EARTH AND LIFE SCIENCE

CURRICULUM PACING CALENDER

Summer 2013

Los Angeles County Office of Education
Division of Student Programs

EARTH AND LIFE SCIENCE
SUMMER PACING CALENDAR
2013

How to use this pacing calendar:

The Earth and Life Science Summer Pacing Calendar is intended to be a guide for pacing instruction and a tool to assist teachers in combining standards in a thematic approach to help their students master them during the 2013 eight week summer intersession.

As a goal for this summer the pacing calendar attempts to integrate the new Common Core State Standards (CCSS) for Literacy in History/Social Studies, Science, and Technical Subjects found within the Common Core State Standards for English Language Arts. It is important to understand that the CCSS Literacy in Science do not replace the existing content standards in Earth and Life Science, but instead supplement them. The goal of the CCSS standards is that all students are College and Career Ready (CCR) in literacy no later than the end of high school. Thus, each strand (Reading & Writing) in the CCSS for English Language Arts & Literacy in History/Social Studies, Science, and Technical Subjects contains a set of CCR Anchor Standards that become frameworks around which the standards are organized and allows us to understand the progression of the standards across the grades (6-12). This pacing calendar suggest some Reading and Writing CCR standards; however, teachers are given the flexibility to choose since these CCR standards can be applied to almost any of the science content standards. The CCR Anchor standards are provided and located at the end of the pacing calendar for your convenience.

In addition, the three themes and standards developed and chosen for science this summer have an ELA connection to essential questions developed for the novel, *The Hunger Games* by Suzanne Collins, that will be covered in ELA classrooms over the summer intersession. A time frame is given to cover each theme; however, flexibility is given to the teacher to decide how much time to spend on each standard and sub standard for Earth and Life Science in order to allow for some re-teaching, enriching, and extending learning opportunities. At the end of each sub standard textbook pages are provided for your convenience. A writing assessment prompt is also provided at the end of each theme related to the recommended CCR Writing Anchor Standard to help the teacher with assessing student mastery of the standards. At this time no rubric is provided; however, the use of the CAHSEE writing prompt rubric is suggested as a baseline to develop your own rubric (http://www.cde.ca.gov/ta/tg/hs/documents/teacherelaapp.pdf).

Theme One: ***Boundaries: Protection or Suppression*** **Total Days = 14 days** **July 1 to July 19**	**ELA Connection:** ***The Hunger Games*** **Essential Questions** • How is Panem a Dystopian Society? • How does any ruling class maintain power? • What is my role and impact on society?

Suggested Common Core Anchor Standards:

Integration and Knowledge of Ideas:

READING CCR.ASR.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.

Text Types and Purposes:

WRITING CCR.ASW.1 Write arguments to support claims in an analysis of substantive topics or texts using valid reasoning and relevant and sufficient evidence.

SCIENCE CONTENT STANDARDS	
EARTH SCIENCE	**BIOLOGY/LIFE SCIENCE**
Standards & Learning Targets: **Dynamic Earth Processes** ***3*** Plate tectonics operating over geologic time has changed the patterns of land, sea, and mountains on Earth's surface. As the basis for understanding this concept: • ***3b.*** *I understand the principal structures that form at the three different kinds of plate boundaries. (p. 327-340, 382-387)*	**Standards & Learning Targets:** **Cell Biology** ***1*** The fundamental life processes of plants and animals depend on a variety of chemical reactions that occur in specialized areas of the organism's cells. As a basis for understanding this concept: • ***1a.*** *I understand cells are enclosed within semipermeable membranes that regulate their interaction with their*

- ***3f.*** *I understand the explanation for the location and properties of volcanoes that are due to hot spots and the explanation for those that are due to subduction. (p. 356-363)*

Energy in the Earth System

4 Energy enters the Earth system primarily as solar radiation and eventually escapes as heat. As a basis for understanding this concept:

- ***4c.*** *I understand the different atmospheric gases that absorb the Earth's thermal radiation and the mechanism and significance of the greenhouse effect. (p. 105-106, 110, 484-492, 545-546, 602-603)*

Structure and Composition of the Atmosphere

8 Life has changed Earth's atmosphere, and changes in the atmosphere affect conditions for life. As a basis for understanding this concept:

- ***8c.*** *I understand the location of the ozone layer in the upper atmosphere, its role in absorbing ultraviolet radiation, and the way in which this layer varies both naturally and in response to human activities. (p. 110-111, 193-195, 277, 478, 487-488, 495, 602-603)*

surroundings. (p. 55-56, 60-61, 83-84)

- ***1g.*** *I understand the role of the mitochondria in making stored chemical-bond energy available to cells by completing the breakdown of glucose to carbon dioxide. (p. 65, 104-107)*

Evolution

8 Evolution is the result of genetic changes that occur in constantly changing environments. As a basis for understanding this concept:

- ***8d.*** *I understand the reproductive or geographic isolation affects speciation. (p. 280-282, 290-292, 365)*

Physiology

10 Organisms have a variety of mechanisms to combat disease. As a basis for under-standing the human immune response:

- ***10a.*** *I understand the role of the skin in providing nonspecific defenses against infection. (p. 924-925, 927-929, 861-864)*

Writing Assessment: "Do the various boundaries found in our natural world protect us or suppress us? Write specific focused content arguments to support your claims using valid reasoning and relevant and sufficient evidence."

Theme Two: ***Symbiotic Relationships, Survivalism and the Scarcity of Natural Resources in the Biosphere.*** **Total Days = 15 days** **July 22 to August 9**	**ELA Connection:** ***The Hunger Games*** **Essential Questions** • How can using individual strengths and/or intelligence help someone to survive? • What is the importance of alliances to survival?

Suggested Common Core Anchor Standards:

Key Ideas and Details:

READING CCR.ASR.2 Determine central ideas or themes of a text and analyze their development; summarize the key supporting details and ideas.

Craft and Structure:

READING CCR.ASR.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.

Research to Build and Present Knowledge:

WRITING CCR.ASW.8 Gather relevant information from multiple print and digital sources, assess the credibility and accuracy of each source, and integrate the information while avoiding plagiarism.

WRITING CCR.ASW.9 Draw evidence from literary or informational texts to support analysis, reflection, and research.

SCIENCE CONTENT STANDARDS	
EARTH SCIENCE	**BIOLOGY/LIFE SCIENCE**
Standards & Learning Targets: **Energy in the Earth System**	**Standards & Learning Targets:** **Ecology**

4 Energy enters the Earth system primarily as solar radiation and eventually escapes as heat. As a basis for understanding this concept:

- ***4a.*** *I understand the relative amount of incoming solar energy compared with Earth's internal energy and the energy used by society. (p. 102-103, 105-107, 476-477, 479, 481, 483-485, 650, 652-653, 663-664)*

Biogeochemical Cycles

7 Each element on Earth moves among reservoirs, which exist in the solid earth, in oceans, in the atmosphere, and within and among organisms as part of biogeochemical cycles. As a basis for understanding this concept:

- ***7b*** *I understand the global carbon cycle: the different physical and chemical forms of carbon in the atmosphere, oceans, biomass, fossil fuels, and the movement of carbon among these reservoirs. (p. 34, 85, 95, 185-189, 366-367, 477, 641-648, 665)*

- ***7c*** *I understand the movement of matter among reservoirs is driven by Earth's internal and external sources of energy. (p. 8, 19-22, 102, 158-159, 185-188, 234-235, 246-249, 310-316, 481, 650-653, 684)*

California Geology

9 The geology of California underlies the state's wealth of natural resources as well as its natural hazards. As a basis for understanding this concept:

- ***9a*** *I understand the resources of major economic importance in*

6 Stability in an ecosystem is a balance between competing effects. As a basis for understanding this concept:

- ***6a.*** *I understand biodiversity is the sum total of different kinds of organisms and is affected by alterations of habitats. (p. 340-344, 370, 378)*

- ***6b.*** *I know how to analyze changes in an ecosystem resulting from changes in climate, human activity, introduction of nonnative species, or changes in population size. (p. 340-344, 371-375, 386-388, 390-395, 400)*

- ***6c.*** *I understand how fluctuations in population size in an ecosystem are determined by the relative rates of birth, immigration, emigration, and death. (p. 320-329)*

- ***6d****. I understand how water, carbon, and nitrogen cycle between abiotic resources and organic matter in the ecosystem and how oxygen cycles through photosynthesis and respiration. (p. 96, 350-353)*

