

# Curriculum Framework for BioLit (Biology and ELA)<sup>1</sup>

School: Delaware STEM Academy      Curricular Tool: Science Coalition, Science & Global Issues: Biology, New Tech Network Echo      Grade: 10      Teacher: \_\_\_\_\_

The content of this curriculum map will be taught in a daily block of 90 minutes.

Concepts/Big Ideas	Essential Questions/Learning Targets	Assessments
<p><b>Project One: Evolution – Maintaining Diversity</b></p> <p><b>Biology Content:</b> This unit explores the nature of science and the theory of evolution by natural selection. Students investigate how science is distinguished from other ways of knowing by the use of empirical observations, experimental evidence, logical arguments, and healthy skepticism. Students also investigate how evolution explains the unity and diversity of species found on Earth and why evolution is important now as it is applied to current medical, agricultural, environmental, and other societal issues. After learning about biodiversity through various nonfiction texts, students will write a report that defines biodiversity and explains its importance within a local context.</p> <p><b>ELA Content:</b> Within this project, students will read and analyze anchor texts such as <i>Evolution: The Story of Life on Earth</i> and <i>Lord of the Flies</i>, and excerpts from Darwin’s <i>Origin of a Species</i> to explore the concepts of evolution from a scientific and socio-cultural perspective. <i>Evolution</i> is a graphic novel that explains the history of life on earth by reviewing the fundamental concepts of evolution in a format that serves the dual purpose of entertainment and education. The themes about human nature that are developed in <i>Lord of the Flies</i> will be investigated with other readings on socio-cultural evolution. Students will consider the concept of diversity and consider why the groups of boys in the story become less civilized and less diverse. Students will write a point of view journal to consider characterization. Excerpts from Darwin’s <i>The Origin of Species</i> as a seminal work the conception of evolution will also be investigated as supplemental text. Students will create a presentation on the accuracy of <i>Evolution</i> and</p> <p><b>Potential Projects:</b> Wanted: Dead or Alive, Solve Your Own Mystery: Classification and Dichotomous Keys, Biodiversity: A Case for Court, Winner Takes All: Engage in the Human Race</p> <p><b>Timeline: 9 weeks</b></p> <p><b>Resources:</b>  <i>Science and Global Issues: Biology</i>, Lab Aids  <i>Evolution: The Story of Life on Earth</i> by Jay Hosler  <i>Lord of the Flies</i> by William Golding  <i>The Origin of Species</i> by Charles Darwin</p>		

<sup>1</sup> The BioLit curriculum map was approved by DDOE in the spring of 2013 as part of the First State Military Academy’s curriculum, and is the same 10<sup>th</sup> grade integrated course offered at the Delaware New Tech Academy @ Seaford HS. The choice to adopt it at the Delaware STEM Academy is intentional to create opportunities for networking and shared curriculum resources across Delaware’s three New Tech High Schools.

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<p><a href="http://www.doe.k12.de.us/">http://www.doe.k12.de.us/</a></p> <p><b><u>Science Standards</u></b>  As a member of the Science Coalition, the Delaware STEM Academy will adopt the biology curriculum recommended by the Science Coalition and aligned to Next Generation Science Standards. When those materials become available, the content will be integrated into BioLit.</p> <p><b><u>ELA Standards</u></b>  <b>Reading Standards for Literature</b>  Cite strong and thorough textual evidence to support analysis of what the text says explicitly as well as inferences drawn from the text. <b>CC9-10RL1</b>  Determine a theme or central idea of a text and analyze in detail its development over the course of the text, including how it emerges and is shaped and refined by specific details; provide an objective summary of the text. <b>CC9-10RL2</b>  Analyze how complex characters (e.g., those with multiple or conflicting motivations) develop over the course of a text, interact with other characters, and advance the plot or develop the theme. <b>CC9-10RL3</b>  Determine the meaning of words and phrases as they are used in the text, including figurative and connotative meanings; analyze the cumulative impact of specific word choices on meaning and tone (e.g., how the language evokes a sense of time and place; how it sets a formal or informal tone). <b>CC9-10RL4</b></p> <p><b>Reading Standards for Informational Text</b>  Cite strong and thorough textual evidence to support analysis of what the text says explicitly as well as inferences drawn from the text. <b>CC9-10RI1</b>  Determine a central idea of a text and analyze its development over the course of the text, including how it emerges and is shaped and refined by specific details; provide an objective summary of the text. <b>CC9-10RI2</b>  Analyze how the author unfolds an analysis or series of ideas or events, including the order in which the points are made, how they are introduced and developed, and the connections that are drawn between them. <b>CC9-10RI3</b>  Determine the meaning of words and phrases as they are used in a text, including figurative, connotative, and technical meanings; analyze the cumulative impact of specific word choices on meaning and tone (e.g., how the language of a court opinion differs from that of a newspaper). <b>CC9-10RI4</b>  Analyze various accounts of a subject told in different mediums (e.g., a person's life story in both print and multimedia), determining which details are emphasized in each account. <b>CC9-10RI7</b></p> <p><b>Writing Standards</b>  Write informative/explanatory texts to examine and convey complex ideas, concepts, and information clearly and accurately through the effective selection, organization, and analysis of content. <b>CC9-10W2</b></p> <ol style="list-style-type: none"> <li>Introduce a topic; organize complex 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>CC9-10W2a</b></li> <li>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. <b>CC9-10W2b</b></li> <li>Use appropriate and varied transitions to link the major sections of the text, create cohesion, and clarify the relationships among complex ideas and concepts. <b>CC9-10W2c</b></li> <li>Use precise language and domain-specific vocabulary to manage the complexity of the topic. <b>CC9-10W2d</b></li> <li>Establish and maintain a formal style and objective tone while attending to the norms and conventions of the discipline in which they are writing. <b>CC9-</b></li> </ol>		

