### Beyond Single Measures of Text Complexity: Addressing the Interactions of Readers, Texts, and Tasks

Elfrieda H. Hiebert

TextProject &

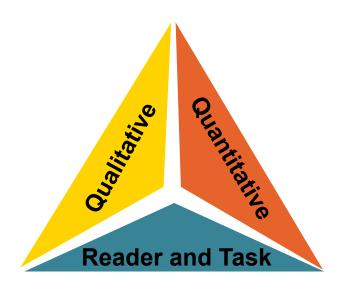
University of California, Santa Cruz

### Standard 10: Range, Quality, & Complexity of Student Reading

Grade 6 students:  Range of Reading and Level of Text Comple	xity	Grade 7 students:		Grade 8 students:
<ol> <li>By the end of the year, read and comprehend literature, including stories, dramas, and poems, in the grades 6–8 text complexity band proficiently, with scaffolding as needed at the high end of the range.</li> </ol>		By the end of the year, read and comprehend literature, including stories, dramas, and poems, in the grades 6-8 text complexity band proficiently, with scaffolding as needed at the high end of the range.	10.	By the end of the year, read and comprehend literature, including stories, dramas, and poems, at the high end of grades 6–8 text complexity band independently and proficiently.

### Measuring Text Complexity

Text features measured by an attentive human reader



Quantitative features typically measured by computer software

Such assessments are best made by teachers employing their professional knowledge of their students and the subject.

#### **Qualitative Measurement**

- Guided Reading Levels:
  - Two experienced judges:
    - O/P (Grade 3) or Q/R (Grade 4)
- CCSS Rubric:
  - Levels of Meaning: Explicitly stated purpose
  - Structure: Explicit; Traits of a common genre
  - Language conventionality & clarity: literal
  - knowledge demands: some specialized knowledge; low intertextuality
  - FAIRLY SIMPLE

One scientist who spent an entire winter observing these amazing birds says it is staggering to see 10,000 penguins in a single quiet huddle. The temperature inside can be 77°F. Standing nearby when a huddle breaks up, observers can feel, smell, even see the heat. It's like a wall of steam. The penguins are packed in so tightly that when one comes out, the bird is square-shaped for a few moments from the pressure of the other birds.

#### All for One

Not only is it unbelievably cold while the emperor dad stands holding his egg all winter, it's also dark.

Nevertheless, he keeps the egg warm, without stopping for anything, even food. He loses up to a half of his body weight before his mate comes back from feeding at sea in July. She takes over the egg, which then hatches.

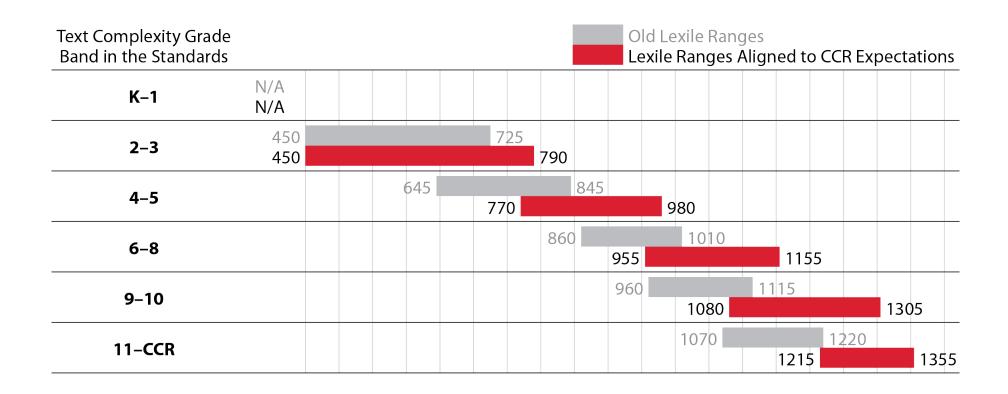
The male finally gets to go eat. When he gets back, the parents take turns holding the chick on their feet to keep it warm for the next eight weeks. At that point it's old enough to safely stand on the ice by itself.



A newly hatched chick stays warm by standing on top of a parent's feet.



## CCSS Staircase of Text Complexity (in Appendix A, 2010)



### Supplement to Appendix A (2012)

#### **Common Scale for Band Level Text Difficulty Ranges**

Common Scale	Text Analyzer Tools					
for Band	ATOS	DRP	FK	Lexile	SR	RM
2nd-3rd	2.75-5.14	42-54	1.98-5.34	420-820	0.05-2.48	3.53-6.13
4th-5th	4.97-7.03	52-60	4.51-7.73	740-1010	0.84-5.75	5.42-7.92
6th-8th	7.00-9.98	57-67	6.51-10.34	925-1185	4.11-10.66	7.04-9.57
9th-10th	9.67-12.01	62-72	8.32-12.12	1050-1335	9.02-13.93	8.41-10.81
11th-CCR	11.20-14.10	67-74	10.34-14.20	1185-1385	12.30-14.50	9.57-12.00

#### Key:

ATOS ATOS® (Renaissance Learning)

DRP Degrees of Reading Power® (Questar Assessment, Inc.)

