Teaching Writing to Students with Autism and Intellectual Disabilities

Robert Pennington PhD BCBA-D

UNIVERSITY OF LOUISVILLE

Why writing matters?

- Allows non-speaking individuals a form in which to communicate
- Societal shifts toward electronic medium for social interactions
  - Because people have to update their status!

Why writing matters?

- Demonstration of knowledge in educational contexts
  - Core content instruction is communication instruction
  - Writing skills are required in most vocational contexts
Big ideas
- Writing is a topography of communication
- Permanent products have unique benefits to the reader/listener community

Barriers for students with MSD
- Challenges in communication and language development/motor skills
- Lack of experiences with writing
- Lack of emphasis on writing instruction for this population

Writing research in MSD?
- Early emphasis on spelling
- Few studies addressing more complex skills
- Systematic instruction
- Computer assisted instruction
Without a route paved by research?

- We rely on what we do know!

We do know…

- That children without MSD can benefit from
  - Predictable writing routines
  - Explicit instruction across multiple writing areas
  - Motivational strategies
  - Teaching reading and writing together

  (Graham, Harris, & Larson, 2001; Mason & Graham, 2008)

We do know

- That children with MSD can benefit from
  - Systematic instruction
  - Breaking down skills to component parts
  - Frequent instructional opportunities
  - Response prompting strategies
    - (Browder, Wakeman, Spooner, Algozzine, 2006; Browder & Lalli, 1991; Doyle, Wolery, Ault, & Gast, 1988; Morse & Schuster, 2004; Snell, Chen & Hoover, 2006)
  - Assistive technology
A Proposed Path

- A behavioral understanding of language may help us determine where to start?
- Helps us frame this complex endeavor in the contexts of observable variables

A Proposed Path

- Instead of a focus on syntactic structure

A Proposed Path

- There is a focus on the purpose a response serves
Helps us move from

A Behavioral Approach to Language
- Generally, we start by teaching students to use language to mand (request/protest)
- This helps learners use communication skills to control their environment and establishes the importance of these skills
- Therefore, establishing the relevance of communicative responses to their lives

A Behavioral Path

- Mand  Listener Skills/Tacting  Intraverbal
- Writing for items  Writing about things you see  Writing about things you know
Consider

- Teaching students to exchange written words or pictures for a specified reinforcer
- Once this writer to reader relationship is established you may shape up the student responses

“Shape up” student responses

- Gradually require improved approximations of a response for access to the reinforcer

“Prompt” student responses

- Present SP – Model – Response – Reinforce

Fade over trials/sessions
Keep it meaningful

- Teach a child to copy text to access information on preferred items

- Child must sign in or out of preferred activities
  - Waiter Game/mailbox center

A Behavioral Path

- Copying
  - Critical in the development of other skills
    - Behavioral cusp
  - Avoid teaching in isolation because it is boring!!
  - Teach in the context of highly reinforcing stimuli

A Behavioral Path

- Transcription
  - Spoken stimulus evokes a written, finger-spelled, or typed response
  - Spelling
  - Generative responding
Teaching Spelling

- Important that child can name letters (Treiman, Tincoff, & Eichmond –Welty, 1996)
  - Learning to spell name
  - Learning to spell familiar and preferred items

A Behavioral Path

- Teaching Spelling
  - Match to sample (Stromer et al., 1997)
  - Copy-cover-compare methods (CCC: Schlosser et al., 1998; 2004)
  - Backward chaining, forward chaining

Match to sample

- armistice
Cover copy compare

- Generally involves studying a model, covering the model, copying from memory, comparing, and then correcting errors

Resource
- [https://www.interventioncentral.org/sites/default/files/pdfs/pdfs_interventions/cover_copy_compare_spelling_sight_words.pdf](https://www.interventioncentral.org/sites/default/files/pdfs/pdfs_interventions/cover_copy_compare_spelling_sight_words.pdf)

Model Copy Cover Compare

- First fold paper into three panels like so

\[ \begin{array}{c}
\hline
<table>
<thead>
<tr>
<th>1a</th>
<th>1b</th>
</tr>
</thead>
<tbody>
<tr>
<td>2a</td>
<td>2b</td>
</tr>
</tbody>
</table>
\hline
\end{array} \]
Some students will not acquire sufficient spelling repertoires and will use selection-based systems at the word level.
“Word level?”

