

Appendix X: Education Standards

North Carolina Essential Standards

Science

6.L.1.2 Explain the significance of the processes of photosynthesis, respiration, and transpiration to the survival of green plants and other organisms.

6.L.2.1 Summarize how energy derived from the sun is used by plants to produce sugars (photosynthesis) and is transferred within food chains and food webs (terrestrial and aquatic) from producers to consumers to decomposers.

7.P.2.2 Explain how energy can be transformed from one form to another (specifically potential energy and kinetic energy) using a model or diagram of a moving object (roller coaster, pendulum, or cars on ramps as examples).

7.E.1.6 Conclude that the good health of humans requires: monitoring the atmosphere, maintaining air quality and stewardship.

8.P.1 Understand the properties of matter and changes that occur when matter interacts in an open and closed container.

8.P.2 Explain the environmental implications associated with the various methods of obtaining, managing, and using energy resources.

8.P.2.1 Explain the environmental consequences of the various methods of obtaining, transforming and distributing energy.

8.P.2.2 Explain the implications of the depletion of renewable and nonrenewable energy resources and the importance of conservation.

8.L.2.1 Summarize aspects of biotechnology including:

- Specific genetic information available
- Careers
- Economic benefits to North Carolina
- Ethical issues
- Implications for agriculture

8.L.3.3 Explain how the flow of energy within food webs is interconnected with the cycling of matter (including water, nitrogen, carbon dioxide and oxygen).

8.L.5.1 Summarize how food provides the energy and the molecules required for building materials, growth and survival of all organisms (to include plants).

Social Studies

7.G.1.1 Explain how environmental conditions and human response to those conditions influence modern societies and regions (e.g. natural barriers, scarcity of resources and factors that influence settlement).

7.G.1.3 Explain how natural disasters (e.g. flooding, earthquakes, monsoons and tsunamis), preservation efforts and human modification of the environment (e.g. recycling, planting trees, deforestation, pollution, irrigation systems and climate change) affect modern societies and regions.

7.G.2.2 Use maps, charts, graphs, geographic data and available technology tools (i.e. GPS and GIS software) to interpret and draw conclusions about social, economic, and environmental issues in modern societies and regions.

7.E.1.2 Explain the implications of economic decisions in national and international affairs (e.g. OPEC, NAFTA, G20, WTO, EU and economic alliances).

7.E.1.3 Summarize the main characteristics of various economic systems (e.g. capitalism, socialism, communism; market, mixed, command and traditional economies).

8.G.1 Understand the geographic factors that influenced North Carolina and the United States.

8.G.1.1 Explain how location and place have presented opportunities and challenges for the movement of people, goods, and ideas in North Carolina and the United States.

8.G.1.2 Understand the human and physical characteristics of regions in North Carolina and the United States (e.g. physical features, culture, political organization and ethnic make-up).

8.G.1.3 Explain how human and environmental interaction affected quality of life and settlement patterns in North Carolina and the United States (e.g. environmental disasters, infrastructure development, coastal restoration and alternative sources of energy).

8.C&G.1.1 Summarize democratic ideals expressed in local, state, and national government (e.g. limited government, popular sovereignty, separation of powers, republicanism, federalism and individual rights).

8.C&G.2 Understand the role that citizen participation plays in societal change.

Math

NC.6.EE.6 Use variables to represent numbers and write expressions when solving a real-world or mathematical problem.

NC.6.SP.2 Understand that a set of data collected to answer a statistical question has a distribution which can be described by its center, spread, and overall shape.

NC.7.NS.3 Solve real-world and mathematical problems involving numerical expressions with rational numbers using the four operations.

NC.7.SP.3 Recognize the role of variability when comparing two populations.

b. Informally assess the difference between two data sets by examining the overlap and separation between the graphical representations of two data sets.

NC.7.SP.4 Use measures of center and measures of variability for numerical data from random samples to draw comparative inferences about two populations.

NC.8.F.5 Qualitatively analyze the functional relationship between two quantities.

- Analyze a graph determining where the function is increasing or decreasing; linear or non-linear.
- Sketch a graph that exhibits the qualitative features of a real-world function.

NC.8.SP.1 Construct and interpret scatter plots for bivariate measurement data to investigate patterns of association between two quantities. Investigate and describe patterns such as clustering, outliers, positive or negative association, linear association, and nonlinear association.

English Language Arts

RI.6.6 Determine an author's point of view or purpose in a text and explain how it is conveyed in the text.