FK Flesch Kincaid® (public domain, no mass analyzer tool available)

Lexile Lexile Framework® (MetaMetrics)

SR Source Rater© (Educational Testing Service)

RM Pearson Reading Maturity Metric© (Pearson Education)

#### Themes of the Presentation:

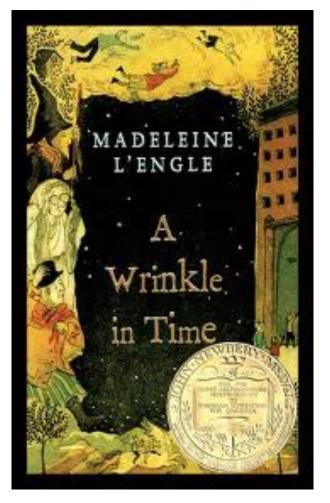
- Quantitative (or qualitative) assessments that give a single number or letter don't help teachers know what to teach or how to match students with texts that support their growth in reading.
- II. There is quantitative information that can aid teachers in choosing *what texts* to teach and *how* to assign appropriate texts to students.
  - a) In particular, information provided from large digital databases of texts means that vocabulary representing key concepts and potentially challenging for readers can be identified.
  - b) But there are other quantitative features of texts that matter a great deal in students' growth of reading capacity and also their ability to read texts independently.

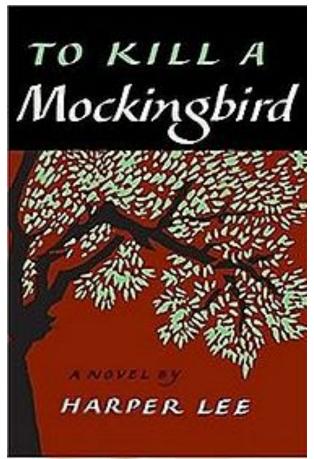
# I. Uses Of Omnibus Measures Of Text Complexity

# LOUISE ERDRICH BIRCHBARK House

Grs. 4-5

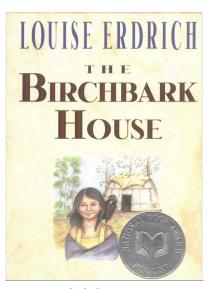
Grs. 6-8



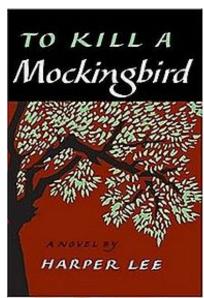


Grs. 9-10

### Model 1: A "Number" or a Grade Level Assigned for an Entire Text







Common Scale			Text \na\v	zer Tools		
for Band	ATOS	Dkr	Fix	Lexile	SR	RM
2nd-3rd	2.75-5.14	42-54	1.98-5.34	420-820	0.05-2.48	3.53-6.13
4th-5th	4.97-7.03	52-60	4.51-7.73	740-1010	0.84-5.75	5.42-7.92
6th-8th	7.00-9.98	57-67	6.51-10.34	925-1185	4.11-10.66	7.04-9.57
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### Summary of Text Difficulty/Readability Systems

- Narrative: Typically Underestimated
- Informational: Typically Overestimated



Text Matters— www.textproject.org

#### Readability and the Common Core's Staircase of Text Complexity

#### Elfrieda H. Hiebert

Text Project & University of California, Santa Cruz

For a long time, educators have asked questions about what makes a text complex. Why is it harder for students to read some books than others? How are we to help students select texts that will challenge them without frustrating them? What type of texts will increase their reading achievement most effectively?



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For more information about Text Matters, visit www.textproject.org/text-matters

By adding text complexity as a dimension of literacy, the Common Core State Standards for English Language Arts (CCSS/ELA; Common Core State Standards Initiative, 2010) bring these questions to the fore. To establish text complexity, the standards propose a three-proneed system:

- qualitative analyses of features such as levels of meaning (e.g., readers need to make inferences to understand a character's motive):
- reader-task variables such as readers' background knowledge of a text's topic and ways in which teachers and situations influence readers' interactions with a text (e.g., an audio of a book or the level of teacher guidance); and
- quantitative indices such as information on the number of infrequent words and length of sentences (e.g., word indexes, sentence-length formulas, or automatic readability programs).

