-screen to stop dictating. Voice dictation isn't perfect, so you may need to make a few adjustments using the keyboard.

Microsoft Windows Office 365

Microsoft Office 365 has an in-built Dictate function. It can be used both online and offline. You need a subscription to Office 365 to use this feature. To find out how to use it, check out the link here.

Technology for Writing

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In addition to activating voice recognition built into your device, you can also download apps and software on your tablet/laptop that aid in writing. These can be downloaded from App Store (iPad) and/or Microsoft Store (Windows).

AGE: 4+

COST:
FREE - €10.99

AVAILABLE ON:

VOICE DREAM WRITER

Voice Dream Writer works as a proof-reader. Using its text-to-speech functionality, it reads aloud text as it is typed using the keyboard or the dictate function. This helps students to spot grammatical errors, spelling mistakes and awkward sentences.
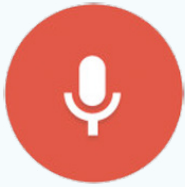
AGE: 6+

COST:
FREE - €5.49

AVAILABLE ON:

SNAPTYPE PRO

SnapType Pro allows students to work on workbooks and photocopied worksheets – by letting them fill them in on the iPad. Students can overlay textboxes on the images and work directly from there. Snaptype helps students keep up with their peers in class, even when their penmanship holds them back. Once finished working on a document, they can print, save it or send it to their teacher. Great for those who find hand-writing difficult. There is a free version too, which is a good starting point.

GOOGLE VOICE TYPING

AGE: 8+ / **COST:** FREE

AVAILABLE ON:

This is a great dictation tool for Google Docs and Google Slides. To use it, you must be connected to the internet with the Google Chrome Browser on Windows, MacOS or Chromebook devices. Voice Typing is also available on Google Android devices.

GRAMMARLY

AGE: 8+

COST: FREE - $139.95 YEARLY

AVAILABLE ON:

Grammarly corrects over 250 types of grammatical mistakes, while also catching contextual spelling errors and poor vocabulary usage. Premium/Paid version has downloadable software to work in Microsoft Office. Free version works online in a browser only. It's a great tool for students who need a little help with grammar. It also has a very useful built-in spell checker.

DRAGON NATURALLY SPEAKING

AGE: 12+

COST: FROM €202.95

AVAILABLE ON:

Instead of manually typing documents, students with dyslexia, DCD or other learning challenges can create written work or complete assignments simply by talking.

Dragon NS would have been the "go-to" speech recognition option for a number of years. Recently schools have been opting for some of the free/cheaper options mentioned above. There can be a steep learning curve with Dragon and it is expensive. However, it is certainly one of the best speech recognition options on the market. Also a good quality headset is essential (USB version), as it doesn't come with one.

It has and is being used in Irish State Exams by students each year with good success. The key is to use it over a number of months before exams, so in-class exams and for homework.

Current version being used: Dragon Professional Individual, v15

ORGANISATIONAL AND STUDY SKILLS

Many students with learning and attention difficulties struggle with managing everyday tasks such as organising their work, concentrating on tasks, keeping to time, meeting deadlines, etc. With the following technology, they can overcome these difficulties.

GOOGLE DRIVE

Google Drive allows students to access and share documents easily on their iPad and laptop. All their files in Google Drive are backed up safely so that they can't lose them. Students can view and access their files from any device and can share homework with teachers or parents to see what work is done.

MICROSOFT ONEDRIVE

Like Googe Drive, with Microsoft OneDrive, students can easily create and share documents or other study material on their iPad and laptop. It comes pre-installed on Windows 10 laptops. All that is needed is for students, parents or educators to sign into it using a Microsoft account. They can then create files and folders in it and share them with others.

CHOICEWORKS

AGE: 4+   **COST:** €7.99

AVAILABLE ON:

The Choiceworks App is a picture-based learning tool that helps children complete daily routines, understand and control feelings, improve their waiting skills and make choices. It offers a simple, straightforward, and visual representation of some important life skills. This may help some students who have trouble grasping the abstract nature of feelings.

NOTABILITY

AGE: 12+   **COST:** €10.99

AVAILABLE ON:

Notability is a very useful app to take notes and record audio at the same time, notes can be taken and stored on cloud storage. Notes can then be organised and shared. Great for students who may struggle to get everything from the board. This app is great for all age groups, from late primary to college.

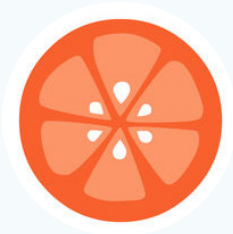## XMIND - MINDMAP

AGE: 8+

COST: FREE - €9.99 FOR 6 MONTHS

AVAILABLE ON:

MindX lets students create, edit and share their mind maps on the go and synchronise them with cloud storage. This is very useful to plan out both essays and study sessions. It is free to start, however there are in-app purchases.
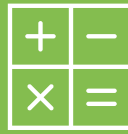
FLAT TOMATO

AGE: 8+ / **COST:** FREE

AVAILABLE ON:

The Flat Tomato app is a beautifully designed timer for students who want to avoid distractions and get more done! It is based on the Pomodoro technique, which gets students to work in intervals of up to 25 minutes and take a break for 5 minutes in-between. Useful for homework time, you can reduce the time blocks as required.

