Effective Literacy Instruction for Deaf & Hard of Hearing Students
Understanding the research base for advocacy & implementation

Hannah Dostal, Ph.D.
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Good afternoon!

Existing research on education for DHH students

Findings from recent research

Implications of recent research
Your Experiences

1. When and how have your children developed language and/or literacy?

2. What are their successes? Challenges?

3. Which professionals work with your child?

4. What do you wonder about related to your child’s language and literacy experiences?
Literacy Non-Negotiables

Every child…

1. reads something he or she chooses
2. reads accurately with understanding
3. writes about something meaningful
4. talks with peers about reading and writing
5. has access to an expert reader/writer’s thinking
Cycles of Reading Success

Engagement in reading

Confidence reading

Time spent reading

Decoding practice

Vocabulary exposure

Fluency practice

Comprehension practice

Gabriel, 2012
The Engagement Model of Reading Development

Guthrie, 2014

**Motivation in Reading***
- Components:
  - Intrinsic
  - Efficacy
  - Value
  - Social

**Cognition in Reading**
- Components:
  - Relevance/choice
  - Success
  - Importance
  - Collaboration
  - Volume
  - Word rec.
  - Fluency
  - Vocabulary
  - Comprehension

**Reading Engagement**
- Components:
  - Effort
  - Enthusiasm
  - Persistence
  - Self-regulation

**Reading Achievement**
- Components:
  - Reasoning
  - Literal
  - Fluency
  - Vocabulary

*Ongoing research suggests this is all true of writing as well*
The Traditional Narrative about DHH Students

The median reading comp. test score for 17-18 year old d/hh students corresponds to a **4th grade level** (Gallaudet Research Institute, 2003)

Between the ages of 12-22 d/hh students make ~1 year of gains in literacy (Yoshinaga-Itano, Snyder & Mayberry, 1996)

D/hh adolescence experience a writing “plateau” in semantics & syntax (Musselman & Szanto, 1998)

Between the ages of 12-22 d/hh students make ~1 year of gains in reading comp. & vocab. development (Yoshinaga-Itano, Snyder & Mayberry, 1996)
Expanding the Traditional Narrative

Explain success/failure in literacy
18% of the variance

- hearing loss 4%
- gender 4%
- SES
- grade
- placement
- preferred mode
- interpreter use
- hours in class

Language proficiency?

Antia, Reed & Kreimeyer (2005)
Importance of Language

- Language stimulates cognitive development
- Language sophistication influences cognitive abilities
- The ability to interact helps students develop cognitive skills
## Language Diversity of DHH Students

<table>
<thead>
<tr>
<th>Language History #1</th>
<th>full access to ASL</th>
<th>fully developed ASL as L1</th>
<th>no delay in language acquisition</th>
<th>develop (traditional) literacy in L2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Language History #2</td>
<td>sufficient access to spoken English</td>
<td>fully developed English as L1</td>
<td>no delay in language acquisition</td>
<td>develop literacy in L1</td>
</tr>
<tr>
<td>Language History #3</td>
<td>lack of accessible language models (Mitchell &amp; Karchmer, 2004, Hoffmeister, 2013)</td>
<td>often do not acquire a fully developed L1</td>
<td>significant language delays in L1</td>
<td>may struggle with literacy development</td>
</tr>
</tbody>
</table>
Impact of Language Diversity

Developed Metalinguistic Awareness

“I was really close to my father until I was 5 years old. My father died in a wreck. He was driving with no seatbelt, and he rolled his car 4 times and he jumped out…”

Language Transfer

“Sometime that problem solve it.”
“Night yesterday buy movie DVD.”

Confused Compositions

“I want be need do know.”
“I say what your name.”

Old man slow walk

I go Paly oh

I happy I went shop for
Sports banqueto
“...40 years of peer-reviewed journal articles... A total of 964 articles related to literacy and deafness... Limited data to establish evidenced-based practices...”