The Reading Teacher, 2013, 66(6)

#### SUPPORTING STUDENTS' MOVEMENT UP THE STAIRCASE OF TEXT COMPLEXITY

Elfrieda H. Hiebert

The Common Core State Standards foreground text complexity. But what does this mean for a classroom teacher working with a specific text and a group of students?

hy is it hander for students to read some books than others? How are we to help students select tasks that will challenge them without frustraing them? What type of texts will increase their reading achievement most effectively? By adding text complexity as a dimension of literacy, the Common Core State Standards for English Language Arts (CZSS/ELA, National Covernors Association Center Flore Rest Practices & Council of Chief State School Officers, 2010) bring these questions to the fore. The Text Complexity Multi-Index (TCMI) is a four-step process that teachers can use in matching toxis and students. This article provides an overview of each step in the process along with the manner in which

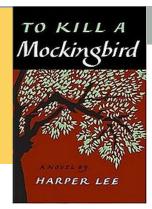
Lauren (a pseudonym), a second-grade teacher, used the TCMI four-step process.

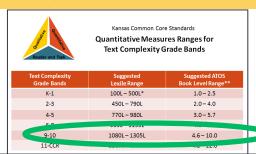
Lauren teaches in a state committed to the goals of the CSS. CCSS writters have recommended a staincase of text complexity in Appendix A to ensure that high school seniors are able to read at cellage and career levels and have extended the ranges in a recent publication (Nelson, Perfetti, Liben, & Liben, 2012. As Laura began planning a week of instruction in the third trimester of second grade, she choos to examine two texts, which were available of

Elfridge H. Hiebert is president and CEO of TextProject, Santa Chur,

The Reacing Teacher Vol. 66 beam 6 pp. 469-468 DOHO/002/TRITR/149 @2013 International Reacing Association

### Model 2: Qualitative/ Quantitative/Reader-Text Systems







Meaning

TEXT COMPLEXITY: QUALITATIVE MEASURES RUBRIC

#### LITERARY TEXTS

STRUCTURE

LL VLLO OI		
Middle High	Middle Low	Low
Multiple Levels of Meaning	☐ Single Level of Complex Meaning	☐ Single Level of Simple Meaning

#### High

High

Multiple Levels of Complex

- □ Narrative Structure: complex, implicit, and unconventional
- □ Narration: many shifts in point of
- Order of Events: not in
- chronological order

  Use of Graphics: sophisticated
  graphics, essential to understanding
  the text, may also provide information
  not otherwise conveyed in the text

#### Middle High

- Narrative Structure: some complexities, more implicit than explicit, some unconventionality Narration: occasional shifts in point
- of view

  Order of Events: several major shifts
- in time, use of flashback

  Use of Graphics: some sophisticated graphics, may occasionally be essential to understanding the text

#### Middle Low

- □ Narrative Structure: largely simple structure, more explicit than implicit, largely conventional
- Narration: few, if any, shifts in point
- of view

  Order of Events: occasional use of
- flashback, no major shifts in time

  Use of Graphics: largely simple
  graphics, supplementary to
  understanding of the text

#### Low

- Narrative Structure: simple, explicit, conventional, no shifts in point of view
- ☐ Narration: no shifts in point of view
- □ Order of Events: chronological
- ☐ Use of Graphics: use of simple graphics, unnecessary to understand the text

#### LANGUAGE CONVENTIONALITY AND CLARITY

#### High

- Meaning: implicit or inferred meaning, heavy use of figurative or ironic language, may be purposefully ambiguous or misleading at times
- □ Register: generally unfamiliar, archaic, domain-specific, or overly academic

#### Middle High

- Meaning: some implicit or inferred meaning, use of figurative or ironic language
- Register: occasionally unfamiliar, archaic, domain-specific, or overly academic

#### Middle Low

- Meaning: largely explicit and literal meaning, subtle use of figurative or ironic language
- Register: largely contemporary, familiar, conversational, rarely unfamiliar, archaic, domain-specific, or overly academic

#### Low

- Meaning: explicit and literal meaning, little or no use of figurative or ironic language
- Register: contemporary, familiar, conversational

#### KNOWLEDGE DEMANDS

#### High

- □ Life Experiences: explores complex, sophisticated, multiple themes; experiences portrayed are not fantasy but are distinctly different from the common reader
- ultural/Literary Knowledge: many references/allusions to other texts (intertextuality) and cultural elements
- Subject Matter Knowledge: requires extensive, perhaps specialized content knowledge

#### Middle High

- Life Experiences: explores multiple themes of varying levels of complexity; experiences portrayed are not fantasy but are uncommon to most
- Cultura/Literary Knowledge: some references/allusions to other texts (intertextuality) and cultural elements
- ☐ Subject Matter Knowledge: requires moderate levels of content knowledge

