Considering Decodable Texts: Examining Current Evidence & Exploring an Alternative Research Perspective

Elfrieda H. Hiebert
TextProject

Presentation at the annual meeting of the American Educational Research Association, Philadelphia, April 14, 2024
There is no doubt that phonetic regularity is essential—both in instruction experience and also in texts used for application/practice.

Anderson et al. (1985); Snow et al. (1998); National Reading Panel (2000)
Three goals

• Descriptions:
  • Current model driving textbook mandates: Lesson-to-Text-Match
  • An alternative model: Multiple-Criteria

• Research on texts in beginning reading

• Recent research paradigms for studying text effects
DESCRIPTIONS OF TWO MODELS OF TEXT TO SUPPORT AUTOMATICITY IN WORD RECOGNITION
Lesson-to-Text-Match (LTTM) Model for Decodable Texts
(Texas Education Agency, 1997; California State Board of Education, 2000)

<table>
<thead>
<tr>
<th>a, t, g, p, h, m, s, j, b</th>
<th>+i, f, c</th>
<th>+z</th>
</tr>
</thead>
<tbody>
<tr>
<td>the, his, and, in, is, a, sees, cap, happy</td>
<td>+this, in, on, do, not</td>
<td>+she, Matt</td>
</tr>
<tr>
<td><strong>Tag the ham</strong></td>
<td><strong>The bat</strong></td>
<td><strong>At bat</strong></td>
</tr>
<tr>
<td>Pam has 3 hams. Pam has 3 tags.</td>
<td>This is a bat. This is a fat bat.</td>
<td>Bat it, Pam!</td>
</tr>
<tr>
<td>Pam tags the hams.</td>
<td>See the fat bat in the cap?</td>
<td>Pam bats it.</td>
</tr>
<tr>
<td>Sam sees his tag and his ham.</td>
<td>See the tag on the cap?</td>
<td>She tags the</td>
</tr>
<tr>
<td>Sam jams his ham in a bag.</td>
<td>This is Sam.</td>
<td>bag. Tap it, Sam!</td>
</tr>
<tr>
<td>Sam taps his cap. Sam is happy.</td>
<td>Do not pat a bat, Sam!</td>
<td>Sam taps it.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>WORD FEATURE</th>
<th>DESCRIPTION</th>
</tr>
</thead>
</table>
| Decodability (Letter-Sound Correspondences for vowels) | • short vowels  
• long vowels  
• complex vowels  
• variant vowels  
• short vowels in 1st syllable |
| Frequency                                | • 100 most-frequent words  
• 300 most-frequent words  
• 1000 most-frequent words |
| Concreteness/ imageability\(^1\)         | • 3.75-4.24  
• 4.25-4.74  
• 4.75-5 |
| Morphology                               | • Infected endings  
• Compound words  
• Simple derivatives (e.g., “a,” “ful”) |
| Familiarity\(^2\) (Age of Acquisition)   | • <4  
• 4.01-6  
• 6.01-8  
• 8.01+ |

\(^1\)Brysbaert et al., 2013  
\(^2\)Kuperman et al., 2012
<table>
<thead>
<tr>
<th>Study</th>
<th>Text Types and instruction</th>
<th>Study Findings</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Decodable vs. Leveled texts</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Juel &amp; Roper/Schneider (1985)</td>
<td>Core reading program or core phonics program with same decoding instruction</td>
<td>At end of year, groups did not difference on Iowa Reading Total Score.</td>
</tr>
<tr>
<td>Boylin (1998)</td>
<td>Predictable text, decodable text, decodable text plus explicit graphophonic decoding instruction</td>
<td>Predictable and decodable groups did not differ on any literacy measures at end of year; Strategy + decodable outperformed Decodable Group on word recognition at Time 2 but not Time 3.</td>
</tr>
<tr>
<td>Denton et al. (2014)</td>
<td>Leveled texts with guided reading, explicit phonics with decodable texts, typical school instruction</td>
<td>Both intervention groups performed significantly better than typical instruction on word id. Outcomes for intervention groups did not differ significantly from each other.</td>
</tr>
<tr>
<td><strong>Leveled texts re-sorted by decoding curriculum</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ehri et al. (2007)</td>
<td>Leveled texts re-organized to follow phonics curriculum, decodable texts with same curriculum, &amp; typical classroom texts</td>
<td>Students in reorganized text group made significantly greater gains reading words and comprehending text than decodable text group (d = 0.70) or typical classroom (d = 0.74).</td>
</tr>
<tr>
<td>Hiebert et al. (1992)</td>
<td>Leveled texts reorganized for phonics curriculum and same texts used in typical Chapter I instruction</td>
<td>Reorganized text group performed significantly higher than controls; students in reorganized text group with lowest entry scores performed comparably to average students at end of year.</td>
</tr>
<tr>
<td>Menon &amp; Hiebert (2005)</td>
<td>Reorganized leveled texts according to phonics curriculum vs. literature-based anthology texts</td>
<td>Intervention students outperformed students in comparison group on word and passage tasks.</td>
</tr>
<tr>
<td><strong>Multicriteria text</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cheatham et al. (2014)*</td>
<td>Multicriteria text or authentic text during independent reading time</td>
<td>No statistically significant group differences overall, although d = .67 for word reading of developing decoders in multicriteria group.</td>
</tr>
<tr>
<td><strong>Texts varying in decodability</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Jenkins et al. (2004)#</td>
<td>Explicit phonics instruction with more or less decodable texts vs classroom control group</td>
<td>Both groups performed significantly better than controls on decoding and comprehension, but no significant effects between intervention groups.</td>
</tr>
<tr>
<td>Hiebert &amp; Fisher (2016)</td>
<td>Explicit phonics instruction with decodable texts based on either LSC or rime vs typical instruction</td>
<td>On measures of word identification, fluency, &amp; comprehension, both intervention groups performed significantly better than controls; rime-based text group performed better than LSC-based text group on all measures.</td>
</tr>
</tbody>
</table>

