Designing Intensive Supplemental Intervention for Students with Intellectual Disabilities

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Overview
Project Intensity: The Development of a Supplemental Literacy Program Designed to Provide Extensive Practice with Multiple-Criteria Text for Students with Intellectual Disabilities

• Brief Literature Review/Rationale for Intervention
• Brief Overview of Intervention Components
• Brief Overview of Measures and Iterative Design
• Discussion on Features of Goal 2 Design Work for Slow Responders
Grant Team

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Literature Review:
Teaching Students with ID to Read

• Limited research on effective teaching of reading to students with ID; therefore, reliance on research with students with LD/RD (Polloway, et al., 2010)

• Some research on effective teaching of isolated skills to students with ID; emphasis on sight word instruction and limited phonics (reviews by Browder, et al., 2006; Browder & Xin, 1998; Joseph & Seery, 2004)

• More recently, programs more comprehensive in nature with goal of reading similar to students without ID (full processing of words with understanding at least commensurate with listening comprehension) found to be effective (Allor and colleagues; Browder and colleagues; Sevcik and colleagues; Burgoyne and colleagues in UK; Lemon and colleague)
Findings from a four year Randomized Control Trial for students with low IQs: Allor and colleagues (in press)

- Students who received treatment outperformed controls on all language and literacy measures (except sight words).
- But, even with treatment, it can take up to 4 years for students with moderate intellectual disabilities to master first grade reading skills.
Oral Reading Fluency:
Predicted Scores by IQ and Condition

Words Per Minute

Week of Progress Monitoring
## Meeting the Instructional Needs of Students with ID

<table>
<thead>
<tr>
<th>Intensive Repetition</th>
<th>Needs and Characteristics</th>
<th>Limitations of Current Core and Supplemental Curricula</th>
<th>Solutions the Proposed Supplemental Curriculum will Provide</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Need intensive practice</td>
<td>*Limited texts and practice materials to develop skills; *Materials need to be used by a highly skilled teacher *Texts do not include enough repetition of high utility words</td>
<td>*Multiple texts and materials; *Some materials designed for use by paraprofessionals and tutors *Texts with extensive repetition (within and across books) of high utility words (sight words and high frequency decodable words)</td>
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<td></td>
<td>Need repetition of groups of lessons</td>
<td>*Mastery within each lesson is typically expected</td>
<td>*Texts/materials providing practice of clusters of skills (i.e. bands)</td>
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<td>Solutions the Proposed Supplemental Curriculum will Provide</td>
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<tr>
<td>Transfer</td>
<td>*Words in lessons are not a close enough match to text</td>
<td></td>
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<td></td>
<td>*Text does not support application of strategies (i.e.</td>
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<td></td>
<td>limited repetition of taught words)</td>
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<td></td>
<td>*Skills in application lessons apply routines (e.g. “</td>
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<tr>
<td></td>
<td>sound it out”) in core curriculum to exact words in</td>
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<td></td>
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<tr>
<td></td>
<td>text</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>*Texts include increased repetition of words students</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>are being taught to read in lessons</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Low Language</td>
<td><strong>Needs and Characteristics</strong></td>
<td><strong>Limitations of Current Core and Supplemental Curricula</strong></td>
<td><strong>Solutions the Proposed Supplemental Curriculum will Provide</strong></td>
</tr>
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</tbody>
</table>
|              | Limited Vocabulary (i.e. oral lexicon) | *Texts with contrived or unfamiliar or unnatural vocabulary *(ex. suds vs. bubbles; tam vs. hat)* | *Texts with familiar, high utility vocabulary (ex. hat, run)* | *
|              | Limited Background Knowledge | *Texts with topics unfamiliar to students* | *Texts with familiar topics* |
|              | Limited Syntax; Limited Working Memory | *Some long sentences, with complex sentence structures; Written language forms that are awkward and/or dissimilar from spoken language* | *Texts include short sentences similar to oral language* | *

*Texts include more sight words; sentences more similar to spoken language (i.e. more natural)*
<table>
<thead>
<tr>
<th>Needs and Characteristics</th>
<th>Limitations of Current Core and Supplemental Curricula</th>
<th>Solutions the Proposed Supplemental Curriculum will Provide</th>
</tr>
</thead>
<tbody>
<tr>
<td>Relative strength of sight word reading</td>
<td>*Limited number of sight words early in lessons/text</td>
<td>*Texts include a faster introduction of sight words</td>
</tr>
<tr>
<td>Relative strength of letter-sound knowledge</td>
<td>*Limited consonants early in lessons/text</td>
<td>*Somewhat increased number of consonants during early bands (i.e. clusters of skills)</td>
</tr>
</tbody>
</table>
Role of Decodability in Early Text: Synthesis (Cheatham & Allor, 2012)

• Descriptive studies (student performance during book reading) provide evidence of a correlation between increased levels of decodability and increased reading fluency (Compton, et al., 2004; Hiebert & Fisher, 2007; Hoffman, et al., 2001; Mesmer, 2010)