- Think of writing as built upon bricks or units
  - Letters
  - Words
  - Sentences
  - Paragraphs

Sample Programs

- Clicker Sentences App

Sample Programs

- Clicker 6
A Behavioral Path

- After students learn that writing has a strong communicative function
- Then we teach students to write about stimuli in their environment, (tact)

This functional approach

- Write about what you see vs. Write about what you did today?

Reading and Writing

- In early instruction, we often teach listening and speaker skills simultaneously.
- For many AAC users, reading and writing instruction is almost indiscriminable
A Proposed Path

- Once students are able to write words in the presence of pictures, we can start with simple sentences
- Start with the rule, “a simple sentence names something or someone and then tells more”

Kameenui & Simmons, 1990

Sentences: Scope and Sequence

- Identify a sentence as naming somebody or something and telling more about the person or thing
- Selecting sentences that name somebody or something and tell more about the person or thing depicted in the picture
- Completing sentences that…………………

Engelmann & Silber (1985)

Matching Tasks

I see a fish
I see a dog
I see a cow
Sentence completion tasks

- Use autoclitic frames/sentence starters
  - I see ___
  - I want ___
- The man _____
  - Flips
  - Eats
  - Sees

Sentences: Scope and Sequence

- Generating sentences that tell the main thing that happened in a picture or series of pictures
- Generating sentences that name somebody or something and tell more about the person or thing
- Combine simple sentences to make complex sentences

Simple Sentence Phase

- During this phase, teachers should start shaping the use of mechanics.
  - Capitalizing first word in sentences, using ending punctuation
  - Building in as a requirement for reinforcement
  - Self-monitoring
Strategies for Sentence Writing

Pennington, R. C., Flick, A., & Smith-Wehr, K. (In Press). The use of response prompting and frames for teaching sentence writing to students with moderate intellectual disability, Focus on Autism and Other Developmental Disabilities

Sentence Studies

- 2 Participants with ASD/MSD
  - Teaching basic sentence writing across three behaviors
    - Write a sentence to tell me what you want?
    - Write a sentence to tell me what you see?
    - Write a sentence to me about the ________

Participants

- 2 Participants with MSD/ASD
  - 1 Male (12 years) FSIQ 43
  - 1 Female (7 years) FSIQ 47
  - No transcription skills
  - No prior history writing sentences
  - Self-contained Classroom
Dependent Variable

- Percent of Correct Sentences
  - Corresponding to the presented stimulus
  - Including the target frame (i.e., I want the, I see the, The___is____),
  - Starting with a capitalized word, and
  - Ending in a period

Teaching Methods

- Computer-Assisted Instruction
- System of Least Prompts
  - Present request
    - Wait 10s
    - Praise/deliver reinforcer if correct or introduce prompt sequence
    - Level 1 Independent
    - Level 2 Written model
    - Level 3 Full physical
Results

Generalization

- Participant 1
  - I want the chip, see fish, fish is hungry
- Participant 2
  - I want the tickle, penguin, The shark is blue
Participant with MSD
- 1 Male (8 years) ASD, FSIQ 53
- Transcription skills
- No prior history writing sentences
- Self-contained Classroom

Dependent Variable
- Percent of Correct Sentences
  - Corresponding to the presented stimulus
  - Including the target frame (i.e., I want the, I see the, The___is____),
  - Starting with a capitalized word
  - Ending in a period
- Interobserver Agreement for 32% of Sessions
  - 99%

Teaching Methods
- Constant Time Delay
  - Controlling prompt (Written Model)
  - 0-s delay trials model is always present
  - 5-s delay trial-opportunity to respond independently
- Fidelity 100%, 99%
Results

- We taught a written request first!
- We used predictable writing structures.

