

# ELA Knowledge Map<sup>TM</sup>



A unique analytic resource enabling policymakers, school leaders, and parents to better understand the strengths and weaknesses of the Journeys Grades K-5 English language arts curriculum.



The achievement gap is, in large part, a knowledge gap. Compelling research strongly affirms that students' reading levels – particularly from fifth grade onwards – relate deeply to their level of background content knowledge<sup>i</sup> Students in more affluent systems demonstrate more success in skill-based English language arts (ELA) assessments not only because they are better at "recognizing main ideas," but also because they are far more likely to know more about the subject matter discussed in any given text. Research from around the world shows the same: Most democracies around the world require all schools to teach a standard body of knowledge; and a comprehensive, content-rich curriculum is a signature feature of high-performing education systems. Despite the research record, a large number of the United States' ELA curricula treat texts not as a source of building knowledge, but merely as a site for attempting to hone abstract reading skills.

Determining whether a particular ELA curriculum is "standards aligned" is a helpful step, but it does not tell us about the knowledge-building capacity of that curriculum. For example: Instructional materials may use publisher-written texts that satisfy the standards-based requirement for "textual complexity," but if the materials fail to offer students a sequenced, knowledge-rich learning experience simultaneously, they miss a critical opportunity to build reading fluency. Merely drilling students on "finding the main idea" will never help them become better readers. Instead, they need to understand what the text is really about - something that can only be achieved by encountering the background knowledge that pertains.

The Johns Hopkins Institute for Education Policy (Institute) has developed the ELA Knowledge Map™, a tool with which to evaluate an ELA curriculum in terms of the knowledge it offers students, both about the world (mainly through nonfiction texts) and about psychology and the human condition (through both nonfiction and fiction texts). The Institute conducts this analysis by "mapping" the knowledge domains implicit in the selection of the documents to be read, while also evaluating each text's quality and the coherence of the unit in which is taught. To measure coherence, we assess the degree to

which supporting materials in a unit amplify and deepen the specific knowledge offered in the anchor text.

Each review generates two visual reports: *Knowledge Heat Maps* and *Unit Coherency Maps*. The maps depict the fields of knowledge opened and those missed, in each grade and cumulatively, and with what quality of texts.

The Knowledge Map<sup>™</sup> is a one-of-a-kind analytic resource that enables policymakers, school leaders, and parents to better understand the overall strengths and weaknesses of a given curriculum; instructional leaders to "fill in gaps" that might exist; and publishers to continuously improve the materials they offer the public.

For the following report, the Institute evaluated Houghton Mifflin Harcourt Journeys ("HMH Journeys") curriculum for Grades K-5. This analysis covers a representative sample based on materials provided by the system, and does not account for more specific variety in the selected texts.

#### **METHODOLOGY**

- The Institute maps all items in the evaluated grades on three initial dimensions and at different grain sizes of coverage. For example, a letter by abolitionist Thomas Garrett about Harriet Tubman would be categorized like so:
  - o **Domain:** U.S. History to 1865
  - o **Topic:** Slavery/Abolition
  - o **Subtopics:** Harriet Tubman; Underground Railroad
- The Institute evaluates the quality of every student-facing resource both individually and in the broader context of the unit.
- The Institute constructs a vertical mapping of the knowledge domains at each level, first by grade and then across multiple grades.
- The Institute creates a coverage report that visually illustrates the depth of emphasis a given domain receives across the grades.

#### **HIGH-LEVEL FINDINGS**

The Institute's analysis of the HMH Journeys curriculum finds that the materials included are generally high-quality at higher grade levels. Of the seven evaluated grade levels, five fall well within the threshold for high quality; however, the two that do not scored particularly poorly.

Additionally, the curriculum presents strengths in specific areas of knowledge reinforcement. The Institute's heat map analysis reveals strong or adequate reinforcement in social-emotional and literary domains. The results of the Social-Emotional and American Literature heat maps in particular indicate that the Journeys curriculum successfully addresses relevant concepts that can be applied both within and outside of the classroom.

However, the heat maps also reveal certain gaps in instruction that a more well-rounded ELA curriculum could meaningfully address. Many of the moderately-rated knowledge domains fell on the

<sup>&</sup>lt;sup>1</sup> Unit coherency maps will only be generated if the curriculum materials enable that form of analysis.

cusp between a moderate score and a weak one, indicating potential missed opportunities for instruction in other relevant topics. For instance, weaknesses in the Diversity, Equity, & Inclusion knowledge domain suggest an area for improvement in the curriculum's scope.