• Intervention studies (independent variable decodable text) found mixed results, but do indicate some positive effects from reading decodable texts
  – Juel & Roper/Schneider, 1985 and Mesmer, 2005 found that students in decodable text group applied their phonics skills more readily
  – Jenkins, et al., 2004 the decodable text group did not measurably improve response to a tutoring intervention (however, text “became decodable” for nondecodable group as study progressed AND both groups received individual feedback during text reading from a tutor)
The Solution: Multiple Criteria Text/Application Lessons and Students with ID (Allor et al., 2013)

• Text practice and application lessons were effective in improving student ability to quickly identify words both in and out of context

• Students unitized (pronounced word within 3-4 seconds) words from books when presented in random order

• Anecdotal observations revealed students successfully read the connected text specifically taught in the application lessons

• Oral reading fluency measures (DIBELS) revealed SOME growth
UP AT BAT

By Joanna Guinther
Illustrated by Dick Smolinski
Adapted by Jill Allor

Crack! The bat hits the ball.

"I did it! I did it!" said Sam. "I hit the ball."

"Look at the ball!" said Tom. "Look at the ball go up, up, up!"

Where will the ball go?
Will Sam hit the ball?

Bam! Sam hits the ball.
Figure 1. Words read correct on proximal measure during baseline and intervention.
Intensity Grant: Program Components

• Multiple Criteria Texts (We are writing the books based on five themes to reinforce meaning)
• Application Lessons (teacher led)
• Practice Activities (helper led)
• Implementation Tools
  – Proximal/mastery assessments
  – Scope and sequence
  – Word lists
  – Lesson Plans with teacher observation (struggling, practicing, mastered)
### Implementation Schedule

#### Figure 2 Week at a Glance

<table>
<thead>
<tr>
<th>Activity</th>
<th>Mon</th>
<th>Tu</th>
<th>Wed</th>
<th>Th</th>
<th>Fri</th>
</tr>
</thead>
<tbody>
<tr>
<td>Application Lesson with Text Reading (implemented by current reading teacher)</td>
<td></td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Practice Activities with Text Reading (implemented by paraprofessional/tutors)</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Systematic, Evidence-Based Core (currently provided in partner schools)</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
</tbody>
</table>

- Teacher Application Lessons (3 times per week @ 20 min)
- Helper Practice Activities (3-4 times per week @15-20 min)
Text Characteristics

- Gradually increase the number of high-frequency irregular words
- Maximize use of words that are BOTH regularly spelled AND high frequency (e.g. *man*)
- Avoid use of very low frequency words that are likely to be unfamiliar to students, even if regularly spelled (e.g. *mast*)
- Include a small number of content words, as needed, with picture support (i.e. irregular words or words comprised of patterns taught later in the curriculum, such as *ball*)
- Incorporate instructional design principles (to increase likelihood that internal structure of words is fully processed)
  - Varying sentence structure
  - Include discriminant words (e.g. bam/Sam as in Bam! Sam hits the ball!)
  - Repeating words frequently, particularly high-frequency words (irregular or regular)
“It’s time for lunch,” said Mom. “I want a sandwich. Sam, what do you want to eat?”

I want a sandwich.

“Well we need something else with our sandwiches. Do you like chips or cheese crackers?”

I like chips.

I want a pizza.

I will show you how to make a pizza. There are many types of pizza. You can make a pizza that you want to eat.

I want olives.
I want pepperoni.

Step 4. Put the toppings on the pizza. You can put whatever toppings you want to have on the pizza.
Mom said, “Sam and Jazz, do you want to play Hide and Seek?”

Yes, I do.

Look at Jazz! 😛

Yes!

Mom said, “Shhh, Jazz.” This time Jazz was quiet.

Are you in here?

No, you are not in here. Where are you?

It is very important to take care of your pet. I will tell you how to take care of a dog. Give your pet a name.

I see the dog.

Here is the dog.

Dogs need to run and play. That is how they exercise. Take your dog on walks. Play with him every day. Do you like to play with dogs?

Yes, I like dogs. I see the dog in the grass. 🐶

The dog is happy!

😊
Teacher Routines (yellow)

- Teacher does all activities on lesson plan
- Teacher selects from activities at bottom of page and writes them on
- Lesson plan includes teacher observation of student skills
  - Struggling
  - Practicing
  - Mastered
Let's Make Lunch Story Reading Teacher Guide

Use this guide to direct discussion and enhance student engagement. Select 1-2 questions per page based on student ability. Questions increase in difficulty as the question “steps” and numbers increase, with the highest step (#3) being the most difficult.

The second time you read the story, ask different, more difficult questions.

Read the title and make predictions about the story. Who makes your lunch? Do you ever make lunch?

Word List

- do
- is
- what
- say
- bread
- lunch
- cheese
- sandwich
- jam

Read the word list to the students. Make sure the students know what the pictures are. Optional: Have the students point to the words as you read.

Read the Story Starter.

