

TALKING ABOUT SPECIAL EDUCATION SERIES

VOLUME 13

# ASSISTIVE TECHNOLOGY

INFORMATION BOOKLET



This pamphlet is one of a series of resources prepared by the First Nations Schools Association (FNSA) and First Nations Education Steering Committee (FNESC) to share information about how to support all First Nations students, regardless of their needs.

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**FNSA MANDATE:**

to collaborate with First Nation schools to create nurturing environments that develop learners' pride and competence in their First Nations language and heritage and equip them to realize their full potential within self-governing First Nations communities.

**FNESC MANDATE:**

to facilitate discussion about education matters affecting First Nations in BC by disseminating information to and soliciting input from First Nations. FNESC's primary goal is to promote and support the provision of a quality education to First Nations learners.

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We hope that these pamphlets provide a useful overview of key special education topics, representing an introduction to issues that some people may want to investigate in more detail. Anyone who requires more information or has specific questions is welcome to contact the FNESC/FNSA special education staff.



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# WHAT IS ASSISTIVE TECHNOLOGY (AT)?

The term “Assistive Technology” (AT) refers to the systematic delivery of assistive technology products and services.

- Assistive technology products are any items, tools, equipment or software that maintain or improve a person's functioning and independence, thereby promoting improved well-being. Hearing aids, wheelchairs, communication aids, spectacles, prostheses, pill organizers, and memory aids are all examples of assistive products.<sup>1</sup>
- Assistive technology services directly assist people who have a disability with the selection, acquisition or use of an assistive product or device.<sup>2</sup>

1 <https://www.who.int/news-room/fact-sheets/detail/assistive-technology>

2 <https://ectacenter.org/topics/atech/definitions.asp>

**NOTE:** in this pamphlet, we use the term “parent” for simplicity, but the information is intended to be inclusive of all family members/caregivers of students with special needs. FNESC and the FNSA respect and appreciate the invaluable contributions of everyone who works to support all First Nations students – regardless of their special talents, gifts, or challenges.

# AT IN AN EDUCATIONAL ENVIRONMENT

AT can be thought of as a bridge between the demands of students' tasks and environments and their unique skills and abilities. AT provides alternate ways for students to access the curriculum, achieve appropriate learning outcomes, and demonstrate their learning.



## EXAMPLES

Tasks	Performance Outcomes	Environments
• Reading and writing	• Legible work	• Classroom
• Math	• Keeping pace with peers	• Home
• Planning and organizing	• Visual/auditory presentations	• Community
• Spelling	• Correct grammar and spelling	• Gymnasium
• Social Interaction	• Comprehension	• Playground
• Self-regulation	• Sharing of knowledge	• Study hall

AT can help to reduce any barriers that are making it difficult for students to effectively interact with their environment by providing accommodations or adaptations.



