



Assistive Technology Overview

CAC Presentation
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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

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?

Glossary



Start

Audio Output

Close
Captioning



iOS/Windows Accessibility Features

-Speak

-Magnifying

-Zoom

-Search Function

Distance Learning Device Accessibility Features

<i>Device/Feature</i>	<i>Mac Laptop Computer</i>	<i>iPad</i>	<i>Chromebook</i>
Vision	https://www.apple.com/accessibility/mac/vision/	https://www.apple.com/accessibility/ipad/vision/	https://support.google.com/chromebook/answer/177893?hl=en&ref_topic=9016892
Hearing	https://www.apple.com/accessibility/mac/hearing/	https://www.apple.com/accessibility/ipad/hearing/	https://support.google.com/chromebook/answer/6320705?hl=en&ref_topic=9016892
Mobility	https://www.apple.com/accessibility/mac/mobility/	https://www.apple.com/accessibility/ipad/mobility/	https://support.google.com/chromebook/answer/9032490?hl=en&ref_topic=9016892
Learning	https://www.apple.com/accessibility/mac/learning/	https://www.apple.com/accessibility/ipad/mobility/	https://support.google.com/chromebook/answer/9032490?hl=en&ref_topic=9016892

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

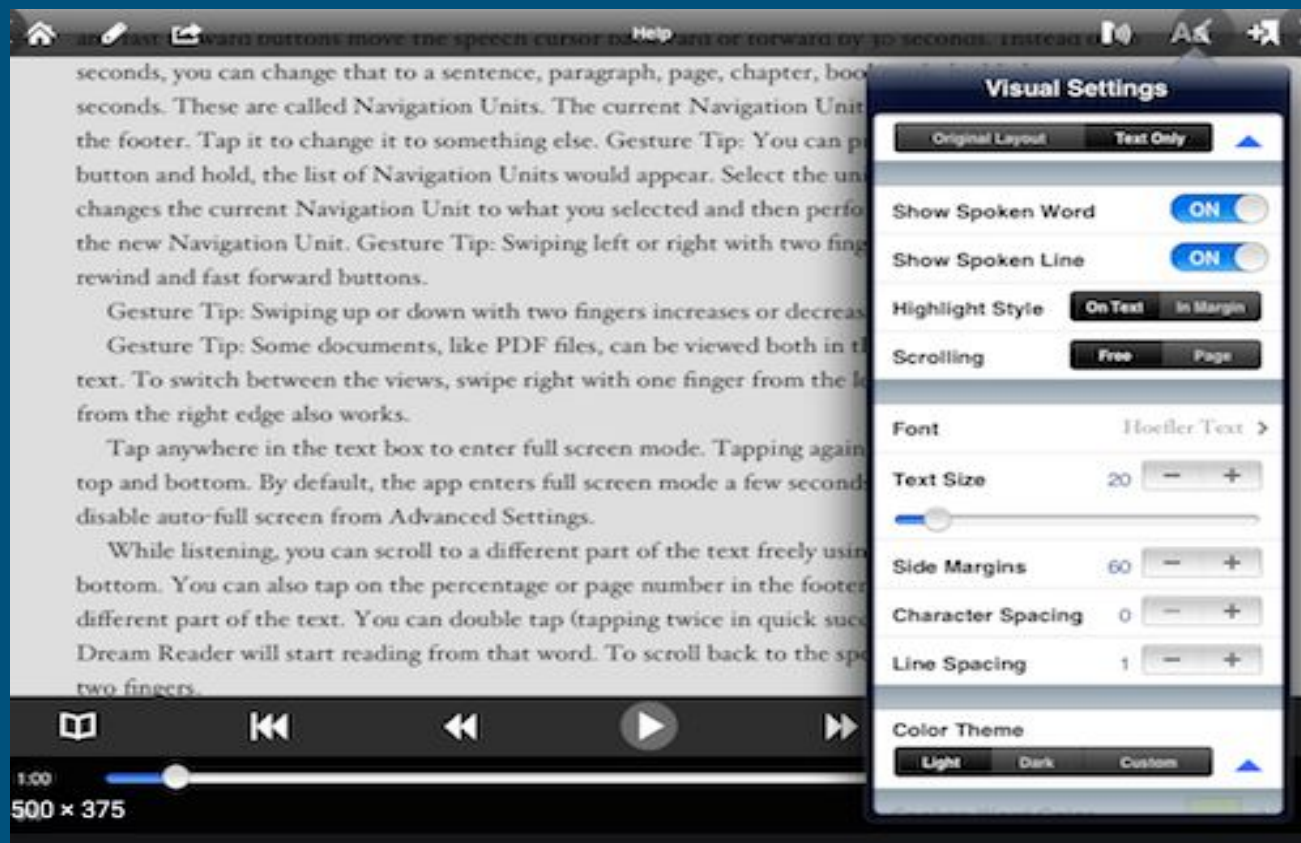
- Reading Rulers
- Colored Overlays
- Magnification
- Easy-Access Dictionaries
- Highlighting Tape
- Open Dyslexic Font