Interventions conducted with first graders with these exceptions: •Grade 2; •Kindergarten; •Grades 2-5; #In Jenkins et al. study, texts were established to be decodable according to LTTM model.
I want a cat. I want a fish.
But I do not want my cat to want my fish!
<table>
<thead>
<tr>
<th>WORD FEATURE</th>
<th>DESCRIPTION</th>
<th>DISTRIBUTION IN LEVEL A Texts</th>
</tr>
</thead>
</table>
| Decodability (Letter-Sound Correspondences for vowels) | - short vowels  
- long vowels  
- complex vowels  
- variant vowels  
- short vowels in 1st syllable | 59%  
2% |
| Frequency | - 100 most-frequent words  
- 300 most-frequent words  
- 1000 most-frequent words | 51%  
9%  
12% |
| Concreteness/imageability$^1$ | - 3.75-4.24  
- 4.25-4.74  
- 4.75-5 | 8%  
12%  
24% |
| Familiarity$^2$ (Age of Acquisition) | - <4  
- 4.01-6  
- 6.01-8  
- 8.01+ | 53%  
42%  
5%  
.3% |
| Morphology | - Inflected endings  
- Compound words  
- Simple derivatives (e.g., “a,” “ful”) | |

$^1$Brysbaert et al., 2013  
$^2$Kuperman et al., 2012
<table>
<thead>
<tr>
<th>WORD FEATURE</th>
<th>DESCRIPTION</th>
<th>DISTRIBUTION IN LEVEL A TEXTS</th>
<th>DISTRIBUTION IN RAVE-O TEXTS</th>
</tr>
</thead>
</table>
| **Decodability** (Letter-Sound Correspondences for vowels) | •short vowels  
•long vowels  
•complex vowels  
•variant vowels  
•short vowels in 1st syllable | 2%                            | 8%                            |
| **Frequency**                    | •100 most-frequent words  
•300 most-frequent words  
•1000 most-frequent words | 51%                           | 50%                           |
| **Concreteness/ imageability¹**  | •3.75-4.24  
•4.25-4.74  
•4.75-5 | 8%                            | 11%                           |
| **Familiarity²** (Age of Acquisition) | •<4  
•4.01-6  
•6.01-8  
•8.01+ | 53%                           | 48%                           |
| **Morphology**                   | •Inflected endings  
•Compound words  
•Simple derivatives (e.g., “a,” “ful”) |                  |                               |

¹Brysbaert et al., 2013  
²Kuperman et al., 2012)
EVIDENCE FOR EFFICACY OF LTTM & MC TEXTS
RESEARCH APPROACHES TO DESCRIBE TEXT EFFICACY
Efficacy of decodable texts and non-decodable texts: Pugh, Kearns, & Hiebert (2023)

Study used effect size data from three recently published meta-analyses of the effects of reading interventions on reading achievement of students with reading difficulty in kindergarten through third grade.

Effect sizes for interventions with:
- Decodable texts: .50
- Non-decodable texts: .49
- No text: .41
- Decodable & non-decodable texts: .66
Computational Modeling

- The training set consisted of items from three text sets (two decodable; non-decodable).

- Testing sets comprised items on the Woodcock-Johnson III Letter-Word Identification subtest and The English Lexicon Project (ELP) naming data.

- The dependent variable was item accuracy after 20 training epochs.

- Model performance correlated strongly with difficulty of WJ3-LWID items ($\rho = .69$). The correlation with mean ELP accuracy was lower ($r = .36$). Average performance on nondecodable-text words was better than on decodable-text words, but the nondecodable texts also included more high-frequency words. Performance on words unique to each text type was better for decodable texts.

- Comparisons suggest that, although decodable texts allow application of sound-spelling knowledge to many words, reading nondecodable texts may lead to better performance on words students will see more often.
The Research We Need: Decodable Texts

1. What evidence is there for the “if taught, then learned”? Specifically, how does the pace of introducing LSCs correspond to the learning trajectories of the children who learn to read in school?

2. LTTM model is based on LSCs within words and connection to lessons as the basis for decodability. Neither the number of different words in which LSCs appear nor repetition of words is a consideration in calculation of decodability. What evidence validates low levels of repetition of words?

3. In initial texts, students see little variation in LSC patterns. Number of letters in words in RAVE-O example: X = 3.1; SD = .88. Does a steady treatment of little variation in word length and in LSCs (e.g., only words with short a) serve as a support or hindrance to word recognition?

<table>
<thead>
<tr>
<th>Text Feature</th>
<th>Economy’s Keys to Reading (1972)</th>
<th>Open Court (2000)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unique Words per 100</td>
<td>14</td>
<td>23</td>
</tr>
<tr>
<td>Single-appearing words (%)</td>
<td>1</td>
<td>10</td>
</tr>
</tbody>
</table>
More information: TextProject.org

Queries: Hiebert@textproject.org