An Individual is Disabled by Environmental Barriers

ASSISTIVE TECHNOLOGY SOLUTIONS



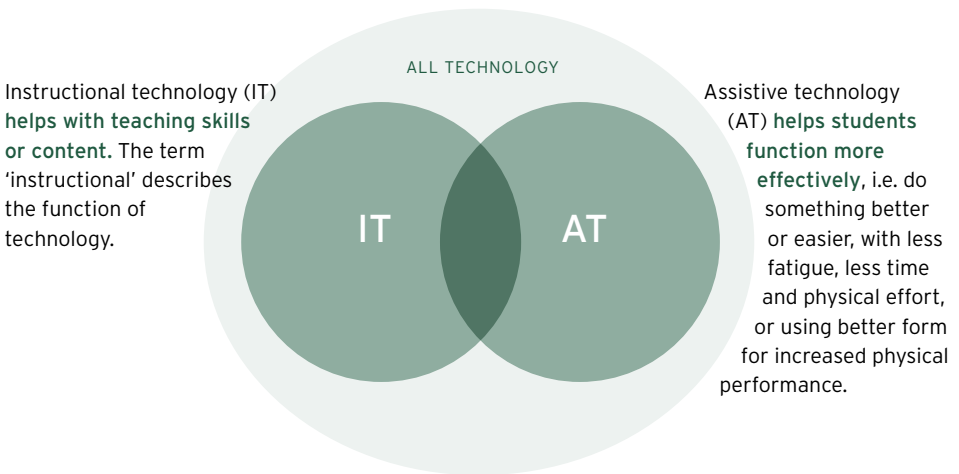
Environmental Barriers Are Removed

## WHAT IS THE DIFFERENCE BETWEEN INSTRUCTIONAL TECHNOLOGY (IT) AND ASSISTIVE TECHNOLOGY (AT)?<sup>3</sup>

Not all technology is instructional technology (IT), and not all IT is AT.

**Instructional Technology (IT)** includes various types of technology that allow educators to deliver information and enhance learning opportunities in a variety of ways. IT includes the hardware, software, email, apps, Learning Management Systems, and internet used in the learning environment, and it is commonly classroom / online / hybrid instruction based.<sup>4</sup>

**Assistive Technology (AT)** refers to specific types of technology that enable students to perform functions that might otherwise be difficult or impossible. AT can provide accommodations for students who encounter barriers to instructional materials and environments. These may be commercially available tools, some of which may be adapted or used in different ways for specific purposes and circumstances.



3 <https://www.stepp-program.org/family-modules/technology/general-instructional-and-assistive-technologies>.  
4 Dr. Therese Willkomm. <https://ecseat.blogspot.com/2015/02/assistive-technology-vs-instructional.html>

## EXAMPLES:

INSTRUCTIONAL TECHNOLOGY	ASSISTIVE TECHNOLOGY
iPad	<b>VoiceOver</b> built-in accessibility tool (text-to-speech) to hear and understand what's on a screen.
Digital worksheet	<b>Google Read&amp;Write</b> to access worksheets and work with content through text-to-speech, speech-to-text, dictionary, picture dictionary, etc.
Paper workbook for written response exercises	<b>Camera / Optical Character Recognition (OCR) apps</b> (such as SnapTypePro or Office Lens) to turn paper pages into digital format and offer an option for speech-to-text responses.
Smart Board - interactive white board	<b>Use of a finger, tennis ball or SMART pen</b> to write on the board, depending on the learner's fine motor ability. Or recording an activity process on the board to be replayed later on a student's personal device.
Whiteboard	<b>Seeing AI app</b> , which takes a photo of writing on a whiteboard and reads it aloud (text-to-speech) to reduce barriers in reading.

# WHO CAN BENEFIT FROM AT PRODUCTS AND SERVICES?

People who benefit from ATs are those who have functional limitations and encounter barriers in their environments, possibly due to the following.

- Learning disabilities such as dyslexia, dyscalculia, dysgraphia, auditory processing disorder, etc.
- Attention Deficit Hyperactivity Disorder (ADHD)
- Vision impairment, loss of vision, presbyopia, cataracts, macular degeneration, etc.
- Hearing impairment or deafness
- Physical or physiological limitations created by cerebral palsy, spina bifida, rheumatoid arthritis, dyspraxia, muscular dystrophy, etc.
- Intellectual impairments created by Down syndrome, Williams syndrome, Fragile-X syndrome, global developmental delay, etc.
- Speech and language delays and disorders, such as expressive and/or receptive language, apraxia of speech, aphasia, selective mutism, etc.
- Fetal Alcohol Spectrum Disorder (FASD)
- Autism Spectrum Disorder (ASD)
- Severe behaviour issues created by oppositional defiance disorder (ODD), conduct disorder, etc.
- Mental health issues, such as anxiety, depression, PTSD, etc.
- Chronic health or multiple exceptionalities

# TYPES OF ATs

ATs can be understood along a continuum ranging from “low to high-tech.” In almost all cases, it is best to choose AT tools and services that are the least invasive – that is, those that interfere the least with students’ functioning.

