Slide 1

Effective
Technologies
and Strategies
for Maximum
K-12
Independence

Bridgette Nicholson
*Occupational Therapist
Assistive Technology
Consultant*

www.powerofatech.info/2020wrotss

Slide 2

Bridgette Nicholson OTR/L
Occupational Therapist
Assistive Technology Consultant

OT and AT over 33 years

Excited about new technology and the opportunities it creates for all children!

AT support for presentations
www.powerofatech.info/

AT writing evaluation
typingtraining.com
Provided to attendees

Loving my young adult kids stage, addicted to outdoors, long bike rides, kayaking, camping, hiking, the beach!, friends and laughter.

Slide 3

Today:

Collaboration
and
Discussion

Movement
and Flexible
Positions

YOU?

Slide 4

Research and Supporting Information

Supporting Information and References for Presentations

By Bridgette Nicholson, Occupational Therapist/Assistive Technology Consultant
www.powerofatech.info/links

001	Supported eText: Effects of Text-to-Speech on Access and Achievement for High School Students with Disabilities. 2009: Izzo, M.V., Yurick, A. & McArrell, B.; Journal of Special Education Technology: Vol.24, Issue 3:
002	NATE NETWORK - Connecting Assistive Technology Specialists in Education. Assistive Technology Research Summary https://www.natenetwork.org/resources/
003	NAEP assessments https://www.nationsreportcard.gov/
004	Overview of Assistive Technology Research https://www.natenetwork.org/resources/
005	Handwriting Movement Sonification for the Rehabilitation of Dysgraphia https://www.sciencedaily.com/releases/2011/01/110119000408.htm

https://www.powerofatech.info/links

www.powerofatech.info

Slide 1 — Contents

CONTENTS

Slide 2

OCCUPATIONAL THERAPY
in K12
environments

Roles and Responsibilities

Evidence Based Implementation

COLLABORATION

Slide 3

MOTOR FUNCTIONING

Sensory needs

Multisensory learning

Rhythm, sound, movement

Flexible seating

Mobility and Stability

Coordination

Endurance

Muscle tone

Strength

Slide 4

MOTOR FUNCTIONING

Motor readiness and availability for learning

Access to equipment and environment

Assistive Technology

Multisensory learning

MULTISENSORY READING, WRITING, and LEARNING

Doing/Haptic | Vision | Talking | Hearing | Vision and Hearing

Rhythm
Sound
Movement
Vision
Patterns
Repetition

Rhythm and Music Motor Activities

Music for rhythm activities

Los Minions Electronica
Bongo Cat plays "Havana" ft. Toy Chicken
Crazy frog
Robot Little - Incoming Call
Hippo jungle song
Madagascar 2
The Bare Necessities
J.Geco - Chicken Song
The Crazy Frogs - The Ding Dong Song
Roller babies gangnam style
Minions - papaya (electronica)
Animoji We Will Rock You
Tones And I - Dance Monkey

Flexible seating

Creative positioning   Alternate postures
Dynamic postures
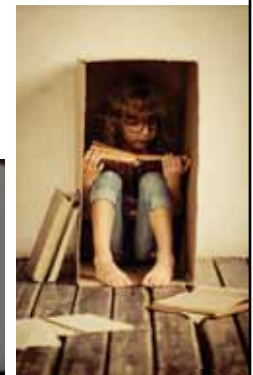
COLLABORATION

Flexible seating

Benefits and reasons

- Sensory and movement
- Sensory diet or program
- Physical comfort
- Motor needs
- Posture, positioning
- Endurance
- Habituation
- Social and Interaction
- Collaboration
- Informal versus formal
- Student choice and control
- Behavior
- More options for alternate methods of work
- Highly individual, reduced isolation of individual students with unique needs
- Developing healthy work habits

Flexible seating

Group vs. Individual options
Adding sensory options
- Theraband
- Bungee
- Weighted pads and animal beanbags
- Slings
- Swings
- Slant boards
- Alternate or therapeutic seating
- Weighted fidget tools

MOTOR FUNCTIONING and ACCESSIBILITY

High Incidence Ss

Low Incidence Ss

Accessibility

Physical control and access

Technology
Communication
Learning
Materials
Environment
Socialization

Slide 1

Accessibility

Mac computers
Windows Computers
Handheld devices

Slide 2

Accessibility

Seating and Positioning:
Describe Seating and Positioning:

- Height adjustable table
- Inflatable wedge for seating
- Memory foam wedge for seating
- Flexible or alternate positioning
- Adjustable keyboard mount or tray (angle and/or height)
- Wrist rest
- Arm support
- Keyguard
- Keycaps

