

Social Studies Knowledge Map™: Abbreviated Sample Report

Introduction

The achievement gap is, in large part, a knowledge gap. Research from around the world reveals that most democratic nations require all schools to teach a standard body of knowledge. A comprehensive, content-rich curriculum is a signature feature of high-performing academic systems. Despite this research record, a majority of the United States' curricula treat social studies content not as a source of building and applying knowledge, but merely as a site for attempting to hone abstract skills. Furthermore, existing political science literature indicates that students should practice the skill of civil disagreement – a skill that a well-designed social studies curriculum can encourage.

The Johns Hopkins Institute for Education Policy has developed tools to analyze a social studies curriculum in terms of the knowledge it helps students learn and apply. We conduct this analysis by mapping out the knowledge domains that are implied in the selection of sources and texts discussed. This mapping enables policymakers to visualize not only the domains of knowledge opened up in the curriculum – and those that are missed – but also to what degree they are opened, and over what grade span. The Institute also assesses whether a given unit includes more than one perspective, and whether the teacher-facing materials encourage deliberation and disagreement. Throughout the review process, the Institute works closely with instructional leaders to ensure that the map reflects the system's vision of an educated person, and that it includes specific knowledge domains with local relevance. The Knowledge Map™ is a one-of-a-kind instrument.

The methodological approach is as follows:

- The Institute's team maps all of the items in the designated social studies curricula on three initial dimensions, at different grain sizes of coverage. For example, a letter by abolitionist Thomas Garrett about Harriet Tubman would be categorized as:
 - Domain: U.S. History to 1865
 - Topic: Slavery/Abolition
 - Subtopics: Harriet Tubman; Underground Railroad
- The team then evaluates the quality and contribution of every item (including both primary and secondary sources) using Likert-scale scores, as well as in the broader context of the entire unit.
- Next, the Institute constructs a vertical mapping of knowledge domains, or threads, at each level, both by individual grade level and then across grade levels.

- The Institute creates a coverage report that illustrates the depth of emphasis a given domain receives across multiple grades.
- Finally, the Institute evaluates each unit for its presentation of distinctive viewpoints, and for the presence of teacher-facing instructions that would support a deliberative classroom.

Altogether, these reports establish a clear picture of which specific knowledge domains the curriculum reinforces or even over-represents, which it does not, at what grade levels this reinforcement occurs, and with what quality or bias. The Institute also provides budget-sensitive, high-level recommendations that may include adoption of new materials, amendments to the existing materials, or targeted professional development.

The Institute's findings are housed in a proprietary database to curate the findings and enable reporting on cross-sections of data according to text, grade level, and knowledge domain.

The Knowledge Map™ presents graphic displays of what students read as part of a curriculum, and it includes topics in its analysis that matter locally, such as state history, cultural relevance, and the immigrant experience.

Institute Recommendations

The district's social studies curriculum provides students with a strong knowledge background in Civics & Government, Economics, and Geography. The particular focus in these areas suggests a practical and pragmatic approach to social studies that will establish relevant knowledge in students' lives. In addition, the curriculum clearly pays attention to providing students with high-quality texts that represent multiple viewpoints, as well as opportunities for discussion and inquiry. This focus serves to prepare students for public engagement and application of social studies skills later in life. There has been a significant effort made to include histories and regional content relevant to students' own background. The Knowledge Map™ analysis does identify some areas with less robust coverage and coherence within units. Therefore, the Institute recommends that the district:

- Consider where there may be room in the elementary curriculum to introduce concepts and content that will be revisited in more depth in the secondary years, especially content that provides international context.
- Identify units with low coherence scores and consider how to streamline content reinforcement in these areas.
- Incorporate religious and philosophical discussions into history content where appropriate, in order to increase students' understanding of the influence these contexts have held throughout history.
- Create space for discussion of African heritage and diaspora outside of colonial and U.S. history, in order to create more equitable representation of minority groups in the district.

Heat Maps: Introduction

A critical gateway question asks how much exposure students receive to each important domain of knowledge and the topics within them. The Institute’s knowledge maps, otherwise referred to as ‘heat’ maps, measure coverage at the topical level based upon reviews by Institute-selected experts, who evaluate materials based on substantial content knowledge.

Each heat map expresses the findings visually using a color-coding scheme, as shown in Figure 1. Lighter blue squares represent fewer knowledge-building materials, such as one to four texts, while darker blue squares represent more knowledge-building materials, such as eight or more texts.



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

Heat Maps: Elementary Only (K-5)

The analysis results for the topical domains within the elementary grades (K-5) appear in Figures 2 through 7 below. The knowledge domains represent the Institute’s interpretation of the Common Core standards; therefore, they do not include error analysis.

Strong Knowledge-Building Domains

The curriculum presents strong knowledge building in several domains and a number of topics, as shown in the figures below. High-performing knowledge-building domains appear in the heat maps as dark blue, indicating the presence of many texts that address the topic (for instance, the categories of 8+ Texts and 5-7 Texts).

At the elementary level, the knowledge domains of Civics & Government (Figure 2) and Geography (Figure 3) are the strongest in the curriculum, due to the high prevalence of quality knowledge-building texts. A particular strength of these domains is their reinforcement of topics across grade levels, as demonstrated by dark blue squares across entire rows. For instance, the Geography domain demonstrates a wide variety of materials covering the subtopics ‘Maps,’ ‘Physical Geography,’ and ‘Geographical Perspectives’ at every grade. This suggests that students in the system receive regular education on these specific topics throughout their elementary education. Similar patterns across grade levels are found in the Civics & Government domain as well, particularly in regards to the subtopics of ‘American Politics & Government’ and ‘Citizenship & Civic Life.’

Though other knowledge domains fail to meet the requirements for a strong knowledge-building domain as a whole, certain domains demonstrate strength at individual grade levels or regarding certain subtopics. The US History to 1865 domain (Figure 5), for instance, meets the standards of a moderate knowledge-building domain. However, the heat maps for Grades 4 and 5 present as much darker than the rest of the map. Within these two grade levels, a wide variety of relevant subtopics are covered in depth, creating a stronger knowledge profile overall. Similarly, the ‘Cultural Anthropology’ subtopic of the Anthropology knowledge domain (Figure 4) presents a higher instance of darker blue squares across grade levels. Though the domain as a whole only achieves moderate knowledge building, the variety of materials regarding cultural anthropology in particular indicates that students receive successful knowledge reinforcement through their elementary years.