RI.6.8 Trace and evaluate the argument and specific claims in a text, distinguishing claims that are supported by reasons and evidence from claims that are not.

RI.6.9 Compare and contrast one author's presentation of events with that of another.

W.6.1 Write arguments to support claims with clear reasons and relevant evidence.

- a. Organize information and ideas around a topic to plan and prepare to write.
- b. Introduce claim(s) and organize the reasons and evidence clearly.
- c. Support claim(s) with clear reasons and relevant evidence, using credible sources and demonstrating an understanding of the topic or text.
- d. Use words, phrases, and clauses to clarify the relationships among claim(s) and reasons.
- e. Establish and maintain a formal style.
- f. Provide a concluding statement or section that follows from the argument presented.
- g. With some guidance and support from peers and adults, develop and strengthen writing as needed by revising, editing, rewriting, or trying a new approach, with consideration to task, purpose, and audience.

W.6.4 Use digital tools and resources to produce and publish writing as well as to interact and collaborate with others; demonstrate sufficient word processing skills.

W.6.5 Conduct short research projects to answer a question, drawing on several sources and refocusing the investigation when appropriate.

W.6.6 Gather relevant information from multiple print and digital sources; assess the credibility of each source; and quote or paraphrase the data and conclusions of others while avoiding plagiarism and providing basic bibliographic information for sources.

SL.6.1 Engage effectively in a range of collaborative discussions (one on one, in groups, and teacher-led) with diverse partners on grade 6 topics, texts, and issues, building on others' ideas and expressing their own clearly.

- a. Come to discussions prepared, having read or studied required material; explicitly draw on that preparation by referring to evidence on the topic, text, or issue to probe and reflect on ideas under discussion.
- b. Follow rules for collegial discussions, set specific goals and deadlines, and define individual roles as needed.
- c. Pose and respond to specific questions with elaboration and detail by making comments that contribute to the topic, text, or issue under discussion.
- d. Review the key ideas expressed and demonstrate understanding of multiple perspectives through reflection and paraphrasing.

SL.6.3 Delineate a speaker's argument and specific claims, distinguishing claims that are supported by reasons and evidence from claims that are not.

SL.6.4 Present claims and findings, sequencing ideas logically and using pertinent descriptions, facts, and details to accentuate main ideas or themes; adapt speech to a variety of contexts and tasks.

SL.6.5 Include multimedia components and visual displays in presentations to clarify information.

L.6.1 Demonstrate command of the conventions of standard English grammar and usage when writing or speaking; demonstrate proficiency within the 6-8 grammar continuum.

L.6.2 Demonstrate command of the conventions of standard English capitalization, punctuation, and spelling when writing; demonstrate proficiency within the 6-8 conventions continuum.

L.6.6 Acquire and use accurately grade-appropriate general academic and domain-specific words and phrases; develop vocabulary knowledge when considering a word or phrase important to comprehension or expression.

RI.7.6 Determine an author's point of view or purpose in a text and analyze how the author distinguishes his or her position from that of others.

RI.7.8 Trace and evaluate the argument and specific claims in a text, assessing whether the reasoning is sound and the evidence is relevant and sufficient to support the claims.

RI.7.9 Analyze how two or more authors writing about the same topic shape their presentations of key information by emphasizing different evidence or advancing different interpretations of facts.

W.7.1 Write arguments to support claims with clear reasons and relevant evidence.

- a. Organize information and ideas around a topic to plan and prepare to write.
- b. Introduce claim(s), acknowledge alternate or opposing claims, and organize the reasons and evidence logically.
- c. Support claim(s) with logical reasoning and relevant evidence, using accurate, credible sources and demonstrating an understanding of the topic or text.
- d. Use words, phrases, and clauses to create cohesion and clarify the relationships among claim(s), reasons, and evidence.
- e. Establish and maintain a formal style.
- f. Provide a concluding statement or section that follows from and supports the argument presented.

- g. With some guidance and support from peers and adults, develop and strengthen writing as needed by revising, editing, rewriting, or trying a new approach, focusing on how well purpose and audience have been addressed.

W.7.4 Use digital tools and resources to produce and publish writing, link to and cite sources, and to interact and collaborate with others.

W.7.5 Conduct short research projects to answer a question, drawing on several sources and generating additional related, focused questions for further research and investigation.

W.7.6 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.

SL.7.1 Engage effectively in a range of collaborative discussions (one on one, in groups, and teacher-led) with diverse partners on grade 7 topics, texts, and issues, building on others' ideas and expressing their own clearly.