## ASSISTIVE TECHNOLOGY CONTINUUM<sup>5</sup>

LOW-TECH TOOLS	MID-TECH TOOLS	HIGH-TECH TOOLS
Pencil Grips	Spellchecker	Alternate Keyboards
Various types of lined paper	Audio recorder/recordings	E-text readers and conversion formats
Highlighters	Audio books	Comprehensive augmentative and alternative communication
Post-it notes	Simple voice output devices such as a Big Mack switch	Text-to-speech software
Slanted surfaces	Switch operated toys, electronics and appliances	Speech-to-text software
Colored filters		Environmental control devices and systems
Whiteboard and markers	Electronic staplers and erasers	Built-in accessibility features on phones, tablets and laptops

5 Adapted from Sweeny J. (1998). The Assistive Technology continuum. Retrieved on May 3, 2021 from: <https://assistedtechnology.weebly.com/uploads/3/4/1/9/3419723/banner.pdf>



LOW-TECH TOOLS	MID-TECH TOOLS	HIGH-TECH TOOLS
Picture schedules	Calculator and talking calculator	Apps on tablet or iPad/ iPhone, such as those for: Visual schedules <ul style="list-style-type: none"> <li>▪ Scanning (OCR)</li> <li>▪ Reading/describing the environment</li> <li>▪ Executive functioning</li> <li>▪ Organization</li> <li>▪ Self-regulation</li> <li>▪ Alternative keyboards</li> <li>▪ First Voices Languages</li> <li>▪ Storytelling</li> </ul>
		FM system
		Livescribe™ Pen

# MYTHS AND MISCONCEPTIONS ABOUT AT PRODUCTS AND SERVICES<sup>6</sup>

- **MYTH: High-tech is the best tech.** In fact, low-tech solutions can be preferable if they meet the learner's needs related to their tasks and environments. Sometimes both low and high-tech are needed.
- **MYTH: AT will give students an 'unfair' advantage.** That is not true. Using AT can provide equitable access to the same learning tasks; equitable means every student receiving what they need to be successful, which differs depending on each student's particular needs. AT does not change a student's intelligence; it just allows them an alternate way to show what they know and express their learning. AT offers students opportunities to be more independent in their learning.
- **MYTH: Using AT means the student will have less motivation.** Instead, AT is intended and designed to reduce barriers and frustration - which will ideally lead to increased enthusiasm for learning tasks.
- **MYTH: AT will 'fix' a student's challenge.** That is not true. AT will not solve every challenge that a student may encounter. AT will help a student access and respond to the curriculum, but it will not eliminate issues related to student functioning.
- **MYTH: Only AT users need training.** In fact, everyone on the student's support team needs AT training, including those who are 'tech savvy.' Training will help to ensure that the AT matches the learner's needs and is used optimally for the required tasks and environments.

<sup>6</sup> Adapted from: Presentation 'Conquering Villains and Myths' by Rachel Johnson and Barb Kelli, (2020). Closing the Gap Conference.

<sup>7</sup> Myths about Assistive Technology Explained. Retrieved on May 5, 2021 from <https://www.noodle.com/articles/7-myths-about-assistive-technology-explained>

Learning Disabilities and Assistive Technology Guide: Chapter 2.2 - Myths, Realities and Actions Steps. Retrieved on May 21, 2021 [https://gatfl.gatech.edu/tflwiki/index.php?title=Learning\\_Disabilities\\_and\\_Assistive\\_Technologies\\_Guide:\\_Chapter\\_2.2\\_Myths,\\_Realities\\_%26\\_Action\\_Steps#MYTH:\\_Product\\_descriptions\\_are\\_always\\_accurate](https://gatfl.gatech.edu/tflwiki/index.php?title=Learning_Disabilities_and_Assistive_Technologies_Guide:_Chapter_2.2_Myths,_Realities_%26_Action_Steps#MYTH:_Product_descriptions_are_always_accurate)

