Demystifying Dyslexia in the General Education Classroom

Courage to Risk Conference
Friday, January 31st, 2020
10:15-11:25am
Setting the context: My elevator speech.
Agenda

- Personalization – Guiding Principles;
- Assessment Tools;
- Systematic Curriculum & Instruction;
- Next Steps.
Personalization

- Instruction that accounts for both the motivation and individual differences among students (Adelman & Taylor, 2006).

- It takes into account students' perceptions of the classroom environment, which includes the learning activities and how they fit with the students’ goals.

- It separates itself from differentiation by emphasizing student motivation and a good “match” between the learner and his/her learning environment. (a.k.a. Ask the student!)

- Anderson (2011) states that, “Mass education is adequate, as long as students are highly motivated to learn and get ahead of their peers” (p. 13).
Assessments
Assessments:
- Words by Marcia Henry
- Going through academic texts, and pulling spelling words that encompass one or more rules.
- Having students record themselves reading aloud; miscue analysis. (Short selections at multiple levels.)

The bottom line…
- *Ensure that you are assessing phonemic awareness skills (blending, segmenting – first, last and all sounds).
- *Assessing phonetic knowledge— the relationship between written letters and sounds (alphabetic principle).
- *Identifying gaps with prefix, suffix and root word meanings.
CBM – Maze Scores –Supported by research: Chung, Espin & Stevenson (2018)

“A maze is a passage in which every 7th word is deleted and replaced with a multiple-choice item consisting of the correct word and two distracters. Students read silently for 2–3 min, selecting the word that restores meaning to the text. The number of correct selections is counted and placed on the graph” (p. 629).

The results indicated “…support for the reliability, sensitivity to growth and validity of maze scores for secondary-school students” (p. 645).
Additional Assessments – Things to Keep in Mind

- CTOPP, TOWRE and Subtests from the Woodcock-Johnson and WIAT are only one set of data points in time.

- A body of evidence and frequency over time is a better gauge of a child’s ability that an isolated set of test scores.

- Cross-content integration is key!
Systematic Curriculum & Instruction
So... how does this look in the classroom?

“Time pressures and large amounts of work are enemies of individuals with dyslexia.” (Wadlington, 2000, p. 63).
Overall Instructional Strategies

- Solidify grouping practices:
  - Can you have a group that meets each day? (Particular spelling rules? Phonemic awareness?)

- Comprehension and fluency strategies:
  - Self-monitoring
  - Summarizing
  - Inferring

- Extensive feedback during the learning process:
  - Oral vs Written

- Breakdown tasks step by step:
  - Check lists
  - Pictures

(Calhoon, 2005 as cited in Vaughn, Gersten & Chard, 2000)
Quality Over Quantity… if possible

- Shorten tasks and pick the most pertinent examples.
- Break down concepts into discrete parts (i.e. What does inferencing actually mean?)
- Which note taking strategy will work for the particular student?
- Teach how to create and use a study guide.
What Type of Instruction do we need?

- “Significant phonological awareness and decoding deficits recommend combined phonological awareness and phonics instruction (National Institutes of Child Health and Development, 2000).
- Word identification difficulties in the absence of phonological deficits suggest more advanced word study including morphophonological analysis and spelling (e.g., Moats, 2005).
- Rate exercises in activities such as repeated readings can address reading fluency deficits (Chard, Vaughn, & Tyler, 2002).
- Significant reading comprehension deficits would require direct instruction in vocabulary development and strategy training (e.g., Vaughn & Klingner, 1999).

“…extensive opportunities to read authentic text engage all components with beneficial effects on reading achievement (Mol & Bus, 2011)” (Ring & Black, 2018, p. 120).
Will commercial reading programs meet this need?

- “Currently, most available published multicomponent remedial reading programs for adolescents with RD typically follow the same integrated organization of the components shown to be effective for beginning readers (e.g., Language!, 2006; Lindamood and Bell, 1999; Saxon Phonics Intervention, 2006; Wilson Reading System, 2002).

