Why is writing so important?

Importance of our approach and plan for teaching and supporting writing

- Confident
- Brave
- Participation
- Making
- Building
- Contributing

“Albert Einstein said Creativity is Contagious. Pass it on. Whatever you want to put out into the world, your art, your ideas, your dreams, your knowledge, your creativity; share it with the world. Because when you do that you inspire others to do the same and it has a domino effect. It helps you create a more beautiful world, a braver world where people have the courage to share themselves and their information and their creativity. A braver society where people have the courage to do the things that they want to do because they see that you are doing it and they see that other people have done it.”
In the US, Over 2/3 of our students demonstrate significant challenges with writing!

Performance Summary
Percent of students who met or exceeded expectations for grade-level learning standards in DC in the 2017-18 school year.

- ENGLISH LANGUAGE ARTS/LITERACY: 33%
- MATHEMATICS: 29%

Assistive Technology can, and DOES have significant, positive impact.
The research and the data shows it.

NATE NETWORK - Connecting Assistive Technology Specialists in Education
Assistive Technology Research Summary (002)
### Research and Supporting Information

[https://www.powerofatech.info/links](https://www.powerofatech.info/links)

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**Supporting Information and References for Presentations**

By Bridgette Nicholson, Occupational Therapist/Technology Consultant

[www.powerofatech.info](http://www.powerofatech.info)

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<td>001</td>
<td>Supported-eText: Effects of Test-to-Speech on Access and Achievement for High School Students with Disabilities</td>
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<tr>
<td>002</td>
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**Supporting Information at:**

[www.powerofatech.info](http://www.powerofatech.info)

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**Slide and Accessible Text Outline**

**AzOTA Session Brainstorming & Collaboration**

**Role play student writing**

- Brainstorm
- Mapping
- Quick think
- Voice Recording

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**BY BRIDGETTE NICHOLSON**  
**OCCUPATIONAL THERAPIST**  
**ASSISTIVE TECHNOLOGY CONSULTANT**

Supporting information at:  
[www.powerofatech.info](http://www.powerofatech.info)

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Click [here](http://www.powerofatech.info) to view live map.
Writing Success: FOR ALL STUDENTS.

WRITING PRODUCTION

Handwriting
Typing
Voice Recording
Speech Recognition

AAC device user
Emergent Verbal skills
Intelligible Speech

MULTIMEDIA/MULTISENSORY LEARNING

Traditional Focus

Click here to view this map live
ADD TALKING AND LISTENING (with tech.) FOR INDEPENDENCE AND INCREASED ACHIEVEMENT

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‘INDEPENDENT’ SPEECH AND HEARING USING TECHNOLOGY ARE THE MOST UNDERUTILIZED SKILLS IN LEARNING

YET, SPEECH AND HEARING (WITH TECH.) ARE MANY OF OUR STUDENTS BEST ‘RELATIVE’ STRENGTHS!

Dictating to adult:
• Increases dependence
• Reduces creativity
• NOT independent thought and work!
 Voice Speech Talking

ALL kids of all cognitive and grade levels
Think about YOUR students
Skill areas
Relative strengths

Creativity Storytelling Confidence

From a young age kids love talking and telling stories:
Intuitive
Expansive
Confident
Fun
Production of information with NO mechanics

Speech IN / Talking / Voice Recording

Voice only, no text
A powerful means for students to produce independent work!
Use of voice for writing and documenting thoughts, ideas, information
Dictating to an assistant / teacher / parent
Dictating to a computer / voice recorder / other technology
Independence and achievement vs. dependence and assisted work

Who can or should use Voice Recording?

Students with:
• Intelligible and those with speech challenges
• Many thoughts, ideas and information
• Poor handwriting or typing
• Poor spelling
• Poor motivation for writing
• Non verbal students using AAC devices
• Any student who needs to brainstorm or quickly record information
Benefits of using Voice Recording for Writing

Using student’s relative strength!
For ALL verbal students AND nonverbal students using AAC devices, regardless of cognitive level.
Reduced mechanics, increased efficiency
Quality of speech NOT important
Quality of content increases

Stages of Training for Voice Recording

Need strategies and carefully planned introduction and training
Using a microphone and voice recording is not automatic success
Can be highly successful with the right training
OR can be negative/not as successful

