



Maryland College and Career Ready Standards Framework

Disciplinary Literacy

Maryland College and Career Ready Standards Framework Disciplinary Literacy - Reading Standards for Science and Technical Subjects Grades 9-12

The Maryland College and Career Ready (MCCR) Standards for Disciplinary Literacy in History/Social Studies, Science, and Technical Subjects define skills that students must develop to be fully prepared for the challenges and expectations of college and careers. With the adoption of the MCCR Standards, teachers in all subject areas will build discipline-specific literacy into daily instruction when and where appropriate. The disciplinary literacy standards are not meant to replace existing content standards in the history, social studies, science, or technical subject classrooms, but rather to support them. Literacy development is essential for students to access and learn disciplinary content and must be a shared responsibility across all fields of study.

The Division of Instruction (MSDE) has developed curricular documents to support the implementation and understanding of the MCCR Standards for Disciplinary Literacy in History/Social Studies, Science, and Technical Subjects for grades 6-12. The framework identifies essential skills for accessing, analyzing, and evaluating content-rich informational texts and presenting evidence-based conclusions in argumentative and explanatory writing, emphasizing research. The MCCR Anchor Standards frame the document and define the ultimate literacy expectations required for graduation. Grade-banded standards (6-8, 9-10, and 11-12) provide a progression of rigor designed to help students achieve these expectations. A set of essential skills and knowledge, identified for each standard, recognizes the supporting skills needed for mastery.

It is important to note that MCCR Standards are not hierarchal or sequential; they are a collection of skills and strategies that work together flexibly throughout the learning process. To unlock and communicate content knowledge, students will employ strategic reading and writing strategies when interacting with various texts. The teacher will facilitate knowledge-building while students regularly and actively participate in content-specific discussions, use domain-specific vocabulary, and adhere to the conventions of language when speaking and writing.

Note: Informational Text is not limited to information presented as printed written exposition. It includes items such as maps, tables, charts, oral histories, multimedia presentations, technical data, art, photographs, websites, sound clips, etc.

Disciplinary Literacy Abbreviations:

- RH = Reading Standards for Literacy in History/Social Studies
- RST = Reading Standards for Literacy in Science and Technical Subjects
- WHST = Writing Standards for Literacy in History/Social Studies, Science and Technical Subjects
- MD SLM = Maryland School Library Media Curriculum
- DL = Digital Learning

Reading Standards for Literacy in Science and Technical Subjects

Cluster: Key Ideas and Details

MCCR Anchor Standard 1: Read closely to determine what the text says explicitly and to make logical inferences from it; cite specific textual evidence when writing or speaking to support conclusions drawn from the text.

| GRADE 9-10 STUDENTS | GRADE 11-12 STUDENTS |
|---|--|
| <p>RST 9-10.1 Cite specific textual evidence to support analysis of science and technical texts, attending to the precise details of explanations or descriptions.</p> | <p>RST 11-12 Cite specific textual evidence to support analysis of science and technical texts, attending to important distinctions the author makes and to any gaps or inconsistencies in the account.</p> |
| <p>Essential Skills and Knowledge</p> <ul style="list-style-type: none"> • Demonstrate the behaviors of a strategic reader when reading a science or technical text. • Analyze text clues that affect meaning. • Identify evidence that supports the author’s purpose. • Evaluate textual evidence for completeness and relevance. • Participate actively and appropriately in discussions about informational text. • Interpret, explain, and apply appropriate academic and/or domain-specific vocabulary when responding and discussing informational text. (See CCSS L. 9- 10 .4 & L.9-10.6). | <p>Essential Skills and Knowledge</p> <ul style="list-style-type: none"> • Demonstrate the behaviors of a strategic reader when reading science and technical texts. • Identify the evidence in the text that supports the author’s purpose. • Evaluate available evidence for thoroughness, completeness, accuracy and relevance. • Analyze evidence and explain any inconsistencies or ambiguities between or among evidence presented in text. • Participate actively and appropriately in discussions about informational text. • Interpret, explain, and apply appropriate academic and/or domain-specific vocabulary when responding and discussing informational text. (See CCSS L.11- 12.4 & L.11-12.6.) |