- **MYTH: People need to be able to use AT tools perfectly before starting their use.** Actually, many AT tools have built-in scaffolding levels - especially speech generating devices and apps (SDGs). Also, sometimes students may benefit from beginning with a lower-tech option first and, as their skill level increases, moving to a higher-tech option over time.
- **MYTH: AT is only for students with a learning disability (LD).** While there are many AT tools for those who have a learning disability, ATs can actually support all types of learners with a variety of disabilities. Many people use AT every day without recognizing it; for example, eye glasses are considered an AT tool.
- **MYTH: “Digital Natives” (meaning someone brought up during the age of technology) can teach themselves the best ways to use AT in school.** Being comfortable with technology doesn't mean knowing how to use an AT for a specific task. For example, it takes practice to use word prediction accurately and efficiently to match each learner and task. Some, but not all, ATs are intuitive and easy to learn, but like most technology tools there are many ways to customize and fine tune settings. Students need guidance and support to determine how to best use tools that are matched to their learning experiences.
- **MYTH: AT can replace good teaching.** This is untrue. AT can augment and support good teaching with effective accommodations. When paired with good teaching, AT can offer alternate pathways to support student success.
- **MYTH: Determining a student's AT needs happens once.** In fact, considering a student's needs is an ongoing process. AT must match a student's changing needs and circumstances, which must be reviewed over time.
- **MYTH: ATs should work right out of the box.** That is not always the case. ATs may not always match a product description, which are designed to sell the product and don't always describe possible limitations for some users. It is best to try a device or software with a student before purchasing it. If that is not possible, when purchasing a new product check the return policy.
- **MYTH: If a specific AT tool works well for one student it will work well for all other students.** In fact, every student is different, even if they have similar diagnoses. ATs must be selected according to each student's specific needs, strengths, environments, and specific tasks.

# SUGGESTIONS FOR SCHOOL STAFF

The following questions can be used to help school staff consider whether and how students might benefit from AT.

- Are any students experiencing challenges accessing the curriculum, learning, or demonstrating what they know? Are any students encountering challenges functioning independently?
- Have you discussed any barriers with a Speech Language Pathologist (SLP), Physiotherapist (PT), Occupational Therapist (OT), or other health professional to identify possible reasons and recommended interventions?
- If an AT product is being used by a student, is this included in the student's Independent Education Plan?

# THE SETT FRAMEWORK (STUDENT, ENVIRONMENT, TASK, TOOLS)

The SETT (Student, Environment, Task, Tools) framework is a collaborative AT decision-making tool used by a multidisciplinary team that supports a student. It is based on the principle that in order to foster the most appropriate systematic use of tools (supports, devices, services, strategies, accommodations, modifications, etc.) for students, teams must first develop a clearer understanding of the student, the environments in which the student usually spends time, and the tasks required for the student to actively participate in processes that will lead to educational success.

The aim of the SETT Framework is to avoid the tendency to select a tool without sufficient information. Using the Framework involves discussing what is known about students, their environments, and tasks they are required to perform, as well as what other information is needed to inform choices and select appropriate tools.

- See Table 1 (SETT Fill-in Form) on the following page

**TABLE 1:**  
**ASSISTIVE TECHNOLOGY FOR LEARNING ASSESSMENT**  
**SETT FRAMEWORK**

STUDENT	ENVIRONMENT
<ul style="list-style-type: none"> <li>▪ What are the student's special needs?</li> <li>▪ What are the student's current abilities?</li> </ul>	<ul style="list-style-type: none"> <li>▪ What materials and equipment are currently available?</li> <li>▪ What is the physical arrangement and instructional arrangement?</li> <li>▪ What supports are available?</li> <li>▪ What resources are available to the people supporting the student</li> </ul>
<p><b>WHAT WE KNOW:</b></p>	<p><b>WHAT WE KNOW:</b></p>
<p><b>WHAT WE NEED TO KNOW:</b></p>	<p><b>WHAT WE NEED TO KNOW:</b></p>