Unit-level coherence within individual grade levels varies, and generally represents an area for potential improvement. Though the general quality of the units remains high, many units fail effectively to link the anchor text and supplementary materials together, which will hinder the overall cognitive effectiveness of the unit. Focusing in on additional ways to reinforce the main themes and ideas of individual units would ensure that the students complete each unit with a well-rounded understanding of the included topics.

#### INSTITUTE RECOMMENDATIONS

HMH Journeys curriculum provides ELA coursework that intends to improve knowledge acquisition and reinforcement through the use of high-quality, relevant materials. The Knowledge Map™ analysis highlights critical areas of knowledge building and assesses the curriculum's notable strengths and weaknesses. Based on these exercises, the Institute recommends the following:

- Ensure meaningful coverage across grade levels in those knowledge domains where gaps are indicated, and where the district agrees that the missing knowledge is both important in itself and in terms of the coursework's scope.
- Improve the general coherence of units by ensuring, where necessary, higher levels of reinforcement between anchor texts and their supporting materials.
- Evaluate units particularly in the lower grade levels for the presence of low-quality or irrelevant texts and consider their elimination and replacement by additional high-quality materials.

The report will now elaborate on the specific findings of the Knowledge Map™ exercises.

# HMH JOURNEYS KNOWLEDGE/HEAT MAPS: GRADES K-5

One of the Institute's critical gateway questions addresses the level of exposure children receive to each important domain of knowledge and to the topics within those domains. Each heat map expresses the findings visually using a color-coding scheme, as shown in Figure 1 below. Lighter blue squares represent fewer knowledge-building texts, such as one or no text, while darker blue squares represent more knowledge-building texts, such as eight or more. The results for each of the twelve topical domains in Grades K-5 appear in the figures below.

Figure 1. Heat map color-coded rating scheme of knowledge building, where lighter blue indicates fewer texts and darker blue indicates a larger number of texts.

#### **Strong Knowledge-Building Domains**

The curriculum presents robust knowledge building in several domains and additional topics, shown below alphabetically when similarly rated. Strong knowledge-building domains appear in the heat maps as dark blue, indicating that many texts address the topic (for instance, the heat map categories of 8+ Texts or 5-7 Texts).

Within the Journeys curriculum, two domains scored strongly for knowledge-building – American Literature (Figure 2) and Social-Emotional (Figure 3). Both of these domains presented high numbers of texts regarding many topics and across many grades, indicating that the knowledge established in early years is expanded as students progress.

Additional knowledge domains exhibit patterns of strength in specific topics across grade bands. One pattern appears as large numbers of texts on a particular topic across all grades. Within the Science domain (Figure 8), which scored moderately overall, the Animals topic is strongly covered at all grade levels. A second pattern includes large numbers of texts across domain topics within an individual grade band. In the visual heat map, this would appear as dark columns underneath a specific grade level.



Figure 2. Heat map analysis of the American Literature knowledge domain in Grades K-5.

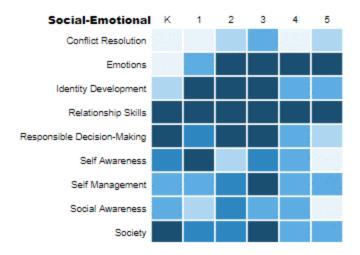


Figure 3. Heat map of the Social-Emotional knowledge domain in Grades K-5.

# **Moderate Knowledge-Building Domains**

The curriculum presents several moderate knowledge-building domains and topics. Moderate knowledge-building domains appear in the heat maps as mixed blue, indicating that few or some texts address the topics within them (for instance, the heat map category of 2-4 Texts).

Eight knowledge domains achieved moderate scores for coverage within this curriculum – American History & Geography (Figure 4), Global Literature (Figure 5), Music & Performing Arts (Figure 6), Public Institutions (Figure 7), Science (Figure 8), Language & Linguistics (Figure 9), Visual Arts (Figure 10), and Diversity, Equity, & Inclusion (Figure 11). As the graphics below will indicate, these domains show more noticeable gaps in instruction; however, they still include an adequate level of coverage on a variety of topics.

Beyond these domains, patterns of moderate knowledge building appear within other maps. One pattern appears as moderate coverage in topics across grade levels. While the Diversity, Equity, & Inclusion domain (Figure 11) has a moderate knowledge building in topics such as the African American Experience, there are gaps in other topics such as Human Rights and Civil Rights. A second pattern demonstrates moderate numbers of texts across a domain's topics at individual grade levels. For instance, the Global Literature domain (Figure 5) includes more limited coverage within Grade 1, but still achieved a high enough coverage level to score strongly overall.

