Access through AT

Reading, Writing, Math, Communication
An Introduction...

https://www.youtube.com/watch?v=b8iOEDDabGo
Terms

**Assistive Technology (AT):** any tool and/or system implemented to improve and/or maintain the capabilities of an individual with a disability

- Writing
- Reading
- Computer Access
- Communication
- Play
- More...

**Performance Gaps:** when one component of a skills is higher or out of balance with other components; this typically warrants AT intervention

- *Communication:* receptive/expressive language
- *Writing:* motor/cognitive linguistic
- *Reading:* fluency/comprehension
Universal Design (UD)

UD is "the design of products and environments to be usable by all people, to the greatest extent possible, without the need for adaptation or specialized design" (www.ncsu.edu/ncsu/design/cud/pubs_p/docs/poster.pdf).

**Principals:**
- Equitable Use
- Flexibility in Use
- Simple and Intuitive Use
- Perceptible Information
- Tolerance for Error
- Low Physical Effort
- Size and Space for Approach and Use

**UD for Learning:**
- **Representation:** show information in different ways
- **Action & Expression:** approach learning tasks and allow students to demonstrate what they know in different ways
- **Engagement:** offer multiple options to engage students to keep interest
READING
• **Visual Display**: how the text is visually presented
  - Font
  - Size
  - Color/contrast
  - Spacing

• **Visual Tracking**: ability of the eyes to move smoothly, accurately, and quickly across a line or from one object to another

• **Vocabulary**: words that make up a language

• **Comprehension**: level of understanding of a text

• **Fluency**: the ability to read a text accurately, quickly, and with expression
Visual Displays- Word Walls

An organized collection of words & symbols that are prominently displayed within the environment and used to help the individual reference, read, & learn new vocabulary
This is Earth.
Earth is our home.
Fluency/Phonics - text to speech

https://www.youtube.com/watch?v=J4vazTRLzUc
https://www.youtube.com/watch?v=ZSIY6hR8Ujk
https://www.youtube.com/watch?v=ExqTYgbwS7E
PERSONAL BOOKS

Accommodate: reading level, visual display, visual supports, etc

Encourage Participation

Facilitate Peer Interaction

Uses
- Curricular Content
- Personal Narratives
- Social Stories

Options
- Pictello
- Book Creator
- BoardMaker
Personal Narratives

Personal Narratives tell a story about something that happened to you.

For those with difficulty with communicating out of context, these narratives with pictures, written words, and voice output will support sharing experiences, interacting with others, and learning language.
Social Stories

Social Stories can be created and serve as a visual guide describing various social interactions, situations, behaviors, skills or concepts. They can teach Alcides what to expect and expected behaviors in a given situation, activity or environment.
Curricular content can be displayed in Pictello and taught to Alcides in advance or provided as modified classwork. Stories can be created covering thematic units and/or concepts.
### Some Reading Tools

<table>
<thead>
<tr>
<th>Area</th>
<th>Tools and Features</th>
</tr>
</thead>
<tbody>
<tr>
<td>Visual Display</td>
<td>Word Walls</td>
</tr>
<tr>
<td>Visual Tracking</td>
<td>Increased font size&lt;br&gt;Decreased words&lt;br&gt;Text to Speech Supports:&lt;br&gt;● Bookshare, Voice Dream Reader, Learning Ally</td>
</tr>
<tr>
<td>Vocabulary</td>
<td>Visual Supports:&lt;br&gt;● News2You, BoardMaker</td>
</tr>
<tr>
<td>Comprehension</td>
<td>Personal Books</td>
</tr>
<tr>
<td>Fluency</td>
<td>Text to Speech Supports:&lt;br&gt;● Bookshare, Voice Dream Reader, Learning Ally, Step by Step</td>
</tr>
</tbody>
</table>
WRITING
Writing Components

- **Motor Aspects**
  - **Positioning**: seating, desk, etc
  - **Utensils**: paper, pen, keyboard, voice recognition, etc
  - **Time/Labor**: is writing a long an arduous process
  - **Legibility**

