Assistive Technology

● Assistive technology device means any item, piece of equipment, or product system, whether acquired commercially off the shelf, modified or customized, that is used to increase, maintain or improve the functional capabilities of a child with a disability. The term does not include a medical device that is surgically implanted, or the replacement of such device. (Sec. 300.5 Assistive Technology Device IDEA 2004 http://idea.ed.gov)

● A system of no-tech, low-tech, or high-tech tools and strategies that match a person's needs, abilities, and tasks and that facilitates academic performance (NSNET: http://www.nsnet.org/atc/tools/atech.html)
IDEA ‘97

Added the requirement that each IEP Team consider the need for assistive technology as part of the Consideration of Special Factors.

300.346(a)(2) Consideration of Special Factors.

The IEP Team shall...

(v) consider whether the child requires assistive technology devices and services.
IEP Team AT Consideration Outcome

The IEP Team shall consider whether the child requires assistive technology devices and services.

1. **NO** - The student does not require AT support
2. **YES** (known AT) - Current AT is working
3. **YES** (new AT) - New AT should be tried
4. **DON’T KNOW** - More information is needed.
AT Assessment Framework: The SETT Process

Student: What are the areas of need? What is the student having difficulty in doing?

Environment: What are the supports already available?

Task(s): Can be IEP goals, but can also be previously unidentified tasks that students is having difficulty with

Tools: Feature matching process
- AT can be **low-tech**: communication boards made of cardboard or fuzzy felt.
- AT can be **high-tech**: special-purpose computers.
- AT can be **hardware**: prosthetics, mounting systems, and positioning devices.
- AT can be **computer hardware**: special switches, keyboards, and pointing devices.
- AT can be **computer software**: screen readers and communication programs.
- AT can be **inclusive or specialized learning materials and curriculum aids**.
- AT can be **specialized curricular software**.
- AT can be **much more**—electronic devices, wheelchairs, walkers, braces, educational software, power lifts, pencil holders, eye-gaze and head trackers, and much more.
Low Tech vs. High Tech Assistive Technology Tools

- Low Tech: no mechanical features, less training involved, less expensive
- High Tech: complex features, electronic or battery operated, more training, higher cost

HIGH TECH IS NOT ALWAYS THE BEST/MOST APPROPRIATE TECH

- Low tech does not rely on power sources
- Electronics can fail
- High operational/maintenance complexity may lead to frustration and device abandonment
Instructional Technology

Instructional Technology vs. Assistive Technology
Distance Learning Instructional Technology
Built-In Features

-Voice Input

-Text to Speech

-Electronic Dictionary (text & graphic)

-Highlight

-Notetaking Tools
“Go Math” Built-In Accessibility Features

- Consistent placement of menus and control features
- Graphics along with text (Closed Captioning) to support non-readers and early readers
- Audio output: spoken instructions with volume control
- Ability to set pace and level of difficulty (Personal Math Trainer)
- Lesson Vocabulary/Glossary with Audio
- On-demand tutorial videos (Math On The Spot)
- Planner
- Assignment Tracker
Essential Question

How can you identify and name circles?
iOS/Windows Accessibility Features

- Speak
- Magnifying
- Zoom
- Search Function
# Distance Learning Device Accessibility Features

<table>
<thead>
<tr>
<th>Device/Feature</th>
<th>Mac Laptop Computer</th>
<th>iPad</th>
<th>Chromebook</th>
</tr>
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</table>
Assistive Technology Support

- Reading
- Written Expression
- Hand Writing
- Computer Access
- Communication
- Math
- Executive Function Skills
AT for Reading:

- Physical Access: Positioning support, Page Turners
- Visual support: Tracking, Contrast, Magnification, Large Print
- Word Identification: Text-To-Speech, Digital Dictionary
- Specialized Format: Braille reader, Audio Books
AT for Reading - Low Tech Options

- Reading Rulers
- Colored Overlays
- Magnification
- Easy-Access Dictionaries
- Highlighting Tape
- Open Dyslexic Font
AT for Reading: Text-to-Speech & Digital Library

- controlling the speed at which text is read
- choosing specific voices for reading text
- choosing highlighting colours
- choosing the amount of text to be read aloud at any one time (e.g., word, sentence, or paragraph)
- custom pronunciation, such as names
- turning voice on or off
- highlighting or not highlighting words as they are being read out loud.
seconds, you can change that to a sentence, paragraph, page, chapter, book, or even more. These are called Navigation Units. The current Navigation Unit is indicated by the header and the footer. Tap it to change it to something else. Gesture Tip: You can press and hold the header or the footer to display the list of Navigation Units. Select the unit you want, and then the app will move the speech cursor to the beginning of the selected Navigation Unit. Gesture Tip: Select the header or the footer and then swipe up or down to fast forward or fast backward.