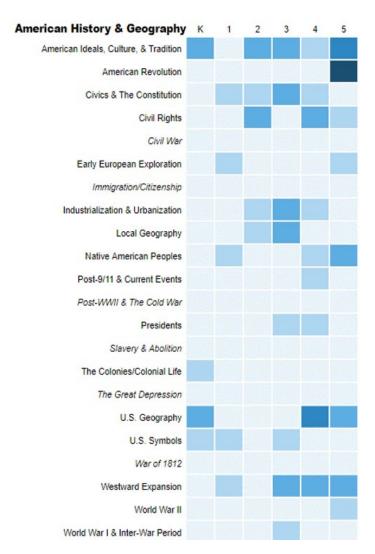


Figure 4. Heat map analysis of the American History & Geography knowledge domain in Grades K-5.

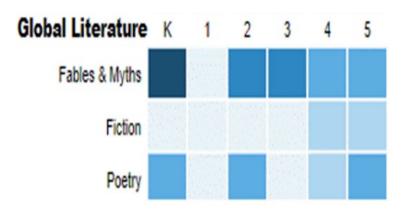


Figure 5. Heat map analysis of the Global Literature knowledge domain in Grades K-5.

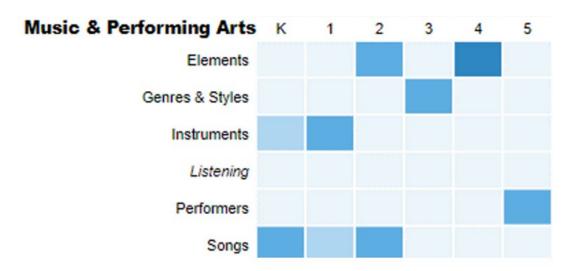


Figure 6. Heat map analysis of the Music & Performing Arts knowledge domain in Grades K-5.

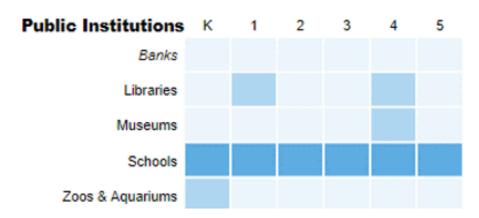


Figure 7. Heat map analysis of the Public Institutions knowledge domain in Grades K-5.

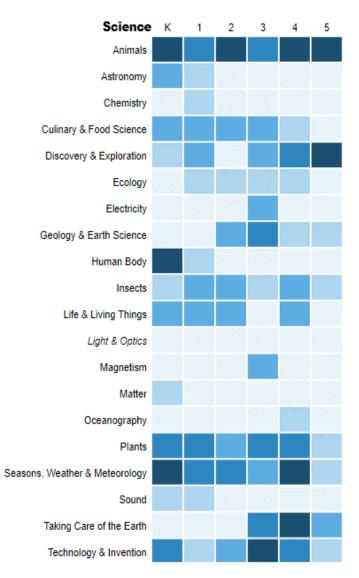


Figure 8. Heat map analysis of the Science knowledge domain in Grades K-5.

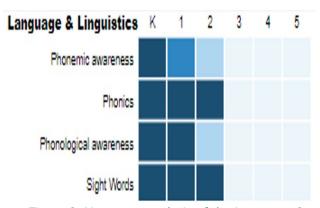


Figure 9. Heat map analysis of the Language & Linguistics knowledge domain in Grades K-5.

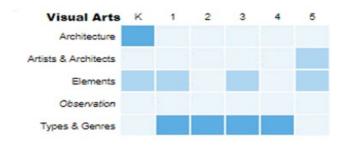


Figure 10. Heat map analysis of the Visual Arts knowledge domain in Grades K-5.