#### Middle Low

- Life Experiences: explores a single complex theme; experiences portrayed are common to many readers or are clearly fantasy
- Cultural/Literary Knowledge: few references/allusions to other texts (intertextuality) and cultural elements
- Subject Matter Knowledge: requires some content knowledge

#### Low

- □ Life Experiences: explores a single theme; experiences portrayed are everyday and common or are clearly fantasy
- Cultural/Literary Knowledge: no references/allusions to other texts (intertextuality) and cultural elements
- Subject Matter Knowledge: requires only everyday content knowledge



Kansas Common Core Standards

#### Quantitative Measures Ranges for Text Complexity Grade Bands

Text Complexity Grade Bands	Suggested Lexile Range	Suggested ATOS Book Level Range**
K-1	100L - 500L*	1.0-2.5
2-3	450L – 790L	2.0 – 4.0
4-5	7701 – 9801	<del>5.0−</del> 5.7
6-8	955L – 1155L	4.0 - 8.0
9-10	1080L - 1305L	4.6 – 10.0
11-CCR	1215L – 1355L	4.8 – 12.0

- \* The K-1 suggested Lexile range was not identified by the Common Core Sta
- \*\* Taken from Accelerated Reader and the Common Core State Standards, at http://doc.renlearn.com/KMNet/R004572117GKC46B.pdf

Lexile: 870

ATOS: 5.6

#### Questions for Professional Reflection on

#### Reader and Task Considerations

#### Cognitive Capabilities

- Does the reader possess the necessary attention to read and comprehend this specific text?
- Will the reader be able to remember and make connections among the various details presented in this specific text?
- Does the reader possess the necessary critical/analytic thinking skills to understand the relationships between the main idea, purpose, and/or theme of the text and the various details used to support that main idea, purpose, and/or theme?
- Will this specific text help to develop the attention, memory, and critical/analytic thinking skills necessary for future reading endeavors?

#### Reading Skills

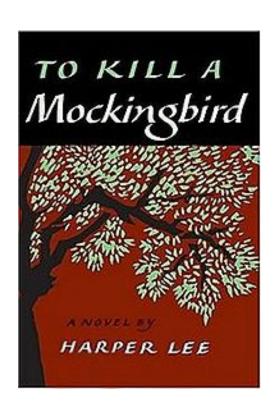
- Does the reader possess the necessary inferencing skills to "read between the lines" and make connections among elements that may not be explicit in this specific text?
- Does the reader possess the necessary visualization skills to imagine what is occurring or what is being described in this specific text?
- Does the reader possess the necessary questioning skills to challenge the ideas being presented in this text and consider those ideas from multiple points of view?
- Does the reader possess the necessary comprehension strategies to manage the material in this specific text?
- Will this specific text help to develop the inferencing skills, visualization skills, questioning skills, and comprehension strategies necessary for future reading endeavors?

#### Motivation and Engagement with Task and Text

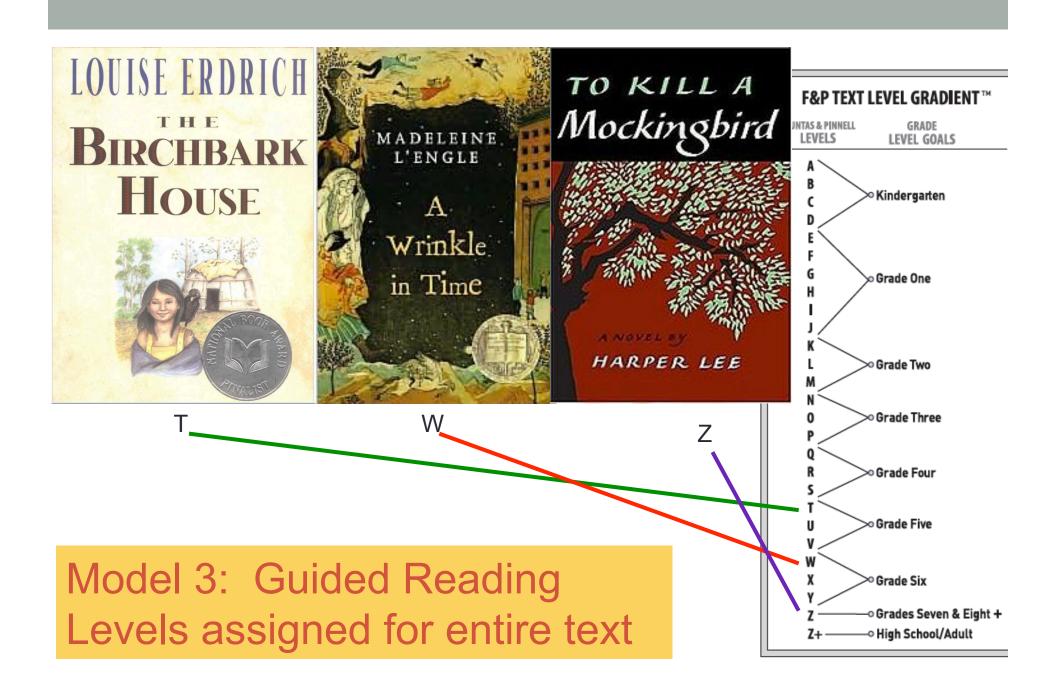
- Will the reader understand the purpose—which might shift over the course of the reading experience—for reading this specific text (i.e., skimming, studying to retain content, close reading for analysis, etc.)?
- . Will the reader be interested in the content of this specific text?