-- Luckner, Sebald, Cooney, Young & Muir, 2005
1. Does instruction that supports language development support writing outcomes?

2. Does language/literacy instruction transfer across new types of texts?

3. Can instruction help students demonstrate greater metalinguistic awareness?

4. Can students whose performance has plateaued experience growth?
Question 1

If students are exposed to writing instruction designed to address linguistic competence & metalinguistic awareness, will students demonstrate greater competence in expressive language?

- Written English
- Spoken English
- American Sign Language
Study Design

Typical Writing Instruction

5 weeks; 4 hrs/week

Intervention

5 weeks; 4 hrs/week

Pre Samples & Interviews

Mid Samples & Interviews

Post Pre Samples & Interviews

Grades 4-6
Analysis
Narrative Writing, instruction provided
Informational Writing, no instruction provided
ASL MLU

![Graphs showing mean length of utterances across different MLU stages for high and low language groups.](image)
Unintelligible ASL Utterances

Lang: High

Unintelligible Utterances

Un: Pre  Un: Mid  Un: Post

Lang: Low

Unintelligible Utterances

Un: Pre  Un: Mid  Un: Post
Does instruction that supports language development support *writing outcomes*?
Study Design

- Pre-Recount Writing Samples
- Recount Writing Instruction: 9 weeks, 8 hrs/week
- Post-Recount & Pre-Persuasive Writing Samples
- Persuasive Writing Instruction: 9 weeks, 8 hrs/week
- Post-Persuasive Writing Samples
## Writing Outcomes

<table>
<thead>
<tr>
<th>Group</th>
<th>Pretest M (SD)</th>
<th>Posttest M (SD)</th>
<th>p</th>
<th>ES</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>M (SD)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Narrative</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BAU</td>
<td>4.4 (2.2)</td>
<td>4.2 (2.4)</td>
<td>&lt;0.01*</td>
<td>2.64</td>
</tr>
<tr>
<td>Treatment</td>
<td>3.9 (2.5)</td>
<td>7.2 (3.7)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Information</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BAU</td>
<td>3.9 (1.7)</td>
<td>4.8 (2.1)</td>
<td>&lt;0.01*</td>
<td>1.01</td>
</tr>
<tr>
<td>Treatment</td>
<td>4.4 (2.8)</td>
<td>6.2 (3.5)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Broad WL</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BAU</td>
<td>64.1 (22.7)</td>
<td>61.9 (22.0)</td>
<td>&lt;0.01*</td>
<td>1.88</td>
</tr>
<tr>
<td>Treatment</td>
<td>50.4 (31.2)</td>
<td>71.6 (22.5)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
## Recount Language

<table>
<thead>
<tr>
<th>Outcome Test</th>
<th>Group</th>
<th>Pretest</th>
<th>Posttest</th>
<th>p</th>
<th>ES</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Perfect T-units</strong></td>
<td>BAU</td>
<td>0.2 (0.3)</td>
<td>0.2 (0.2)</td>
<td>0.26</td>
<td>0.46</td>
</tr>
<tr>
<td></td>
<td>Treatment</td>
<td>0.1 (0.1)</td>
<td>0.2 (0.2)</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Flawed T-units</strong></td>
<td>BAU</td>
<td>0.6 (0.3)</td>
<td>0.6 (0.3)</td>
<td><strong>0.01</strong></td>
<td>1.20</td>
</tr>
<tr>
<td></td>
<td>Treatment</td>
<td>0.4 (0.3)</td>
<td>0.6 (0.3)</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Word Strings</strong></td>
<td>BAU</td>
<td>0.8 (0.3)</td>
<td>0.7 (0.3)</td>
<td><strong>0.03</strong></td>
<td>1.09</td>
</tr>
<tr>
<td></td>
<td>Treatment</td>
<td>0.5 (0.3)</td>
<td>0.7 (0.3)</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Words per T-unit</strong></td>
<td>BAU</td>
<td>5.1 (2.6)</td>
<td>4.6 (2.4)</td>
<td><strong>0.02</strong></td>
<td>1.13</td>
</tr>
<tr>
<td></td>
<td>Treatment</td>
<td>3.8 (2.3)</td>
<td>5.3 (2.1)</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>% Complete Sentences</strong></td>
<td>BAU</td>
<td>0.7 (0.3)</td>
<td>0.7 (0.3)</td>
<td><strong>0.02</strong></td>
<td>1.09</td>
</tr>
<tr>
<td></td>
<td>Treatment</td>
<td>0.5 (0.3)</td>
<td>0.7 (0.3)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
I went to Montessori school for half of kindergarten and 1st and 2nd grade. I’m very athletic. I’m a good dancer. I like to work by myself, but I like to be with friends. I like vocabulary, I like to spell. It is very noisy at my old school. I like to get to know people better. I like music. I’m afraid of spiders. I like it to be quiet. I’d like for you to use the efem, and I’d like your face not to be covered when in school.