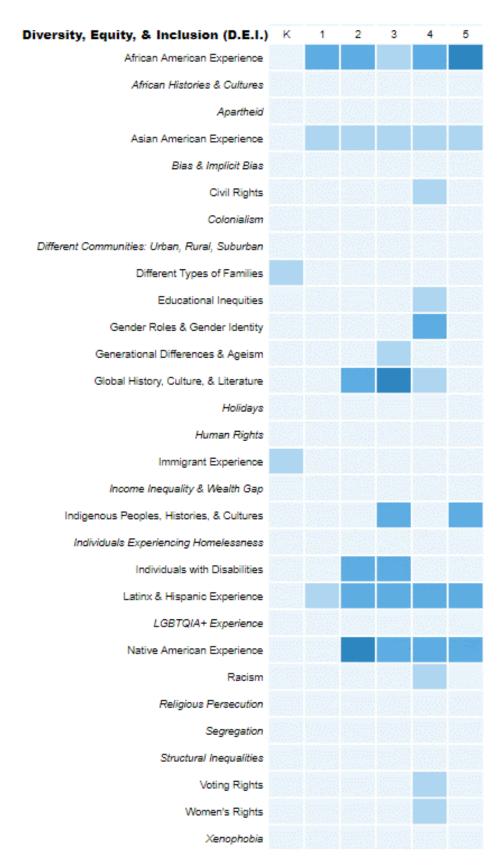


Figure 11. Heat map analysis of the Diversity, Equity, & Inclusion knowledge domain in Grades K-5.

# **Weak Knowledge-Building Domains**

The curriculum presents insufficient or weak knowledge building in several knowledge domains and topics. Weak knowledge-building domains appear in heat maps as primarily light blue or gray, indicating that one or no texts address the topic. It is important to note that absences at certain levels may reflect curricular progression decisions and other factors, and that the heat maps should be considered in the context of the evaluated system. However, significant gaps may be worth examining in order to further develop knowledge reinforcement within the curriculum.

Two domains scored weakly for knowledge reinforcement within the curriculum –Mathematics (Figure 12) and World History & Geography (Figure 13). As the graphics below indicate, these domains have broad gaps in instruction or minimal texts on most topics and do not contribute to a well-rounded curriculum.

Besides these generally weak domains, other knowledge domains present specific issues. One pattern appears as an absence of texts regarding particular topics across grade levels. Though the Science and Equity & Inclusion domains (Figure 8 & Figure 11) achieved moderate knowledge building overall, several topics include low or no coverage. An additional pattern of weakness presents itself as a lack of domain coverage within a grade band. Visually, this appears in the Knowledge  $Map^{TM}$  as empty columns beneath individual grade levels. An example of this pattern can be found within the World History & Geography domain (Figure 13), where no texts appear in Grade 1 and one text appears in Grade 2. As previously mentioned, certain specialized absences may make sense within the curriculum, and context must be considered when evaluating the results of the heat map analysis.

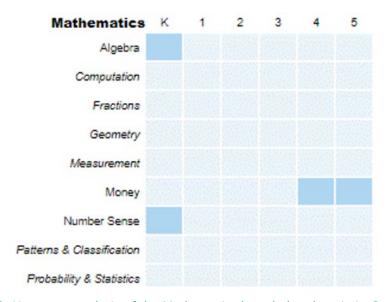


Figure 12. Heat map analysis of the Mathematics knowledge domain in Grades K-5.

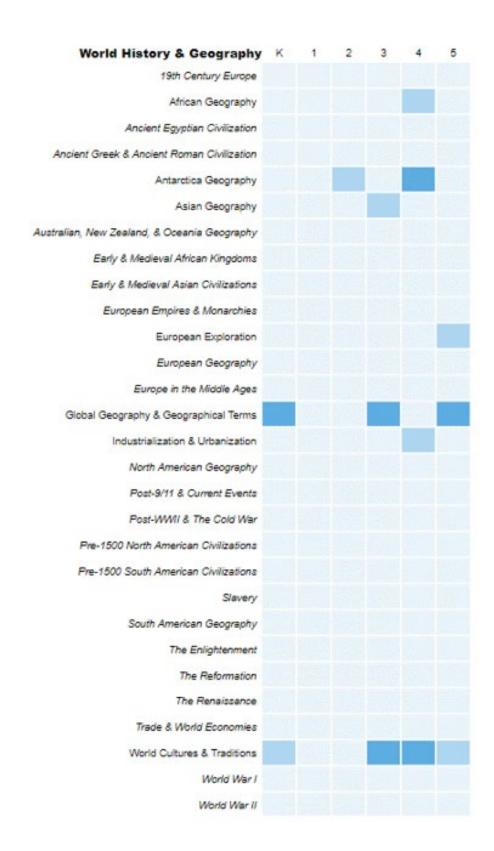


Figure 13. Heat map analysis of the World History & Geography knowledge domain in Grades K-5.

#### HMH JOURNEYS QUALITY AND COHERENCE

As mentioned previously, the Institute's analysis includes tagging each text for the knowledge domains, topics, and subtopics that it reinforces. The evaluation also rates each individual text for quality according to the rubric below. For each item, the Institute applies a tagging system that rates how well supplemental materials reinforce the knowledge found in the anchor text.