- a. Come to discussions prepared, having read or researched material under study; explicitly draw on that preparation by referring to evidence on the topic, text, or issue to probe and reflect on ideas under discussion.
- b. Follow rules for collegial discussions, track progress toward specific goals and deadlines, and define individual roles as needed.
- c. Pose questions that elicit elaboration and respond to others' questions and comments with relevant observations and ideas that bring the discussion back on topic as needed.
- d. Acknowledge new information expressed by others and, when warranted, modify their own views.

SL.7.3 Delineate a speaker's argument and specific claims, evaluating the soundness of the reasoning and the relevance and sufficiency of the evidence.

SL.7.4 Present claims and findings, emphasizing salient points in a focused, coherent manner with pertinent descriptions, facts, details, and examples; adapt speech to a variety of contexts and tasks.

SL.7.5 Include multimedia components and visual displays in presentations to clarify claims and findings and emphasize salient points.

L.7.1 Demonstrate command of the conventions of standard English grammar and usage when writing or speaking; demonstrate proficiency within the 6-8 grammar continuum.

L.7.2 Demonstrate command of the conventions of standard English capitalization, punctuation, and spelling when writing; demonstrate proficiency within the 6-8 conventions continuum.

L.7.6 Acquire and use accurately grade-appropriate general academic and domain-specific words and phrases; develop vocabulary knowledge when considering a word or phrase important to comprehension or expression.

RI.8.6 Determine an author's point of view or purpose in a text and analyze how the author acknowledges and responds to conflicting evidence or viewpoints.

RI.8.8 Delineate and evaluate the argument and specific claims in a text, assessing whether the reasoning is sound and the evidence is relevant and sufficient; recognize when irrelevant evidence is introduced.

RI.8.9 Analyze a case in which two or more texts provide conflicting information on the same topic and identify where the texts disagree on matters of fact or interpretation.

W.8.1 Write arguments to support claims with clear reasons and relevant evidence.

- a. Organize information and ideas around a topic to plan and prepare to write.
- b. Introduce claim(s), acknowledge and distinguish the claim(s) from alternate or opposing claims, and organize the reasons and evidence logically.
- c. Support claim(s) with logical reasoning and relevant evidence, using accurate, credible sources and demonstrating an understanding of the topic or text.
- d. Use words, phrases, and clauses to create cohesion and clarify the relationships among claim(s), counterclaims, reasons, and evidence.
- e. Establish and maintain a formal style.
- f. Provide a concluding statement or section that follows from and supports the argument presented.
- g. With some guidance and support from peers and adults, develop and strengthen writing as needed by revising, editing, rewriting, or trying a new approach, focusing on how well purpose and audience have been addressed.

W.8.4 Use digital tools and resources to produce and publish writing and present the relationships between information and ideas efficiently as well as to interact and collaborate with others.

W.8.5 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.

W.8.6 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.

SL.8.1 Engage effectively in a range of collaborative discussions (one on one, in groups, and teacher-led) with diverse partners on grade 8 topics, texts, and issues, building on others' ideas and expressing their own clearly.

- a. Come to discussions prepared, having read or researched material under study; explicitly draw on that preparation by referring to evidence on the topic, text, or issue to probe and reflect on ideas under discussion.
- b. Follow rules for collegial discussions and decision-making, track progress toward specific goals and deadlines, and define individual roles as needed.
- c. Pose questions that connect the ideas of several speakers and respond to others' questions and comments with relevant evidence, observations, and ideas.
- d. Acknowledge new information expressed by others, and, when warranted, qualify or justify their own views in light of the evidence presented.

SL.8.2 Analyze the purpose of information presented in diverse media and formats and evaluate the motives behind its presentation.

SL.8.3 Delineate a speaker's argument and specific claims, evaluating the soundness of the reasoning and relevance and sufficiency of the evidence, and identifying when irrelevant evidence is introduced.

SL.8.4 Present claims and findings, emphasizing salient points in a focused, coherent manner with relevant evidence, sound valid reasoning, and well-chosen details; adapt speech to a variety of contexts and tasks.

SL.8.5 Integrate multimedia and visual displays into presentations to clarify information, strengthen claims and evidence, and add interest.

L.8.1 Demonstrate command of the conventions of standard English grammar and usage when writing or speaking; demonstrate proficiency within the 6-8 grammar continuum.

L.8.2 Demonstrate command of the conventions of standard English capitalization, punctuation, and spelling when writing; demonstrate proficiency within the 6-8 conventions continuum.