Stages of Training for Voice Recording

1. Voice play
2. Voice email and voice chatting
3. Basic dictation into documents
4. Voice annotation
5. Mapping with voice
6. Stand-alone voice files
7. Dictating longer answers / papers
8. Hand-held recording
9. Audio editing
10. Podcasting
2. Speech Recognition

Speech to Text Technology - massive improvement
More potential for greater numbers of students now

- More complex than voice recording:
  - Accuracy of dictation
  - Only for students with ‘adequate’ articulation
  - ‘Adequate articulation’ hard to quantify
  - More complex cognitive task (writing process, reading, editing)

- Overall more complex BUT great benefit for some students

- PLANNED AND STRUCTURED APPROACH TO TRAINING IS ESSENTIAL

Speech Recognition cannot and should not be ‘plug-n-play’.

Need planning and training for greatest success.

Speech-to-Text Technology
SIGNIFICANT IMPROVEMENTS
Greater Accuracy
Lower Cost or Free
Available on many platforms (hardware and software)

Speech Recognition, with the right approach and training, has great potential to improve students writing.

Exciting options with new speech integration into regular technology all around us!

TRAINING APPROACH and STEPS for SPEECH RECOGNITION (SR)

Before speech recognition, start with voice recording, it’s

a. motivating
b. easy
c. conversational
d. a GREAT precursor for skill development prior to SR
e. many other benefits…
Student #1

3rd grade

I also play Minecraft on the computer. I've never, I've never... When I played it, a lot of times, every time when I played it, I didn't see the Minecraft Creeper, and I went, and I burned up my lame house, and I went into it one time and I got stuck in it. My house in Minecraft, I burned it up. I burned it up because it was lame. Because it was a lame house. That's all I remember that I play... on the computer.

I play in the snow. I pretend that the snow and ice are gold. I pretend that they are gold. I also make snow angels. That's all I do in the snow. I go down the... I do it in Royal Oak Park. I have one brother, I don't have any sisters.

I play the Wii. I play Wii Sports Resort. I also play Super Mario Galaxy II Wii. At first, I didn't play because at first I didn't really want to play as a Star in Super Mario Wii. And, in Super Mario Galaxy, it's a star that Player 2 has to play as, is in a bubble all the time, and it can, and that Star can spin. And that can, and that Star can spin. Cause all the characters in Super Mario Wii get to spin, and in that, and that, in Super Mario Galaxy II Wii, you have to, the Player 2 has to play as a Star. Nope, it doesn't, nope, it doesn't do anything special. I don't know if there are more fun things or not.

One time, he was recording his voice for a project. My brother. I might eventually have to do that for my project. Because he did that in school, so I probably will do that.
The Great Wall of China was built to protect the Chinese people from the Mongol invasions during the Ching dynasty. The wall stretches from the Northeast coast of China 2000 miles to the Southwest coast. The wall took billions of people to build but it cost over a million lives in deaths. The wall is built as a single wall that covers the whole fences of China. There was originally a series of smaller walls going all over China. The wall, 2000 years later, is falling apart because of erosion and neglect. The wall of China is an international symbol on foods and company symbols. The Mongols are the greatest horseback riders that ever existed. The wall is not built right on the border of China but in of the border at least on the modern border.

Voice Recording = 105 words per minute
Student Case Studies and Work Samples

Student #3

8th grade

Abraham Lincoln was the 16th president. He was born in Kentucky. He loved to read. He had a mom and dad, a brother and sister and four kids and a wife. When he was 9 years old his mom died. His dad got married when he was 10 years old. When his sister died it made him sad. His son Edward Baker Lincoln died when he was only three years old. His son William Wallace Lincoln died when he was only 11 years old. His son Tad Lincoln died when he was only 18 years old. Robert Todd Lincoln was his only son to grow up. Abraham Lincoln was the leader in the Civil War. He wrote the Gettysburg address and the Emancipation Proclamation. His height is 64. He was assassinated by John Wilkes Booth at Ford’s theater after the Civil War. He died at Peterson house right across the street the next day. He is buried with his family in a cemetery called Lincoln Tomb in Springfield. Abraham Lincoln was president for only four years.
Student Case Studies and Work Samples

Student #4

10th grade

HANDWRITING

TRACING

PENCIL GRIP
Tell me about this picture
The lion
the lion King is a movie
I want to watch that lion King movie.
Is it coming out?
What can you tell me about the lion?"
It roars!
Is it coming out, the lion King movie
what can you tell me about this lion?"
It roars!
tell me about some other things about the lion
It's got hair.
It's got hair, what else?
The lion, it's got hair, is got eyes, it's got ears, It's got big
teeth.
I'm going to cover this picture now. What can you tell me about
lions?
They fight! Scar in the lion King movie. Is it coming out today?