- ***6e****. I understand a vital part of an ecosystem is the stability of its producers and decomposers. (p. 345-349, 370)*

- ***6f.*** *I understand that each link in a food web some energy is stored in newly made structures but much energy is dissipated into the environment as heat. This dissipation may be represented in an energy pyramid. (p. 348-349)*

Evolution

8 Evolution is the result of genetic changes that occur in constantly changing environments. As a basis for

California and their relation to California's geology. (p. Pg. CA4-CA11—Chapter 13A, 644-646, 662-664) • ***9c*** *I understand the importance of water to society, the origins of California's fresh water, and the relationship between supply and need. (p. CA 13-CA 19, 158-163, 171-179, 246-255, 259-264)*	understanding this concept: • ***8a.*** *I understand how natural selection determines the differential survival of groups of organisms. (p. 9, 279-282, 288-291, 329, 332)*

Writing Assessment: "Write a composition that draws evidence from literary text (The Hunger Games) or informational text (Science textbook or multiple print and digital sources) to support analysis, reflection, and research of the standards related to Earth Science and Biology/Life Science as it pertains to symbiotic relationships, survivalism and the scarcity of natural resources in our biosphere."

Theme Three: Change and Stability: Their Importance to Survival **Total Days = 11 days** **August 12 to August 26**	**ELA Connection: *The Hunger Games*** **Essential Questions** • What is real and what is manipulation in the media? • How can people change perceptions in order to win?

Suggested Common Core Anchor Standards:

Integration of Knowledge and Ideas:

READING CCR.ASR.7 Integrate and evaluate content presented in diverse formats and media, including visually and quantitatively, as well as in words.

Production and Distribution of Writing:

WRITING CCR.ASW.6 Use technology, including the internet to produce and publish writing and to interact and collaborate with others.

SCIENCE CONTENT STANDARDS	
EARTH SCIENCE	**BIOLOGY/LIFE SCIENCE**
Standards & Learning Targets: **Dynamic Earth Processes** ***3*** Plate tectonics operating over geologic time has changed the patterns of land, sea, and mountains on Earth's surface. As the basis for understanding this concept: • ***3a****. I can identify the features of the ocean floor (magnetic patterns, age, and sea-floor topography) and provide evidence of plate tectonics. (p. 215-217-222, 376-379, 381-388)* • ***3c.*** *I can explain the properties of rocks based on the physical and chemical conditions in which they formed, including plate tectonic processes. (p. 413-429)* • ***3d.*** *I understand why and how earthquakes occur and the scales used to measure their intensity and magnitude. (p. 278, 308-309, 347-348, 354-355, 363-364, 381-387)* • ***3e.*** *I can identify and compare two kinds of volcanoes: one kind with violent eruptions producing steep slopes and the other kind with voluminous lava flows producing gentle slopes. (p. 356-363)* **Energy in the Earth System** ***5*** Heating of Earth's surface and atmosphere by the sun drives convection within the atmosphere and oceans, producing winds and ocean currents. As a basis for understanding this concept:	**Standards & Learning Targets:** **Genetics** ***5*** The genetic composition of cells can be altered by incorporation of exogenous DNA into the cells. As a basis for understanding this concept: • ***5c*** *I understand genetic engineering (biotechnology) is used to produce novel biomedical and agricultural products. (p. 228-242)* **Evolution** ***7*** The frequency of an allele in a gene pool of a population depends on many factors and may be stable or unstable over time. As a basis for understanding this concept: • ***7c*** *I understand new mutations are constantly being generated in a gene pool. (p. 219-220, 326-327, 332)* ***8*** Evolution is the result of genetic changes that occur in constantly changing environments. As a basis for understanding this concept: • ***8b*** *I understand that a great diversity of species increases the chance that at least some organisms survive major changes in the environment. (p. 288-292)* **Physiology** ***9*** As a result of the coordinated structures and functions of

