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

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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)

Lesson-to-Text Match (LTTM Stein et al., 1999). Unit of decodability is the letter-sound correspondence (LSC). If a lesson in teacher's guide has been provided on all LSCs within a word, it is decodable. [Words can also be taught as sight words and included in the "decodable" metric.]

Texts from: Wolf, M. (2011). RAVE-O. Cambium.

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

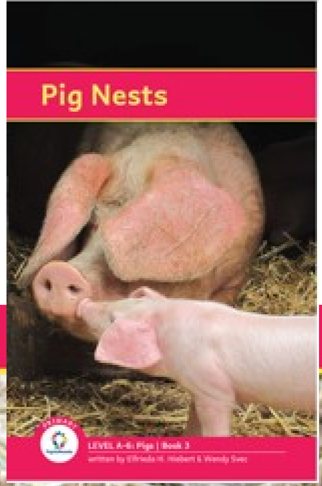
WORD FEATURE	DESCRIPTION
Decodability (Letter-Sound Correspondences for vowels)	•short vowels •long vowels •complex vowels •variant vowels •short vowels in 1st syllable
Frequency	•100 most-frequent words •300 most-frequent words •1000 most-frequent words
Concreteness/ imageability[1]	•3.75-4.24 •4.25-4.74 •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)

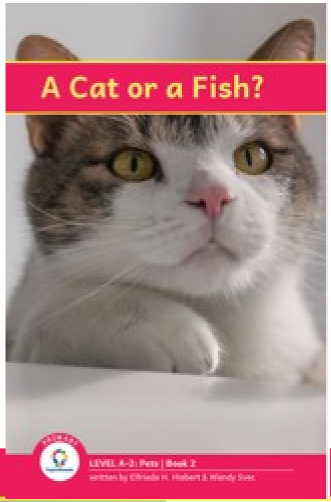
Multiple-Criteria texts

Study	Text Types and instruction	Study Findings
Decodable vs. Leveled texts		
Juel & Roper/ Schneider (1985)	Core reading program or core phonics program with same decoding instruction	At end of year, groups did not difference on Iowa Reading Total Score.
Boylin (1998)	Predictable text, decodable text, decodable text plus explicit graphophonic decoding instruction	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.
Denton et al. (2014)	Leveled texts with guided reading, explicit phonics with decodable texts, typical school instruction	Both intervention groups performed significantly better than typical instruction on word id. Outcomes for intervention groups did not differ significantly from each other.
Leveled texts re-sorted by decoding curriculum		
Ehri et al. (2007)	Leveled texts re-organized to follow phonics curriculum, decodable texts with same curriculum, & typical classroom texts	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).
Hiebert et al. (1992)	Leveled texts reorganized for phonics curriculum and same texts used in typical Chapter I instruction	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.
Menon & Hiebert (2005)	Reorganized leveled texts according to phonics curriculum vs. literature-based anthology texts	Intervention students outperformed students in comparison group on word and passage tasks.
Multicriteria text		
Cheatham et al. (2014)*	Multicriteria text or authentic text during independent reading time	No statistically significant group differences overall, although *d = .67 for* word reading of developing decoders in multicriteria group
Price-Mohr & Price (2017, 2020)**	Synthetic phonics instruction with decodable or nondecodable texts vs control	2020, 2017: statistically significant difference for reading comprehension favoring low phonically-decodable texts.
Texts varying in decodability		
Jenkins et al. (2004)#	Explicit phonics instruction with more or less decodable texts vs classroom control group	Both groups performed significantly better than controls on decoding and comprehension, but no significant effects between intervention groups.
Hiebert & Fisher (2016)	Explicit phonics instruction with decodable texts based on either LSC or rime vs typical instruction	On measures of word identification, fluency, & comprehension, both intervention groups performed significantly better than controls; rime-based text group performed better than LSC-based text group on all measures.

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.