What else can you tell me about lions?
They eat bugs. They roar.
What do they eat?
They eat meat
where do lions live?
On the big rock.
The lion has a big rock.
Do the males or the females normally do the hunting?
The females.
Is there anything else you can tell me about lions?
They sleep. The lion King movie. The big rock.

Systems for evaluating writing:
1. Variables
2. Production
3. Productivity
4. Content
Click [here](https://www.typingtraining.com) to view this map live.

Collecting data for:
- Handwriting
- Typing
- Voice Recording
- Speech Recognition

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

Evaluation of Writing - Production, Productivity, Content

**Method of Text Entry:**

- **Directed Selection:**
  - Mouse
  - Joystick
  - Switch Controlled Mouse Directions
  - Other Mouse Control
  - 2 Or More Switch Scanning
  - Morse Code
  - 10 Finger Typing
  - Left Hand
  - Right Hand
  - Other

- **Indirect Select:**
  - Timed Scanning With Single Switch

- **Unspecified Text Entry Method**
Data collection for all 4 methods of writing
WITH TEST SETUP variables

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

Other Hardware Used:
- Wrist rest
- Arm support
- Height adjustable table
- Adjustable Keyboard Mount or Tray (angle and/or height)
- Keyguard
- Keycaps

Other Hardware Device(s):

Evaluation of Writing - Production, Productivity, Content

Keyboard / Input Device Type:
- Standard QWERTY Keyboard
- Simply Works Keyboard
- Handwriting Recognition
- Split, or Natural, Keyboard
- On-Screen Keyboard - QWERTY Layout
- On-Screen Keyboard - Frequency of Use Layout
- Big Keys - ABC Layout
- Small Keys Cherry Keyboard
- Big Keys - QWERTY Layout
- orbTouch Keyless Keyboard

Software and Settings:
- Sticky keys
- 800x600 resolution or lower (to enlarge screen items)
- Filter keys
- Windows large scheme, including large font size
- Toggle keys
- Windows extra large scheme, including extra large font size
- Sound notification
- Windows high contrast settings

Word prediction software:

Abbreviation expansion:

Browser Zoom / Text Size: (unspecified)

Speech output software:
- Speak Letter
- Speak Word
- Speak Sentence

Other Software and Settings:
Qualitative data

Teacher grading
Work saved / recorded for teacher review and for data (including photos of written work / drawings, voice recordings)

<table>
<thead>
<tr>
<th>Teacher Grade</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>None</td>
<td></td>
</tr>
</tbody>
</table>

Text Entered (errors highlighted)
- Elephants have gray skin, a long trunk, and 2 long tusks.
- They are herbivores, meaning that they don’t eat meat.

Quantitative

Speed Accuracy Numbers and graphs

Data collection for HANDWRITING

Data collection for TYPING

SUMMER
During the summer I like [ ]

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.
Data collection for VOICE RECORDING

Open Writing / Open Writing - Voice Recording  User ID: 1

Instructions:
Talk about anything you want.

Pause
✔ I'm Done

Recording...

Data collection for SPEECH RECOGNITION

Open Writing / Open Writing - Speech Recognition

In this exercise you will use speech recognition. Write about anything you want.

Click here and dictate your answer using speech recognition.

I'm Done

Resources

Kindle Book

If you want this resource, please indicate by checking the section in the survey you complete at the end of this session.

Resources

Login for student evaluation and data collection for writing production methods

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

www.typingtraining.com
Resources
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.

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Database
PLEASE SHARE YOUR IDEAS AND KNOWLEDGE ON THE DATABASE

Click here to join the Facebook page

Online Survey of today’s presentation

www.powerofatech.info/feedback

Q & A
Comments Suggestions?

THANK YOU!