- Interestingly, a current review conducted on the use of these integrated multicomponent remedial programs for adolescents with RD indicate that, while they do help students make gains in reading, little evidence exists that they close the achievement gap and normalize reading skills for older students to the level of their nondisabled peers (Slavin, Cheung, Groff, & Lake, 2008)” (Calhoon et al., 2010, p. 60).
Drawing from Pieces of Commercial Intervention Programs

- REWARDS (Shippen et al., 2005)
- Wilson
- Lindamood-Bell
- Read Naturally
- LETRS
What can we pull from these programs?

- Scope and Sequence:
  - Where do I start?
  - What do my students need to know?
  - Word lists, phrases & sentences (i.e. Activities and Tasks)
  - Multi-sensory materials within reason
  - Strategies & Explicit Instruction (i.e. –ed as /t/ /ed/ /d/) – Roadmap
Systematic Curriculum – The ‘Buzz’ around OG

- “Their approach was unique at the time for (a) its emphasis on individually introducing each phonogram and all the rules for blending them into larger units (e.g., syllables), (b) every unit was taught using visual, auditory, and kinesthetic information to establish representations of print-sound correspondences and, (c) the units of language were introduced in a systematic sequence of increasing complexity from simple vowels and consonants through multiple syllable words” (p. 384, Uhry & Clark, 2005, as cited in Ring, Avrit & Black, 2017).
Something to think about…

"Although widely adopted in clinics and schools, there is limited research on the efficacy of Orton Gillingham instruction in general and the Alphabetic Phonics-based curricula in particular. A few studies suggest that the programs improve the word reading skills of children with reading disabilities" (Ring, Avrit & Black, 2017, p. 384).
Morphology Instruction…

- “Morphology is the system of rules that govern how units of meaning (i.e., morphemes like root words and affixes) are combined to form words that express different meanings and serve different syntactic roles (e.g., tasteful, distaste)” (Goodwin, 2015, p. 92).

- “The meanings of 60% of morphologically complex words can be figured out by analyzing the component morphemes that make up the word” (Nagy & Anderson, 1984 as cited in Goodwin, 2015, p. 93).
But does morphology instruction work?

- From Goodwin, 2015, p. 94:
  - “The research literature provides evidence for the effectiveness of morphological instruction with synthesizes like Nagy and Townsend (2012) and Carlisle (2010).
  - For example, Carlisle (2010) reported that morphological instruction supported word reading, spelling, and morphological analysis.”
  - Supports literacy and vocabulary learning overall.
So, why are morphological programs not effective?

- Instruction is done in isolation:
  - “…a close review of the literature suggests morphological interventions teach awareness of morphological principles, build affix and root-word knowledge, and/or teach morphological problem-solving (i.e., the ability to ‘‘think about how the constituent morphemes contributed to a word’s meaning or grammatical role’’ Carlisle, 2010, p. 479).
  - These principles are usually taught through breaking words apart, building words from morphemes, and learning root or affix meanings (Bowers et al., 2010; Goodwin & Ahn, 2010)” (Goodwin, 2015, p. 95).
What will make morphological programs successful?

- From Goodwin, 2015, p. 95:
  - Less frequent approaches involve linking morpheme meanings to connected academic texts and drawing attention to how these morphologically complex words are manipulated to fit into academic phrases as tools to convey understandings. Even rarer is instruction that is integrated within content areas or comprehension instruction (e.g., Baumann, Edwards, Boland, Olejnik, & Kame’enui, 2003). From what we know about the close relationship between morphology and academic language, it is likely that such an approach would be helpful in supporting adolescents’ academic reading.
What does morphological instruction look like in practice?

- “…challenging words were pre-taught, defined, and discussed with examples and non-examples (vs.) students word solved unfamiliar words within text by finding units of meaning they recognized within large, unfamiliar words” (Goodwin, 2015, p. 98).

- **Warm-up activities:** listing morphologically related words (movement, mover, remove, etc.) and then circling morphologically similar words.

- **During reading,** “… Challenging words morphologically problem-solved: morphemes marked (i.e., boxed), defined, meanings summed, and linked to context” (Goodwin, 2015, p. 99).

- Keep a record & access it later! (Study guide, notes, etc.)
Strategies & Tools: Increased letter spacing and font type?