Quality and coherence findings vary and are not linked to each other. A unit may score highly for overall quality, shown as a percentage, but have a low coherence rating in terms of how well the supplemental texts reinforce the knowledge built in the anchor text. In other words, units with high overall quality scores may only weakly reinforce central themes through the inclusion of additional materials, and vice versa.

#### **Rubrics for Quality**

The Institute applies three rubrics for text quality analysis – a fiction rubric, nonfiction rubric, and literary nonfiction rubric. All rubrics consider content knowledge and language. Rubrics for fiction and literary nonfiction (nonfiction material presented in a narrative format) include additional factors relevant to the genres, such as emotion and prominence. The nonfiction rubric omits these factors in favor of focusing on the source's accuracy and quality.

# Fiction and Literary Nonfiction (Total of 15 possible Points)

**Evocation of Emotion:** The degree to which the text is memorable due to its impact upon the reader's affect. Works that may achieve high emotion scores include Shakespeare's *Romeo & Juliet* and Morrison's *The Bluest Eye*.

**Language:** The degree to which the text contains outstanding language and derives effect from several factors, including:

- Clarity (Hemingway's Old Man & The Sea, Austen's Emma)
- Appeal to the imagination (Tolkien's Lord of the Rings)
- Sophisticated capacity at multiple levels, including cultural, social, metaphorical, and/or theological (Kafka's *The Trial*, Dante's *Divine Comedy*, de Cervantes' *Don Quixote*).

*Timeless and Profound Questions:* The degree to which a text addresses perpetual issues of the human condition, such as private or public ethics, obedience to the state, family allegiance, meaning, and purpose. Works that may achieve high scores on this metric include Sophocles' *Antigone* and Camus's *The Stranger*.

**Content Knowledge:** The degree to which text builds students' background knowledge about the world. Strong examples on this metric include Erdrich's *Birchbark House* for elementary students or Austen's *Pride & Prejudice* for secondary students.

**Prominence:** The degree to which a text is widely known. Several factors determine a text's prominence, including:

- Longevity: The degree to which the text has entered the American literary canon, meaning that
  the text remains widely read for at least fifty years since its publication (Steinbeck's *The Grapes*of Wrath, Thoreau's Walden).
- Current prominence: The degree to which the text is a contemporary classic, meaning that it
  appears widely in American schools in recent years (Cisneros's Last House on Mango Street,
  Satrapi's Persepolis).
- Awards: The degree to which the text has been recognized as outstanding by critics or through awards. Notable literary awards include the Nobel Prize in Literature, Booker Prize, John Newberry, Man Booker Award, <u>PEN/Faulkner Award for Fiction</u>, Pulitzer Prize, the <u>Coretta Scott</u> <u>King</u> Awards, or <u>Pura Belpre Awards</u>. More examples of critical literary acclaim appear <u>here</u>.
- Accuracy & Source (literary nonfiction only): The verifiable factual basis for the information and the bias profile of the source.

#### **Nonfiction (Total of 12 Possible Points)**

**Accuracy:** The degree to which the text is empirically accurate.

**Source Quality**: The degree to which the text comes from a high-caliber source. The Institute assigned an initial numerical value to news sources and added quality scores upon encountering new sources. (For relevant links, click <a href="here">here</a>.)

Language: The degree to which the text is well written and presents its subject matter.

**Content Knowledge:** The degree to which the text effectively builds background knowledge of the topic or subtopic at hand.

#### **Unit Quality & Coherence Analysis**

The Knowledge Map™ project allows for a unit-level analysis of quality and coherence. The Institute begins its analysis with heat maps, which illustrate coverage by grade bands of crucial knowledge domains and topics. It then builds upon that analysis through a quality scoring system that reflects the review of each individual text, outlined in the above rubrics and averaged across the entire text set. Finally, the Institute generates coherence graphs that illustrate the extent to which the supplemental materials reinforce the knowledge built by the anchor text (as measured through assigned topic tags). In units lacking a predefined anchor text, the highest-quality text serves as the anchor.

The coherence graph utilizes a ball-and-spoke visual, where the central ball represents the anchor and the surrounding balls represent the supporting materials. The numbers shown on each ball represent the number of topics in each supplemental material that correlate to the topics assigned to the anchor. The anchor always reinforces itself entirely; as such, the number on the central ball always equates to the total number of tags. The proximity of each spoke to the central ball visually conveys this relationship.

