Today’s Agenda

- Significance of Syntax
  - Syntactic Role
  - Readability
  - Addressing the Problem
- Strategies for Teaching Syntactic Structures
  - Animated PowerPoints
  - Implementation
  - Interactive Examples
  - Results
Significance of Syntax
Syntax at School Age

- Complexity of all aspects of language, including syntax, increases each year in school.

- Literate language uses longer, more embedded and conjoined utterances as well as abstract vocabulary and complex discourse structures.

- Syntactic complexity is one of the two primary measures of readability.

- Increases each grade level and by 4th grade exceeds the grammatical complexity of typical conversational language (Chall, 1983).
What is Readability?

<table>
<thead>
<tr>
<th>Words</th>
<th>Syllables</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tony lived in a zoo.</td>
<td>5</td>
</tr>
<tr>
<td>He was a lion.</td>
<td>4</td>
</tr>
<tr>
<td>He was a friendly lion.</td>
<td>5</td>
</tr>
<tr>
<td>A bird came to his cage.</td>
<td>6</td>
</tr>
</tbody>
</table>

5-20. Similar
average = 5

Total: 100

112 syllables per 100 words

The vocabulary is simple

Total Sentences = 20

20 sentences per 100 words

The sentence structure is simple
1. Julie had trained months for this race, and she hoped she and her dogs would win.  
2. They certainly had tried.  
3. Hour after hour, day after day, Julie’s dogs pulled the sled to get in shape for the race.  

The vocabulary requires background knowledge, words like “shape” “day after day” have specific meaning.
Similar words can be read differently and have different meanings based on syntactic structures.

He wanted to go with her before school.

He wanted to go with her big sister.

The reader must be able to quickly parse the sentences into correct syntactic chunks.

Intonation, stress, and pauses would differ.

Only by reading with an understanding of the syntactic structures can the meaning be abstracted.
Evidence for Syntactic Role

- Poor readers have difficulty detecting and correcting syntactic errors
  (Bentin, Deutsch, & Liberman, 1990; Demont & Gombert, 1996; Gottardo, Stanovich, & Siegel, 1996; Leikin, 2002)

- Preschoolers with syntactic delays are at high risk for later reading problems
  (Nation & Snowling, 2000, 2004)

- Syntactic awareness at 1\textsuperscript{st} grade predicts word recognition at 2\textsuperscript{nd} grade after accounting for PA and general ability
  (Tunmer, 1989)

- Dyslexic readers have difficulty with syntactic processing
  (Leikin, 2002)
Mokhtari and Thompson (2006) examined 5th grade students' levels of syntactic awareness in relation to their reading fluency and comprehension.

Level of syntactic awareness significantly related to reading fluency ($r = 0.625$).

And significantly related to reading comprehension ($r = 0.816$).
Implications

- Lower levels of syntactic awareness correspond to poor reading fluency and poor comprehension.

- Increasing syntactic awareness should increase reading ability.
The Problem is Not Addressed

- Rich get richer, poor get poorer: Those who start out with less syntactic awareness are poorer readers; poor reading limits learning of new syntactic structures (Loban, 1976; Moats, 2009)

- Teachers are not trained to recognize or teach language processing (not even aware they need to)

- Even with individual training, few teachers understand language at a level where they can teach using classroom materials (Clinton project)
Need for Curriculum Addressing Syntax

- Need to develop language-based curricula
- Need effective instruction aimed at syntactic awareness
- Need to determine how the improvement of syntactic awareness impacts reading fluency and reading comprehension
- Need to measure effects of syntactic awareness training on students with varying reading ability levels and experiences.

Mokhtari and Thompson (2006)
Strategies for Teaching Syntactic Structures
Animated PowerPoints

- 70 members of undergrad class of 2008 each made an animated PowerPoint
- Each wrote an original story parallel in syntactic structure to a DIBELS passage
- Stories written from Grade 1 through Grade 6
- Each “unpacks” the difficult language of text into component simple sentences
- Animation then reconstructs sentences step-by-step, flying in conjunctions, labeling parts of speech, deleting redundant information.
The Four-Leaf Luck PowerPoint was presented in class for 30 minutes three-times weekly.

The goal was to learn to process the complex syntax of advanced reading, a foundational skill for reading fluency and reading comprehension.
He asked Danny whether the stories about finding a clover with four leaves were true, to which Danny replied that he didn’t know for sure.