Who is in the story? What room do you think they are in? Do you eat sandwiches?

1. What do you see in this picture?

2. What is this? (point to the sandwich) What kind of sandwich do you think it is?

3. Would you have chosen ham or tuna? What is your favorite sandwich?

1. What is happening on this page?

2. What is this? (point) What is Sam wearing?

After reading the story, do Think and Sort meaning. Discuss the picture cards and ensure the students know what they are. Sort 2 of the pictures with the student. Think aloud, asking yourself questions like, I want [say the picture]. I do not want [say the picture]. Then have the student sort 3-4 picture cards and tell you why.
Helper Activities (green)

- Preselected activities (must-dos)
- Additional activities selected by teacher to practice skills already introduced by the teacher
Read, Read, Read!

Say The Sound

t  m  c  s  p  t

c  f  m  p  f  s

Look and Say

do  a  want  I  like  I

not  like  not  do  a  want

I  want  like  not  do  a

Write and Say

1.

2.
Currently Collecting Preliminary Descriptive Student Data Feasibility Feedback

- Pre-test scores
- Preliminary classroom observations about core reading instruction
- Feedback about program components
  - Interventionists
  - Teacher interviews
  - Advisory board
Types of Measures to Demonstrate How We Differ from Classroom Typical practice, Feasibility, and Fidelity of Intervention

Documentation of core (ICE-R)

Additional research-adapted observation of BAU core instruction (will add a structured interview of teachers’ beliefs about the need for systematic instruction and potential for growth and concerns like time)

Fidelity and feasibility (will relate to PD eventually but for now we are implementing) Use checklists, observations, lesson plans, structure interviews
Measurement of Fidelity

- Using both descriptive and a-priori fidelity (Dane and Schneider 1998)
  - Adherence
  - Exposure
  - Quality of delivery
  - Participant responsiveness
  - Program differentiation
- We will observe live sessions and also video or audiotaped sessions
Unit Feasibility Feedback from Teachers (Initial Structured Interview)

“Homemade”
### Active Ingredients

- Carefully designed, meaningful, themed books in instructional bands
- Application lessons (including high frequency and decodable patterns)
- Practice materials and games to be implemented by a paraprofessional, monitored by teachers
- Implementation tools (Professional development, scripts, assessments, etc.)

### When implemented as intended...

- Teachers report feasibility and usability of intervention
- Teachers implement application lessons and text reading activities
- Paraprofessionals and tutors implement practice activities and text reading activities
- Students are provided with lesson/practice time according to guidelines, resulting in improved outcomes on assessments

### Constructs

<table>
<thead>
<tr>
<th>Constructs</th>
<th>Proximal Measures(^a)</th>
<th>Distal Progress Monitoring Measures(^b)</th>
<th>Distal Pre/Post Measures(^c)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Phonemic Awareness</td>
<td>Phoneme Segmentation Fluency</td>
<td>Phoneme Segmentation Fluency</td>
<td>Blending Real Words</td>
</tr>
<tr>
<td>Phonics</td>
<td>Real Word Fluency</td>
<td>Nonsense Word Fluency</td>
<td>Letter-Word identification</td>
</tr>
<tr>
<td>Unitization of Target Words</td>
<td>Taught Word List</td>
<td>--</td>
<td>Word Attack</td>
</tr>
<tr>
<td>Fluency</td>
<td>Oral Reading Fluency</td>
<td>Oral Reading Fluency</td>
<td>Fluency</td>
</tr>
<tr>
<td>Expressive Vocabulary</td>
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<td>Picture Vocabulary</td>
</tr>
<tr>
<td>Vocabulary/Comprehension</td>
<td>Cloze Test</td>
<td>--</td>
<td>Passage Comprehension</td>
</tr>
</tbody>
</table>
Types of Student Measures to Demonstrate “Promise” of Intervention

- Proximal or mastery of content
- Distal progress monitoring
- Standardized measures of language and literacy (growth and moderators)
Progress Monitoring

Proximal progress monitoring measure

- Developing mastery and transfer measures
- We hope to address in single case and or Brief Experimental Analyses rate of acquisition of skills (e.g., a decodable pattern, taught sight words, taught vocabulary, sentence reading and comprehension)

Distal CBM (not taught, expect slower growth) 1 per week

- Aimsweb Letter sound fluency
- Fuchs Word identification fluency
- DIBELS phoneme segmentation fluency
Standardized Measures of Academic Progress

• Very distal measures of progress and to compare our sample to others
  • Woodcock Reading Mastery Test
    – Letter Identification
    – Phonemic Awareness
      • Initial sound
      • Blending
    – Word Identification
  • Potential moderators of progress and to compare our sample to others
    • Peabody Picture Vocabulary
    • Collect IQ data from school
    • Other IQ test
Conclusion

• Brief Literature Review/Rationale for Intervention
• Brief Overview of Intervention Components
• Brief Overview of Measures and Iterative Design
• Discussion on Features of Goal 2 Design Work for Slow Responders

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