The quality and coherence findings for each grade level follow in the sections below. This report highlights the highest- and lowest-quality units for each grade, and provides a discussion of knowledge reinforcement within those units. The caption below each graph provides an overall quality score for the unit. The Institute considers a unit or text high-quality if it scores 70% or above. A score is

acceptable as low as 66%, while any lower score indicates that a text or unit scored poorly overall. The caption contains additional information about each graphic, including the grade level and unit number represented. In the graphic itself, the anchor text rating appears in the center, while individual supplemental text ratings appear on the nodes.

# HMH JOURNEYS QUALITY & COHERENCE FINDINGS: GRADES K-5

#### Kindergarten

Kindergarten receives an overall quality score of 69.51%, placing it in the acceptable quality band. It must be noted that student decodables were reviewed and included in charts below.

#### **Highest-Rated Unit**

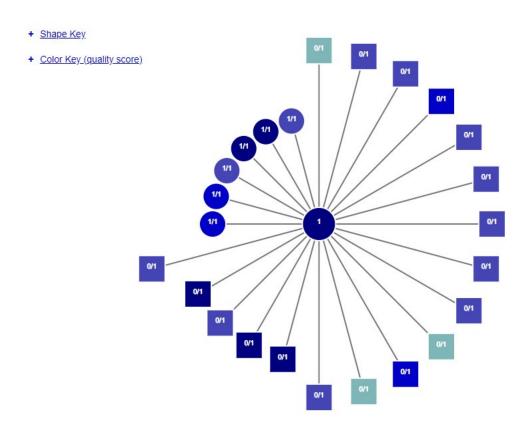


Figure 14. Coherence map of Grade K, Unit 5, A Tiger Grows Up and related texts. Supporting Materials weaklyto-moderately reinforce the anchor text. The average unit score for text quality is 72.36%.

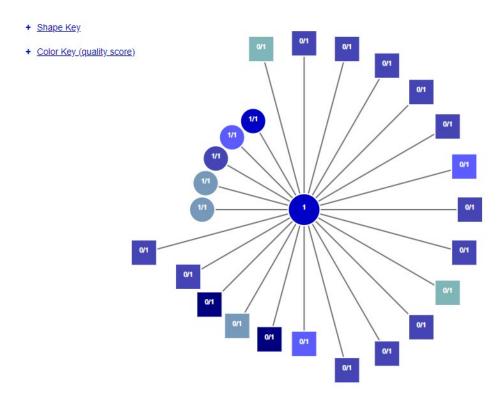


Figure 15. Coherence map of Grade K, Unit 3, Every Season and related texts. Supporting materials weakly-to-moderately reinforce the anchor text. The average unit score for text quality is 66.4%

#### Grade 1

Grade 1 receives an overall quality score of 62.46%, placing it in the low-quality band. Again, student decodables were reviewed and included in charts below.

### **Highest-Rated Unit**

Unit 4 is the highest-quality unit at this grade level, with an average quality score of 66.67%. Individual text quality varies, as the graphic below reveals. Coherence analysis indicates weak knowledge building within the unit. Only two of the unit's fifteen supplementary materials share topic tags with the anchor, suggesting a low level of integration across the entire unit. Though both of the anchor's topic tags are represented, the inclusion of additional coherent materials would benefit the unit's overall effectiveness.

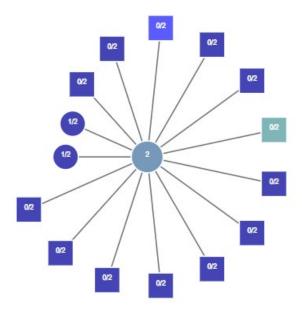


Figure 16. Coherence map of Grade 1, Unit 4, The Big Trip and related texts. Supporting materials weakly reinforce the anchor text. The average unit score for text quality is 66.67%.

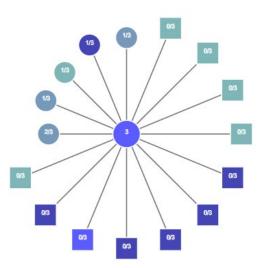


Figure 17. Coherence map of Grade 1, Unit 1, Curious George at School and related texts. Supporting materials weakly-to-moderately reinforce the anchor text. The average unit score for text quality is 53.25%.

#### Grade 2

Grade 2 achieves an overall quality score of 74.23%, placing it in the high-quality band. Student decodables were reviewed and included in charts below.