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<p><b>10W2e</b></p> <p>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). <b>CC9-10W2f</b></p> <p>Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience. <b>CC9-10W4</b></p> <p>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. <b>CC9-10W5</b></p> <p>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. <b>CC9-10W6</b></p> <p>Draw evidence from literary or informational texts to support analysis, reflection, and research. <b>CC9-10W9</b></p> <p>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. <b>CC9-10W10</b></p> <p><b>Speaking and Listening Standards</b></p> <p>Initiate and participate effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on <i>grades 9-10 topics, texts, and issues</i>, building on others' ideas and expressing their own clearly and persuasively. <b>CC9-10SL1</b></p> <p>a. Come to discussions prepared, having read and researched material under study; explicitly draw on that preparation by referring to evidence from texts and other research on the topic or issue to stimulate a thoughtful, well-reasoned exchange of ideas. <b>CC9-10SL1a</b></p> <p>b. Work with peers to set rules for collegial discussions and decision-making (e.g., informal consensus, taking votes on key issues, presentation of alternate views), clear goals and deadlines, and individual roles as needed. <b>CC9-10SL1b</b></p> <p>Integrate multiple sources of information presented in diverse media or formats (e.g., visually, quantitatively, orally) evaluating the credibility and accuracy of each source. <b>CC9-10SL2</b></p> <p>Present information, findings, and supporting evidence clearly, concisely, and logically such that listeners can follow the line of reasoning and the organization, development, substance, and style are appropriate to purpose, audience, and task. <b>CC9-10SL4</b></p> <p><b>Language Standards</b></p> <p>Demonstrate command of the conventions of standard English grammar and usage when writing or speaking. <b>CC9-10L1</b></p> <p>Demonstrate command of the conventions of standard English capitalization, punctuation, and spelling when writing. <b>CC9-10L2</b></p> <p><b>a. Spell correctly. CC9-10L2c</b></p> <p>Determine or clarify the meaning of unknown and multiple-meaning words and phrases based on <i>grades 9-10 reading and content</i>, choosing flexibly from a range of strategies. <b>CC9-10L4</b></p> <p>a. Use context (e.g., the overall meaning of a sentence, paragraph, or text; a word's position or function in a sentence) as a clue to the meaning of a word or phrase. <b>CC9-10L4a</b></p> <p>Verify the preliminary determination of the meaning of a word or phrase (e.g., by checking the inferred meaning in context or in a dictionary). <b>CC9-10L4d</b></p> <p>Demonstrate understanding of figurative language, word relationships, and nuances in word meanings. <b>CC9-10L5</b></p> <p><b>Reading Standards for Literacy in Science and Technical Subjects</b></p> <p>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. <b>CC9-10RS/TS2</b></p>		