| GRADE 9-10 STUDENTS | GRADE 11-12 STUDENTS |
|---|--|
| RST 9-10.1 Cite specific textual evidence to support analysis of science and technical texts, attending to the precise details of explanations or descriptions. | RST 11-12 Cite specific textual evidence to support analysis of science and technical texts, attending to important distinctions the author makes and to any gaps or inconsistencies in the account. |
| <ul style="list-style-type: none">• Use knowledge of language and its conventions when speaking and writing. (See CCSS L.9-10.1.)• (See MD SLM V.A.) | <ul style="list-style-type: none">• Use knowledge of language and its conventions when speaking and writing. (See CCSS L.11-12.1.)• (See MD SLM V.A.) |

Reading Standards for Literacy in Science and Technical Subjects

Cluster: Key Ideas and Details

MCCR Anchor Standard 2: Determine central ideas or themes of a text and analyze their development; summarize the key supporting details and ideas.

| GRADE 9-10 STUDENTS | GRADE 11-12 STUDENTS |
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| <p>RST. 9-10.2 Determine the central ideas or conclusions of a text; trace the text’s explanation or depiction of a complex process, phenomenon, or concept; provide an accurate summary of the text.</p> | <p>RST.11-12.2 Determine the central ideas or conclusions of a text; trace the text’s explanation or depiction of a complex process, phenomenon, or concept; provide an accurate summary of the text.</p> |
| <p>Essential Skills and Knowledge</p> <ul style="list-style-type: none">• Analyze the key ideas that contribute to the development of a complex process, phenomenon, or concept presented in the text.• Synthesize evidence from the text to determine the central idea or conclusion.• Objectively summarize the scientific or technical text, including the appropriate key ideas, processes, and/or phenomenon. | <p>Essential Skills and Knowledge</p> <ul style="list-style-type: none">• Analyze ideas, processes, and/or information that support the development of the central idea(s) or conclusion of a science or technical text.• Synthesize evidence from the text to determine the central idea or conclusion.• Summarize the information presented in the text by accurately paraphrasing the key ideas and details that support the concepts, processes or information. |

Reading Standards for Literacy in Science and Technical Subjects

Cluster: Key Ideas and Details

MCCR Anchor Standard 3: Analyze how and why individuals, events, and ideas develop and interact over the course of text.

| GRADE 9-10 STUDENTS | GRADE 11-12 STUDENTS |
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| <p>RST.9-10.3 Follow precisely a complex multistep procedure when carrying out experiments, taking measurements, or performing technical tasks, attending to special cases or exceptions defined in the text.</p> | <p>RST.11-12.3 Follow precisely a complex multistep procedure when carrying out experiments, taking measurements, or performing technical tasks; analyze the specific results based on explanations in the text.</p> |
| <p>Essential Skills and Knowledge</p> <ul style="list-style-type: none"> • Analyze and explain the text structure and features of a complex multi-step scientific or technical procedure and how it contributes to the purpose of the text. • Evaluate how the use of domain specific vocabulary, materials, specific scientific tools, or equipment in the text that contributes to the procedure. • Identify special directions or exceptions in the text important/critical to the procedure. • Implement the procedure. | <p>Essential Skills and Knowledge</p> <ul style="list-style-type: none"> • Analyze the text structure of a scientific or technical procedure and how it contributes to meaning and or/purpose. • Analyze the procedure, including the descriptive details (quantities, units of measurement) and use of specific materials (e.g., materials/chemicals, scientific tools and equipment), and sequence of events important to effective implementation. • Implement procedure or technical task. • Compare experimental results to the predicted outcomes. • Analyze results to support predicted outcomes or to identify possible sources of error. |

Reading Standards for Literacy in Science and Technical Subjects

Cluster: Craft and Structure

MCCR Anchor Standard 4: Interpret words and phrases as they are used in a text, including determining technical, connotative, and figurative meanings, and analyze how specific word choices shape meaning or tone.