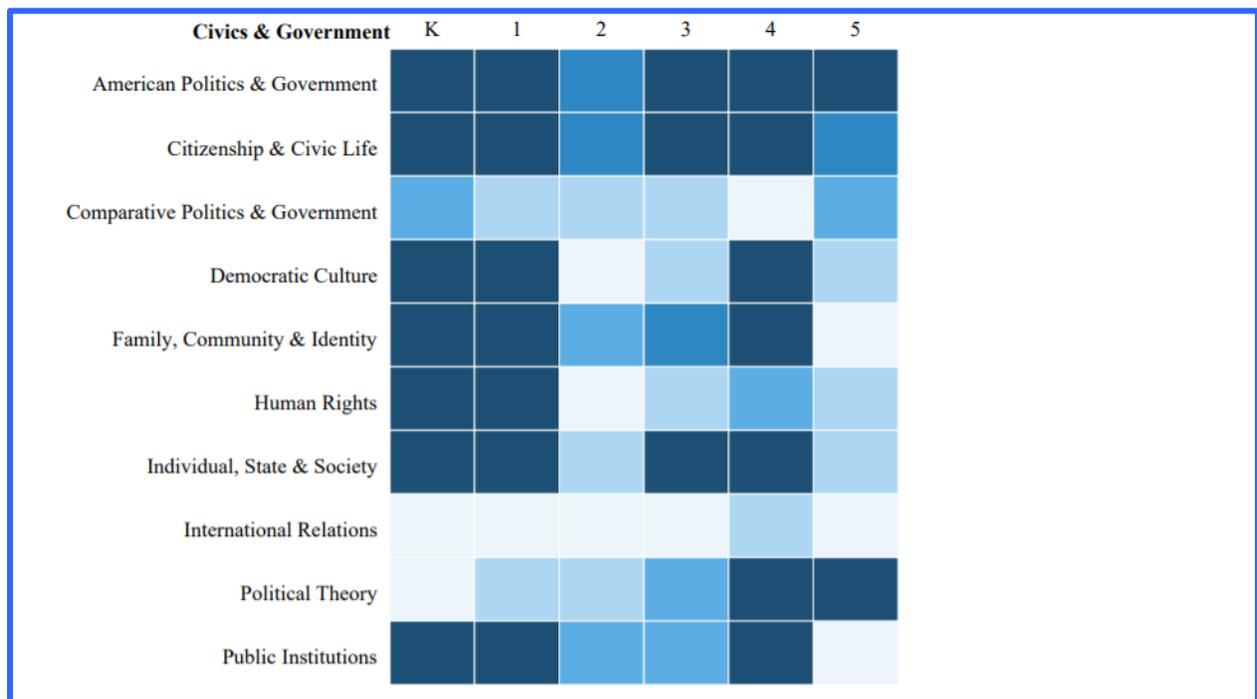


Figure 2. Heat map analysis of the Civics & Government knowledge domain in Grades K-5.

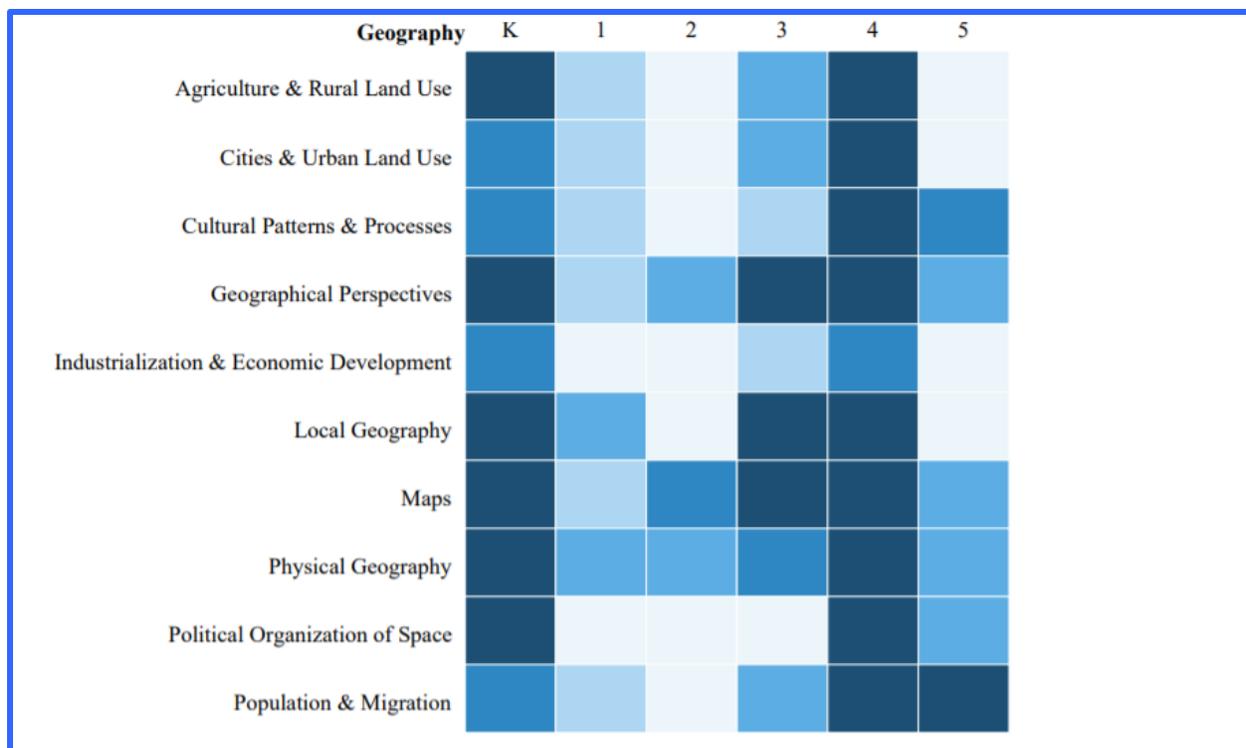


Figure 3. Heat map analysis of the Geography knowledge domain in Grades K-5.