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.

AT for Reading: Text-to-Speech & Digital Library



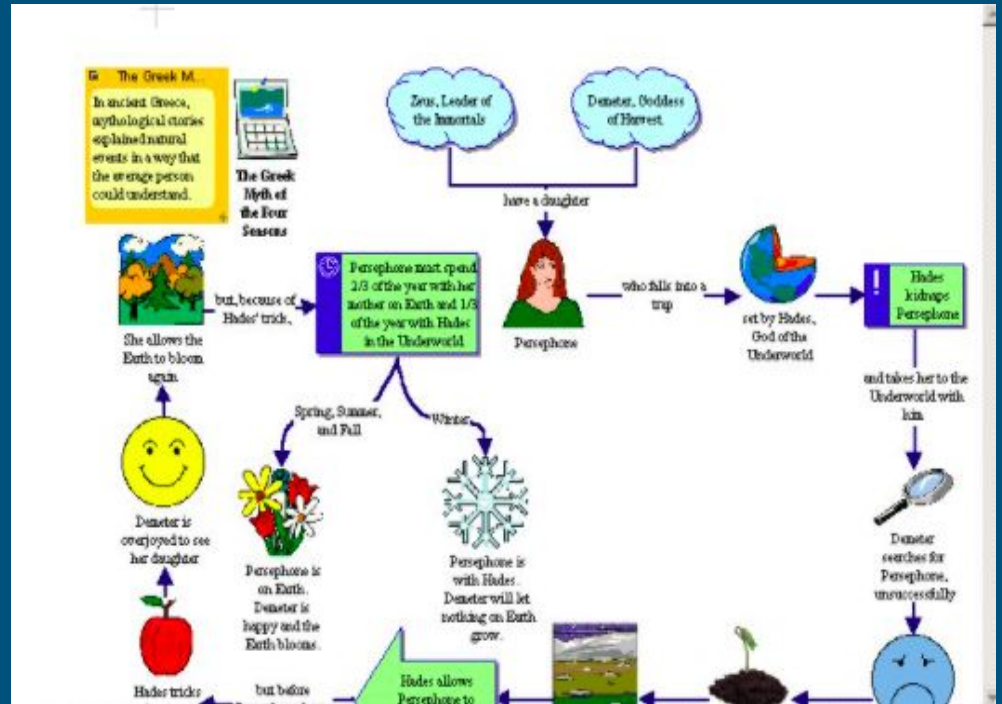
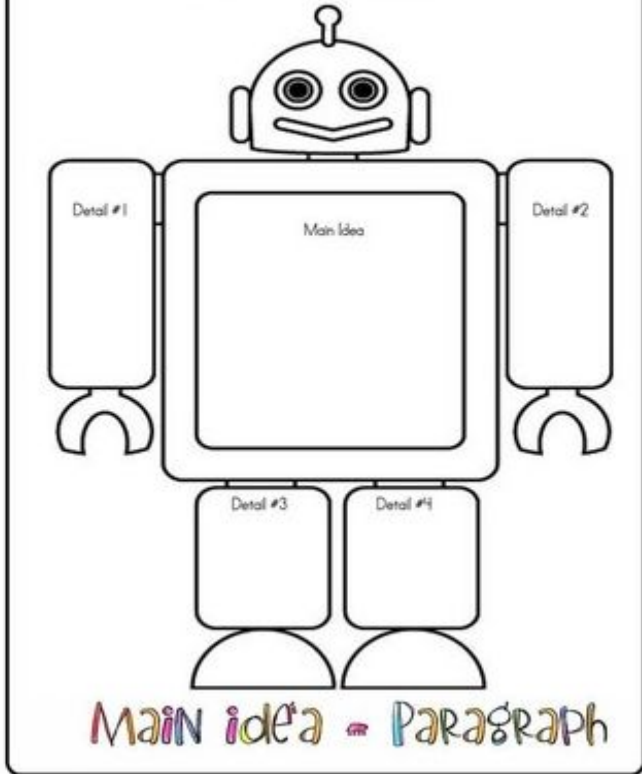
AT for Written Expression: Visual Thinking