Gesture Tip: Swiping up or down with two fingers increases or decreases the speed of the speech.

Gesture Tip: Some documents, like PDF files, can be viewed both in the text view and in the image view. To switch between the views, swipe right with one finger from the left edge or swipe left with one finger from the right edge.

Tap anywhere in the text box to enter full screen mode. Tapping against the top and bottom of the screen will display the full-screen view. By default, the app enters full screen mode a few seconds after the screen is last touched. This can be disabled from Advanced Settings.

While listening, you can scroll to a different part of the text freely using two fingers. You can also tap on the percentage or page number in the footer to jump to a different part of the text. You can double tap (tapping twice in quick succession) to enter and exit full-screen mode.

Dream Reader will start reading from that word. To scroll back to the start of the text, two fingers.
AT for Written Expression: Visual Thinking

- provides a framework for thinking, planning, and organizing
- maps out thinking and makes connections between information and ideas
- creates a cognitive link between visuals and written text to strengthen long-term memory
- supports and enhances collaboration
- develops vocabulary, word recognition, reading for comprehension, writing, and critical thinking skills across all subject areas
- provides for revision or refinement of ideas and thinking
- provides built-in scaffolding (e.g., ability to convert information from a visual map into outline form for writing (in some programs)).
Writing a Paragraph

Robot Writing

Main idea + Paragraph

Detail #1

Detail #2

Detail #3

Detail #4

Greek Myth of the Four Seasons

Zeus, Leader of the Immortals

Dionysus, God of the Underworld

Persephone

Percy, God of the Underworld

Hades

Spring, Summer, and Fall

Winter

Persephone is on Earth.

Dionysus is happy and the Earth blooms.

Persephone is with Hades.

Dionysus will get nothing on Earth.

Hades allows Persephone to

Sends Persephone into a trap

Persephone must spend 2/3 of the year with her mother on Earth and 1/3 of the year with Hades in the Underworld

She allows the Earth to bloom upon

Hades tricks

Hades is overjoyed to see his daughter

Persephone

Hades

Dionysus

Hades tricked

Dionysus

Hades

Dionysus

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Hacles
AT for Written Expression - Word Prediction

- adding words specific to the needs and interests of individual students
- creating topic-specific vocabulary sets or content dictionaries
- customizing how students “input” the word into their writing (e.g., mouse click, number)
- modifying the visual display (e.g., prediction window follows the cursor and written text or stays in place)
- using speech feedback
- choosing the number of words in the prediction list
- supporting phonetic or inventive spelling (program recognizes that ‘brthdy’ means ‘birthday’)
- expanding abbreviations (e.g., NAHS can be expanded to Northern Alberta High School).
AT for Written Expression

- Word Cards
- Writing Templates
- Electronic Dictionary
- Word Prediction Software
- Voice Recognition Software
AT for Writing: Written Expression
AT for Computer Access

- Alternative Keyboard / Keyboard Additions
- Mouse Alternatives
- Touchscreens & Touchscreen Software
- Painting Device (mouthstick, head pointer)
- Switches
AT for Written Expression - Voice Typing

- planning/pre-writing activities
- composing writing assignments (e.g., essays, research papers, position papers)
- revising/editing by having the text read back and using that feedback to revise written output
- collaborative writing using Google docs, email or social media
- creating study notes.
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Assistive Technology Tools for Math

- Manipulatives
- Graph paper
- Lined paper turn sideways for lining up columns
- Raised lined paper
- Raised number rulers
- Multiplication chart
- Math Glossary (Go Math)
- Number Line
- Number Stamps