• ***5a.*** *I understand how differential heating of Earth results in circulation patterns in the atmosphere and oceans that globally distribute the heat. (p. 213, 234, 448, 450, 486-493, 496-498, 509-512, 530-531, 546-548, 558-567)* **6** Climate is the long-term average of a region's weather and depends on many factors. As a basis for understanding this concept: • ***6c.*** *I understand how the Earth's climate has changed over time, corresponding to changes in Earth's geography, atmospheric composition, and other factors, such as solar radiation and plate movement. (p. 250-251, 541-548, 600-601, 691)*	organ systems, the internal environment of the human body remains relatively stable (homeostatic) despite changes in the outside environment. As a basis for understanding this concept: • ***9g*** *I understand the homeostatic role of the kidneys in the removal of nitrogenous wastes and the role of the liver in blood detoxification and glucose balance.* • ***9i*** *I understand how hormones (including digestive, reproductive, osmoregulatory) provide internal feedback mechanisms for homeostasis at the cellular level and in whole organisms.* ***10*** Organisms have a variety of mechanisms to combat disease. As a basis for under-standing the human immune response: • ***10b*** *I understand the role of antibodies in the body's response to infection. (p. 876-879, 924-932)* • ***10d*** *I understand there are important differences between bacteria and viruses with respect to their requirements for growth and replication, the body's primary defense against bacterial and viral infections, and effective treatments of these infections. (p. 434-436, 448, 440, 442, 444, 447, 449-450, 924-926, 930-932)*
Writing Assessment: "Use technology, including the internet to produce and publish writing about change and stability found throughout our natural environment."	

Standards for

Literacy in History/Social Studies, Science, and Technical Subjects

6–12

College and Career Readiness anchor Standards for Reading

The grades 6–12 standards on the following pages define what students should understand and be able to do by the end of each grade span. They correspond to the College and Career Readiness (CCR) anchor standards below by number. The CCR and grade-specific standards are necessary complements—the former providing broad standards, the latter providing additional specificity—that together define the skills and understandings that all students must demonstrate.

Key Ideas and details

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.
2. Determine central ideas or themes of a text and analyze their development; summarize the key supporting details and ideas.
3. Analyze how and why individuals, events, or ideas develop and interact over the course of a text.

Craft and Structure

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

Integration of Knowledge and Ideas

7. Integrate and evaluate content presented in diverse formats and media, including visually and quantitatively, as well as in words.*
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.
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.

Range of Reading and Level of Text Complexity

10. Read and comprehend complex literary and informational texts independently and proficiently.

*Please see "Research to Build and Present Knowledge" in Writing for additional standards relevant to gathering, assessing, and applying information from print and digital sources.

Note on range and content of student reading

Reading is critical to building knowledge in history/social studies as well as in science and technical subjects. College and career ready reading in these fields requires an appreciation of the norms and conventions of each discipline, such as the kinds of evidence used in history and science; an understanding of domain-specific words and phrases; an attention to precise details; and the capacity to evaluate intricate arguments, synthesize complex information, and follow detailed descriptions of events and concepts. In history/social studies, for example, students need to be able to analyze, evaluate, and differentiate primary and secondary sources. When reading scientific and technical texts, students need to be able to gain knowledge from challenging texts that often make extensive use of elaborate diagrams and data to convey information and illustrate concepts. Students must be able to read complex informational texts in these fields with independence and confidence because the vast majority of reading in college and workforce training programs will be sophisticated nonfiction. It is important to note that these Reading standards are meant to complement the specific content demands of the disciplines, not replace them.

Reading Standards for Literacy in History/Social Studies 6–12

RH

The standards below begin at grade 6; standards for K–5 reading in history/social studies, science, and technical subjects are integrated into the K–5 Reading standards. The CCR anchor standards and high school standards in literacy work in tandem to define college and career readiness expectations—the former providing broad standards, the latter providing additional specificity.