(unspecified)
QWERTY - hardware
QWERTY - on-screen
Frequency of use - hardware
Frequency of use - on-screen
On-screen AAC language or layout
Englarged keyboard
Mini keyboard
Adapted keyboard
Other

Slide 3

Mobility and Stability

Joint Stabilization
for enabling & training
specific movements

Proximal stability

Distal mobility
and function
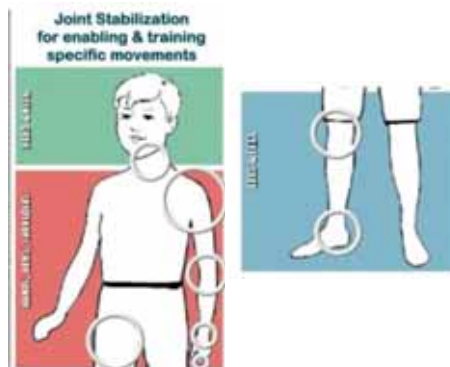
Slide 4

Adaptive Access for Students with Complex Needs

Access methods for complex needs
  Alternate keyboards including AAC devices
  Alternate pointing devices with on-screen keyboards

View video

View video

AAC device controlling iPad
Computer control
Mouse movement and macros

Joystick controlling iPad
Adaptive Joystick
iPad Assistive Touch

Adaptive Access for Students with Complex Needs

Seating and Positioning
    Student's body
        Movement and control
        Vision
        Sensory
    Setup for successful access
        Determine access method
        Key points of control
        Physical setup

Adaptive Access for Students with Complex Needs

Environmental set up
    Mounting and placement
    Vision and hearing
    Educational materials/supports

Adaptive Access for Students with Complex Needs

Positioning for Access

(Student photos used with parent permission)

Adaptive Access for Students with Complex Needs

Positioning for Access

Adaptive Access for Students with Complex Needs

Positioning
for Access

Social Emotional

Engagement

Buddy work

Peer demo

Role play

Modeling

Engagement

Buddy work

Peer demo

Role play

Modeling

Engagement

High Interest

Low Cognitive Load

Quick and Easy

Awesome Products

Creating Content with meaning and purpose

Bypass mechanical and challenges of writing

Cognitive engagement grows when classrooms look less like worksheets and assessments and more like places of personalized reading and writing with large, in-class libraries, regular student publication, and high levels of student interaction.

Karen Erickson, David Koppenhaver
Comprehensive Literacy for All: Teaching Students with Significant Disabilities to Read and Write

#kindlequotes

Motivation and Confidence

OT role with social emotional issues in different environments.

Motivation and Confidence

True multimedia strategies to improve confidence and motivation

SIMPLE
EFFECTIVE

Executive Functioning

Time management and planning
Calendars
To-do and tasks
Reminders and cues
Timers
Checklists

Management of materials
Environment

Technology and digital management
Assignments
Organizing information
Graphic organizers
Note-taking

Executive Functioning

Google keep

EVERNOTE

OneNote

Google Calendar
color coding

Multimedia Learning

Physical   Vision/Eyes   Hearing/Ears   Talking/Mouth   Emotional

READING

anxious

Additional information:
/sh/ is spelled 13 different ways in the
English language!

Initial	Medial	Final
sugar	ocean	
champagne	nauseous	
schnauzer	fuchia	
pshaw	issue	

MULTISENSORY READING, WRITING, and LEARNING

Vision | Doing/Haptic | Talking | Hearing | Vision and Hearing

Link to live map - click on numbers on live map for more detail

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LISTENING - Text to Speech

Text-to-speech

Computer or technology 'reads' aloud to student.

Example of Synthesized Speech

Bookshare

An Accessible Online Library
for people with print disabilities

TEXT WITH COMPUTER / SYNTHESIZED VOICE

time of year. For another, he really wanted to do his homework but was forced to do it in secret, in the dead of night. And he also

---

LISTENING - Digitized Speech

- REAL human voice, narration
  - Student voice
  - Teacher voice
  - Prerecorded voice e.g. audiobook with real human
  - Mostly audio is stand-alone (normally no text associated)

Example of Digitized Speech

Learning Ally

HUMAN VOICE –
SOME BOOKS
WITH TEXT
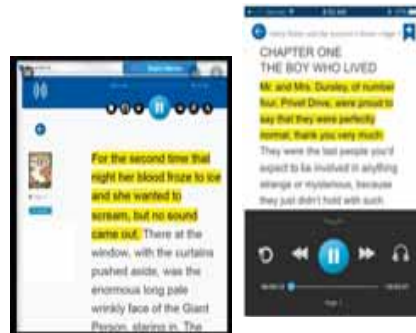
Settings are essential!