\* adapted from [www.joyzabala.com](http://www.joyzabala.com)

TASK(S)	TOOLS
<ul style="list-style-type: none"><li>▪ What activities take place in the environment?</li><li>▪ What are the critical elements of the activities?</li><li>▪ How might the activities be modified to accommodate the student's needs?</li><li>▪ How might technology support the student's active participation in the activities?</li></ul>	<ul style="list-style-type: none"><li>▪ What low-tech, mid-tech and high-tech options should be considered for a student with these needs and abilities?</li><li>▪ What strategies might increase student performance?</li><li>▪ How might these tools be tried out with the student in the environments in which they will be used?</li></ul>
<p>WHAT WE KNOW:</p>	<p>WHAT WE KNOW:</p>
<p>WHAT WE NEED TO KNOW:</p>	<p>WHAT WE NEED TO KNOW:</p>

# ACCESSIBLE MATERIALS: ARC-BC

The Accessible Resource Center BC (ARC-BC) facilitates access to digitally accessible resources for students with perceptual disabilities, providing them alternatives to hard print resources. A perceptual (or print) disability results in significant difficulties seeing, holding, or understanding a work in its original format, affecting students with visual impairments, physical disabilities, and comprehension (learning) disabilities.

To access resources produced by ARC-BC, a one-hour training session is required. Many students using AT will benefit from accessing these resources.



# MESSAGES TO SHARE WITH FAMILIES OR CAREGIVERS

School staff can also help families and caregivers be more aware of AT options and their benefits. The following are some key messages to share if students should be or are using ATs.

- If AT is used to support your child, your input about its use and effectiveness is extremely valuable - including your ideas and suggestions for how the AT can be included appropriately in your child's Individual Education Plan goals and strategies.
- If your child uses the same or alternate AT at home, your collaboration with school staff and any relevant specialists will help to ensure that your child's AT use is consistent at home and in school, which is crucial for the effectiveness of the AT and for your child's overall well-being and long-term success.

# CONCLUSIONS

As technology advances generally, there has been a corresponding increase in the creation of more effective, more accessible, and more widely available AT - which is having a positive impact on the inclusion and engagement of students who have disabilities and diverse abilities in the general education setting.

While they are unable to eliminate all learning challenges entirely, AT can help students to build on their strengths and limit the impacts of any challenges they may have, and AT is greatly increasing opportunities for all children to participate in learning experiences in the least restrictive education environments. AT can also help students participate in extra-curricular activities, interact socially, access more meaningful post-secondary and employment options, and experience greater well-being overall.

For that reason, it is important that all educators embrace the potential for AT to greatly assist students, as long as associated services and devices are selected and implemented according to each student's unique needs.



VOLUMES AVAILABLE IN THE

*TALKING ABOUT SPECIAL EDUCATION* SERIES:

VOLUME 1: AN OVERVIEW

VOLUME 2: AN INTRODUCTION FOR PARENTS / FAMILIES

VOLUME 3: INDIVIDUAL EDUCATION PLANS

VOLUME 4: A PARENT'S GUIDE TO INDIVIDUAL EDUCATION PLANS

VOLUME 5: SPEECH AND LANGUAGE THERAPY

VOLUME 6: ATTENTION DEFICIT / ATTENTION DEFICIT HYPERACTIVE  
DISORDER

VOLUME 7: FETAL ALCOHOL SPECTRUM DISORDERS

VOLUME 8: AUTISM SPECTRUM DISORDERS

VOLUME 9: GIFTED EDUCATION

VOLUME 10: TRAUMA

VOLUME 11: OCCUPATIONAL THERAPY

VOLUME 12: PHYSIOTHERAPY

VOLUME 13: ASSISTIVE TECHNOLOGY

VOLUME 14: POSITIVE BEHAVIOURAL INTERVENTIONS

FOR MORE INFORMATION:



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