- The **font of Dyslexie does not result in increased reading performance** (rate and accuracy) by students with dyslexia (Duranovic, et al., 2018; Kuster, et al., 2018).
  - Arial is the ‘preferred font.’
- Increased spacing between letters does support students’ reading performance and when spacing is implemented, the challenges with fonts such as Times New Roman Italic and Curlz MT were mitigated.
  - Previous studies indicated that, “Dyslexics made significantly fewer errors and read largely spaced text faster than normally spaced text. For English, however, the results showed that letter spacing improves the reading speed in general but has no specific effect on dyslexics. However, letter spacing improved the reading accuracy” (Duranovic, et al., 2018, p. 219).

- What does that look like in the classroom?
Multi-Sensory Instruction Materials – Sand? (Nope!)

- Scratch Art
- Markers, glitter glue, crayons, window markers, oil pastels, etc.
- Dance (Flocabulary)
- Flipgrid, iMovie
- Water Color
### Instruction – Reading Comprehension: Break it Down

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<thead>
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<th>Inferences</th>
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<td>Components of the Plot</td>
<td>*Impact/change characters’ <strong>actions</strong>, whether positively or negatively;</td>
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<td>*Impact/change characters’ <strong>feelings</strong>, whether positively or negatively;</td>
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<td>*Impact/change characters’ <strong>beliefs and/or outlook</strong> about something or someone;</td>
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<td>*Impact/change characters’ <strong>interactions or relationships</strong> with one another;</td>
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<td>*Change characters’ <strong>internal thinking</strong> about himself/herself;</td>
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<td><em>Influence the <strong>dialogue</strong> within a story.</em>*</td>
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Reading at Independent Level

- Books at level!

- Continual practice of similar tools

- “It is important that students read text at their independent reading level and, specifically, that the text provides practice with the skills being taught concurrently during linguistics skills and spelling” (Beck & Juel, 1995; Samuels, Schermer, & Reinking, 1992 as cited in Calhoon et al., 2010, p. 66).
Build an Independent Reading Plan & Align it to the Class Plan

- Purpose for Reading (Study? Help with the next concept? Easier in the future?)
- Prior Knowledge
- Stop & Jot:
  - Details – and Main Idea
  - Inferences (People’s actions, decisions, feelings; Policies; Reactions, Key Events, etc.)
  - Indicate what has been learned
  - Question
- *Books at level (Lexile)*
Note taking – Can’t I just say summarize the article?

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<tr>
<th>Summarize</th>
<th>Infer</th>
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<tr>
<td>Read each section (information under the boldfaced words) of the article – underline sentences that give clues to the main idea.</td>
<td>What is the author really trying to say? (Something specific about people’s actions? Next steps? Policy?)</td>
<td>How can you connect with this section? More importantly, how can others? Could they connect positively or negatively?</td>
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Section 1:
Teaching Note Taking

- Teach students how to copy down notes from the internet – what do you really need to effectively study? To Research?
  - Copy down notes from the internet can lead to more effective study aids.

- It is a two-part process:
  - Take down notes from the internet - annotate if possible; Mark notes in a book;
  - Put in the notes in your own words;
  - What do your notes mean? Ensure that there is interpretation.
Note Taking

1. Read each article once through. As you read, stop at each section and ask yourself, “What is this section mostly about?”

2. Then, read the article again and mark at least one sentence from each section of the text that helps the reader understand what the text is mostly about.

3. (If you are reading online, you can do this by highlighting or underlining, and if you are reading the printed text, you can do this with a post-it.)

2. Write each sentence from the article in column 1 (see below) and then write it in your own words in column 2 (see below).

3. Then combine your notes from Column 2 to create the summary.

<table>
<thead>
<tr>
<th>Exact words from each section of the text that tell what the section is mostly about</th>
<th>Putting words from the text in <em>MY OWN WORDS</em> - switch around words, find synonyms for words, add and/or delete words</th>
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Additional Supplements
Children with ASD, however, have been reported to show a disassociation between decoding and comprehension: while decoding skills in high-functioning children with autism and Asperger’s syndrome may be intact (Frith and Snowling 1983; Griswold et al. 2002; O’Connor and Klein 2004), their reading comprehension is often lower than expected for their level of reading ability (Minshew et al. 1994; O’Connor and Hermelin 1994).