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<p>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 <i>grades 9-10 texts and topics</i>. <b>CC9-10RS/TS4</b></p> <p>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. <b>CC9-10RS/TS6</b></p> <p>By the end of grade 10, read and comprehend science/technical texts in the grades 9-10 text complexity band independently and proficiently. <b>CC9-10RS/TS10</b></p> <p>Write informative/explanatory texts, including the narration of historical events, scientific procedures/ experiments, or technical processes. <b>CC9-10WH/SS/S/TS2</b></p> <ol style="list-style-type: none"> <li>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>CC9-10WH/SS/S/TS2a</b></li> <li>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. <b>CC9-10WH/SS/S/TS2b</b></li> <li>Use varied transitions and sentence structures to link the major sections of the text, create cohesion, and clarify the relationships among ideas and concepts. <b>CC9-10WH/SS/S/TS2c</b></li> <li>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. <b>CC9-10WH/SS/S/TS2d</b></li> <li>Establish and maintain a formal style and objective tone while attending to the norms and conventions of the discipline in which they are writing. <b>CC9-10WH/SS/S/TS2e</b></li> <li>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). <b>CC9-10WH/SS/S/TS2f</b></li> </ol> <p>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. <b>CC9-10WH/SS/S/TS8</b></p> <p>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. <b>CC9-10WH/SS/S/TS10</b></p>		
<p><b><u>Biology Concepts</u></b>            Biodiversity            Ecosystem services and humans' impact on species            Natural selection and adaptation            Darwin's research            Geologic time            Interpreting the fossil record            Phylogeny            Microevolution and macroevolution            Biological species concept and specialization            The genetic basis of evolution</p>	<p><b><u>Science Essential Questions:</u></b>            How do we conserve genetic, species, and ecosystem diversity?             How does natural selection encourage inter and intra-specific diversity over time?             What are the benefits to developing ecosystems services and intrinsic value models for conservation?             Why is sexual reproduction important to the survival of most species?</p>	<p><b><u>Formative Assessments:</u></b>            Teacher observation            Graphic organizers            Journal Entries            KWLs            Pre-tests            Conferences            Observations            Question and Answer Sessions            First Drafts / Quizzes            Journals            Interviews</p>

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<p><b><u>ELA Concepts</u></b> Cause and effect Literature as a means of expression Influence Conflict Symbolism Allegory</p> <p><b><u>Science Big Ideas:</u></b> Each ecosystem differs from others in its varieties of species, genetic makeup of its species, and the evolutionary relationships of species. All of these levels of variation comprise the earth's biodiversity.</p> <p>The diversity and changing of life forms over many generations is the result of natural selection, in which organisms with advantageous traits survive, reproduce, and pass those traits to offspring.</p> <p>The diversity and changing of life forms over many generations is the result of natural selection, in which organisms with advantageous traits survive, reproduce, and pass those traits to offspring.</p> <p><b><u>ELA Big Ideas:</u></b> People use analysis to look deeply into ideas in order to fully understand their meaning and structure.</p> <p>Communication enables us to gain and share information about self, others, and the world.</p> <p>The differences between those who are “civilized” and “savage” are reflected in culture.</p> <p>Dynamics of power and personality conflicts directly impacts people.</p> <p>The effects of war may result in a loss of innocence.</p>	<p>Why is diversity important to a species' ability to survive?</p> <p><b><u>ELA Essential Questions:</u></b></p> <ul style="list-style-type: none"> <li>• Why is it important to be able to see the parts that make a whole?</li> <li>• What is the value of determining cause and effect?</li> <li>• How does literature and other media express life experiences?</li> <li>• What does it mean to be civilized?</li> <li>• How do power and ambition influence the choices that people make?</li> <li>• What role does conflict play in a civilized society?</li> <li>• What is human nature and how do we know?</li> </ul> <p><b><u>Science Learning Targets:</u></b></p> <ul style="list-style-type: none"> <li>• Study the evolutionary processes that produce biodiversity, what caused the subtle and dramatic shifts that occurred in the past, and how biodiversity might change in the future.</li> <li>• Complete a project as a conservationist, focusing on understanding the biodiversity of an area in order to establish priorities for conservation of species.</li> <li>• Debate how human activities affect biodiversity.</li> <li>• Investigate the levels of biodiversity and the evolutionary processes that increase, decrease, or maintain biodiversity.</li> <li>• Examine humans' social, environmental, and economic influences on biodiversity, and make recommendations for which forest area on a fictitious island should receive funds for conservation.</li> </ul> <p><b><u>ELA Learning Targets:</u></b></p> <ul style="list-style-type: none"> <li>• Explain cause and effect relationships within a text.</li> <li>• Interpret the interdependence/interactions of characters, theme, setting, conflict, resolution.</li> </ul>	<p>Short responses Quickwrites Tickets in/out of the door Participation in lab work Notetaking</p> <p><b><u>Summative Assessments:</u></b> Tests on specific content Essays Informational reports/articles Free response Presentations Projects Model of key ideas Lab reports Portfolios Checklists/rubrics Debates</p>