MATHEMATICS

Students with dyslexia, ADHD and other learning challenges can get tripped up by maths problems in different ways. Dyscalculia can make it hard to make sense of numbers and math concepts.

Maths is one area with less AT options available, however there are a few to help students work on their maths skills, as outlined below.

MATH VS ZOMBIEST

Math Vs Zombies teaches students addition, subtraction, division and multiplication using a fun, interactive game. Included in the game is a detailed Report Card section where parents and educators can monitor progress and find patterns of learning and help practice areas of weakness.

AGE: 5+ | **COST:** €5.49

AVAILABLE ON:

PHOTOMATHS

Simply point your camera toward a math problem and Photomath will magically show the result with a detailed set of step-by-step instructions. Great app to get students moving on Maths problems. It works with handwriting and graphs too.

AGE: 6+ | **COST:** FREE

AVAILABLE ON:

MYSCRIPT CALCULATOR

AGE: 6+ | **COST:** €3.49

AVAILABLE ON:

MyScript Calculator has many uses and appeals to a variety of age ranges and skill levels. Younger students doing single-step problems find it useful, but it also has complicated calculation features that are suited for advanced maths. Older students in secondary school who have difficulty with math concepts could use it to check their work. It also saves your history as you go, so you can easily go back and reuse any work. Finally you can export your workings to another app with one tap.

EQUATIO

AGE: 12+

COST: FREE - €69 YEARLY

AVAILABLE ON:

A chrome extension which provides word prediction, handwriting recognition, speech to text, and text to speech support for writing mathematical and scientific equations. EquatIO instantly turns students' thoughts into clear, accurate on-screen formulas. When students dictate a formula aloud, EquatIO is smart enough to ignore 'umms', 'errs' and other unwanted non-math words.

EquatIO is not a tool that teaches students about maths, but it can help with learning. Writing equations, especially complex ones, can be tedious and distract from learning.

ONENOTE DIGITAL MATH TUTOR

AGE: 12+

COST: FREE WITH OFFICE 365 SUBSCRIPTION

AVAILABLE ON:

Students can hand write an equation, select the equation using the lasso tool and have OneNote provide step by step directions in the sidebar on how to solve the equation. Requires Windows 10 and OneNote.

OTHER USEFUL RESOURCES

SCANNING AND RECORDING PENS
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Scanning pens work just like a highlighter and help with reading text in books, newspapers, and magazines. Some devices can download the scanned text into a computer or mobile device, along with any notes the student may take. We outline 2 different options below.

C-PEN READER PEN

C-Pen Reader is a totally portable, pocket-sized device that reads text out aloud with an English human-like digital voice. Students can simply pass the nib across a word and it instantly displays the definition and reads it aloud. It also scans and captures lines of text which students can upload to their laptop. Now approved to be used in Irish State Exams. ↗

LIVESCRIBE PEN

Livescribe pen is a ballpoint pen with an embedded computer and digital audio recorder. Using the pen, students can record what they write and later upload it to a computer. Their notes are synchronised with the audio. This allows them to replay portions of a recording by tapping on the notes that were written at the time the recording was made. These pens are best if used with senior cycle post-primary students. ↗

TOUCH TYPING

Touch typing is the ability to use muscle memory to find keys fast, without using the sense of sight, and with all the available fingers, just like piano players do. It significantly improves typing speed and eliminates errors. Irish State Examinations Commission offers some students the option to type their exams instead of writing them. Given this, it is important to ensure that they learn touch typing as early as possible.

STUDENTS CAN LEARN TOUCH TYPING ON THE FOLLOWING WEBSITES:

- www.dancemattypingguide.com
- www.typingclub.com
- www.typing.com/student
- www.sense-lang.org/typing/
- www.readandspell.com/us/education-licence

KEYBOARDS

Dyslexia and Developmental Coordination Disorder (DCD) makes it difficult to spell words according to letters alone. Therefore, students with dyslexia and other writing difficulties may find it tricky to use the standard keyboard available in laptops, PCs and iPads. They can benefit from physical keyboards having special overlays that customise the appearance and function of a standard keyboard. For example, reduced input choices to avoid confusion, grouping of keys by colour or location, adding graphics to aid comprehension, etc. The following physical keyboards can work well for students with learning difficulties.

- ⊙ [Bluetooth Clevy Keyboard](#)

- ⊙ [XL Print Bluetooth Black on Yellow Uppercase Keyboard](#)

Additionally, click on the external link to see how students can benefit from alternative keyboards that can be activated on an iPad. ↗