Higher level elements of decoding, however, have been shown to be impaired or delayed in autism (Tager-Flusberg et al. 1990), especially when it comes to more complex grammatical structures.

Therefore, fluent reading of meaningful text can pose a challenge to the ASD population, since this task requires complex multi-dimensional cognitive abilities and relies more heavily on general linguistic and semantic skills than on word-level measures of decoding (Nation and Snowling 1997).
“...in dyslexia the problem starts with inadequate decoding whereas in ASD the problem appears to lie in recovering the linguistic and semantic structure and in relating the meaning of a text to background information” (Huemer & Mann, 2009).
“Language processing disabilities such as dyslexia or dysgraphia can hinder a person’s ability to learn vocabulary and concepts and use symbols, signs, and operations” (Wadlington & Wadlington, 2009, p. 3).

What does this look like in class?
- Difficulty decoding and comprehending mathematical instruction, text and word problems.
- Writing down answers, questions and notes.

What other factors do we have to take into account?
- Students’ motivation.
- Students’ background knowledge of the material.
Additional Considerations

- Students with reading difficulties, not limited to dyslexia, are often challenged by:
  - Place value;
  - Four Operations;
  - Written calculations;
  - Word problems.

- Majority of the research only extends to students' difficulties with word problems.
What can we do?
General Instruction

- Preview the skills within the next lesson the day before, if possible. (Note: 1 Lesson might extend across multiple days.)
  - Why is this needed? Where will I use this in my life?

- Teacher Modeling: Break down each skill and concept to the most discrete step

  - Visual First: Concrete objects to Pictures and Diagrams

  - Written Second: Label problems step-by-step, record short phrases (via FlipGrid, or other mechanism) to illustrate knowledge (if needed), then write short phrases next to step.
What if they still cannot get it? Do I have to teach until mastery?
Curriculum Support

- Major Concepts Covered Thoroughly
- Application to Real Life
- Use of Manipulatives (Base 10 – small magnets, algebra tiles, etc.)
- Emphasis on breaking down language
- Comparison of the different mathematical signs
What can we do?
Word Problems

- Develop an annotation process for **word problems**:
  - **Underline the facts** (sentences that have information to help me solve the question),
  - **Circle the operation(s)** (the words that indicate the mathematical symbol),
  - **Highlight/write potential questions and terms** (before solving what are you unsure about?),
  - **Go step-by step to solve the problem** (color code each step, display on index cards instead of paper).

- Develop an annotation process for **math assignments**:
  - Orient students to the common structure/components of assignments first;
  - Practice with directions: Whole Assignment – “What am I being asked to do?”;
  - Practice with directions: Each Question – “What do I need to do?”
    - “What operation do I need to use?” “Why?”
What can we do? General Strategies

- Eliminate memorization if at all possible.
- Students should be given the opportunity to monitor their own learning:
  - Goal setting and tracking across all domains, if possible.
- Integrate a variety of approaches, including:
  - Sequential, step by step instruction that is relevant;
  - Finding strategic patterns;
  - Visual representations (i.e. illustrating Base 10 blocks).
- Develop a students’ strategic math expertise:
  - Illustration of word problems?
  - Choosing the operation for a word problem?
  - Lining up vertical problems?
  - Examining each problem for potential mistakes?
Mastery of complex vocabulary, higher-level text analysis, comprehension skills, and scientific writing are areas of relative weakness for many students. These areas are particularly problematic for students with learning disabilities (Lerner & Johns, 2012). Although acquisition of high level text comprehension skills is an important instructional objective, many students with learning disabilities are still learning important literacy skills even in the secondary grades, and may not be expected to learn best through independent study of science textbooks" (Scruggs et al., 2013, p. 50).
Science Instruction

- We have best practices in science instruction, however, there remains to be little empirical evidence such as high student achievement to support these practices (Oliveira et al., 2013).