# **Highest-Rated Unit**

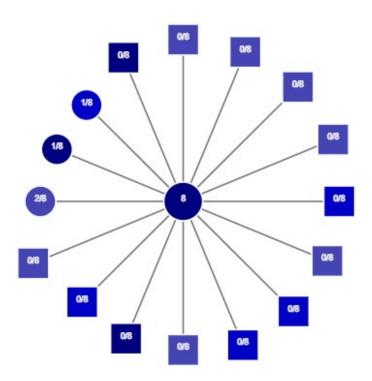


Figure 18. Coherence map of Grade 2, Unit 2, The Ugly Vegetables and related texts. Supporting materials weakly-to-moderately reinforce the anchor text. The average unit score for text quality is 81.01%.

#### **Lowest-Rated Unit**

Unit 3 is the lowest-quality unit at this grade level, with an average text quality score of 69.01%, which still falls within the Institute's acceptable range. Unit 3 scores weakly-to-moderately for coherence, as reflected in the figure below. All five of the anchor's topic tags are represented within the unit, leading to more opportunities to connect texts to each other; however, the majority of texts still do not share any of those topic tags. Keeping in mind this figure uses Lesson 15's anchor text, ensuring meaningful connections from text to text will improve the unit's efficacy as a whole.

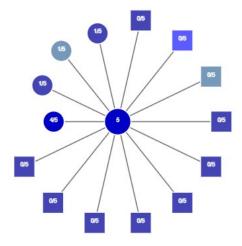


Figure 19. Coherence map of Grade 2, Unit 3, Officer Buckle and Gloria and related texts. Supporting materials weakly-to-moderately reinforce the anchor text. The average unit score of text quality is 69.01%.

# **Grade 3**

Grade 3 achieves an overall quality score of 72.39%, placing it in the high-quality band.

## **Highest-Rated Unit**

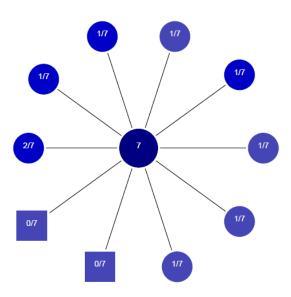


Figure 20. Coherence map of Grade 3, Unit 1, Pop's Bridge and related texts. Supporting materials moderately reinforce the anchor text. The average unit score for text quality is 77.78%.

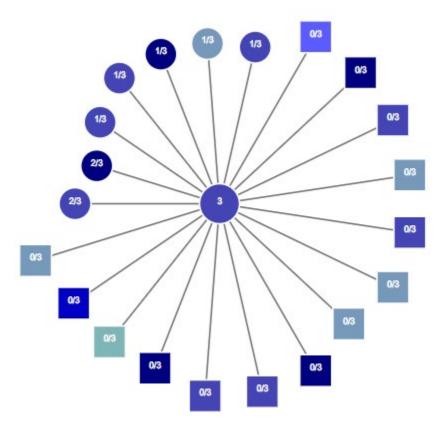


Figure 21. Coherence map of Grade 3, Unit 6, Saving Buster and related texts. Supporting materials weakly-to-moderately reinforce the anchor text. The average unit score for text quality is 68.93%.

#### **Grade 4**

Grade 4 achieves an overall quality score of 80.95%, placing it in the high-quality band.

# **Highest-Rated Unit**

Unit 5 is the highest-quality unit at this grade level, with an average text quality score of 85.26%. With Lesson 23's anchor text, half of the material supports at least one topic tagged. However, half of the material does not support any of the topics tagged in the anchor text. To strengthen the unit's coherency, focus should be given on those texts that are not supporting the anchor texts to determine their strength and necessity to the unit.

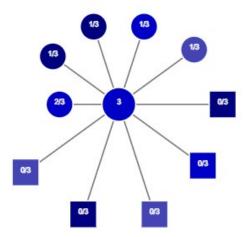


Figure 22. Coherence map of Grade 4, Unit 5, The Ever-Living Tree: The Life and Times of a Coast Redwood and related texts. Supporting materials moderately reinforce the anchor text.

The average unit score for text quality is 85.26%.

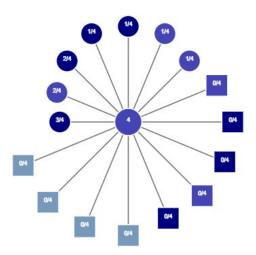


Figure 23. Coherence map of Grade 4, Unit 6, Mystery at Reed's Pond and related texts. Supporting materials moderately reinforce the anchor text. The average unit score for text quality is 73.42%.

## Grade 5

Grade 5 achieves an overall quality score of 81.78%, placing it in the high-quality band.