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<p>Conflict is unavoidable, can be violent, and responses to conflict are individual.</p> <p>The interaction of art, media and various modes of human expression and communication can combine in ways that are more impactful than words or visual art alone.</p> <p><b><u>Integrated Big Ideas:</u></b> Within systems diversity is more beneficial to the whole than uniformity.</p> <p>Diverse populations are more likely to survive changing environments.</p>	<ul style="list-style-type: none"> <li>• Judge the effectiveness of the author’s use of literary devices and explains their use to convey meaning.</li> <li>• Define and explain allegory and symbolism</li> <li>• Analyze passages’ imagery and symbolism</li> <li>• Analyze cause and effect in the novel</li> <li>• Analyze character traits vis-a-vis a novel’s meaning</li> <li>• Make connections to current political/social realities</li> <li>• Build vocabulary through reading</li> <li>• Explore the comics medium as a mode of communicating</li> <li>• Develop an opinion about graphic novels as a way to acquire, practice, and master traditional and new literacies.</li> <li>• Analyze formal structure as it relates to content of graphic novels</li> <li>• Examine the special effects created in sequential art narrative</li> <li>• Critically use, view, and analyze a variety of media.</li> <li>• Compare graphic and literary forms of art.</li> </ul>	
<p><b>Project Two: Cell Biology</b></p> <p><b>Science Concepts:</b> Diseases are caused by infectious microbes, such as bacteria and viruses, genetic factors, and other events that cause breakdowns in the structure or function of cells. The effects of diseases vary from mild to devastating and affect sustainability at the environmental, economic, and social level. Understanding the mechanisms of a disease is essential to people’s ability to prevent, eradicate, and cure it and to maintain the sustainability of populations and communities. Students will examine several diseases and their social, environmental, and economic consequences. You will learn about the mechanism of these diseases at the cellular level, including an investigation of the role that antibiotics play in the evolution of resistant strains of bacteria. You will also investigate the structures and functions of normal cells and some of the processes that occur inside these cells. At the end of the unit, you will make recommendations for how best to allocate limited funding to address world health problems.</p> <p><b>ELA Concepts:</b> Students will examine the anchor texts <i>Brave New World</i> by Aldous Huxley and <i>Utopia</i> from Sir Thomas Moore, comparing Huxley’s creation of a utopian future where humans are genetically designed and pharmaceutically anesthetized to passively serve a ruling order, with excerpts from Moore’s imagining of Utopia where he presents a solution to many of the social ills discussed within the text. Students will equate the structure and functions of cells to the structures and functions of their Utopian society. Disease being a disruption of the utopia created in the miraculous order of the cell or of society. Students will also read multiple nonfiction texts, including <i>When Plague Strikes</i> by James Cross Giblin to learn about major diseases that have changed the course of our history, culture, and society, disrupting the fabric of culture and society. Students will write several pieces comparing elements of the novel to the study of cells.</p>		