- Math Word Wall
- Calculator with large keys and/or large display
- Talking calculator
- Calculator with special features (e.g., fraction translation)
- Text leveling/simplification programs such as Rewordify.com
- Illustrated math dictionary such as mathisfun.com
2. \[ x = \frac{-4 \pm \sqrt{4^2 - 4(3)(4)}}{2(3)} \]

\[ y = 2x + 4 \]

1. \[ 3x + y = 5 \]
Communication

1. The imparting or exchanging of information or news
2. Means of sending or receiving information

Assistive Technology for Communication
Augmentative and Alternative Communication (AAC): an umbrella term that encompasses the communication methods and tools used to supplement or replace speech or writing for those with impairments in the production or comprehension of spoken or written language.
Why Communicate?

Express wants and needs

Express hopes and dreams

Protest, reject

Request

Help

Person, Object, etc.

Express wants and needs

Create Social Closeness

Tell a story

Tell a joke

Recall past experiences

Tell a pretend story

Converse

Start/Initiate

Sustain

End

Give an answer

Comment

Share Information

Name/label

Express emotion

Express idea

Express opinion

Use manners

Greet, take leave

Express appreciation/gratitude

Ask a question

Indicate discomfort

Aggression
unAided Communication

Eye-Gaze (in response to the environment)

Facial Expressions and Body Language

Gestures

Vocalizations and Verbal Approximations

Sign Language
Aided Communication

Communication Books

Picture Symbols

Low-tech Communication Boards

Lite Tech devices

Mobile Devices
Symbol OR Text-Based

High-tech Dedicated Devices
Symbol OR Text-based
Model as a M A S T E R P A L

Supporting Exemplar Communication Partners:

MODEL as a ...

- Motivate
- Accept multiple modalities
- Statements more than questions
- Time (wait time, and time for growth)
- Engage naturally
- Response not required
- Resume potential
- Appropriate prompting
- Let the child lead

(Developed by Tabi Jones-Wohleber, M.S., CCC-SLP)
Assistive Technology for Executive Function Skills

- Temporal Organization
- Sequential Organization
- Spatial Organization
- Prioritization
- Attention
Other Influences That May Impact Executive Functioning

- Hunger & Thirst
- Lack of sleep
- Food Insecurity
- Housing insecurity
- Technology issues
- Hormones, moods, emotions, & other health situations
- Relationships with family members, friends, community support, etc.
- Missing materials
AT for Organization & Planning: Self-Organization

- Audio Supports
- Checklists
- First-Then Cards
- Goal-Setting Tools
- Timers
- Visual Supports
Daily Homework Planner

Date:

<table>
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<tr>
<th>Subject/ Assignment</th>
<th>Do I have All the Materials?</th>
<th>Do I need help?</th>
<th>How long will this take?</th>
<th>Start Time</th>
<th>Stop Time</th>
<th>How long did it take?</th>
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End of School Day Checklist

- Hand in any homework completed
- Hand in any in-class assignments completed
- Return any materials borrowed from teachers/classmates
- Tidy up desk, return things back to their proper spaces
- Check floor around desk
- Place Things to Go Home in the backpack
- Books
- NoteBooks
- Folders
- Notice for parents
- Ask myself, “AM I FORGETTING ANYTHING?”
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AT for Organization & Planning: Information Management/Processing

- Color Coding
- Graphic Organizers
- Highlighting
- Notes Templates
- Rubrics
- Summaries
- Visual Supports
AT for Organization/Planning: Material Management

- Checklists
- Color Coding
- Electronic Storage
- Reminders
- Storage System
- Visual Support
- Video Modeling
AT for Organization/Planning: Time Management

- Checklist
- Pacing/Chunking
- Reminders
- Rubrics
- Schedules
- Timer
- Visual Supports
Distance Learning Executive Function Skills Support

Daily

AM:  - Task/Schedule Overview
     - Create ToDo List
     - Prioritize Assignments
PM:  - Organize materials (physical/digital)
     - Homework Check
     - Review ToDo List

Weekly

- Organize Desk
- Organize Subject Bins (text books, journals, worksheets)
- Check Calendar
Summary

- Assistive Technology Definition
- AT Consideration
- SETT
- Instructional Technology vs. Assistive Technology
- AT features for various areas of need