Grades 6–8 students:	Grades 9–10 students:	Grades 11–12 students:
Key Ideas and details		
1. Cite specific textual evidence to support analysis of primary and secondary sources.	1. Cite specific textual evidence to support analysis of primary and secondary sources, attending to such features as the date and origin of the information.	1. Cite specific textual evidence to support analysis of primary and secondary sources, connecting insights gained from specific details to an understanding of the text as a whole.
2. Determine the central ideas or information of a primary or secondary source; provide an accurate summary of the source distinct from prior knowledge or opinions.	2. Determine the central ideas or information of a primary or secondary source; provide an accurate summary of how key events or ideas develop over the course of the text.	2. Determine the central ideas or information of a primary or secondary source; provide an accurate summary that makes clear the relationships among the key details and ideas.
3. Identify key steps in a text's description of a process related to history/social studies (e.g., how a bill becomes law, how interest rates are raised or lowered).	3. Analyze in detail a series of events described in a text; determine whether earlier events caused later ones or simply preceded them.	3. Evaluate various explanations for actions or events and determine which explanation best accords with textual evidence, acknowledging where the text leaves matters uncertain.
Craft and Structure		
4. Determine the meaning of words and phrases as they are used in a text, including vocabulary specific to domains related to history/social studies.	4. Determine the meaning of words and phrases as they are used in a text, including vocabulary describing political, social, or economic aspects of history/social studies.	4. Determine the meaning of words and phrases as they are used in a text, including analyzing how an author uses and refines the meaning of a key term over the course of a text (e.g., how Madison defines *faction* in *Federalist* No. 10).
5. Describe how a text presents information (e.g., sequentially, comparatively, causally).	5. Analyze how a text uses structure to emphasize key points or advance an explanation or analysis.	5. Analyze in detail how a complex primary source is structured, including how key sentences, paragraphs, and larger portions of the text contribute to the whole.
6. Identify aspects of a text that reveal an author's point of view or purpose (e.g., loaded language, inclusion or avoidance of particular facts).	6. Compare the point of view of two or more authors for how they treat the same or similar topics, including which details they include and emphasize in their respective accounts.	6. Evaluate authors' differing points of view on the same historical event or issue by assessing the authors' claims, reasoning, and evidence.
Integration of Knowledge and Ideas		
7. Integrate visual information (e.g., in charts, graphs, photographs, videos, or maps) with other information in print and digital texts.	7. Integrate quantitative or technical analysis (e.g., charts, research data) with qualitative analysis in print or digital text.	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.
8. Distinguish among fact, opinion, and reasoned judgment in a text.	8. Assess the extent to which the reasoning and evidence in a text support the author's claims.	8. Evaluate an author's premises, claims, and evidence by corroborating or challenging them with other information.
9. Analyze the relationship between a primary and secondary source on the same topic.	9. Compare and contrast treatments of the same topic in several primary and secondary sources.	9. Integrate information from diverse sources, both primary and secondary, into a coherent understanding of an idea or event, noting discrepancies among sources.
Range of Reading and Level of Text Complexity		
10. By the end of grade 8, read and comprehend history/social studies texts in the grades 6–8 text complexity band independently and proficiently.	10. By the end of grade 10, read and comprehend history/social studies texts in the grades 9–10 text complexity band independently and proficiently.	10. By the end of grade 12, read and comprehend history/social studies texts in the grades 11–CCR text complexity band independently and proficiently.

Reading Standards for Literacy in Science and Technical Subjects 6–12

RST

Grades 6–8 students:	Grades 9–10 students:	Grades 11–12 students:
Key Ideas and details		
1. Cite specific textual evidence to support analysis of science and technical texts.	1. Cite specific textual evidence to support analysis of science and technical texts, attending to the precise details of explanations or descriptions.	1. 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.
2. Determine the central ideas or conclusions of a text; provide an accurate summary of the text distinct from prior knowledge or opinions.	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.	2. Determine the central ideas or conclusions of a text; summarize complex concepts, processes, or information presented in a text by paraphrasing them in simpler but still accurate terms.
3. Follow precisely a multistep procedure when carrying out experiments, taking measurements, or performing technical tasks.	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.	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.
Craft and Structure		
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 6–8 texts and topics*.	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*.	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*.
5. Analyze the structure an author uses to organize a text, including how the major sections contribute to the whole and to an understanding of the topic.	5. Analyze the structure of the relationships among concepts in a text, including relationships among key terms (e.g., *force, friction, reaction force, energy*).	5. Analyze how the text structures information or ideas into categories or hierarchies, demonstrating understanding of the information or ideas.
6. Analyze the author's purpose in providing an explanation, describing a procedure, or discussing an experiment in a text.	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.	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.
Integration of Knowledge and Ideas		
7. Integrate quantitative or technical information expressed in words in a text with a version of that information expressed visually (e.g., in a flowchart, diagram, model, graph, or table).	7. Translate quantitative or technical information expressed in words in a text into visual form (e.g., a table or chart) and translate information expressed visually or mathematically (e.g., in an equation) into words.	7. Integrate and evaluate multiple sources of information presented in diverse formats and media (e.g., quantitative data, video, multimedia) in order to address a question or solve a problem.
8. Distinguish among facts, reasoned judgment based on research findings, and speculation in a text.	8. Assess the extent to which the reasoning and evidence in a text support the author's claim or a recommendation for solving a scientific or technical problem.	8. Evaluate the hypotheses, data, analysis, and conclusions in a science or technical text, verifying the data when possible and corroborating or challenging conclusions with other sources of information.
9. Compare and contrast the information gained from experiments, simulations, video, or multimedia sources with that gained from reading a text on the same topic.	9. Compare and contrast findings presented in a text to those from other sources (including their own experiments), noting when the findings support or contradict previous explanations or accounts.	9. Synthesize information from a range of sources (e.g., texts, experiments, simulations) into a coherent understanding of a process, phenomenon, or concept, resolving conflicting information when possible.
Range of Reading and Level of Text Complexity		
10. By the end of grade 8, read and comprehend science/technical texts in the grades 6–8 text complexity band independently and proficiently.	10. By the end of grade 10, read and comprehend science/technical texts in the grades 9–10 text complexity band independently and proficiently.	10. By the end of grade 12, read and comprehend science/technical texts in the grades 11–CCR text complexity band independently and proficiently.