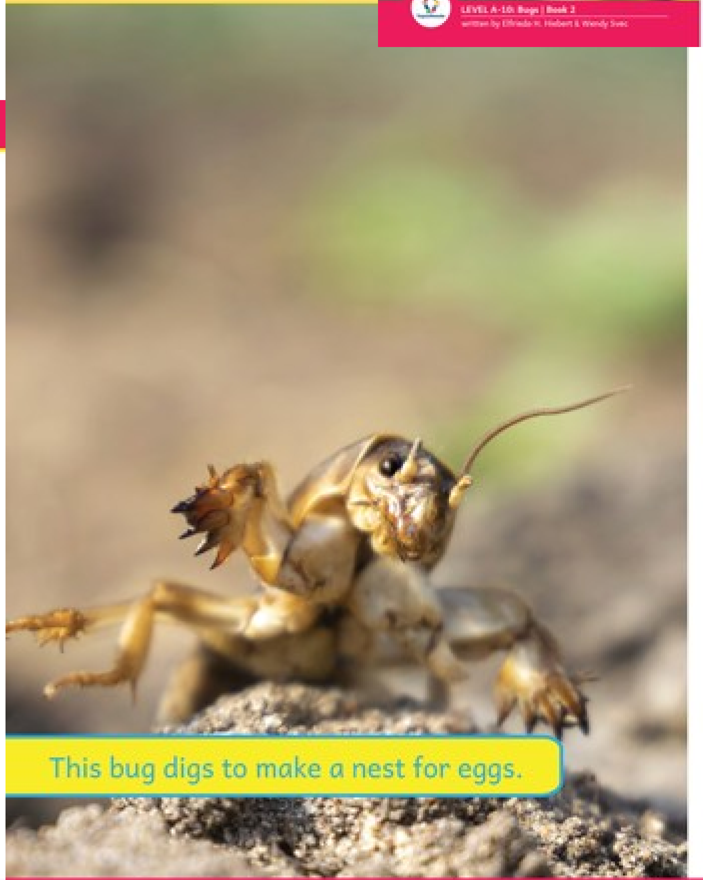
This pig digs into a nest.



The cat is looking at the fish

I want a cat. I want a fish.

But I do not want my cat
to want my fish!



This bug digs to make a nest for eggs.

WORD FEATURE	DESCRIPTION	DISTRIBUTION IN LEVEL A Texts
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	•Infected endings •Compound words •Simple derivatives (e.g., "a," "ful")	

[1]Brysbaert et al., 2013

[2]Kuperman et al., 2012)

WORD FEATURE	DESCRIPTION	DISTRIBUTION IN LEVEL A TEXTS	DISTRIBUTION IN RAVE-O TEXTS
Decodability (Letter-Sound Correspondences for vowels)	•short vowels •long vowels •complex vowels •variant vowels •short vowels in 1st syllable	59% 2%	71% 8%
Frequency	•100 most-frequent words •300 most-frequent words •1000 most-frequent words	51% 9% 12%	50% 4% 11%
Concreteness/ imageability[1]	•3.75-4.24 •4.25-4.74 •4.75-5	8% 12% 24%	11% 17% 11%
Familiarity[2] (Age of Acquisition)	•<4 •4.01-6 •6.01-8 •8.01+	53% 42% 5% .3%	48% 38% 8% 6%
Morphology	•Infected endings •Compound words •Simple derivatives (e.g., "a," "ful")		

[1]Brysbaert et al., 201338%

[2]Kuperman et al., 2012)8%

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

D. Kearns, M. Cooper-Borgenhagen, E.H. Hiebert, Rueckl, N. Crook (July 2024). *Computational modeling of various print learning environments.* Paper to be presented at the annual meeting of the Society for the Study of Reading, Copenhagen

•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?

Text Feature	Economy's Keys to Reading (1972)	Open Court (2000)
Unique Words per 100	14	23
Single-appearing words (%)	1	10

3. In initial texts, students see little variation in LSC patterns. Number osf 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?

Looking for answers from the science of reading: 12 Questions (https//textproject.org/twelve-questions/

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