| GRADE 9-10 STUDENTS | GRADE 11-12 STUDENTS |
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| RST. 9-10.4 Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to grades 9-10 texts and topics. | RST.11-12.4 Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to grades 11-12 texts and topics. |
| <p>Essential Skills and Knowledge</p> <ul style="list-style-type: none">• Analyze the meaning, use, and effect of scientific and technical vocabulary, symbols, and other domain specific-words or phrases as it contributes to comprehension of text.• Use common grade appropriate Greek and Latin affixes and roots as clues to the meaning of a word. (See CCSS L.8.4.b.)• Interpret, explain, and apply appropriate academic and/or domain-specific vocabulary when responding and discussing informational text. (See 9-10 CCSS L.4.& L.6.) | <p>Essential Skills and Knowledge</p> <ul style="list-style-type: none">• Analyze the meaning, use, and effect of science and technical vocabulary, symbols, and other domain specific-words or phrases as it contributes to the meaning of the text.• Interpret, explain, and apply appropriate academic and/or domain-specific vocabulary when responding and discussing science or technical text. (See CCSS L 9-10.4 & L.9-10.6.) |

Reading Standards for Literacy in Science and Technical Subjects

Cluster: Craft and Structure

MCCR Anchor Standard 5: Analyze the structure of texts, including how specific sentences, paragraphs, and larger portions of the text (e.g., a section, chapter, scene, or stanza) relate to each other and the whole.

| GRADE 9-10 STUDENTS | GRADE 11-12 STUDENTS |
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| <p>RST.9-10.5 Analyze the structure of the relationships among concepts in a text, including relationships among key terms (e.g., force, frictions, reaction force, energy).</p> | <p>RST.11-12.5 Analyze how the text structures information or ideas into categories or hierarchies, demonstrating understanding of the information or ideas.</p> |
| <p>Essential Skills and Knowledge</p> <ul style="list-style-type: none"> • Identify and analyze the text structure used to organize science or technical text (e.g., sequentially/chronologically, main ideas and supporting details, cause and effect, compare and contrast, problem and solution). • Apply an understanding of text features in science or technical text (e.g., print features, graphic aids, informational aids, online features, etc.) to facilitate an understanding of the text. • Determine the author’s purpose for the identified text. (See CCSS RI.8.6). • Determine the relationship among certain major sections within the text as a whole. | <p>Essential Skills and Knowledge</p> <ul style="list-style-type: none"> • Analyze the relationship among certain major sections, categories, or hierarchies within the text as a whole. • Analyze and explain how an author deliberately chooses and uses words and text structures to develop and refine ideas or information. • Explain how the relationship among the major sections, categories, or hierarchies contributes to the development of the idea or concept presented within the text. |

| GRADE 9-10 STUDENTS | GRADE 11-12 STUDENTS |
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| RST.9-10.5 Analyze the structure of the relationships among concepts in a text, including relationships among key terms (e.g., force, frictions, reaction force, energy). | RST.11-12.5 Analyze how the text structures information or ideas into categories or hierarchies, demonstrating understanding of the information or ideas. |
| <ul style="list-style-type: none">• Draw conclusions about how the relationship among the major sections adds to the growth of an idea within the whole text.• Evaluate the effectiveness of the structure in presenting the information. | |

Reading Standards for Literacy in Science and Technical Subjects

Cluster: Craft and Structure

MCCR Anchor Standard 6: Assess how point of view or purpose shapes the content and style of a text.

| GRADE 9-10 STUDENTS | GRADE 11-12 STUDENTS |
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| <p>RST.9-10.6 Analyze the author’s purpose in providing an explanation, describing a procedure, or discussing an experiment in a text, defining the question the author seeks to address.</p> | <p>RST.11-12.6 Analyze the author’s purpose in providing an explanation, describing a procedure, or discussing an experiment in a text, identifying important issues that remain unresolved.</p> |
| <p>Essential Skills and Knowledge</p> <ul style="list-style-type: none">• Identify and explain the author’s purpose in providing an explanation, describing a procedure, or discussing an experiment in a text.• Analyze and explain the structure of an explanation, procedure, or experiment and how it contributes to meaning and/or purpose of the text.• Determine and examine the relationships between and among ideas throughout the text and how they contribute to meaning.• Evaluate the effectiveness of the text to address the author’s purpose. | <p>Essential Skills and Knowledge</p> <ul style="list-style-type: none">• Determine and examine the relationships between and among ideas throughout the text and how they contribute to meaning.• Evaluate the text for completeness and relevance.• Analyze and explain any inconsistencies, ambiguities, or gaps among information presented in text. |