- **Composition**
  - **Idea Generation**: retrieving words and ideas
  - **Organization**: paragraphs, sequencing
  - **Spelling**
  - **Grammar**

“WRITING IS THE PAINTING OF THE VOICE!”
Voltaire
Case Study: Joseph

**Age:** 13

**System(s):** Accent 800, interfaced with computer

**Environment/Task:** Science class and writing assignment

**Partner Strategies:** preparation; equipment knowledge and set up

**Teaching Tools:** pre-teaching; visual supports: smart charts; device; computer

**Environment:** providing opportunities; motivating activities (writing)
Case Study: Liam

https://youtu.be/IV8zJMMbkqM

System(s): iPad, Clicker

Sentences

Environment/Task: Homework

Partner Strategies: preparation; equipment knowledge and setup; motivating topics

Teaching Tools: experience; device;

Environment: providing opportunities; motivating activities (writing)
Liam’s Writing

Most of my ancestors came from England. My great grandpa Pool's family came from England to Mexico in 1889. His daughter is my Grandma. She came to California when she was 17 to go to college. Grandma met my Papa at college and they got married. Pop’s family came from England to Ireland then to Canada in 1835. Pop came to California to work at Canadian consulate in 1984. My dad was in middle school when they came. My dad met My mom and they got married in California. I was born in Santa Clara, California. Now I live in Brentwood, California.
Clicker Writing Apps

The Clicker Apps family consists of a range of writing support tools. With the Clicker writing apps there is appropriate support for every student, no matter what stage of literacy they have reached. Each app focuses on one key feature of Clicker, to support children to develop their writing skills one step at a time.

Who is it for?

- Emergent writers
- English language learners
- Older children struggling to acquire basic literacy skills

Who is it for?

- Developing writers
- Struggling writers
- English language learners
- Children moving on from using Clicker Sentences

Who is it for?

- Elementary and Middle School students of all abilities
- Students with dyslexia
- Struggling writers

Who is it for?

- Elementary and Middle School students of all abilities
- Students with dyslexia
- Struggling writers

What does it do?

Clicker Sentences supports children to build their first sentences using words from a grid, with options for differentiated writing support.

What does it do?

Clicker Connect scaffolds independent writing skills by offering words and phrases to support children as they build sentences and compose coherent text.

What does it do?

Clicker Docs transforms your device into a portable elementary school word processor and encourages independent writing with the support of word prediction and word banks.

What does it do?

Clicker Books lets students create their own talking books, using a range of differentiated support. Teachers can also create reading books for students.

At a glance

- Speech feedback
- Model sentences
- Illustrate writing with pictures
- Crick Picture Library included

At a glance

- Speech feedback
- Color-coded cells
- Words and pictures within cells
- Crick Picture Library included

At a glance

- Speech feedback
- Word banks
- Word prediction
- Taking spellchecker

At a glance

- Speech feedback
- Word banks
- Illustrate writing with pictures
- Word prediction
- Talking spellchecker
- Sound recorder

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Case Study: Andre

Age: 8

System(s): Accent 800, interfaced with computer, highlighter, scribe

Environment/Task: Writing workshop

Partner Strategies: preparation; equipment knowledge and set up

Teaching Tools: pre-teaching; visual supports: smart charts; device; computer

Environment: providing opportunities; motivating activities (writing)
<table>
<thead>
<tr>
<th>Positioning</th>
<th>Collaboration with PT/OT; supportive seating; slant board</th>
</tr>
</thead>
<tbody>
<tr>
<td>Utensils</td>
<td>Various pencils, pens, markers</td>
</tr>
<tr>
<td></td>
<td>• highlighting</td>
</tr>
<tr>
<td></td>
<td>Keyboards (on-screen or stand alone)</td>
</tr>
<tr>
<td></td>
<td>Dictation– stay tuned!</td>
</tr>
<tr>
<td>Time/Labor</td>
<td>Typing options</td>
</tr>
<tr>
<td></td>
<td>Built-in dictation</td>
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<tr>
<td>Legibility</td>
<td>Various paper options</td>
</tr>
<tr>
<td></td>
<td>Word Processing</td>
</tr>
</tbody>
</table>
### Some Writing Composition Tools