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<p><b>Potential Projects:</b> The Case 8 Studies: Diagnosis and Treatment, Utopia: Societal Syncopation, Diminishing Returns: Antibiotic Resistant Bacteria, Picture This!: Photosynthesis and Conservation of Energy, Bio-Chemical Warfare,</p> <p><b>Timeline: 9 weeks</b></p> <p><b>Resources:</b>  <i>Science and Global Issues: Biology</i>, Lab Aids  <i>Utopia</i> by Sir Thomas More  <i>Brave New World</i> by Aldous Huxley  <i>When Plague Strikes</i> by James Cross Giblin  <a href="http://www.doe.k12.de.us/">http://www.doe.k12.de.us/</a>            Biology threat agents: <a href="http://www.fas.org/biosecurity/resource/agents.htm">http://www.fas.org/biosecurity/resource/agents.htm</a>            General Introduction on Biological, biochemical, &amp; chemical weapons: <a href="http://science.howstuffworks.com/framed.htm?parent=biochem-war.htm&amp;">http://science.howstuffworks.com/framed.htm?parent=biochem-war.htm&amp;</a>            Medical Research: <a href="http://www.uh.edu/collegium/fall98/medical.html">http://www.uh.edu/collegium/fall98/medical.html</a>            Pathophysiology of chemical weapons: <a href="http://www.clevelandclinicmeded.com/diseasemanagement/infectiousdisease/">http://www.clevelandclinicmeded.com/diseasemanagement/infectiousdisease/</a>            Enzymes: <a href="http://en.wikipedia.org/wiki/Enzyme">http://en.wikipedia.org/wiki/Enzyme</a>  <a href="http://www.scienceacademy.com/1024768/search2.html">http://www.scienceacademy.com/1024768/search2.html</a>  <a href="http://www.newton.dep.anl.gov/newton/askasci/1995/math/MATH060.HTM">http://www.newton.dep.anl.gov/newton/askasci/1995/math/MATH060.HTM</a>  <a href="http://www.cdc.gov">http://www.cdc.gov</a>  <a href="http://www.nsf.gov/news/overviews/biology/index.jsp">http://www.nsf.gov/news/overviews/biology/index.jsp</a>  <a href="http://www.microbe.org/microbes/protists1.asp">http://www.microbe.org/microbes/protists1.asp</a>  <a href="http://www.ucmp.berkeley.edu/bacteria/bacteria.html">http://www.ucmp.berkeley.edu/bacteria/bacteria.html</a>  <a href="http://www.microbe.org/microbes/bacterium1.asp">http://www.microbe.org/microbes/bacterium1.asp</a>  <a href="http://www.eurekascience.com/ICanDoThat/bacteria_cells.htm">http://www.eurekascience.com/ICanDoThat/bacteria_cells.htm</a>  <a href="http://www.ucmp.berkeley.edu/alllife/virus.html">http://www.ucmp.berkeley.edu/alllife/virus.html</a>  <a href="http://www.virology.net/Big_Virology/BVHomePage.html">http://www.virology.net/Big_Virology/BVHomePage.html</a>  <a href="http://www.biologie.uni-hamburg.de/b-online/e33/33.htm">http://www.biologie.uni-hamburg.de/b-online/e33/33.htm</a>  <a href="http://www3.niaid.nih.gov/">http://www3.niaid.nih.gov/</a>  <a href="http://www.idsociety.org/">http://www.idsociety.org/</a>  <a href="http://www.microbe.org/microbes/bacterium1.asp">http://www.microbe.org/microbes/bacterium1.asp</a>  <a href="http://www.ucmp.berkeley.edu/bacteria/bacteria.html">http://www.ucmp.berkeley.edu/bacteria/bacteria.html</a>  <a href="http://www.cellsalive.com/ecoli.htm">http://www.cellsalive.com/ecoli.htm</a>  <a href="http://www.ucmp.berkeley.edu/alllife/virus.html">http://www.ucmp.berkeley.edu/alllife/virus.html</a>  <a href="http://www.microbe.org/microbes/virus1.asp">http://www.microbe.org/microbes/virus1.asp</a>  <a href="http://www.microbe.org/microbes/protists1.asp">http://www.microbe.org/microbes/protists1.asp</a>  <a href="http://users.rcn.com/jkimball.ma.ultranet/BiologyPages/P/Protists.html">http://users.rcn.com/jkimball.ma.ultranet/BiologyPages/P/Protists.html</a></p> <p><b>Science Standards</b></p>		

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<p><b><u>ELA Standards:</u></b></p> <p><b>Reading Standards for Literary Texts</b></p> <p>Cite strong and thorough textual evidence to support analysis of what the text says explicitly as well as inferences drawn from the text. <b>CC9-10RL1</b></p> <p>Determine a theme or central idea of a text and analyze in detail its development over the course of the text, including how it emerges and is shaped and refined by specific details; provide an objective summary of the text. <b>CC9-10RL2</b></p> <p>Analyze the representation of a subject or a key scene in two different artistic mediums, including what is emphasized or absent in each treatment (e.g., Auden's "Musée des Beaux Arts" and Breughel's <i>Landscape with the Fall of Icarus</i>). <b>CC9-10RL7</b></p> <p>Analyze how an author draws on and transforms source material in a specific work (e.g., how Shakespeare treats a theme or topic from Ovid or the Bible or how a later author draws on a play by Shakespeare). <b>CC9-10RL9</b></p> <p>By the end of grade 10, read and comprehend literature, including stories, dramas, and poems, at the high end of the grades 9-10 text complexity band independently and proficiently. <b>CC10RL10</b></p> <p><b>Reading Standards for Informational Texts</b></p> <p>Cite strong and thorough textual evidence to support analysis of what the text says explicitly as well as inferences drawn from the text. <b>CC9-10RI1</b></p> <p>Determine a central idea of a text and analyze its development over the course of the text, including how it emerges and is shaped and refined by specific details; provide an objective summary of the text. <b>CC9-10RI2</b></p> <p>Analyze how the author unfolds an analysis or series of ideas or events, including the order in which the points are made, how they are introduced and developed, and the connections that are drawn between them. <b>CC9-10RI3</b></p> <p>Analyze in detail how an author's ideas or claims are developed and refined by particular sentences, paragraphs, or larger portions of a text (e.g., a section or chapter). <b>CC9-10RI5</b></p> <p>By the end of grade 10, read and comprehend literary nonfiction at the high end of the grades 9-10 text complexity band independently and proficiently. <b>CC10RI10</b></p> <p><b>Writing Standards</b></p> <p>Write informative/explanatory texts to examine and convey complex ideas, concepts, and information clearly and accurately through the effective selection, organization, and analysis of content. <b>CC9-10W2</b></p> <p>Write arguments to support claims in an analysis of substantive topics or texts, using valid reasoning and relevant and sufficient evidence. <b>CC9-10W1</b></p> <ol style="list-style-type: none"> <li>Introduce precise claim(s), distinguish the claim(s) from alternate or opposing claims, and create an organization that establishes clear relationships among claim(s), counterclaims, reasons, and evidence. <b>CC9-10W1a</b></li> <li>Develop claim(s) and counterclaims fairly, supplying evidence for each while pointing out the strengths and limitations of both in a manner that anticipates the audience's knowledge level and concerns. <b>CC9-10W1b</b></li> <li>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. <b>CC9-10W1c</b></li> <li>Establish and maintain a formal style and objective tone while attending to the norms and conventions of the discipline in which they are writing. <b>CC9-10W1d</b></li> </ol>		