Reading Standards for Literacy in Science and Technical Subjects

Cluster: Integration of Knowledge and Ideas

MCCR Anchor Standard 7: Integrate and evaluate content presented in diverse media and formats, including visually and quantitatively, as well as in words.

| GRADE 9-10 STUDENTS | GRADE 11-12 STUDENTS |
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| <p>RST.9-10.7 Translate quantitative or technical information expressed in words in a text into visual form (e.g., a table or a chart) and translate information expressed visually or mathematically (e.g., in an equation) into words.</p> | <p>RST.11-12.7 Integrate and evaluate multiple sources of information presented in diverse formats and media (e.g., visually, quantitatively, as well as in words) in order to address a question or solve a problem.</p> |
| <p>Essential Skills and Knowledge</p> <p>Translate quantitative or technical information in text to a visual.</p> <ul style="list-style-type: none"> Identify the author’s purpose. Identify the key numerical, scientific, or technical terms within the text that describes the quantitative or technical information (e.g., units of measurement). Identify and analyze cue words and phrases that describe the informational relationships expressed (less than, greater than, increases, decreases, equal to). | <p>Essential Skills and Knowledge</p> <ul style="list-style-type: none"> Analyze print, non-print and digital text for explicit details that are relevant to addressing a question or solving a problem. Compare, draw conclusions, and connect significant details and ideas between and among different media formats. Evaluate information from multiple sources of print, non-print, and digital texts, for accuracy, relevance, reliability and validity. Integrate information from multiple sources of print, non-print, and digital texts to address a question or solve a problem. (See CCSS W.11-12.6, W.11-12.7, W.11- 12.8, W.11-12.9b, SL.11-12.2.) (See MD SLM IV.A, IV.B, and MD DL 3.) |

| GRADE 9-10 STUDENTS | GRADE 11-12 STUDENTS |
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| <p>RST.9-10.7 Translate quantitative or technical information expressed in words in a text into visual form (e.g., a table or a chart) and translate information expressed visually or mathematically (e.g., in an equation) into words.</p> | <p>RST.11-12.7 Integrate and evaluate multiple sources of information presented in diverse formats and media (e.g., visually, quantitatively, as well as in words) in order to address a question or solve a problem.</p> |
| <ul style="list-style-type: none"> • Choose, construct, and complete a graphic organizer (chart, table, graph, and flow chart) that most appropriately visually represents the relationship or processes described in the text and the author’s purpose. • Translate information visually or mathematically into words. • Identify the author’s purpose. • Identify the mathematical relationships represented by operational symbols (e.g., +, -, x), mathematic symbols (e.g., (), =, >), and/or technology/flowchart symbols (e.g., , , , ). • Analyze the author’s use of numbers and symbols to represent key ideas, concepts, or processes. • Summarize the information expressed visually by the author into text. • (See MD SLM IV.A, IV.B, and MD DL 3.) | |

Reading Standards for Literacy in Science and Technical Subjects

Cluster: Integration of Knowledge and Ideas

MCCR Anchor Standard 8: Delineate and evaluate the argument and specific claims in a text, including the validity of the reasoning as well as the relevance and sufficiency of the evidence.

| GRADE 9-10 STUDENTS | GRADE 11-12 STUDENTS |
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| <p>RST.9-10.8 Assess the extent to which the reasoning and evidence in a text supports the author’s claim or a recommendation for solving a scientific or technical problem.</p> | <p>RST.11-12.8 Assess the extent to which the reasoning and evidence in a text supports the author’s claim or a recommendation for solving a scientific or technical problem.</p> |
| <p>Essential Skills and Knowledge</p> <ul style="list-style-type: none"> • Identify the author’s claim or recommendation and supporting evidence. • Analyze and evaluate connections among evidence, inferences, and claims or recommendations. • Analyze the completeness, relevance, and accuracy of evidence. • Evaluate the extent to which the evidence supports the author’s claim or recommendation. • (See MD SLM IV.A, IV.B, and MD DL 3.) | <p>Essential Skills and Knowledge</p> <ul style="list-style-type: none"> • Compare and analyze information from sources to identify common areas of support or contradiction with science text. • Seek information from other sources to resolve conflicting information as needed. • Synthesize information to support understanding of text. • (See MD SLM IV.A, IV.B, and MD DL 3.) |