Based upon all the information—all three legs of the model—the final recommendation for *To Kill a Mockingbird* is....



Text Complexity Grade Bands	
K-1	
2-3	
4-5	
6-8	
9-10	
11-CCR	



T	W	Z
Informational texts, more complex fantasy, realistic fiction, traditional literature (folktales), biographies, autobiographies, memoirs, mysteries, historical fiction, short stories, genre combinations (hybrids), diaries	[verbatim from T]	[verbatim from T & W]
Themes focusing on the problems of preadolescents, human problems (war, hardship, economic issues); themes evoke alternative interpretations	Mature societal issues, especially those important to adolescents; wide range of challenging themes that build social awareness and reveal insight into the human condition	[verbatim from W]
Some words from languages other than English; words used in regional or historical dialects; Many words with affixes; multisyllable proper nouns that are difficult to decode	Words that offer decoding challenges because they are archaic come from regional dialect or from languages other than English	[verbatim from W]

# II. Quantitative Information ThatCan Guide Instruction:Grades 2 & Beyond

### Purpose & Types of Information

For what purpose do we need information on a text's complexity?

#### A. Assessment

#### B. Instruction

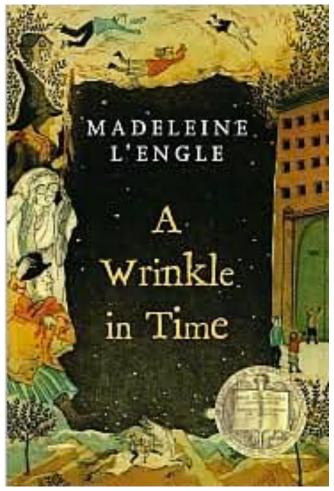
- Lessons: Ensuring the right texts so that students can be guided in acquiring new proficiencies—thus, growing their capacity.
- Student-text fit: Ensuring the right texts for lessons which give them appropriate deliberate practice.

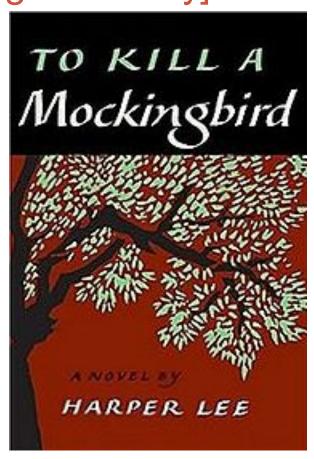
### First Count: Numbers Matter in Reading [e.g., amount of cognitive processing & memory]