Moderate Knowledge-Building Domains

The curriculum presents a number of knowledge-building domains and topics at the moderate level. Moderate knowledge-building domains appear in the heat maps as mixed blue, indicating few or some texts addressing the topic (for instance, the heat map category of 2-4 Texts).

At the elementary level, two knowledge domains show moderate knowledge-building at the general level, as opposed to within specific grade levels or topics. Both Anthropology (Figure 4) and US History to 1865 (Figure 5) demonstrate a variety of texts at different levels, but fail to fully develop an interdisciplinary curriculum across all grade levels. As previously mentioned, the Anthropology domain demonstrates a strong reinforcement of the Cultural Anthropology subtopic across all grade levels, but only sporadically covers subtopics such as archaeology and linguistics. The US History to 1865 domain, meanwhile, achieves strong levels of knowledge building at specific grade levels (Grades 4 and 5), but falter at other grades. These gaps in formal instruction prevent either of these domains from achieving a generally strong score, even if certain bands cover the relevant topics well.

The curriculum demonstrates several other patterns of moderate knowledge building. The Media domain (Figure 6), for instance, demonstrates moderate coverage at individual grade levels. Though the domain is weak otherwise, the fourth-grade band demonstrates moderate coverage of nearly every subtopic, indicating that students at that level receive some reinforcement of topics such as advertising, journalism, and propaganda.

At the topical level, the curriculum provides intermediate coverage of the Race & Ethnicity subtopic within the Sociology domain (Figure 7). At every grade level besides Grade 1, students receive some level of instruction regarding the topic, suggesting that instructors successfully reinforce that information throughout students' elementary education. However, the domain as a whole remains weak due to limited materials covering other topics. In the case of both the Sociology and Media domains, coverage patterns at specific levels provide a basis for further curriculum development.

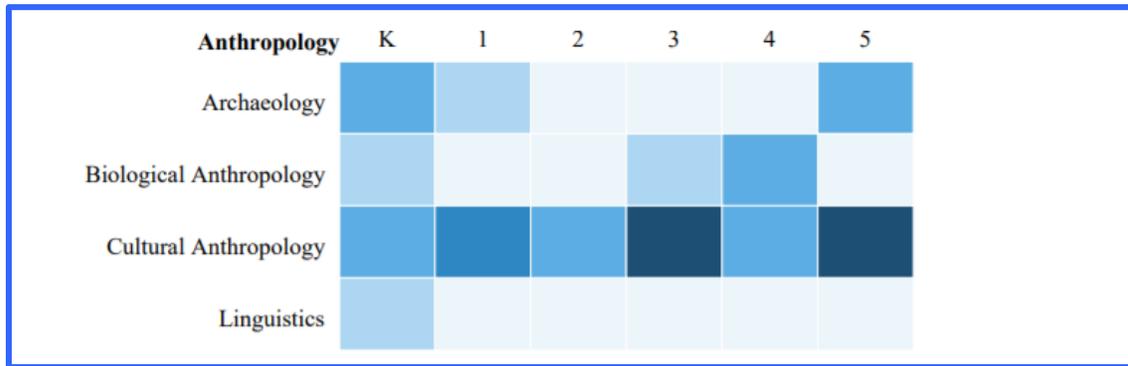


Figure 4. Heat map analysis of the Anthropology knowledge domain in Grades K-5.

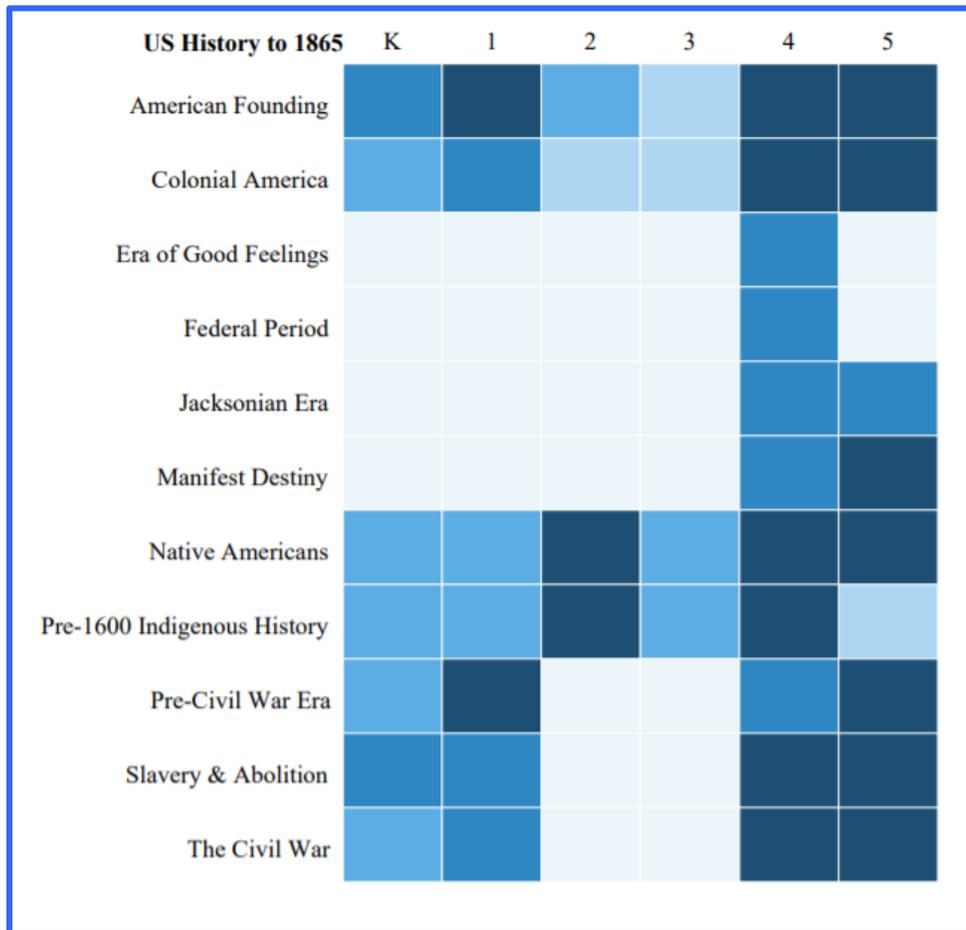


Figure 5. Heat map analysis of the US History to 1865 knowledge domain in Grades K-5.