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<p><b>e.</b> Provide a concluding statement or section that follows from and supports the argument presented. <b>CC9-10W1e</b>            Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience. (Grade-specific expectations for writing types are defined in standards 1-3 above.) <b>CC9-10W4</b>            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. <b>CC9-10W5</b>            Draw evidence from literary or informational texts to support analysis, reflection, and research. <b>CC9-10W9</b>            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. <b>CC9-10W10</b></p> <p><b>Speaking and Listening</b>            Initiate and participate effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grades 9-10 topics, texts, and issues, building on others' ideas and expressing their own clearly and persuasively. <b>CC9-10SL1</b></p> <p><b>a.</b> Come to discussions prepared, having read and researched material under study; explicitly draw on that preparation by referring to evidence from texts and other research on the topic or issue to stimulate a thoughtful, well-reasoned exchange of ideas. <b>CC9-10SL1a</b></p> <p><b>b.</b> Work with peers to set rules for collegial discussions and decision-making (e.g., informal consensus, taking votes on key issues, presentation of alternate views), clear goals and deadlines, and individual roles as needed. <b>CC9-10SL1b</b></p> <p><b>c.</b> Propel conversations by posing and responding to questions that relate the current discussion to broader themes or larger ideas; actively incorporate others into the discussion; and clarify, verify, or challenge ideas and conclusions. <b>CC9-10SL1c</b></p> <p><b>d.</b> Respond thoughtfully to diverse perspectives, summarize points of agreement and disagreement, and, when warranted, qualify or justify their own views and understanding and make new connections in light of the evidence and reasoning presented. <b>CC9-10SL1d</b></p> <p>Make strategic use of digital media (e.g., textual, graphical, audio, visual, and interactive elements) in presentations to enhance understanding of findings, reasoning, and evidence and to add interest. <b>CC9-10SL5</b></p> <p>Present information, findings, and supporting evidence clearly, concisely, and logically such that listeners can follow the line of reasoning and the organization, development, substance, and style are appropriate to purpose, audience, and task. <b>CC9-10SL4</b></p> <p>Make strategic use of digital media (e.g., textual, graphical, audio, visual, and interactive elements) in presentations to enhance understanding of findings, reasoning, and evidence and to add interest. <b>CC9-10SL5</b></p> <p>Adapt speech to a variety of contexts and tasks, demonstrating command of formal English when indicated or appropriate. <b>CC9-10SL6</b></p> <p><b>Language</b>            Demonstrate command of the conventions of standard English grammar and usage when writing or speaking. <b>CC9-10L1</b></p> <p><b>a.</b> Use parallel structure.* <b>CC9-10L1a</b></p> <p>Demonstrate command of the conventions of standard English capitalization, punctuation, and spelling when writing. <b>CC9-10L2</b></p> <p>Use a semicolon (and perhaps a conjunctive adverb) to link two or more closely related independent clauses. <b>CC9-10L2a</b></p> <p><b>c.</b> Spell correctly. <b>CC9-10L2c</b></p> <p>Determine or clarify the meaning of unknown and multiple-meaning words and phrases based on grades 9-10 reading and content, choosing flexibly from a range of strategies. <b>CC9-10L4</b></p> <p><b>b.</b> Identify and correctly use patterns of word changes that indicate different meanings or parts of speech (e.g., analyze, analysis, analytical; advocate, advocacy). <b>CC9-10L4b</b></p>		