LOUISE ERDRICH BIRCHBARK HOUSE

> Grs. 4-5: 40,026 words

Grs. 6-8: 50,040 words



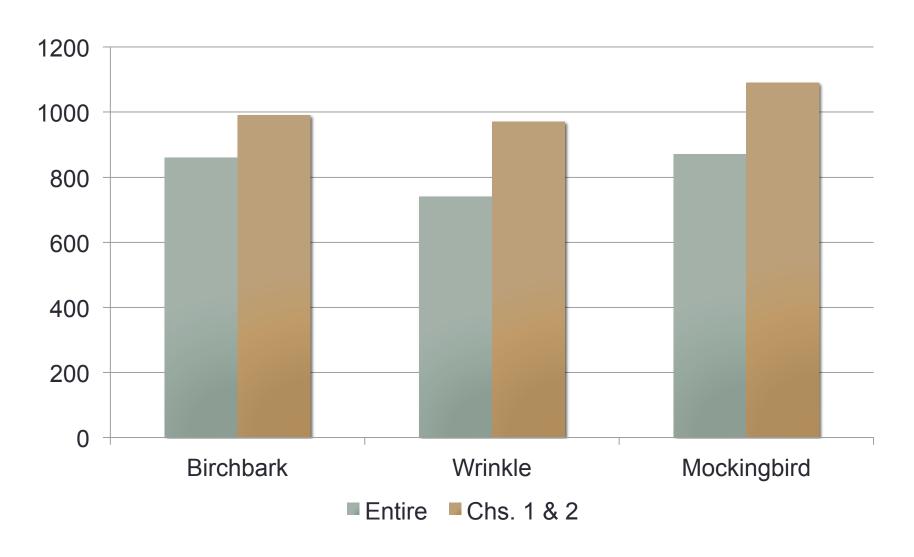


Grs. 9-10: 100,103 words

### Second Count: Numbers and their Implications Change Over a Text

- Complexity changes over the course of a text, as the reader builds a situation model.
- It is in the first chapter (and, often, the second as well) where the traits of characters, the context, and the precipitating problem are typically laid out. In terms of vocabulary, this portion of the text may be much more demanding than subsequent chapters.
- In reading the third and fourth chapters of novels like Birchbark House, A Wrinkle in Time or To Kill a Mockingbird, readers build on the background knowledge gained from the first two chapters of the text.

### Quantitative data (Lexiles) confirms this pattern.

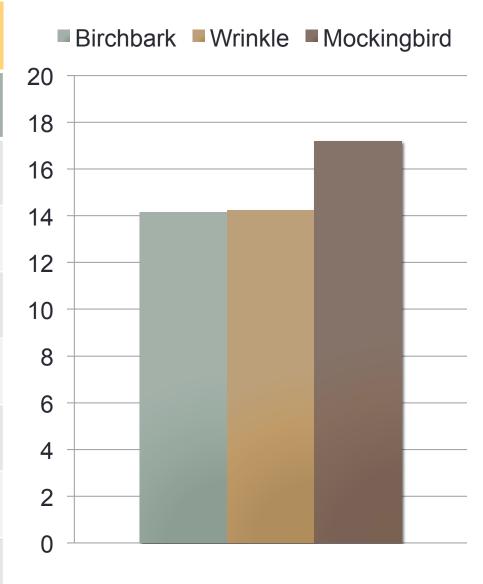


#### Third Count: Long Sentences Mean Numerous Propositions.

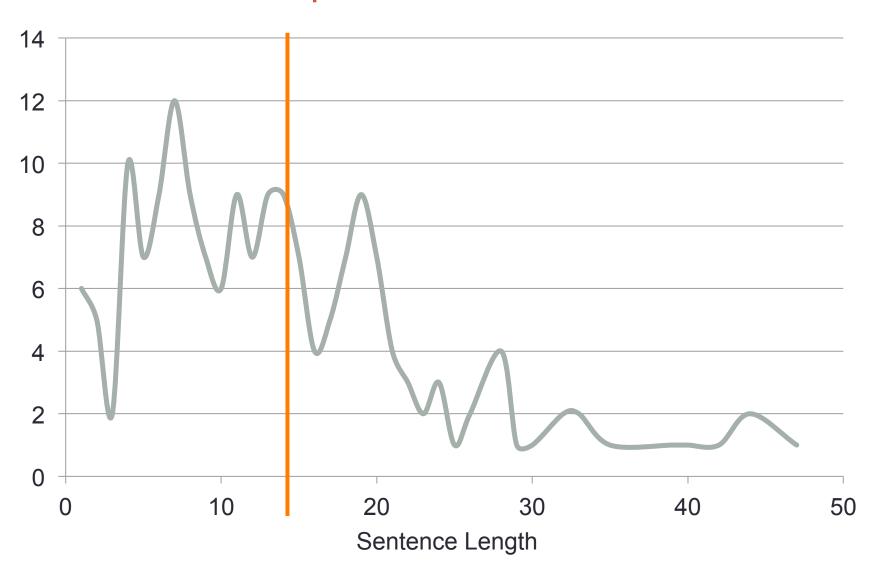
Chapters 1-2 Sentence Length

### Sentence Length & Lexiles: *R* = 0.94

	Narrative	Expository
0-200	5.3	4.9
201-400	6.2	6.3
401-600	8.6	8.3
601-800	10.9	10.6
801-1000	13.9	13.08
1001-1200	17.4	17.01
1200+	25.6	22.6



### Occurrences of Sentence Lengths: 1st Chapter of *Birchbark House*



As it grew dark, the family ate makuks of moose stew and fresh greens and berries, licked their fingers and bowls clean, and at last rolled themselves into warm, fluffy rabbit-skin blankets that still smelled of the cedary smoke of their winter cabin. They were glad to be close to fire, sleeping on soft grassy earth, under leafy sky, and best of all, near water. They fell asleep to the peaceful, curious, continual lapping sound of waves. The fresh wind across the big lake blew away the smoke of cooking fires and vanquished the mosquitoes that came out in whining droves and had plagued them in town. It was good to sleep where the village dogs didn't bark all night and where the only sound to disturb their dreams was the pine trees sifting wind in a lulling roar.

Unless, of course, it stormed.