- 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)).

Name: _____

Writing a Paragraph

Robot Writing



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



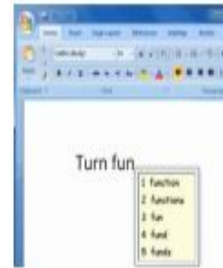
Word Cards



Writing Templates



Electronic Dictionary

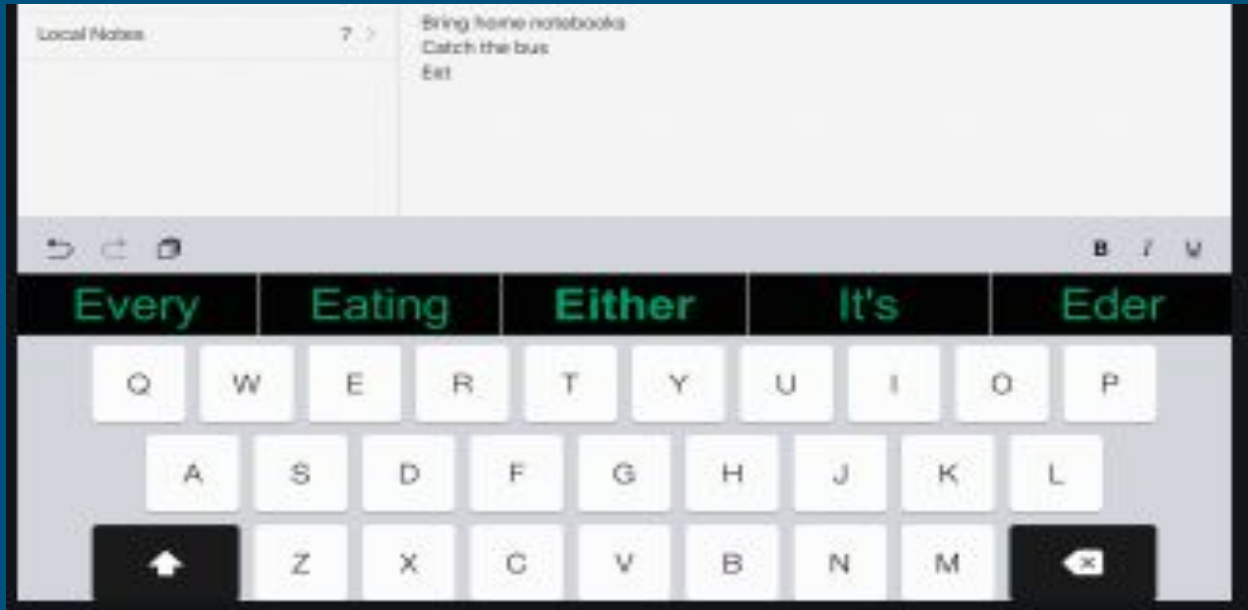


Word Prediction Software



Voice Recognition Software

AT for Writing: Written Expression



AT for Computer Access



Alternative Keyboard /
Keyboard Additions



Mouse Alternatives



Touchscreens &
Touchscreen Software



Pointing 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.