Weak Knowledge-Building Domains

The curriculum presents insufficient or weak knowledge building in a variety of knowledge domains. Weak knowledge-building domains appear in the heat maps as light blue or gray, indicating that one or no texts address the listed topic.

Two elementary knowledge domains demonstrate generally weak knowledge building. Both the Media (Figure 6) and Sociology (Figure 7) domains present major gaps in instruction across the majority of their topics. As previously mentioned, both of these domains do demonstrate moderate knowledge building at specific grade levels or in regards to specific topics; however, general instruction remains underdeveloped and should be bolstered with additional high-quality materials.

Apart from these overall weak domains, all other domains in the curriculum demonstrate specific weaknesses. Even among the curriculum’s generally strong domains, notable gaps in knowledge appear at specific grade bands or regarding certain topics. For example, the Civics & Government domain appears as one of the curriculum’s strongest domains; however, the International Relations subtopic presents weak knowledge building, especially compared to other topics in the domain. Though parts of the curriculum meet the Institute’s definition of a strong knowledge-building domain, every domain in the curriculum could benefit from further development, and this is clearer in some topics than in others.

It is important to note that certain absences may reflect curricular progression decisions and other factors. For instance, social studies courses at higher grade levels tend to focus on certain topics, such as specific historical contexts or civics education. The specific requirements and focus of coursework at different grade levels should be considered when developing the curriculum, but significant gaps in instruction should still be examined.

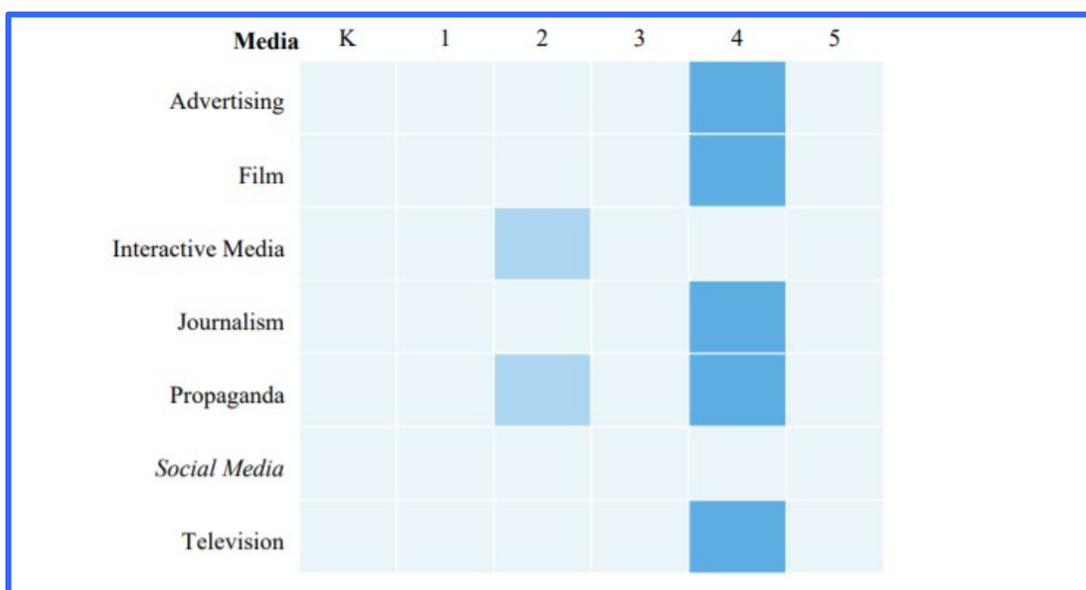


Figure 6. Heat map analysis of the Media knowledge domain in Grades K-5.

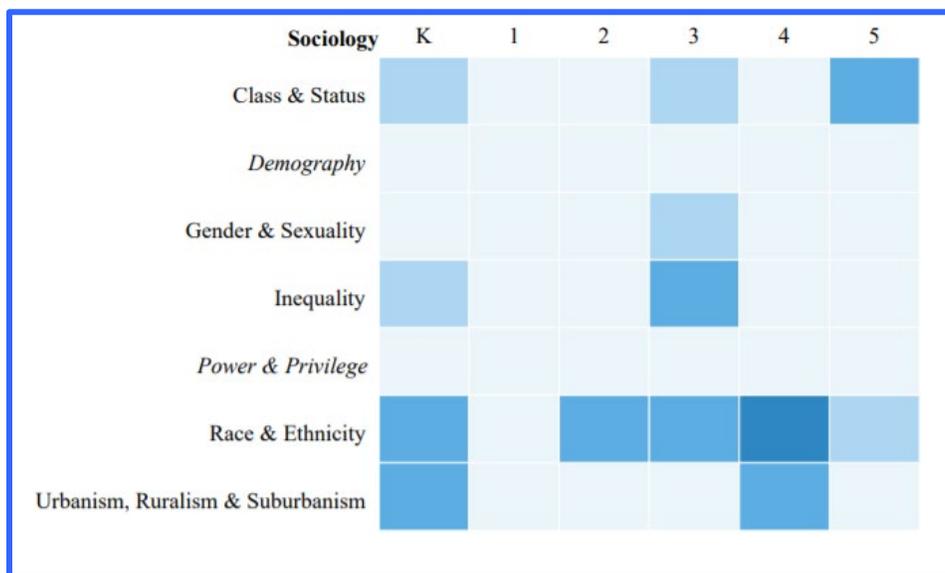


Figure 7. Heat map analysis of the Sociology knowledge domain in Grades K-5.

Quality & Coherence

The Institute also evaluates each text in a curriculum for quality according to the rubric below. For each item, the Institute applies a tagging system that rates supplemental texts by how well they reinforce the knowledge found in anchor texts and topics.

The findings of quality and coherence vary and are not linked to each other. For instance, a unit may score high in overall quality (shown as a percentage), but have a low coherence rating, indicating that the supplemental texts do not successfully reinforce the knowledge built in the anchor text. In other words, units with high overall quality scores may perform weakly on reinforcing central themes through additional materials. The opposite is also possible – a unit that scores low in overall quality may have moderate or strong reinforcement of anchor tag topics.

Rubrics for Quality

The Institute applies three rubrics for analysis of individual text quality.