1980   Research

Research on Supported eText started in early 1980's

Large amount of research demonstrating significant value of Text to Speech for students with reading challenges!

[MUST KNOW] Tech. Tools and Strategies

[MUST KNOW] Tech. Tools and Strategies

[MUST KNOW] Tech. Tools and Strategies
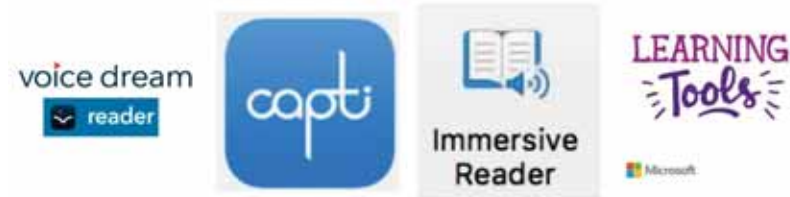
[MUST KNOW] Tech. Tools and Strategies

WRITING

How do students

SHOW WHAT
THEY KNOW?

https://www.nationsreportcard.gov/

In the US, Over 2/3 of our students demonstrate significant challenges with writing!

GRADE 8 | WRITING | 2007
ACHIEVEMENT LEVELS - at or above *Proficient*

2007 National public (NP) percentage at or above *Proficient*

NP 31%

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HOW DO STUDENTS SHOW WHAT THEY KNOW?
- DRAWING
- HANDWRITING
- TYPING
- VOICE RECORDING
- SPEECH RECOGNITION

Effective Technologies and Strategies for Maximum K-12 Independence   Bridgette Nicholson, Occupational Therapist/ Assistive Technology Consultant

Click here to view live map.

Components of Writing
- PHYSICAL — Posture, strength, endurance. Physical production of writing. HOW is the child producing writing?
- EMOTIONAL — Motivation, interest, idea generation, willingness
- PLANNING — Planning, Prewriting strategies, brainstorming, mapping, outlining
- MECHANICS — Mechanics, spelling, punctuation, abbreviations, names, date and numbers etc.
- CONTENT — Product / content - Reason for writing, what does the child produce?

www.powerofatech.info

Writing process
1. Initial thoughts and ideas
2. Pre-writing strategies
3. Drafting and Writing
4. Revising and Editing
5. Publish or Product

www.powerofatech.info

Click here to view this map live

Click here to view examples of programs and strategies for each of these writing methods

www.powerofatech.info/database-writing

Challenges and Strategies

Productivity
Rate
Legibility
Content
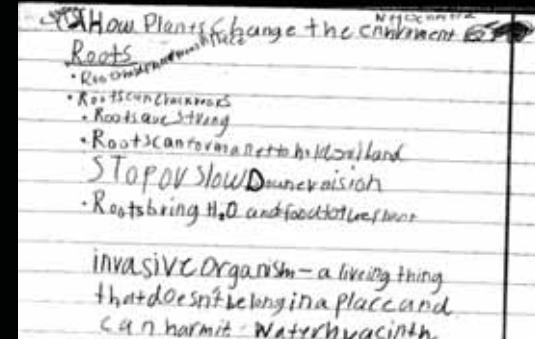
Challenges and Strategies

Strategies and Approach
Ages and stages

Challenges and Strategies

Rate Enhancement

Word prediction - types
Word completion
Bars
Phrases

Prediction

Prediction style

Completion (c > cat)
Completion (c > cat)
Phonetic (k > cat)
First & Contains (gdt > graduate)
Contains Anywhere (ptg > sporting)

Challenges and Strategies

Rate Enhancement

Settings and specific
strategies make
a big difference!

- ☑ Predict next word

Learn Prediction
- ☑ Automatically add new words
- ☐ Spell check before adding new words
- ☑ Learn word order
- ☑ Sort frequency
- ☐ Save dictionary when exiting

Challenges and Strategies

Rate Enhancement

Settings and specific
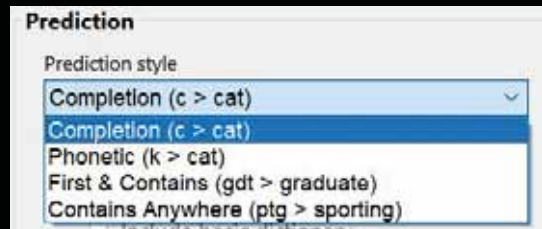strategies make
a big difference!