College and Career Readiness Anchor Standards for Writing

The grades 6–12 standards on the following pages define what students should understand and be able to do by the end of each grade span. They correspond to the College and Career Readiness (CCR) anchor standards below by number. The CCR and grade-specific standards are necessary complements—the former providing broad standards, the latter providing additional specificity—that together define the skills and understandings that all students must demonstrate.

Text Types and Purposes*

1. Write arguments to support claims in an analysis of substantive topics or texts using valid reasoning and relevant and sufficient evidence.
2. Write informative/explanatory texts to examine and convey complex ideas and information clearly and accurately through the effective selection, organization, and analysis of content.
3. Write narratives to develop real or imagined experiences or events using effective technique, well-chosen details and well-structured event sequences.

Production and Distribution of Writing

4. Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.
5. Develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach.
6. Use technology, including the Internet, to produce and publish writing and to interact and collaborate with others.

Research to Build and Present Knowledge

7. Conduct short as well as more sustained research projects based on focused questions, demonstrating understanding of the subject under investigation.
8. Gather relevant information from multiple print and digital sources, assess the credibility and accuracy of each source, and integrate the information while avoiding plagiarism.
9. Draw evidence from literary or informational texts to support analysis, reflection, and research.

Range of Writing

10. Write routinely over extended time frames (time for research, reflection, and revision) and shorter time frames (a single sitting or a day or two) for a range of tasks, purposes, and audiences.

*These broad types of writing include many subgenres. See Appendix A for definitions of key writing types.

Note on range and content of student writing

For students, writing is a key means of asserting and defending claims, showing what they know about a subject, and conveying what they have experienced, imagined, thought, and felt. To be college and career ready writers, students must take task, purpose, and audience into careful consideration, choosing words, information, structures, and formats deliberately. They need to be able to use technology strategically when creating, refining, and collaborating on writing. They have to become adept at gathering information, evaluating sources, and citing material accurately, reporting findings from their research and analysis of sources in a clear and cogent manner. They must have the flexibility, concentration, and fluency to produce high-quality first-draft text under a tight deadline and the capacity to revisit and make improvements to a piece of writing over multiple drafts when circumstances encourage or require it. To meet these goals, students must devote significant time and effort to writing, producing numerous pieces over short and long time frames throughout the year.

Writing Standards for Literacy in History/Social Studies, Science, and Technical Subjects 6–12

whST

The standards below begin at grade 6; standards for K–5 writing in history/social studies, science, and technical subjects are integrated into the K–5 Writing standards. The CCR anchor standards and high school standards in literacy work in tandem to define college and career readiness expectations—the former providing broad standards, the latter providing additional specificity.