Primary Sources: Written, spoken, and verbal.

- **Emotion:** The degree to which the source is memorable due to its impact upon the reader.
- **Language:** The degree to which the text is an example of outstanding or representative writing.
- **Universal Questions:** The degree to which the source addresses important aspects of the human condition or the relevant historical context.
- **Content Knowledge:** The degree to which the text contributes to students' background knowledge about the domains and topics that have been tagged.

- Prominence: Whether the source reflects historical prominence or provides important context to the events and documents that have been tagged.

Primary Sources: Visual, artistic, or non-verbal.

- Emotion: The degree to which the source is memorable due to its impact upon the reader.
- Authenticity: The degree to which the source reflects authentic interpretive experience or visual representation of the historical context.
- Universal Questions: The degree to which the source addresses important aspects of the human condition or the relevant historical context.
- Content Knowledge: The degree to which the text contributes to students' background knowledge about the domains and topics that have been tagged.
- Prominence: Whether the source reflects historical prominence or provides important context to the events and documents that have been tagged.

Secondary Sources: Written, spoken, and visual.

- Accuracy.
- Language/Artistic Technique: The degree to which the text or art is an example of outstanding writing or artistic expression.
- Source: The quality and trustworthiness of the source.
- Content Knowledge: The degree to which the text contributes to students' background knowledge about the domains and topics that have been tagged.

The review also evaluates each unit for the presence or absence of two factors: multiple perspectives on a given subject, and encouragement to create a deliberative classroom.

Unit Quality and Coherence Analysis

The Knowledge Map™ presents a unit-level analysis of quality and coherence. The quality score reflects the individual text-level review, outlined in the above rubrics and averaged across the unit's entire text set. The coherence graphs illustrate the extent to which the non-anchor texts reinforce the knowledge domains, as determined through topical tags. The Institute's study does not include error analysis.

The coherence graph utilizes a ball-and-spoke representation, where the central ball refers to the anchor text and the surrounding spokes represent the relevant supporting texts. The numbers, shown on each ball and spoke, represent the number of content tags in the supplemental texts that reinforce knowledge built in the anchor text. The anchor text always reinforces itself entirely; therefore, the number on the central ball is always equal to the total number of tags for the anchor text. The proximity of each spoke to the central ball visually conveys this relationship. For most units, the anchor text is the textbook. For units or grades without a textbook or established anchor text, the anchor is the highest-quality source in the unit.

The grade-level findings follow in the sections below. In this report, the Institute presents the highest- and lowest-quality units of each grade level, along with a discussion of

knowledge reinforcement. The caption below each graph provides an overall quality score for the unit. The Institute considers a unit high quality if it achieved an average text quality score of 75% or above. A unit is acceptable as low as 66%, and any quality score below 66% denotes poor quality. The captions also contain additional information about each graph, including grade level and unit number.

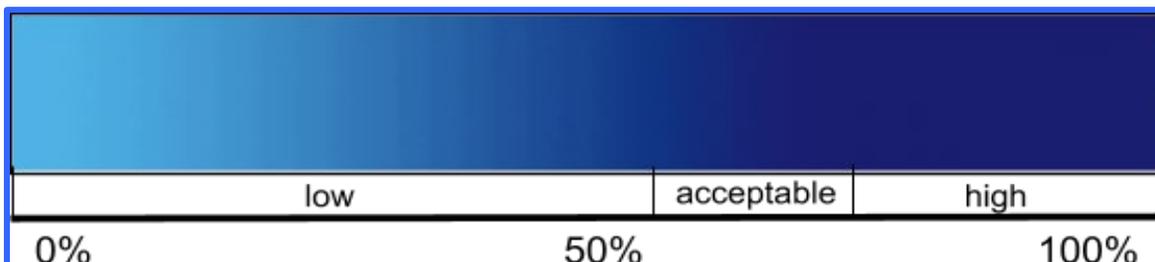


Figure 8. Visual interpretation of unit quality scores.

Quality and Coherence: Sample Findings

Kindergarten

Kindergarten receives an overall quality score of 68.97%, placing it in the acceptable band. This score represents the quality of texts within the grade's units as provided by the district. The scores are mathematical averages reported to the nearest hundredths place, and the precision of the numbers does not reflect the underlying uncertainties of the values. The text quality score reflects the unit-level review as outlined in the above 'Rubrics for Quality' section. Furthermore, the Institute conducted an analysis for the units for coherence using topical tags, shown as proximity graphs for high- and low-rated units, respectively.

Highest-Rated Unit

Unit 14 is the highest-quality unit at this grade level, with an average text quality score of 88.89%. As demonstrated by Figure 9 below, both of the student-facing materials at this level achieve high-quality scores. Additionally, the supporting material shares all four of the anchor text's topic tags. This suggests that beyond the quality of the individual sources, the materials in this unit also connect through the topics they cover, and the information provided in the supporting source reinforces the lessons taught in the anchor text. Though additional materials may help expand the knowledge found in this unit, both the quality and the coherence found here demonstrate a strong basis for further development.

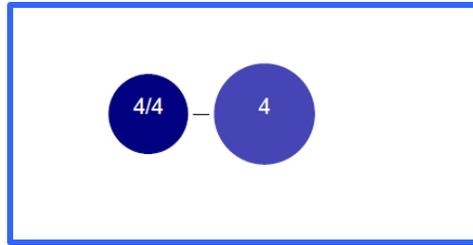


Figure 9. Coherence map of Grade K, Unit 14, anchor text Social Studies: Living, Learning, and Working Together. Supporting material strongly reinforces the anchor text. The average unit score for text quality is 88.89%.

Lowest-Rated Unit

Unit 9 is the lowest-quality unit at this grade level, with an average text quality score of 56.86%. This score represents the range of quality found in the unit's individual materials. Of the four materials students access as a part of this unit, only two of them appear in deep blue shades, while the other two are paler. This suggests moderate overall quality due to the presence of weaker materials. Additionally, none of the three supporting materials match an acceptable amount of the anchor text's nine topic tags – as shown in the figure below, only one demonstrates moderate coherence by sharing five of the tags. In addition to the generally low quality of the unit's materials, the coherence map demonstrates that the materials fail to fully reinforce the general topics introduced in the unit's anchor text.