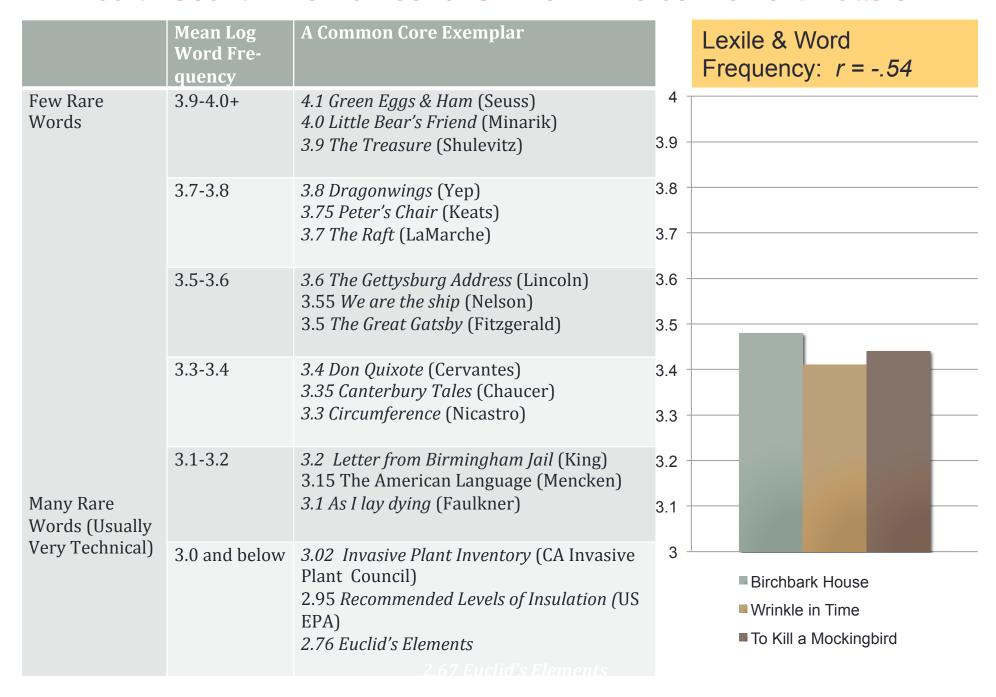
The moon went down to a fingernail's sliver and the corn popped from the ground. The leaves of the birch grew big enough to flutter in the wind. And then, one night, the first storm of the summer struck the island and startled everybody from their dreams.

The fire was down to red winking eyes when Omakayas woke with an uneasy feeling. Something approached. She'd felt a footstep. Omakayas was always the one to sleep near Grandma and now she rolled close. There was a lonely insistence to the sound of the wind, and then everything went still. Far off, she heard one huge footstep. There was a long silence. Then another step fell. The earth shook slightly beneath her, vibrated as though she lay on the head of a vast drum.

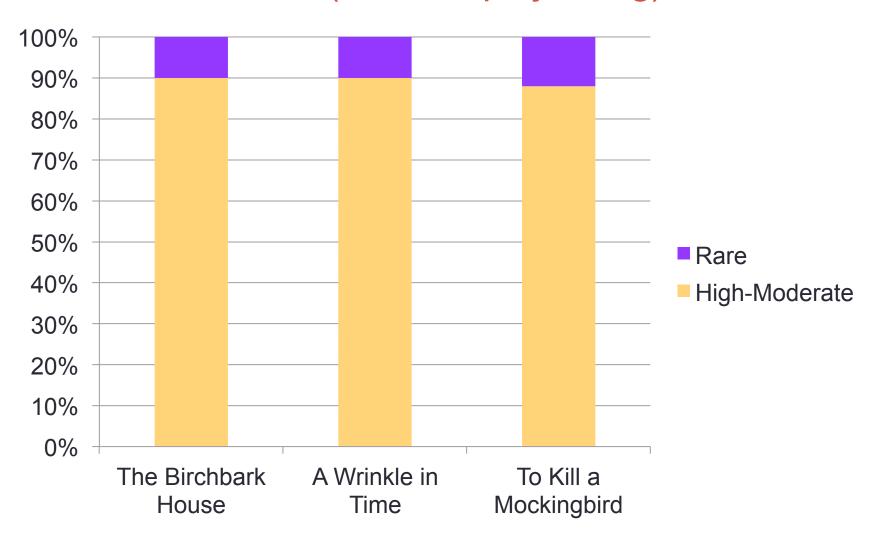
A drum! She remembered that Grandma had said the island was the drum of the thunder beings. Closer and closer they came, shaking earth with their footsteps. Omakayas's lonely feeling became fright. She hid her face and tried not to think of balls of witch fire or the hooting of Grandfather Owl. She tried to keep herself from picturing pakuks, the skeletons of little children, flying through the woods, or the icy breath of giant windigos striding over the ground, cracking trees off with every foot crunch. Another step. Another and another fell and then the wind howled to life. Rain slashed against the tightly sewn walls. A breath of air stirred up the slumbering coals and cast shadows leaping and fighting on the inside walls of the little birchbark house.