Take aways

- We taught a written request first!
- We used predictable writing structures.

Current project

- Present the rule “a sentence names a character and tells more”
- Present a picture stimulus and model
- Praise
- 15-s Delay trials
Moving from single sentences
- The farmer has a wheelbarrow
- The wheelbarrow is red
- The farmer gets vegetables

Writing Sentences about Multiple Pictures
- Teaching story telling
  - Development of cohesion
- The man was reading. The man got hungry. The cookies were gone
More Complex Writing

- So our first three studies involved the use of computer assisted instruction or selection-based response topography

Providing a Reinforcing Context!

- Conduct preference assessment
- MSWO
- Retell a pleasurable experience
- Pair with favorite peer

Investigations 3-5


CAI and Simultaneous Prompting

- In these studies, we combined systematic instruction and assistive technology to increase the number of sentences used during story writing tasks.
- Why, because story telling is a valuable skill

Teaching Methods

- Daily probes were conducted prior to intervention
- During instruction
  - Directive: “Let’s write a story together”
  - Used simultaneous prompting
  - Present each 3 different stories during training
  - Vocal praise and auditory feedback following each sentence
General Findings

- Students wrote a combined 53 stories
- All students acquired story writing responses
- All students acquired new sight words
- All student increases from 0 to 5 story elements
- Students demonstrated 100% comprehension
- All students demonstrated some generalization across response topographies

Results: Jacob

```
Little People lived in the Zoo. 
Sam and Carol used to visit years ago.
```

Planning Study

- 2 students with ID/ASD
- Dependent Variables
  - Sentences
  - Story-elements
- Independent Variable
  - System of least prompts
  - Template
Teaching Methods
- Let’s work on writing a story today.
  - First, we need a character
    - (1) What do you want to write about?
  - Now we need a locale,
  - Now we need an action
    - What did he do?
  - Now, we need an emotion
    - How did your character feel

SLP prompt hierarchy
- Independent
- Presentation of “idea” binder
- Prompted selection

Results
Story generation Study

- Writing Story Narratives
  - 8 students with ASD or ID
- Using Videos to Support Text Development

Participants

- Four males with MSD
  - Ages 11-13
  - Self-contained classroom for students with MSD

Dependent Variable

- Percent of Story Elements
  - Character, Settings, Event 1, Event 2, Character emotion

Teaching Methods

- Present a video
  - Pixar clips
- Introduce 5 story elements
- Complete template together
Clips

- Jack Jack Attack
  - https://www.youtube.com/watch?v=xXufhmvXBD4
- Birds on a wire
  - https://www.youtube.com/watch?v=WLdfpBNjdDc
- Ormie the pig
  - https://www.youtube.com/watch?v=EUm-vAOmYlo

Instructional Steps

- Present opportunity to write
- Self evaluation with graphing

Results
Research: Resume Cover Letters

- 3 high school participants with ID
- Dependent variables
  - # number of cover letter components
- Independent Variable
  - Modeling
  - Revision + Prompting
  - Self graphing

Teaching methods

- Daily probes
- During instruction
  - Student used a checklist to evaluate whether each component was included during probe
  - If components were missing, the teacher initiated prompt sequence
  - Student graphed independent correct responses

Results

- Students acquired target skills
- Students generalized skills to untrained jobs
- Students maintained responses
Research Texted Personal Narrative

- Robots & Texting

Technology

- NAO model H25; Alderbaran Robotics
  - 58cm Tall
  - $13,750
- Iphone
Teaching Students to Text!

- 4 students with ID
- Transition program on a college campus
- Target skills
  - The inclusion of a greeting, statement about oneself (personal narrative), and a closing
  - Identified through discussion with peers

Teaching Methods

- Daily probe
  - Teacher prompted student to text R.P.
- Each day, robot instructed students write each step in chain of responses.
- Robot played reinforcing song
- Two of the students required addition of self evaluation component
Resources

Contact

- Robert.pennington@louisville.edu
- Check out UofL’s programs in MSD/ASD/ABA