Concepts/Big Ideas	Essential Questions/Learning Targets	Assessments
<p>c. Consult general and specialized reference materials (e.g., dictionaries, glossaries, thesauruses), both print and digital, to find the pronunciation of a word or determine or clarify its precise meaning, its part of speech, or its etymology. <b>CC9-10L4c</b></p> <p><b>Reading Standards for Literacy in Science and Technical Subjects</b>  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. <b>CC9-10RS/TS2</b>  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. <b>CC9-10RS/TS3</b>  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 <i>grades 9-10 texts and topics</i>. <b>CC9-10RS/TS4</b>  Analyze the structure of the relationships among concepts in a text, including relationships among key terms (e.g., <i>force, friction, reaction force, energy</i>). <b>CC9-10RS/TS5</b>  By the end of grade 10, read and comprehend science/technical texts in the grades 9-10 text complexity band independently and proficiently. <b>CC9-10RS/TS10</b>  Write arguments focused on <i>discipline-specific content</i>. <b>CC9-10WH/SS/S/TS1</b></p> <ol style="list-style-type: none"> <li>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>CC9-10WH/SS/S/TS1a</b></li> <li>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. <b>CC9-10WH/SS/S/TS1b</b></li> <li>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. <b>CC9-10WH/SS/S/TS1c</b></li> <li>Establish and maintain a formal style and objective tone while attending to the norms and conventions of the discipline in which they are writing. <b>CC9-10WH/SS/S/TS1d</b></li> <li>Provide a concluding statement or section that follows from or supports the argument presented. <b>CC9-10WH/SS/S/TS1e</b></li> </ol>		
<p><b><u>Biology Concepts:</u></b>  Cellular nature of life  Cell structure and function  Cell specialization and differentiation  Cell division and the cell cycle  Microbes and infectious diseases  Breakdown of cellular function in diseases, such as diabetes and cancer  Respiration, photosynthesis, and cellular macromolecules</p> <p><b><u>ELA Concepts:</u></b>  Utopia</p>	<p><b><u>Science Essential Questions:</u></b>  How does structure relate to function in living systems from the organismal to the cellular level?   How can the disparities between developing and developed countries in terms of diseases impacting human life?   How do we make decisions about priorities for disease interventions to prevent or treat diseases that limit the social, economic, and environmental progress of a culture?</p>	<p><b><u>Formative Assessments:</u></b>  Teacher observation  Graphic organizers  Journal Entries  KWLs  Pre-tests  Conferences  Observations  Question and Answer Sessions  First Drafts / Quizzes  Journals  Interviews  Short responses</p>

Concepts/Big Ideas	Essential Questions/Learning Targets	Assessments
<p>Story Elements Metaphor Alliteration Oxymoron Idiom Non-fiction text features Cause and effect</p> <p><b>Science Big Ideas:</b> Living systems, from the organismic to the cellular level, demonstrate the complementary nature of structure and function.</p> <p>The effects of diseases vary from mild to devastating and affect sustainability at the environmental, economic, and social level.</p> <p>Diseases are caused by infectious microbes, such as bacteria and viruses, genetic factors, and other events that cause breakdowns in the structure or function of cells.</p> <p>Understanding the mechanisms of a disease is essential to people’s ability to prevent, eradicate, and cure it and to maintain the sustainability of populations and communities.</p> <p><b>ELA Big Ideas:</b> Good readers ask questions about text to better understand what ideas require making inferences.</p> <p>The development of society has influenced the evolution of microorganisms.</p> <p>Literature can be used as a vehicle for conveying a realistic sense of the events and anxiety accompanying the spread of infectious disease</p>	<p><b>ELA Essential Questions:</b> How do we use evidence to study the past as a way to change the future?</p> <p>Can all of our experiences be put into words? Do texts primarily reflect culture or shape it?</p> <p>From whose viewpoint are we reading? How does that affect our understanding of the text?</p> <p>How can a futuristic text comment on the current existence of humanity?</p> <p><b>Science Learning Targets:</b></p> <ul style="list-style-type: none"> <li>• Examine several diseases and their social, environmental, and economic consequences.</li> <li>• Learn about the mechanism of these diseases at the cellular level.</li> <li>• Investigate the structures and functions of normal cells and some of the processes that occur inside these cells.</li> <li>• Research and recommend how to best allocate limited funding to address world health problems.</li> </ul> <p><b>ELA Learning Targets:</b></p> <ul style="list-style-type: none"> <li>• Use reading skills and strategies to monitor comprehension.</li> <li>• Identify story elements and describe how they impact each other.</li> <li>• Evaluate figurative language, analyze tone, identify sequence, visualize, analyze conflict, analyze characterization, analyze historical context, and connect to literature.</li> <li>• Understand literary elements such as metaphor, alliteration, oxymoron, point of view, setting and</li> </ul>	<p>Quickwrites Tickets in/out of the door Participation in lab work Notetaking</p> <p><b>Summative Assessments:</b> Tests on specific areas Essays/written report Presentations Projects Presentations Model of key ideas Lab reports Portfolios Checklists/rubrics Debates</p>