Think



Speak



Review



Edit

1. Organize ideas in your head before speaking.

2. Make sure the microphone is turned off.

3. Use a clear voice.

4. Speak in complete thoughts.

5. Turn off the microphone.

6. Play back your dictation and listen carefully.

7. Edit for errors.

8. If you or the software makes a mistake, make sure you take the time to correct it!

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)

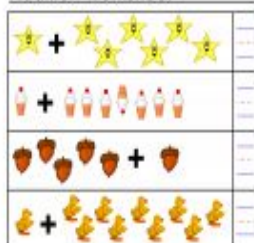
-Text leveling/simplification programs such as Rewordify.com

-Illustrated math dictionary such as mathisfun.com



Abacus / Math line

Addition Worksheet



Enlarged Math Worksheets



Tactile/Voice Output
Measuring Devices
(clocks/rulers)



Talking Calculator or
Large-key Calculator

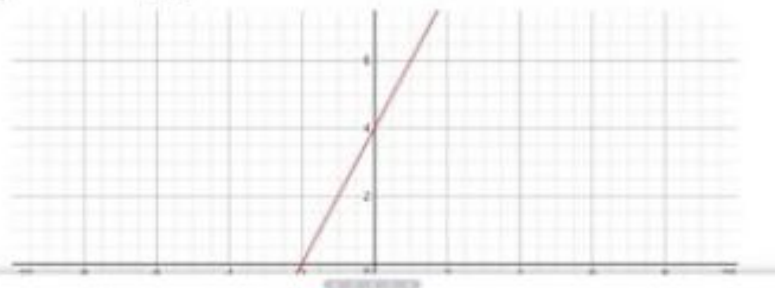


Math Software

$$y = 2x + 4$$

1. $3x + y = 5$

$$2. x = \frac{-4 \pm \sqrt{4^2 - 4(3)(4)}}{2(3)}$$



Math
 $y = 3x - 4$

Communication

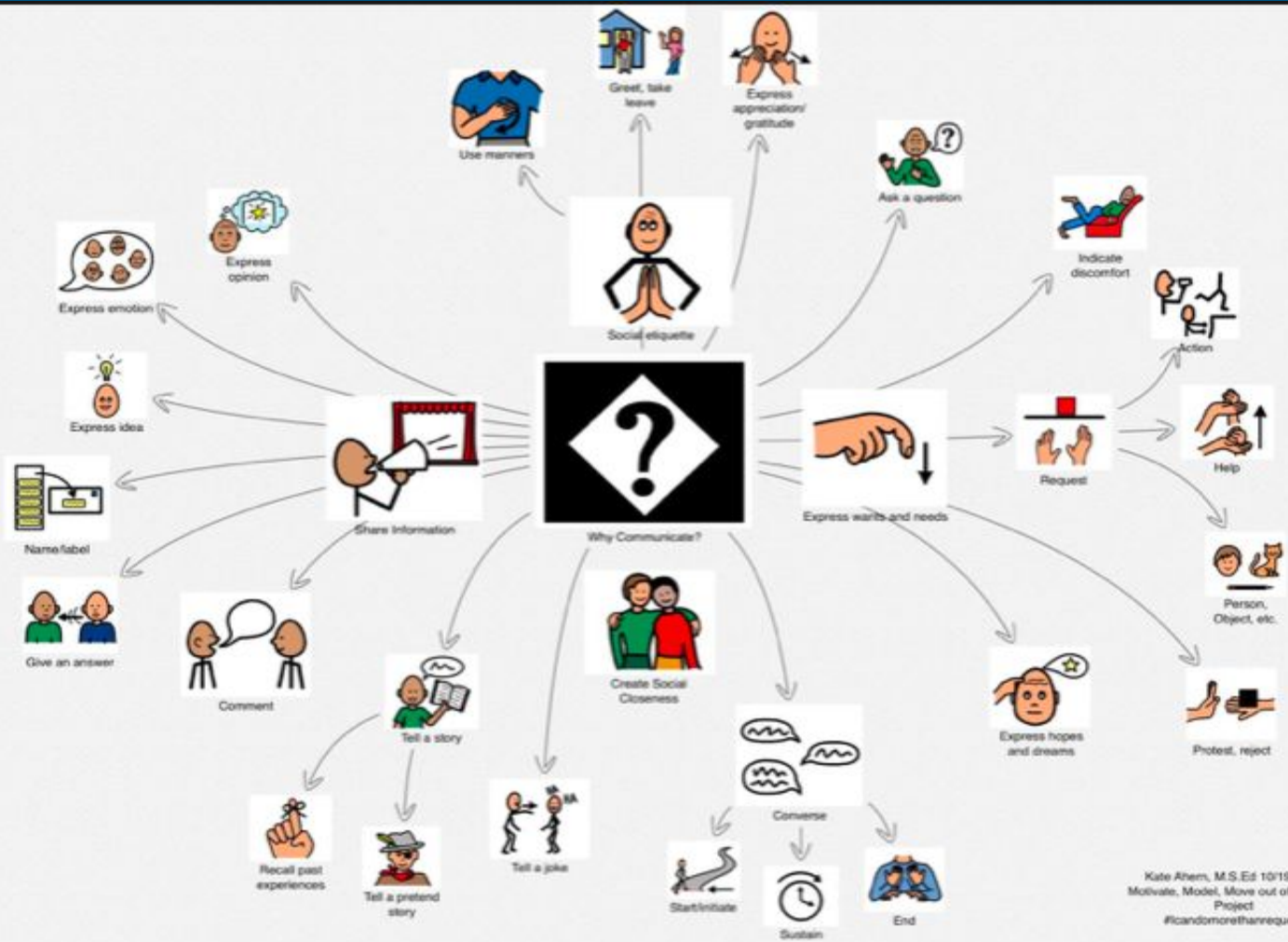
1. The imparting or exchanging of information or news
2. Means of sending or receiving information