Grades 6–8 students:	Grades 9–10 students:	Grades 11–12 students:
Text Types and Purposes		
1. Write arguments focused on *discipline-specific content*. a. Introduce claim(s) about a topic or issue, acknowledge and distinguish the claim(s) from alternate or opposing claims, and organize the reasons and evidence logically. b. Support claim(s) with logical reasoning and relevant, accurate data and evidence that demonstrate an understanding of the topic or text, using credible sources. c. Use words, phrases, and clauses to create cohesion and clarify the relationships among claim(s), counterclaims, reasons, and evidence. d. Establish and maintain a formal style. e. Provide a concluding statement or section that follows from and supports the argument presented.	1. Write arguments focused on *discipline-specific content.* a. Introduce precise claim(s), distinguish the claim(s) from alternate or opposing claims, and create an organization that establishes clear relationships among the claim(s), counterclaims, reasons, and evidence. b. Develop claim(s) and counterclaims fairly, supplying data and evidence for each while pointing out the strengths and limitations of both claim(s) and counterclaims in a discipline-appropriate form and in a manner that anticipates the audience's knowledge level and concerns. c. Use words, phrases, and clauses to link the major sections of the text, create cohesion, and clarify the relationships between claim(s) and reasons, between reasons and evidence, and between claim(s) and counterclaims. d. Establish and maintain a formal style and objective tone while attending to the norms and conventions of the discipline in which they are writing. e. Provide a concluding statement or section that follows from or supports the argument presented.	1. Write arguments focused on *discipline-specific content.* a. Introduce precise, knowledgeable claim(s), establish the significance of the claim(s), distinguish the claim(s) from alternate or opposing claims, and create an organization that logically sequences the claim(s), counterclaims, reasons, and evidence. b. Develop claim(s) and counterclaims fairly and thoroughly, supplying the most relevant data and evidence for each while pointing out the strengths and limitations of both claim(s) and counterclaims in a discipline-appropriate form that anticipates the audience's knowledge level, concerns, values, and possible biases. c. Use words, phrases, and clauses as well as varied syntax to link the major sections of the text, create cohesion, and clarify the relationships between claim(s) and reasons, between reasons and evidence, and between claim(s) and counterclaims. d. Establish and maintain a formal style and objective tone while attending to the norms and conventions of the discipline in which they are writing. e. Provide a concluding statement or section that follows from or supports the argument presented.

Writing Standards for Literacy in History/Social Studies, Science, and Technical Subjects 6–12

whST

Grades 6–8 students:	Grades 9–10 students:	Grades 11–12 students:
Text Types and Purposes (continued)		
2. Write informative/explanatory texts, including the narration of historical events, scientific procedures/ experiments, or technical processes. a. Introduce a topic clearly, previewing what is to follow; organize ideas, concepts, and information into broader categories as appropriate to achieving purpose; include formatting (e.g., headings), graphics (e.g., charts, tables), and multimedia when useful to aiding comprehension. b. Develop the topic with relevant, well-chosen facts, definitions, concrete details, quotations, or other information and examples. c. Use appropriate and varied transitions to create cohesion and clarify the relationships among ideas and concepts. d. Use precise language and domain-specific vocabulary to inform about or explain the topic. e. Establish and maintain a formal style and objective tone. f. Provide a concluding statement or section that follows from and supports the information or explanation presented.	2. Write informative/explanatory texts, including the narration of historical events, scientific procedures/ experiments, or technical processes. a. Introduce a topic and organize ideas, concepts, and information to make important connections and distinctions; include formatting (e.g., headings), graphics (e.g., figures, tables), and multimedia when useful to aiding comprehension. b. Develop the topic with well-chosen, relevant, and sufficient facts, extended definitions, concrete details, quotations, or other information and examples appropriate to the audience's knowledge of the topic. c. Use varied transitions and sentence structures to link the major sections of the text, create cohesion, and clarify the relationships among ideas and concepts. d. Use precise language and domain-specific vocabulary to manage the complexity of the topic and convey a style appropriate to the discipline and context as well as to the expertise of likely readers. e. Establish and maintain a formal style and objective tone while attending to the norms and conventions of the discipline in which they are writing. f. Provide a concluding statement or section that follows from and supports the information or explanation presented (e.g., articulating implications or the significance of the topic).	2. Write informative/explanatory texts, including the narration of historical events, scientific procedures/ experiments, or technical processes. a. Introduce a topic and organize complex ideas, concepts, and information so that each new element builds on that which precedes it to create a unified whole; include formatting (e.g., headings), graphics (e.g., figures, tables), and multimedia when useful to aiding comprehension. b. Develop the topic thoroughly by selecting the most significant and relevant facts, extended definitions, concrete details, quotations, or other information and examples appropriate to the audience's knowledge of the topic. c. Use varied transitions and sentence structures to link the major sections of the text, create cohesion, and clarify the relationships among complex ideas and concepts. d. Use precise language, domain-specific vocabulary and techniques such as metaphor, simile, and analogy to manage the complexity of the topic; convey a knowledgeable stance in a style that responds to the discipline and context as well as to the expertise of likely readers. e. Provide a concluding statement or section that follows from and supports the information or explanation provided (e.g., articulating implications or the significance of the topic).
3. (See note; not applicable as a separate requirement)	3. (See note; not applicable as a separate requirement)	3. (See note; not applicable as a separate requirement)