Mark asked Danny **whether** the stories were true about finding a clover with four leaves.
2011 Implementation

- Whole class intervention in 4th grade for 6 weeks
- The students ranged in decoding skills from very poor to above average.
- All but one were below average in reading comprehension, with 2 comprehending at a first grade level, 4 at second grade, and 3 at an early 3rd grade level.
## Initial Assessment

### DIBELS Assessment Battery

<table>
<thead>
<tr>
<th>Student</th>
<th>ORF</th>
<th>Errors</th>
<th>Retell</th>
<th>Sent Comb</th>
<th>PIAT comp</th>
<th>TOLA/33</th>
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</thead>
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<tr>
<td>EJ71*</td>
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<td>44</td>
<td>10</td>
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<td>JM53</td>
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<td>12</td>
<td>17</td>
<td>7</td>
<td>25</td>
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<td>10</td>
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<td>13</td>
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<tr>
<td>DW33*</td>
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<td>1</td>
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<td>SW13</td>
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<td>5</td>
<td>34</td>
<td>7</td>
<td>50</td>
<td>13</td>
</tr>
</tbody>
</table>

* IEP Students

**AT RISK** Range: 0-82  **SOME RISK** Range: 83-104
Story Grammar Elements

Time = when the story takes place

Characters = who does the action in the story

Setting = where the story takes place

Problem = what occurs to cause a problem or conflict, and character’s internal response (worried, excited, angry, confused...)

Plan = what the plan is to solve the problem

Attempt = the actions used trying to solve the problem

Outcome = the results of the action, good or bad

Evaluation = what was learned, how the story made you feel
Problem

Story Grammar Elements

Time = when the story takes place

Characters = who does the action in the story

Setting = where the story takes place

Problem = what occurs to cause a problem or conflict, and character’s internal response (worried, excited, angry, confused...)
After turning off the game,

Mark and Danny

looking out the window at the yard, suddenly noticed a patch of clover.

He asked Danny whether the stories about finding clover with four leaves were true, to which Danny replied that he didn’t know for sure.

After much discussion among the boys, Danny agreed to go outside in the yard to search for the lucky clover.

“When we find the four-leaf clover, I’m going to wish for an i-pod,” Mark said excitedly as he charged ahead of the group.
Plural

noun

1 + 1 plural =

Regular

+s

© 2006, elementOry.com
After turning off the game, Mark, who was looking out the window at the yard, suddenly noticed a patch of clover.

Mark suddenly noticed a patch of clover.

Mark was looking out the window at the yard.
After turning off the game, Mark, who was looking out the window at the yard, suddenly noticed a patch of clover.

Mark, who suddenly noticed a patch of clover.

Mark was looking out the window at the yard, suddenly noticed a patch of clover.
“When we find the four-leaf clover, I’m going to wish for an i-pod,” Mark said excitedly as he charged ahead of the group.
“When we find the four-leaf clover, I’m going to wish for an i-pod,” Mark said excitedly as he charged ahead of the group.
+ Gain in PIAT Grade Equivalencies

4th Grade Experimental and Control Groups

![Bar chart showing gain in PIAT Grade Equivalencies for 4th Grade Experimental and Control Groups. The experimental group has a significantly higher gain compared to the control group.](chart.png)
Grade Level Equivalencies of Comprehension Scores

<table>
<thead>
<tr>
<th>Grade Level</th>
<th>PRETEST</th>
<th>POSTTEST</th>
</tr>
</thead>
<tbody>
<tr>
<td>1&lt;sup&gt;ST&lt;/sup&gt; GRADE</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>2&lt;sup&gt;ND&lt;/sup&gt; GRADE</td>
<td>4</td>
<td>3*</td>
</tr>
<tr>
<td>3&lt;sup&gt;RD&lt;/sup&gt; GRADE</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>4&lt;sup&gt;TH&lt;/sup&gt; GRADE</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>5&lt;sup&gt;TH&lt;/sup&gt; GRADE</td>
<td>0</td>
<td>1**</td>
</tr>
</tbody>
</table>

* IEP Student at 4<sup>th</sup> Grade if text read
**IEP Student
TOLD:I Sentence Combining
Posttest Gain Scores

Gain Scores Following 6-week Syntax PowerPoint Intervention for Sentence Combining (Test of Language Development)
Important Contribution to RTI

• Current models of reading give superficial attention to the language bases of reading fluency and comprehension

• Recent research on syntactic awareness combined with these two studies suggest that higher level language is a critical component of reading that must be addressed

• Intervening for syntactic and morphological awareness are critical contributions the SLP can make in the classroom for both identified children and their peers

• It is also important to address discourse needs, such as narrative and expository text structures
References