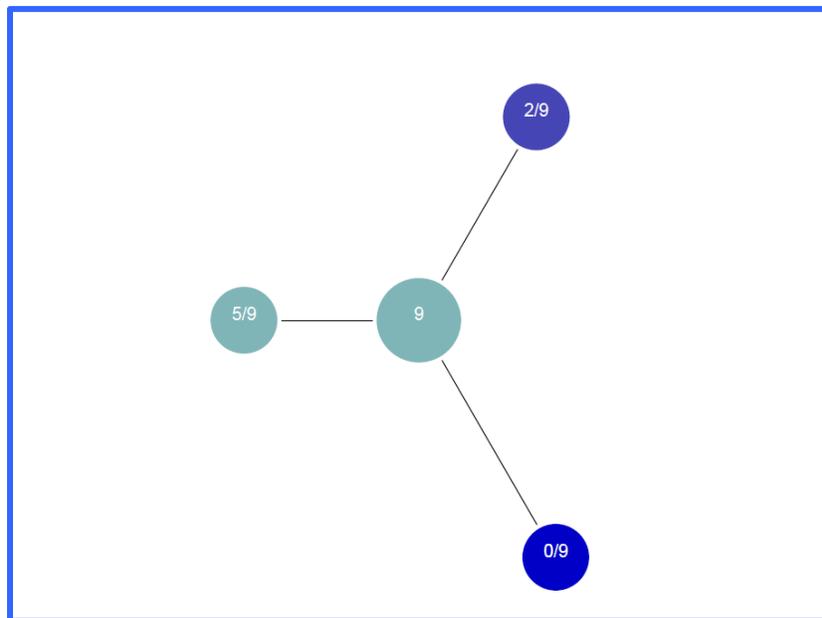


Figure 10. Coherence map of Grade K, Unit 9, anchor text Social Studies: Living, Learning, and Working Together. Supporting materials weakly reinforce the anchor text. The average unit score for text quality is 56.86%.

Grade 6

Grade 6 receives an overall quality score of 75.04%, placing it in the high-quality category. This score represents the quality of texts within the grade’s units as provided by the district.

Highest-Rated Unit

Unit 11 is the highest-quality unit at this grade level, with an average text quality score of 85.33%. The student-facing materials evaluated here achieve high-quality ratings when compared against the rubric, demonstrating that all of the information provided is appropriate for use. The unit achieves a moderate coherence score overall – of the anchor text’s three topic tags, four of the supplementary materials match two of the them, while the remaining one only matches one. This suggests that these materials connect partially to the ideas presented in the textbook, but that they do not successfully connect to all of its themes. Additional materials of a similar quality but with improved relevance would benefit the overall coherence of this unit.

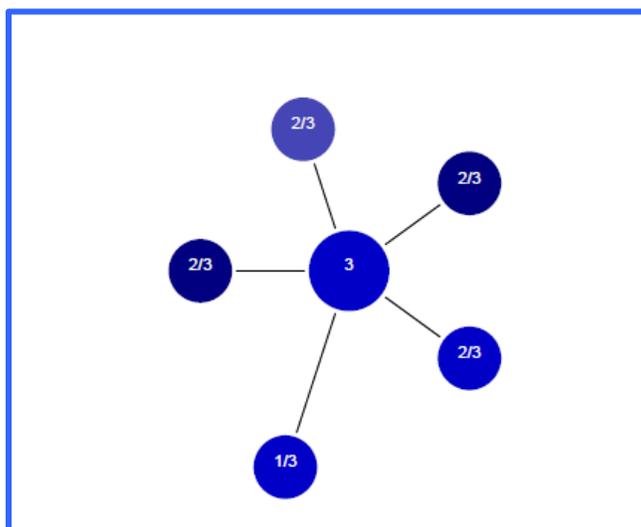


Figure 11. Coherence map of Grade 6, Unit 18, *Discovering Our Past: A History of the United States’ Early Years and related texts*. Supporting texts moderately reinforce the anchor text. The average unit score for text quality is 85.33%.

Lowest-Rated Unit

Unit 5 is the lowest-quality unit at this grade level, with an average text quality score of 68.35%. As the figure below demonstrates, the quality ratings of individual materials vary wildly; some achieve high-quality ratings, while others present as weak. Beyond the issues presented by low-quality materials, the wide variance in quality impacts the overall efficacy of the unit. Despite these issues, the supplementary materials provided at this level are highly relevant to the topics presented in the anchor text. All student-facing sources match both of the anchor’s topic tags, indicating that strong knowledge building occurs throughout the unit. Introducing higher-quality materials with a similar

educational scope would benefit the overall quality of this unit, as it already has a strong base to work with.

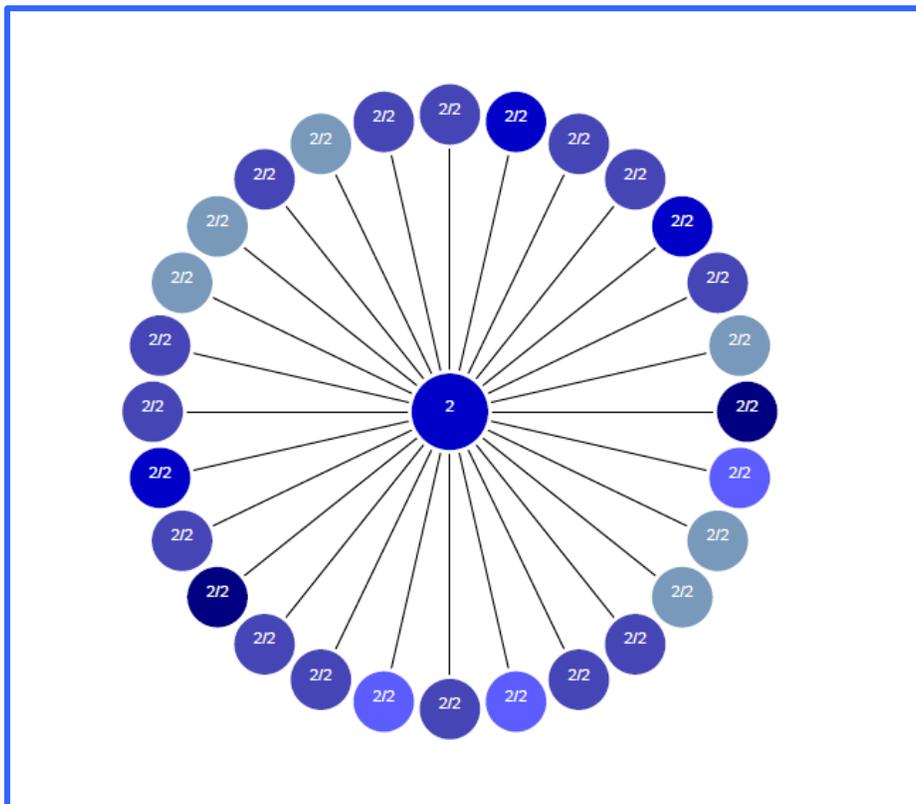


Figure 12. Coherence map of Grade 6, Unit 5, Discovering Our Past: A History of the United States' Early Years and related texts. Supporting materials strongly reinforce the anchor text. The average unit score for text quality is 68.35%.