Dictation
- ○ Speak and select
- ● Speak continuously
- ☑ Only recognize words in my WordQ vocabulary
- Turn mic off: while editing ▾
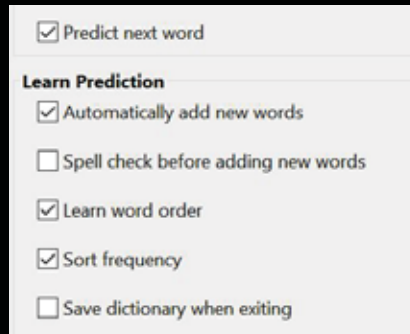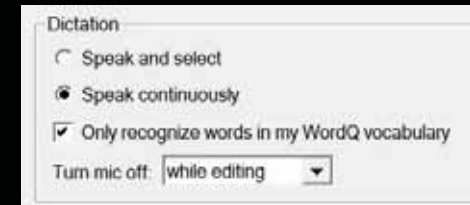
[MUST KNOW] Tech. Tools and Strategies

Speech Recognition

Speech to Text

Google Docs Voice Typing — SIRI — iOS dictation Text to Speech — Apple Voice Control — Android dictation Text to Speech

[MUST KNOW] Tech. Tools and Strategies

Book Creator — iOS Pages on iPad — SnapType — Kami

[MUST KNOW] Tech. Tools and Strategies

iOS Pages on iPad

Shadow Puppet

Flipgrid

Explain Everything

[MUST KNOW] Tech. Tools and Strategies

claro SOFTWARE

Clicker 8
Windows / Mac

CO:Writer Universal

read&write

[MUST KNOW] Tech. Tools and Strategies

USING BOOK CREATOR FOR
DIFFERENTIATED LEARNING
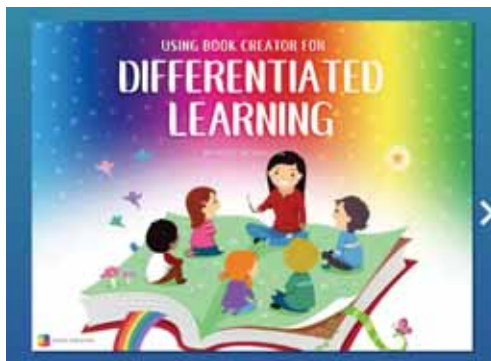
www.PowerOfATech.info

[MUST KNOW] tech. tools and strategies

UDL Tech Toolkit

Free Technology Toolkit for UDL in All Classrooms

www.powerofatech.info

TRANSITION

DATA

Evidence based practice
Data Driven Decisions
Student Data

EVALUATION, TRAINING, DATA

Evidence Based Practice
Data Driven Decisions
Student Data

Systems for evaluating writing:
1. Variables
2. Production
3. Productivity
4. Content

Writing CLAW
The Most Advanced Writing Grip

QUALITATIVE:
Professional Judgment

Professional Opinion

QUANTITATIVE:
Objective Data

DATA COLLECTION

- Types of Data [2]
- Methods of collection [4]
- Collecting Data [4]
- Reporting [2]

EVALUATION OF INDIVIDUAL STUDENTS
Student skills and challenges with writing

PROGRESS MONITORING
What strategies are working, and what isn't working?

GROUPS OF STUDENTS
Collective data for district planning. Which types of tools and strategies have the best overall impact?

DATA COLLECTION
How do we introduce a variety of writing methods and quickly and 'effectively' collect data?

Data and progress monitoring for:

- ☐ 📁 **Open Writing**
  - ☐ 📄 Handwriting
  - ☐ 📄 Speech Recognition
  - ☐ 📄 Typing
  - ☐ 📄 Voice Recording
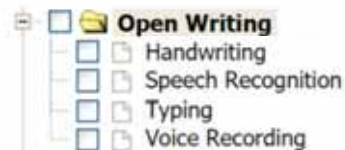
www.typingtraining.com

Conference attendees will receive a subscription to this website to use with students. Login provided at this session.

Evaluation of Writing - Production, Productivity, Content   www.typingtraining.com

Method of Text Entry:

This is the method used to select a

☉ **Direct Select:**
  - ☑ 10 Finger Typing
  - ☐ Left Hand
  - ☐ Right Hand
  - ☐ Other

Directed Selection:
  - ○ Mouse
  - ○ Joystick
  - ○ Switch Controlled Mouse Directions
  - ○ Other Mouse Control
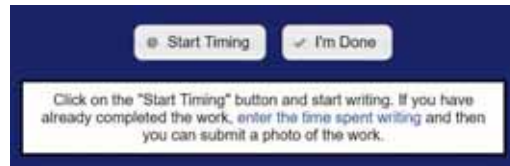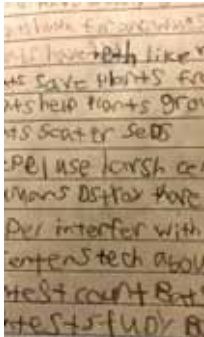 - ○ 2 Or More Switch Scanning
  - ○ Morse Code