# **Highest-Rated Unit**

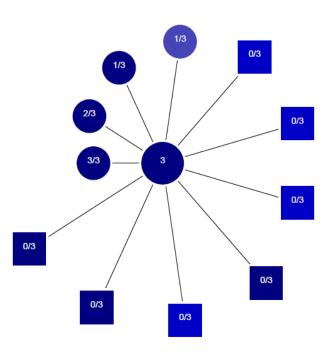


Figure 24. Coherence map of Grade 5, Unit 5, Tucket's Travels and related texts. Supporting materials weakly-to-moderately reinforce the anchor text. The average unit score for text quality is 91.23%.

#### **Lowest-Rated Unit**

Unit 6 is the lowest-quality unit at this grade level, with an average text quality score of 75.53%. The Institute's coherence analysis reveals weak-to-moderate knowledge reinforcement within the unit. Lesson 30's anchor text was tagged for three prominent topics, and slightly over half of the supplementary materials did not address these topics.

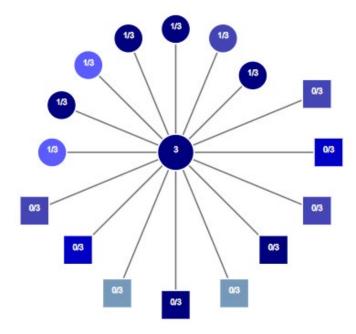


Figure 25. Coherence map of Grade 5, Unit 6, Get Lost! The Puzzle of Mazes and related texts. Supporting materials weakly-to-moderately reinforce the anchor text. The average unit score for text quality is 75.53%.

# HMH JOURNEYS QUALITY ASSESSMENT

In summary, the quality of the HMH Journeys curriculum varies, but is generally strong at higher grade levels. Grades 2 through 5 achieved overall quality scores that fell within the Institute's range for high quality; Grades K scored in the acceptable range. However, Grade 1 scored in the low-quality band. The rightmost column of the chart below reveals the difference in scores between each grade's highest- and lowest-quality units. Four grades presented a difference of over ten percent, indicating that the quality of units within those grades varies considerably. Overall, the curriculum presents a strong basis, but additional development should prioritize improving the general quality of lower grade levels and ensuring a consistent, effective course load at all grade levels.

Grade	Overall Quality Score	Unit High Score	Unit Low Score	Difference (High-Low)
K	69.51%	72.36%	66.40%	5.96%
1	62.46%	66.67%	53.25%	13.42%
2	74.23%	81.01%	69.01%	12.00%
3	72.39%	77.78%	68.93%	8.85%
4	80.95%	85.26%	73.42%	11.84%
5	81.78%	91.23%	75.53%	15.70%

Figure 26. Summary of unit quality scores in Grades K-5.

#### LEARN MORE

This report is one of twelve ELA Knowledge Map<sup>™</sup> reports released in Winter 2022 by the Johns Hopkins Institute for Education Policy. The release of these reports was accompanied by a Findings Summary, outlining the overarching themes across all ELA curricula analyzed. View the other ELA Knowledge Map<sup>™</sup> reports and learn more about the importance of high-quality curriculum at edpolicy.education.jhu.edu.

#### **About the Institute**

The <u>Johns Hopkins University Institute for Education Policy</u> is dedicated to integrating research, policy, and practice to achieve educational excellence for all of America's students. Specifically, we connect research to the policies and practices that will ensure all children have access to intellectually challenging curricula, highly-effective educators, and school models that meet students' diverse needs. By delivering the strongest evidence to the policymakers who set the course and the practitioners who teach and lead, we hope to serve the American children who enter our classrooms every day.

#### **About HMH**

<u>HMH</u> brings learning to countless students, teachers, and readers—transforming lives, supporting communities, and making our society more open, just, and inclusive for all, one story at a time. <u>Journeys</u> is built on a deep foundation of scientific research but treats students as young people who need to be encouraged—and to have fun. The result? An engaging learning experience that *fits*.

<sup>1</sup> Reid Smith et al., "The Role of Background Knowledge in Reading Comprehension: A Critical Review," Reading Psychology 42, no. 3 (April 3, 2021): 214–40). Sonia Q. Cabell and Hyejin Hwang, "Building Content Knowledge to Boost Comprehension in the Primary Grades," Reading Research Quarterly 55, no. S1 (2020): S99–107, https://ila.onlinelibrary.wiley.com/doi/full/10.1002/rrq.338 and also Kathryn S. McCarthy and Danielle S. McNamara, "The Multidimensional Knowledge in Text Comprehension Framework," Educational Psychologist 56, no. 3 (July 3, 2021): 196–214, https://doi.org/10.1080/00461520.2021.1872379).

<sup>1</sup> "Standards aligned" generally refers to the Common Core State Standards.



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