The willow poles trembled, bouncing with the force of the gusts of wind. The birchbark scraped and flapped but was held on with tight stitches. Omakayas hid her face as thunder rolled, smacking onto the lakeshore,

#### Fourth Count: The Number of Unknown Words in a Text Matters

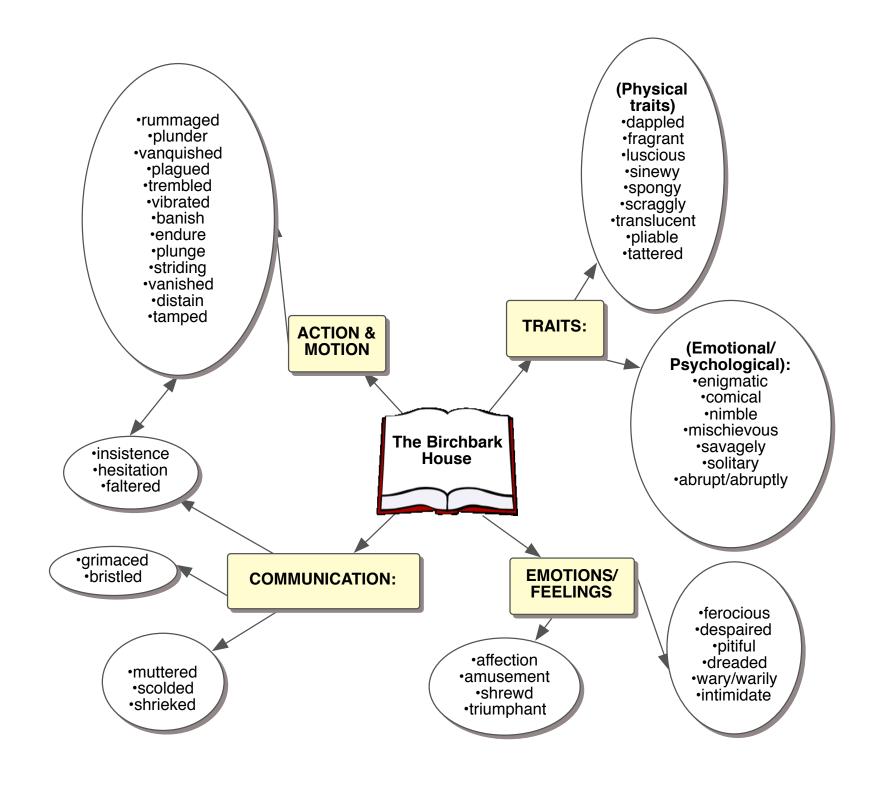


### An Alternative Perspective on Vocabulary: Word Zone Profiler (www.textproject.org)



### Rare words in Chapters 1-2

	Unique Words/ Total Words	Rare Words	Vetted Rare Words (Non-English)
Birchbark	1,557/5,718	345	52 (26)
Wrinkle	1,697/8,340	416	109 (5)
Mockingbird	1,893/7,317	507	83



**≺**○≻

As it grew dark, the family ate makuks of moose stew and fresh greens and berries, licked their fingers and bowls clean, and at last rolled themselves into warm, fluffy rabbit-skin blankets that still smelled of the cedary smoke of their winter cabin. They were glad to be close to fire, sleeping on soft grassy earth, under leafy sky, and best of all, near water. They fell asleep to the peaceful, curious, continual lapping sound of waves. The fresh wind across the big lake blew away the smoke of cooking fires and vanquished the mosquitoes that came out in whining droves and had plagued them in town. It was good to sleep where the village dogs didn't bark all night and where the only sound to disturb their dreams was the pine trees sifting wind in a lulling roar.

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### Final Observation about Quantitative Features of Texts: A View Across Entire Texts

	Total Words in Text	Potential Rare (Vetted)
Birchbark	40,026	2,415 (364)
Wrinkle	50,040	2,496 (654)
Mockingbird	100,103	7,605 (1,245)

#### Themes of the Presentation:

- Quantitative (or qualitative) assessments that give a single number or letter don't help teachers know what to teach or how to match students with texts that support their growth in reading.
- II. There is quantitative information that can aid teachers in choosing *what texts* to teach and *how* to assign appropriate texts to students.
  - a) In particular, information provided from large digital databases of texts means that vocabulary representing key concepts and potentially challenging for readers can be identified.
  - b) But there are other quantitative features of texts that matter a great deal in students' growth of reading capacity and also their ability to read texts independently.













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Common Core State Standards

**Text Complexity** 



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