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.





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

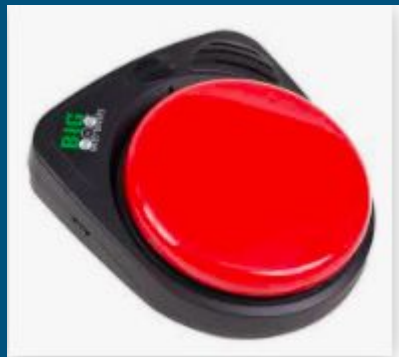
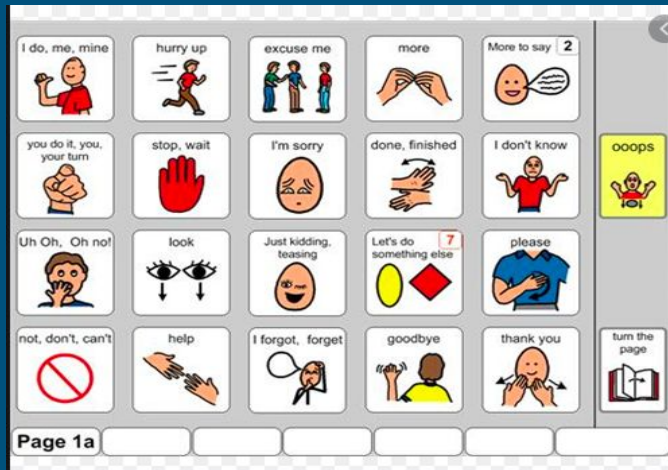
Mobile Devices

Symbol OR Text-Based

High-tech
Dedicated
Devices

Symbol OR Text-based





Model as a MASTER PAL

Supporting Exemplar Communication
Partners:

MODEL as a ...

- **M**otivate
- **A**cept multiple modalities
- **S**tatements more than questions
- **T**ime (wait time, and time for growth)
- **E**ngage naturally
- **R**esponse not required

- **P**resume potential
- **A**ppropriate prompting
- **L**et 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:

Subject/ Assignment	Do I have All the Materials?	Do I need help?	How long will this take?	Start Time	Stop Time	How long did it take?
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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?"



Think



Speak



Review



Edit

1. Organize ideas in your head before speaking.

2. Make sure the microphone is turned off.

3. Use a clear voice.

4. Speak in complete thoughts.

5. Turn off the microphone.

6. Play back your dictation and listen carefully.

7. Edit for errors.

8. If you or the software makes a mistake, make sure you take the time to correct it!

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