Findings: Summary

In summary, the quality and coherence of the district's social studies curriculum varies moderately from grade to grade, but significantly within individual grade bands. Figure 13 below demonstrates, by grade level, the percentage difference between the highest unit score and the lowest unit score per grade. All grades but Grade 12 present a difference of over ten percent between their highest and lowest scores, with particularly high differences in Kindergarten, Grade 7, and Grade 8. These difference scores indicate a high level of inconsistency in quality levels; as a result, students receive weaker reinforcement of certain topics, which diminishes the instruction's overall effectiveness.

Despite the discrepancies within grades, the overall curriculum achieves a solid quality score. None of the grades received a poor-quality rating when measured against the Institute's standards, and only two received a score below 70%. Though trends from grade to grade suggest that coherence could generally benefit from improvement, the fact that all grades achieve at least an acceptable rating indicates that the curriculum prioritizes high-quality resources for its students. With some alterations to close quality gaps, and

with a greater focus on connecting texts to the main ideas of specific units, the entire curriculum could eventually be considered high quality.

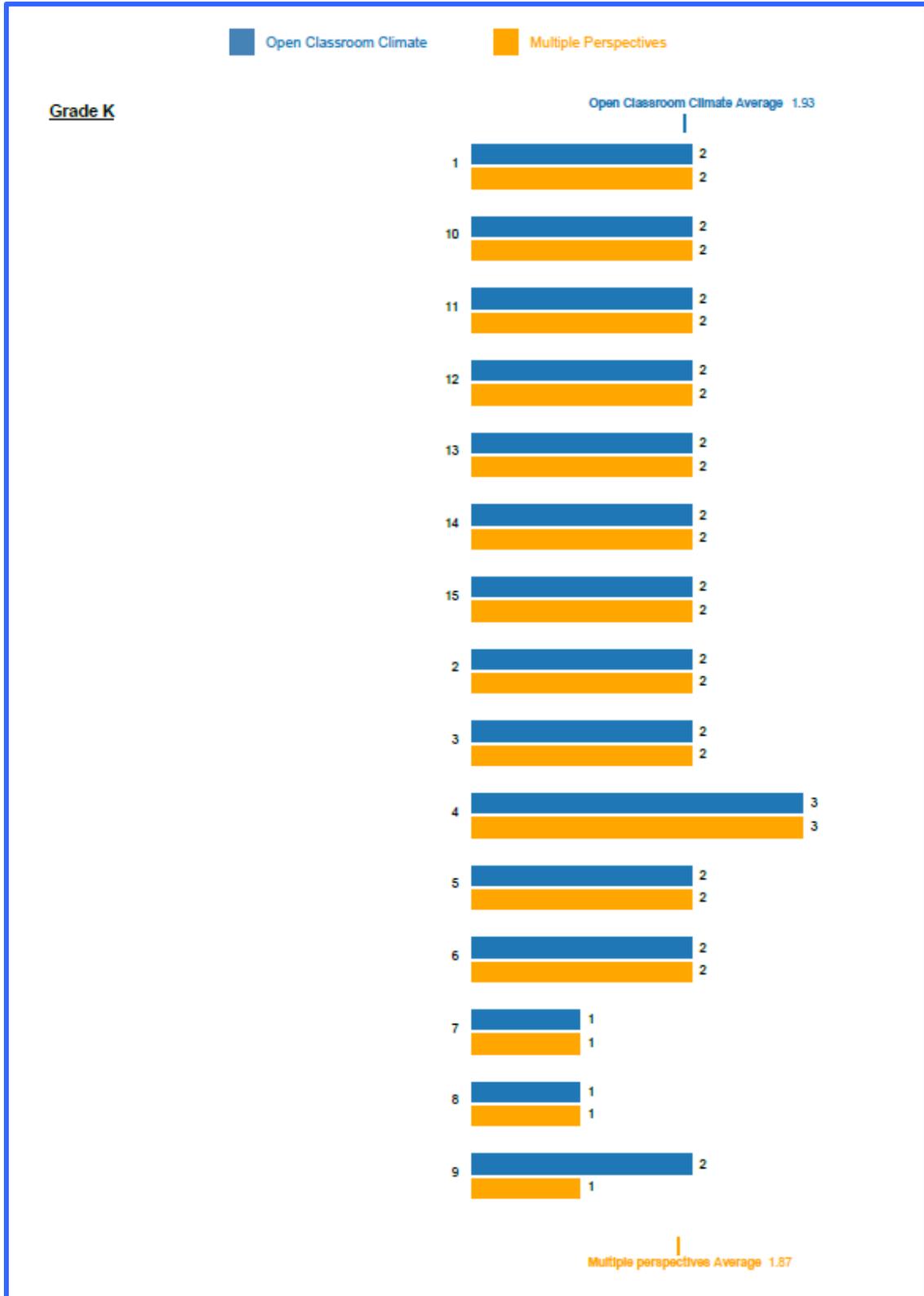
Grade 10 does not have a dedicated social studies course in the district’s curriculum, and as such was not evaluated. Of the remaining twelve elementary and secondary grades, seven received a high-quality rating of 75% or above, and five received an acceptable quality rating of between 66% and 75%.