L.8.6 Acquire and use accurately grade-appropriate general academic and domain-specific words and phrases; develop vocabulary knowledge when considering a word or phrase important to comprehension or expression.

Information and Technology

6.SI.1.1 Analyze resources in terms of their reliability (which can be determined by currency, credibility, or authority, depending on the topic or purpose)

6.SI.1.2 Analyze content for relevance to the assigned task.

6.SI.1 Analyze resources to determine their reliability, point of view, bias, and relevance for particular topics and purposes.

6.SI.1.3 Analyze resources for point of view, bias, values, or intent of information.

6.RP.1 Apply a research process for collaborative or individual research.

6.RP.1.1 Implement a research process collaboratively.

6.RP.1.2 Implement a research process independently.

6.SE.1.1 Apply ethical behavior (copyright, not plagiarizing, proper netiquette) when using resources.

7.SI.1 Evaluate information resources based on specified criteria.

7.SI.1.1 Evaluate resources for reliability. (Reliability can be determined by currency, credibility, authority, etc. depending on the curriculum topic).

7.SI.1.2 Evaluate content for relevance to the assigned task.

7.SI.1.3 Evaluate resources for point of view, bias, values, or intent of information.

7.RP.1 Apply a research process to complete given tasks.

7.RP.1.2 Implement an independent research process activity that is student selected.

7.SE.1.1 Apply ethical behavior (copyright, not plagiarizing, proper netiquette) when using resources.

8.SI.1 Evaluate information resources based on specified criteria.

8.SI.1.1 Evaluate resources for reliability. (Reliability can be determined by currency, credibility, authority, etc. depending on the curriculum topic).

8.SI.1.2 Evaluate content for relevance to the assigned task.

8.SI.1.3 Evaluate resources for point of view, bias, values, or intent of information.

8.RP.1 Apply a research process to complete project-based activities.

8.RP.1.1 Implement a project-based activity collaboratively.

8.RP.1.2 Implement a project-based activity independently.

8.SE.1.1 Analyze ethical behavior (copyright, not plagiarizing, netiquette) when using resources.

Theatre Arts

6.C.1.2 Apply appropriate vocal elements of volume, pitch, rate, tone, articulation, and vocal expression.

6.C.2 Use performance to communicate ideas and feelings.

6.C.2.1 Use improvisation and acting skills to role play various scenarios and given situations.

7.C.1.2 Apply appropriate vocal elements, such as pitch, volume, and projection, effectively in formal and informal presentations.

8.C.1.2 Apply appropriate vocal elements, such as pitch, volume, and projection, effectively while portraying characters.

8.C.1 Use movement, voice, and writing to communicate ideas and feelings.

8.C.1.3 Create original works that communicate ideas and feelings.

National Standards

Next Generation Science Standards

MS-PS1-1. Develop models to describe the atomic composition of simple molecules and extended structures.

MS-PS-1-3. Gather and make sense of information to describe that synthetic materials come from natural resources and impact society.

MS-PS1-5. Develop and use a model to describe how the total number of atoms does not change in a chemical reaction and thus mass is conserved.

MS-PS1-6. Undertake a design project to construct, test, and modify a device that either releases or absorbs thermal energy by chemical processes.*

MS-PS3-4. Plan an investigation to determine the relationships among the energy transferred, the type of matter, the mass, and the change in the average kinetic energy of the particles as measured by the temperature of the sample.

MS-LS1-2. Develop and use a model to describe the function of a cell as a whole and ways the parts of cells contribute to the function.

MS-LS1-6. Construct a scientific explanation based on evidence for the role of photosynthesis in the cycling of matter and flow of energy into and out of organisms.

MS-LS1-7. Develop a model to describe how food is rearranged through chemical reactions forming new molecules that support growth and/or release energy as this matter moves through an organism.

MS-LS2-5. Evaluate competing design solutions for maintaining biodiversity and ecosystem services.*

MS-ESS3-3. Apply scientific principles to design a method for monitoring and minimizing a human impact on the environment.*

MS-ESS3-4. Construct an argument supported by evidence for how increases in human population and per-capita consumption of natural resources impact Earth's systems.

MS-ESS3-5. Ask questions to clarify evidence of the factors that have caused the rise in global temperatures over the past century.

MS-ETS1-1. Define the criteria and constraints of a design problem with sufficient precision to ensure a successful solution, taking into account relevant scientific principles and potential impacts on people and the natural environment that may limit possible solutions.