| **Idea Generation** | Personal and/or motivating pictures/photographs  
|                    | Visual Supports |
| **Organization**   | Graphic Organizers  
|                    | Snap Type Pro |
| **Editing**        | Text to Speech—listen for funny words |
| **Spelling/Grammar** | Built in spell/grammar checks  
|                    | Clicker Docs |
MATH
Math Components

- **Physical Access**: positioning & writing
- **Math Facts & Fluency**: ability to recall and answer basic math facts with accuracy and automaticity
- **Math Literacy**: understanding math terms & concepts
- **Processes and Organization**: following multiple steps of calculation
<table>
<thead>
<tr>
<th>Component</th>
<th>All Grades</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physical Access/Legibility</td>
<td>• COLLABORATION WITH PT &amp; OT</td>
</tr>
<tr>
<td></td>
<td>• Panther Math Paper</td>
</tr>
<tr>
<td></td>
<td>• Enlarged problems</td>
</tr>
<tr>
<td>Math Facts and Fluency</td>
<td>• Times tables</td>
</tr>
<tr>
<td></td>
<td>• Calculator</td>
</tr>
<tr>
<td></td>
<td>• Manipulatives</td>
</tr>
<tr>
<td>Literacy</td>
<td>• Definitions</td>
</tr>
<tr>
<td>Process and Organization</td>
<td>• Task analysis</td>
</tr>
</tbody>
</table>
COMMUNICATING
AAC Systems and Profiles

SYSTEMS
● No Tech
● Low Tech
● Light Tech
● High Tech

USER PROFILES
● Emergent
● Entry
● Intermediate
● Advanced
Low Tech

Communication aids which do not run from a power source

- PECS: Picture Exchange Communication System
- Communication board
- Forced Choice
Light Tech

System which are typically battery operated and have a static (non-changing) display

● Big Mac
● Step by Step
● Tech Talk
● Go Talks

https://www.youtube.com/watch?v=w5cCEwhO1fs
High Tech

Systems typically requiring an electronic power source and have a dynamic display (changing)

• NovaChat
• Accent
• iPad (e.g. ProLoQuo2Go, TouchChat)
High Tech- Peer Interaction

Systems typically requiring an electronic power source and have a dynamic display (changing)

- NovaChat
- Accent
- iPad (e.g. ProLoQuo2Go, TouchChat)
High Tech-Class Presentation

Systems typically requiring an electronic power source and have a dynamic display (changing)

• NovaChat

• Accent

• iPad (e.g. ProLoQuo2Go, TouchChat)

https://www.youtube.com/watch?v=9_P8kLx4dD1s
IMPLEMENTATION
Need Components

Collaboration
Confidence (tech)
Positive Attitude
Creativity

...Implementation Plan

<table>
<thead>
<tr>
<th>Activity/Time</th>
<th>Equipment/Tools</th>
<th>What Student Does</th>
<th>How Staff Facilitates</th>
</tr>
</thead>
<tbody>
<tr>
<td>Arrival and Free Play</td>
<td>Free Play Activities</td>
<td>Upon arrival Ann will wave hello to classroom staff and peers.</td>
<td>Classroom staff will wave and say hello to Ann. They will wave hello to her to model waving.</td>
</tr>
<tr>
<td>8:45-9:10</td>
<td>Choice Board for Activities and ‘What I think’.</td>
<td>Ann will use the choice boards to choose a free play activity and comment on the activity.</td>
<td>Staff will present Ann with the free play choice board to choose a free play activity.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>During or after completing an activity, staff will ask Ann what she thinks of the activity and provide her with the ‘What I think’ choice board to comment.</td>
</tr>
</tbody>
</table>