Reading Standards for Literacy in Science and Technical Subjects

Cluster: Integration of Knowledge and Ideas

MCCR Anchor Standard 9: Analyze how two or more texts address similar themes or topics in order to build knowledge or to compare the approaches the authors take.

| GRADE 9-10 STUDENTS | GRADE 11-12 STUDENTS |
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| <p>RST.9-10.9 Compare and contrast findings presented in a text to those from other sources (including their own experiment(s), noting when the findings support or contradict previous explanations or accounts).</p> | <p>RST.11-12.9 Synthesize information from a range of sources (e.g., text, experiments, simulations) into a coherent understanding of a process, phenomenon, or concept, resolving conflicting information when possible.</p> |
| <p>Essential Skills and Knowledge</p> <ul style="list-style-type: none"> Identify the main points and key details in a science or technical text and those found in other sources (e.g., simulations, videos, multimedia sources, student experiments) on the same topic. Compare and contrast information from different sources to identify common areas of support or contradictions. Synthesize information to represent a logical understanding of the topic. | <p>Essential Skills and Knowledge</p> <ul style="list-style-type: none"> Identify the main points and key details in a science or technical text to those found in other sources (e.g., text, experiments, and simulations) on the same topic. Compare, contrast, and analyze information from the different sources to identify common areas of support and/or contradiction Seek information from other sources to resolve conflicting information. Synthesize information to support understanding of text. |

Reading Standards for Literacy in Science and Technical Subjects
Cluster: Range of Reading and Level of Text Complexity
MCCR Anchor Standard 10: Read and comprehend complex literary and informational texts independently and proficiently.

| GRADE 9-10 STUDENTS | GRADE 11-12 STUDENTS |
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| <p>RST.9-10.10 By the end of grade 10, read and comprehend science/technical texts in the grades 9-10 text complexity band independently and proficiently.</p> | <p>RST.11-12.10 By the end of grade 12, read and comprehend science/technical texts in the grades 11-12 CCR text complexity band independently and proficiently.</p> |
| <p>Essential Skills and Knowledge</p> <ul style="list-style-type: none"> • Demonstrate understanding of a wide range of sufficiently complex science and technical nonfiction. • Comprehend texts of steadily increasing complexity, with scaffolding as needed. • As an emerging adult reader, set personal reading goals to self-select and explore texts of different disciplines and increasing complexity. • Participate actively and appropriately in discussions about informational text. • Interpret, explain, and apply appropriate academic and/or domain-specific vocabulary when responding and discussing informational text. (See 9-10 CCSS L.4 & L.6.) | <p>Essential Skills and Knowledge</p> <ul style="list-style-type: none"> • Demonstrate understanding of a wide range of sufficiently complex science and technical nonfiction. • Comprehend texts of steadily increasing complexity. • As an emerging adult reader, set personal reading goals to self-select and explore texts of different genres and increasing complexity. • Participate actively and appropriately in discussions about informational text. • Interpret, explain, and apply appropriate academic and/or domain-specific vocabulary when responding and discussing informational text. (See 9-10 CCSS L.4 & L.6.) |

| GRADE 9-10 STUDENTS | GRADE 11-12 STUDENTS |
|---|---|
| RST.9-10.10 By the end of grade 10, read and comprehend science/technical texts in the grades 9-10 text complexity band independently and proficiently. | RST.11-12.10 By the end of grade 12, read and comprehend science/technical texts in the grades 11-12 CCR text complexity band independently and proficiently. |
| <ul style="list-style-type: none">• Use knowledge of language and its conventions when speaking and writing. (See 9-10 CCSS L.1.)• (See MD SLM V.A and V.C.) | <ul style="list-style-type: none">• Use knowledge of language and its conventions when speaking and writing. (See 9-10 CCSS L.1.)• (See MD SLM V.A and V.C.) |