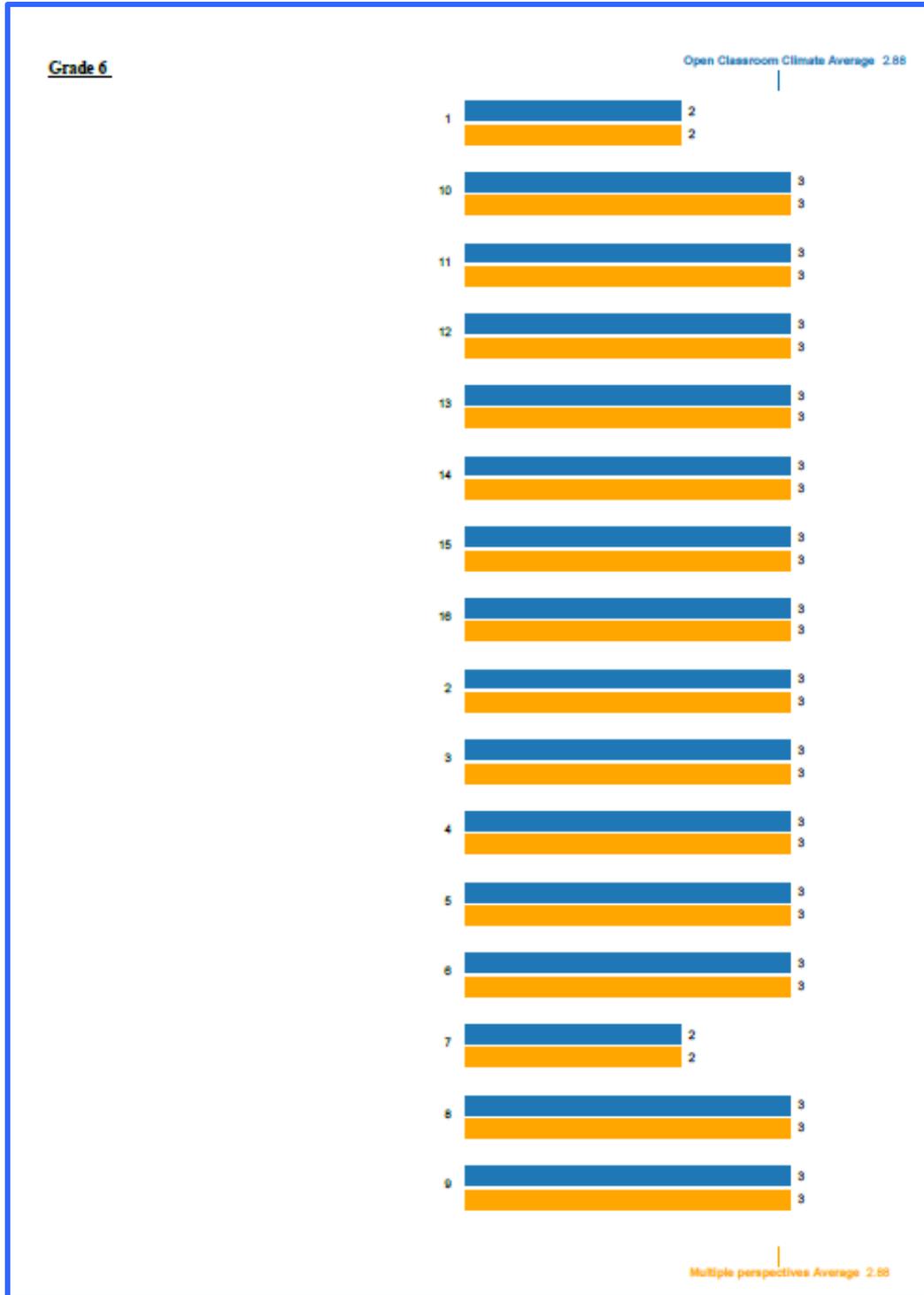
Grade	Overall Quality Score	Unit High Score	Unit Low Score	Difference (High – Low)
K	68.97%	88.89%	56.86%	32.03%
1	67.96%	83.33%	58.73%	24.60%
2	90.63%	97.92%	84.72%	13.20%
3	83.99%	98.33%	71.90%	26.43%
4	78.27%	85.42%	69.14%	16.28%
5	87.47%	93.75%	79.28%	14.47%
6	75.04%	85.33%	68.35%	16.98%
7	77.96%	91.01%	42.59%	48.42%
8	70.65%	92.16%	61.90%	30.26%
9	78.95%	86.11%	66.67%	19.44%
11	73.68%	97.22%	67.45%	29.77%
12	70.52%	73.77%	67.88%	5.89%

Figure 13. Summary of unit quality scores in Grades K-12.

Unit Analysis of Intended Open Classroom Climate and Inclusion of Multiple Perspectives

The Social Studies Knowledge Map™ project also includes a unit-level assessment of multiple perspectives and open classroom climate. The multiple perspectives score measures the extent to which the texts included in the unit represent a range of voices and viewpoints, and provides a holistic approach to the historical event or broader context at hand. The open classroom climate score evaluates teacher-facing materials and analyzes the extent to which instructors are encouraged to include discussion or inquiry-based pedagogy. The score also evaluates whether appropriate space is left for students to form their own opinions on controversial or contested issues. The bar graphs for each grade provide the scores for each unit, and an average on both measures for the grade. Scores in each category range from 1 to 3, with average scores above 2.5 considered high and scores between 2 and 2.5 considered acceptable.





Across all grades, the curriculum had overall average scores of 2.6 for open classroom climate and 2.5 for multiple perspectives; both scores reach the high-level scoring tier. Two grades – Grade 2 and Grade 3 – achieved perfect scores across every unit on both metrics. Additionally, Grade 4 achieved a perfect score on the multiple-perspectives evaluation, but fell just short of it in the open classroom climate evaluation. Kindergarten

received the curriculum's lowest rating on both metrics, with scores of 1.93 on open classroom climate and 1.87 on multiple perspectives. Despite this, the curriculum presents generally solid results on both of these measures, as every other grades scores within the acceptable-to-high range. This reveals that the district's social studies curriculum fosters a learning environment where students explore themes and events from a variety of viewpoints, which encourages them to discuss the presented material and draw their own conclusions. An effective social studies curriculum not only informs students, but also provides them with the means to continue learning and evaluating information after the course ends. Judging by these evaluations in particular, the district equips its students with crucial critical thinking skills.