Indirect Select:
  - ○ Timed Scanning With Single Switch

Unspecified Text Entry Method

Conference attendees will receive a subscription to this website to use with students. Please indicate it you want this on the feedback form at the end of the session.

www.PowerOfATech.info

Data collection for HANDWRITING

@ Start Timing   ✓ I'm Done

Click on the "Start Timing" button and start writing. If you have already completed the work, enter the time spent writing and then you can submit a photo of the work.

EXCITING NEW DEVELOPMENTS

Face Tracking and Eye Gaze for the iPhone and iPad

Creating new opportunities for people with significant physical disabilities! It's not 'real-time' yet, but it's developing quickly…. Keep watching, it will be functional and useful soon!

Calibrate eyetracking

Fit your entire face inside the green box. Works best in a good lighting conditions.

EXCITING NEW DEVELOPMENTS

https://www.disabilityscoop.com/2019/12/03/google-seeks-help-from-people-with-down-syndrome/27512/

Google Seeks Help From People With Down Syndrome

by Michelle Diament | December 3, 2019

EXCITING NEW DEVELOPMENTS

Handicap Assistive Robots Market - Global Industry Analysis, Size, Share, Growth, Trends, and Forecast 2018 - 2026

Category : Healthcare   Format :

https://www.transparencymarketresearch.com/handicap-assistive-robots-market.html

EXCITING NEW DEVELOPMENTS

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EXCITING NEW DEVELOPMENTS

Microsoft | Global Diversity and Inclusion

Diversity & Inclusion

https://www.microsoft.com/en-us/diversity/default.aspx

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EXCITING NEW DEVELOPMENTS

Google Impact Challenge | Disabilities

Working together to build a more inclusive world.

https://www.google.org/impactchallenge/disabilities/

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EXCITING NEW DEVELOPMENTS

Kids' Adaptive Clothing

Target / Kids / Kids' Adaptive Clothing (22)

https://www.target.com/c/kids-adaptive-clothing/-/N-1laue?Nao=0

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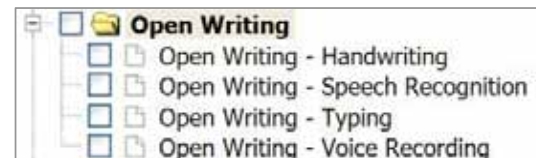
Online Survey of today's presentation

www.powerofatech.info/feedback

Resource - typing training website

Login for student evaluation and data collection for writing production methods

Open Writing
- Open Writing - Handwriting
- Open Writing - Speech Recognition
- Open Writing - Typing
- Open Writing - Voice Recording

www.typingtraining.com

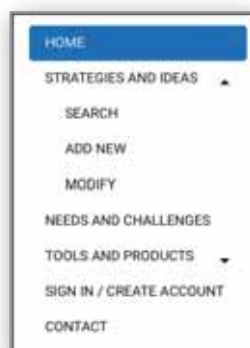Indicate if you want this resource by checking the section in the survey you complete at the end of this session.

Database

www.powerofatech.info/database-writing

A comprehensive database of

1. Assistive Technology TOOLS for writing (for ALL students of all ages, all cognitive levels and all functional levels)
2. STRATEGIES and REAL LIFE samples - information from people who are using the technologies, both students as well as their teachers and parents.
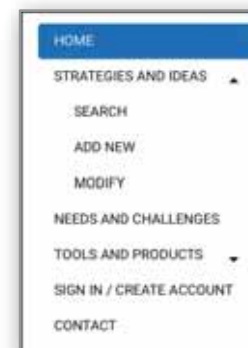

HOME
STRATEGIES AND IDEAS
SEARCH
ADD NEW
MODIFY
NEEDS AND CHALLENGES
TOOLS AND PRODUCTS
SIGN IN / CREATE ACCOUNT
CONTACT

Click here to join the Facebook page

Database

PLEASE SHARE YOUR IDEAS AND KNOWLEDGE ON THE DATABASE

HOME
STRATEGIES AND IDEAS
SEARCH
ADD NEW
MODIFY
NEEDS AND CHALLENGES
TOOLS AND PRODUCTS
SIGN IN / CREATE ACCOUNT
CONTACT

Click here to join the Facebook page

Q & A
Comments
Suggestions?

Thank you!