- Rivet & Krajcik (2008): while there is literature to support instruction that draws upon students’ prior knowledge and experiences, there is little empirical evidence that supports this claim.

- Project based learning has been found to integrate students’ prior experiences successfully, or rather to effectively contextualize the instruction (e.g. Krajcik, Czerniak, & Berger, 2002).

- Oliveira et al. (2013) identified five instructional components that were imperative to student achievement including: use of relevant and engaging curriculum, hands on activities, differentiated lessons, collaborative work and the use of homework to facilitate learning.
  - Specifically, the inclusion of inquiry based lessons and assignments were closely associated with an engaging and relevant curriculum.
  - Stiggins (2002) argues that teachers and other educational stakeholders also need to use assessment as a tool for learning, not just of learning.
  - Stiggins (2002) – “When they assess FOR LEARNING, teachers use the classroom assessment process and the continuous flow of information about student achievement that it provides in order to advance, not merely check on student learning”
Support for Science

- A clear understanding of text structure, and the signal words associated with each structure.
- Note taking strategies – SQ3R
- Direct instruction on how to highlight
- Small group activities
- Guided notes
- Kurzweil 3000 – Text reading, study strategies and report writing.
- Close monitoring of students’ ability to comprehend and decode – note patterns, and ideally leverage explicit instruction on syllable type/division, and spelling rule to support students.
Pedagogical Practices: Fostering Student Engagement and Interest
Scaffolding

1. Modeling.
2. Guided Practice.
3. Independent Practice.
4. Review – DO NOW, Discussion, Checking understanding of Labs.
5. Use of visuals within presentations, explicit prompting and support that was targeted for each student.
Kurzweil 3000

- 31 Natural Text-to-Speech voices
- Text-to-Speech in 18 languages and dialects
- Customizable reading rate and presentation
- Improve readability with OpenDyslexic font and Text magnification
- ABBYY FineReader® OCR-highest accuracy in reading aloud
- Magnify text for learners with visual impairments
- Keyboard shortcuts
Welcome to CAST Science Writer, the tool that supports students in writing lab and class reports. This tool is geared toward middle school and high school students. Check out the supports and help available in Science Writer described below. Or click the "Take a Tour" button above to see how Science Writer works.
ThinkCERCA – Interdisciplinary Tool

Class Discussion Question
How do physical forces apply to sports?

Writing Prompt
How does understanding force and motion affect the way athletes play baseball?

Text
How Are Newton’s Three Laws of Motion Used in Baseball?
By William Machin
LIPS – Lindamood Bell

- Key Components:
  - Sequence (Mixture of rules, integrates rules – consonant digraphs and consonants)
  - Mouth Pictures and Placement
  - Tracking with Colored Squares – Sound and Syllables
  - Spelling Lists and Sentences
    - Nonsense and Real Words
Mouth Placement

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Figure 3.1. Consonants.
Tracking

Before beginning with students, familiarize yourself with how multisyllables sound. Listen to the audio files on the accompanying DVD. Say the sounds aloud and observe the mouth movements in a mirror. Observe the appropriate video files for multisyllable introductions.

Tracking Number, Sequence, and Accent in Syllables

The goal when beginning work in Tracking multisyllabic words is understanding what a syllable is and learning to use large colored squares to represent syllables. These first steps lead to the ability to Track whole syllables being added, omitted, or substituted within words and learning to judge which syllable is accented in a spoken word.

Begin by asking students to Track gross changes in multisyllabic words, as whole syllables are added, omitted, or substituted within words. For this, present chains of real and/or pseudo words, and students will manipulate large colored squares to show the contrasts between the words in the chain:

graceful

gracefully
Decodable Readers
Decodable Readers for Students in Middle and High School

- At this time, they do not exist…
  - Newsela at an appropriate level, with the particular rule highlighted.
  - Isolated scenes from particular books, at the appropriate reading level, building up to a full chapter.
  - Student writing, and/or teacher model of writing, again, with the specific rule highlighted.
  - Short selection of a textbook with rules noted.
Sequence

- Can be disjointed, and relies primarily on sound, rather than explicit rules.