In conclusion, I had the best day of my life.

<table>
<thead>
<tr>
<th>Pre-Writing Scores</th>
<th>1</th>
<th>1.5</th>
<th>1.5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre-Grammar Scores</td>
<td>Perfect-Tunits: 0.54</td>
<td>Words/Tunit: 6.8</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Post-Writing Scores</th>
<th>4.5</th>
<th>4.5</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Post-Grammar Scores</td>
<td>Perfect-Tunits: 0.64</td>
<td>Words/Tunit: 10.2</td>
<td></td>
</tr>
</tbody>
</table>

I was at a Basketball game. It was my Birthday and I felt lucky. I got chosen out of a heap of 300 people! To play during half time, finally half time arrived they brought us on the court. It was just me and my friend going against each other. They told us what to do, they said “first you have to spin around a bat 10 times next you have to shoot whoever gets a basket wins”. After I herd the instructions I was nervous, so many people were watching I even saw a camera!

Once we got on the court I was frozen with fear. I came to my senses and started to spin and spin and spin! I was so ooo dizzy but I stopped for a second and then shoot I missed I shoot again and it went in! I felt like a champion they gave me the prize it was tickets to the next game!

I was so happy! After that I saw my Karte teacher, he patted me on my back and said “good jobed” and I said “you to”. Last we got ice cream. In conclusion I had the best day of my life.
If students are exposed to writing instruction designed to support language development, will students demonstrate greater metalinguistic awareness?
Study Design

Strategic & Interactive Writing Instruction

Pre Samples

Post Samples

1 year; 3 hrs/week

Grades 6-8
# Categories of Language Transfer

<table>
<thead>
<tr>
<th><strong>Unique Glossing/Substitution</strong> (ASL specific lexicon)</th>
<th>Bishop &amp; Hicks (2005)</th>
</tr>
</thead>
<tbody>
<tr>
<td>• <em>Justin say that</em> <strong>invent</strong></td>
<td></td>
</tr>
<tr>
<td>• <em>We grew up together since 11 years</em></td>
<td></td>
</tr>
<tr>
<td>• <em>She try to run away and look for TJ, and she fell</em> <strong>herself</strong> and live...</td>
<td></td>
</tr>
<tr>
<td>• <em>Leila’s mom will sign got</em>* paper finished**</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Syntactic Structure</strong></th>
<th>Valli, Lucas, Mulrooney, &amp; Villaneuva (2011)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Plurality/Adverbs</strong></td>
<td></td>
</tr>
<tr>
<td>• <em>I ride my bike</em>* <strong>rode rode</strong></td>
<td></td>
</tr>
<tr>
<td>• <em>Then we finish eat and 4 girl</em></td>
<td></td>
</tr>
<tr>
<td><strong>Adjectives</strong></td>
<td></td>
</tr>
<tr>
<td>• <em>My mom talk about new</em>* <strong>shoes Nike</strong></td>
<td></td>
</tr>
<tr>
<td>• <em>...but I grew up age 1 then I feel better and age 2...</em></td>
<td></td>
</tr>
<tr>
<td><strong>Topicalization</strong></td>
<td></td>
</tr>
<tr>
<td>• <em>Yesterday I go</em>* <strong>game football.</strong></td>
<td></td>
</tr>
<tr>
<td>• <em>Cat I love pet</em></td>
<td></td>
</tr>
<tr>
<td><strong>Conjunctions</strong></td>
<td></td>
</tr>
<tr>
<td>• <em>I was five years old and</em>* <strong>happened</strong> my father died*</td>
<td></td>
</tr>
<tr>
<td><strong>RH Questions</strong></td>
<td></td>
</tr>
<tr>
<td>• <em>When I have flu? Last Thursday.</em></td>
<td></td>
</tr>
</tbody>
</table>
Prevalence of ASL Features in English Writing