Note: Students' narrative skills continue to grow in these grades. The Standards require that students be able to incorporate narrative elements effectively into arguments and informative/explanatory texts. In history/social studies, students must be able to incorporate narrative accounts into their analyses of individuals or events of historical import. In science and technical subjects, students must be able to write precise enough descriptions of the step-by-step procedures they use in their investigations or technical work that others can replicate them and (possibly) reach the same results.

Writing Standards for Literacy in History/Social Studies, Science, and Technical Subjects 6–12

whST

Grades 6–8 students:	Grades 9–10 students:	Grades 11–12 students:
Production and distribution of Writing		
4. Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.	4. Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.	4. Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.
5. With some guidance and support from peers and adults, develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach, focusing on how well purpose and audience have been addressed.	5. Develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach, focusing on addressing what is most significant for a specific purpose and audience.	5. Develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach, focusing on addressing what is most significant for a specific purpose and audience.
6. Use technology, including the Internet, to produce and publish writing and present the relationships between information and ideas clearly and efficiently.	6. Use technology, including the Internet, to produce, publish, and update individual or shared writing products, taking advantage of technology's capacity to link to other information and to display information flexibly and dynamically.	6. Use technology, including the Internet, to produce, publish, and update individual or shared writing products in response to ongoing feedback, including new arguments or information.
Research to Build and Present Knowledge		
7. Conduct short research projects to answer a question (including a self-generated question), drawing on several sources and generating additional related, focused questions that allow for multiple avenues of exploration.	7. Conduct short as well as more sustained research projects to answer a question (including a self-generated question) or solve a problem; narrow or broaden the inquiry when appropriate; synthesize multiple sources on the subject, demonstrating understanding of the subject under investigation.	7. Conduct short as well as more sustained research projects to answer a question (including a self-generated question) or solve a problem; narrow or broaden the inquiry when appropriate; synthesize multiple sources on the subject, demonstrating understanding of the subject under investigation.
8. Gather relevant information from multiple print and digital sources, using search terms effectively; assess the credibility and accuracy of each source; and quote or paraphrase the data and conclusions of others while avoiding plagiarism and following a standard format for citation.	8. Gather relevant information from multiple authoritative print and digital sources, using advanced searches effectively; assess the usefulness of each source in answering the research question; integrate information into the text selectively to maintain the flow of ideas, avoiding plagiarism and following a standard format for citation.	8. Gather relevant information from multiple authoritative print and digital sources, using advanced searches effectively; assess the strengths and limitations of each source in terms of the specific task, purpose, and audience; integrate information into the text selectively to maintain the flow of ideas, avoiding plagiarism and overreliance on any one source and following a standard format for citation.
9. Draw evidence from informational texts to support analysis reflection, and research.	9. Draw evidence from informational texts to support analysis, reflection, and research.	9. Draw evidence from informational texts to support analysis, reflection, and research.
Range of Writing		
10. Write routinely over extended time frames (time for reflection and revision) and shorter time frames (a single sitting or a day or two) for a range of discipline-specific tasks, purposes, and audiences.	10. Write routinely over extended time frames (time for reflection and revision) and shorter time frames (a single sitting or a day or two) for a range of discipline-specific tasks, purposes, and audiences.	10. Write routinely over extended time frames (time for reflection and revision) and shorter time frames (a single sitting or a day or two) for a range of discipline-specific tasks, purposes, and audiences.