- Consider using:
  - Words by Marcia Henry
  - How to Teach Spelling by Laura Toby Rudginsky and Elizabeth C. Haskell
Mediating the Isolation: Recommendations

- **Some students do not necessarily need a full intervention…**
  - Closely observe the student reading – complete numerous running records, ranging from 2-3 a week over 4-6 weeks.
  - Use the data to inform the content and frequency of instruction provided.

- **Use non-words sparingly…**
  - **Why?** Students with ASD do not see the connection between non-words and what they are doing in their classroom the majority of the time.
  - **Result?** Lack of engagement and motivation.

- **Track words that are explicitly taken from a student’s reading AND writing…**
  - **Why?** The instruction of words needs to closely apply to a student’s reading to support content acquisition, as well as motivation.
  - **If a student is tracking words in isolation, the connection is difficult.**
  - **Pull sentences from a student’s reading to support vocabulary instruction.**
Orton-Gillingham

- Sequence is in levels:
  - C-QU
  - FF, LL, SS, ZZ
  - Consonant blends
  - Ing, Ang, Onk, etc.
  - R-controlled Vowels, etc.
- Multi-sensory activity for each new phoneme (Clay, fern, burst...)
- Three-Part Drill (auditory, visual, kinesthetic)
- Sight word protocol
- Syllable Division and Type
- Spelling words and sentences
Adaptations to Orton-Gillingham

- Three-part drill becomes repetitive, and students lose interest.
  - Use it sparingly!
- Multi-sensory activities are usually not as effective with students at the secondary level – If completed, select with reason.
- Sight word protocol is helpful, when used within the context of a student’s reading.
- Syllable division and type is ESSENTIAL
  - Supporting this piece is: (1) Syllable, (2) Sound, (3) Meaning
- Word, sentence and paragraph writing needs to be in context.
Visualizing and Verbalizing

- Visualizing (Making a movie in your mind as you read.)
- Sequence –
  - Picture
  - Word
  - Sentence
  - Sentences
  - Paragraph
  - Multiple-paragraphs
- Separate workbooks specific to V/V Program
Adaptations to Visualizing and Verbalizing

- If possible, create your own relevant passages aligned to the student’s interests.
- After sentence by sentence move to a fiction or non-fiction text, and ensure that the student is able to apply the same strategies to those texts.

**Fiction:**
- Scene by scene, with instruction on how to notice when there is a scene change (new character enters, dialogue shifts, etc.).

**Non-Fiction:**
- Section by section, with instruction on how to create sections as needed.
Core Process to Comprehension

- Predict
- Summarize
- React / Connect
- Reflect (perspective)
- Judge (agreement/disagreement, bias)
- Conclude (theme)

- Summarize…Inference…Quotations from the Text
Case Study #1: 6th grade male

- Reads impulsively

- Struggles to use his knowledge of phonics as he reads

- Tries to comprehend really quickly

- Conduct several running records, or a similar assessment to examine accuracy, reading rate and prosody.
- Track patterns, and determine gaps in phonics knowledge.
- Involve student in planning instruction to meet those gaps.
- Embed goal setting in instruction.
- Ensure reading material is at his level.
- Extensive modeling of syllable division and type – application to reading.
- Discussion of the importance of comprehension in relation to student’s interests and overall goals.
- Moving beyond summary to reaction and reflection, as well as judgement, in conjunction with in-depth components of story elements.
Case Study #2: 9th grade female

- Reading comprehension (36th percentile WC-J)
- Sentence writing fluency (8th percentile)
- Calculation and math facts at 6th and 3rd percentile
- CAPD Diagnosis
- Support needed with notetaking and keeping track of ideas.

- Determine and provide instruction with any gaps in visualizing.
- In-depth instruction in fiction and non-fiction structures, along with fiction components.
- Provided with a variety of notetaking strategies, including annotation and SQ3R, or something similar. Commitment to one notetaking strategy for 4-6 weeks to determine efficacy and application.
- Use of visuals, including manipulatives to better understand the 4 operations.
- Instruction in oral language comprehension – literal vs. non-literal communication, and application to particular points within her reading.
- ‘Pull apart’ and deconstruct sentences, with words and phrases provided.
Thank you!

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