86 ASL occurrences
  • 39 occurrences at pre (45.3%)- sample length at pre (~100 words) and post (+200)

1.3 ASL occurrences per pre sample (less than 20 t-units)
Prevalence of ASL Features in English Writing

Percentages of ASL syntactical structures identified in pre-academic year writing samples

- Adjectives: 65.2%
- Others: 17.39%
- Plurals/Adverbs: 8.7%
- Conjunctions: 4.35%
- Topicalization: 4.35%
% of ASL Phrases by Group

![Graph showing the percentage of ASL phrases by group (LOW and HIGH) at different time points (PRE, MID, POST). The graph indicates a decrease in the percentage of ASL phrases from PRE to POST for both groups, with the LOW group starting higher than the HIGH group.](image-url)
The Alternative Narrative about DHH Students

Students MLU increased from about 2.5 to 5.5 after five weeks of instruction (Dostal, 2011; Dostal & Wolbers, 2014)

Language proficiency supports students in generalizing & applying knowledge about writing to new genres (Dostal & Wolbers, 2016)
Key Takeaways from Research

DHH students make dramatic gains in language development & literacy proficiency when:

1. Literacy instruction is responsive to language proficiency
2. Language is explicitly taught & negotiated
3. Literacy is taught in interactive, strategic ways

Stop & Talk

- How does this compare with your child’s experiences?
- What questions and ideas does this raise?
Language & Literacy Development in School Settings

Full & consistent access to language
• English
• ASL

May require human & material resources

Full & consistent access to explicit, responsive language & literacy instruction
• Comparing languages
• Strategies of readers/writers
• Interaction/discussion/negotiation of meaning

May require professional learning & resources

Full & consistent exposure to meaningful text

May require professional learning & resources
Planning for Language Access

How?
Under what conditions will students have full (100%) access to a) instruction & b) peer communication?

Who?
Which professionals are needed in order to coordinate optimal conditions for learning?
Working with Classroom Teachers

Questions to ask about access:

• What would be helpful to know about my child’s language history and preferences?

• What amplification technology or interpreting services are my child using regularly in the classroom, and how do we know if it supports access?

• What strategies and supports are used to support communication with teachers and peers across the school day?

Questions to ask about instruction:

• How are visual representations of information used to support learning?

• When and how does my child engage in conversation/discussion in your classroom?

• What are the purposes for reading and how much time do students spend reading in your classroom?

• What are the purposes and audiences for student writing and how often do students write?
Recap: Your Experiences & Questions
Resources

Educating Students Who Are Deaf or Hard of Hearing: A Guide for Professionals in General Education Settings


Visual Language & Visual Learning (VL2) Research Briefs

- http://vl2.gallaudet.edu/research/research-briefs/

Language & Communication Plan

Supporting the Language & Literacy Learning of Deaf & Hard of Hearing Students

You’re invited!
The University of Connecticut’s Reading & Language Arts Center in the NEAG School of Education is pleased to invite you to spend an afternoon with:

Dr. Susan Easterbrooks,
Co-principal investigator for the Center for Literacy & Deafness and a former UConn Husky!

Friday, October 13th
11:30 AM - 3:00 PM