Concepts/Big Ideas	Essential Questions/Learning Targets	Assessments
<p>Interpretation of events when compared to the actual events surrounding and contributing to historical epidemics may cause factual inaccuracies.</p> <p><b><u>Integrated Big Ideas:</u></b> Living systems, from the organismal to the cellular level, demonstrate the complementary nature of structure and function.</p> <p>Disruption of the function of society or the cell will cause a reaction to return to homeostasis</p>	<p>mood, style, dialect and idiom.</p> <ul style="list-style-type: none"> <li>• Use reading skills and strategies for analyzing graphic information, analyzing historical context, summarizing, comparing and contrasting, evaluating evidence, recognizing bias, comparing literature, and generating a purpose for reading.</li> <li>• Identify literary elements such as literary periods, theme, moral, characterization, irony, setting, autobiography, and imagery.</li> <li>• Identify characteristics of scientific texts.</li> <li>• Identify the central point and main supporting elements of a text.</li> <li>• Identify patterns in main ideas across textx.</li> <li>• Read texts explicitly; to analyze texts for specific purposes; to draw evidence from a relevant source.</li> <li>• Summarize a text(s) and select/prioritize relevant evidence from the text.</li> <li>• Identify the stylistic characteristics of writing within the disciplines (scientific editorial).</li> <li>• Organize reading notes into an outline or organizer.</li> <li>• Establish a claim and develop a line of thought supportive of claim.</li> <li>• Follow the writing process to produce a high quality text.</li> <li>• Identify appropriate texts and passages to use for support.</li> <li>• Refine text, including line of thought, language usage, and tone as appropriate to audience and purpose.</li> </ul>	

**Project Three: Genetics – Feeding the World**

**Biology Content:** For thousands of years, people have selected crops and animals with desirable traits and have bred them to produce ever more desirable offspring. This selective breeding has produced modern varieties of organisms, such as sweet corn, dairy cows, and domestic pets. It was not until the mid-19th century that scientists began to understand that inherited traits pass from parents to offspring through genes. Modern scientists study genetics to learn more about how genes work and to solve such practical problems as enhancing crop productivity, curing diseases, and producing new fuels.

One dynamic, and sometimes controversial, technology that has emerged from genetics is genetic modification. After learning to manipulate the genes of various

Concepts/Big Ideas	Essential Questions/Learning Targets	Assessments
<p>species, scientists now can place genes from one species into another to give the target species a specific, desirable trait, such as pest resistance. However, many people and some scientists are concerned that this may lead to unintended consequences for the environment and/or human health.</p> <p>In this unit, you will investigate how genes and patterns of inheritance function in organisms and generations of organisms. You will also learn about the procedures and results of genetic modification and about some of the benefits and trade-offs of producing specific genetically modified organisms.</p> <p><b>Bio Content:</b> Students play the role of political informants/advocates on the subject of stem cell research. This exploration will create a need to know for understanding the role of stem cells in neurological research as well as demonstrating the controversy that is found in that particular type of research.</p> <p><b>ELA Concept:</b> Students will read <i>The Immortal Life of Henrietta Lacks</i>, a poor Southern tobacco farmer who worked the same land as her slave ancestors, yet her cells—taken without her knowledge—became one of the most important tools in medicine. The first “immortal” human cells grown in culture, they are still alive today, though she has been dead for more than sixty years. HeLa cells were vital for developing the polio vaccine; uncovered secrets of cancer, viruses, and the atom bomb’s effects; helped lead to important advances like in vitro fertilization, cloning, and gene mapping; and have been bought and sold by the billions. Students will also read excerpts from <i>Stem Cell Now</i> by Christopher Scott, executive director of Stanford University’s Stem Cell and Society Program, in order to solidify their understanding and strengthen their view on this controversial issue. <i>Stem Cell Now</i> lays out the scientific and ethical issues surrounding this national dilemma. Scott guides readers through the latest advances in stem cell research in clear, accessible language, telling the stories of the researchers who are exploring the potential of stem cells to cure cancer, grow new organs, and repair the immune system. Students will research issues surrounding genetics and complete a significant research project.</p> <p><b>Potential Projects:</b> Who’s Gene?, Human Genetics Project, Who are You? – A Genetic Manifestation, Selling Cells: A Stem Cell Debate</p> <p><b>Timeline: 9 weeks</b></p> <p><b>Resources:</b>  <i>Science and Global Issues: Biology</i>, Lab Aids  <i>The Immortal Life of Henrietta Lacks</i> by Rebecca Skloot  <a href="http://www.lacksfamily.com/">http://www.lacksfamily.com/</a>  <a href="http://www.radiolab.org/2010/may/17/henriettas-tumor/">http://www.radiolab.org/2010/may/17/henriettas-tumor/</a>  <a href="http://www.doe.k12.de.us/">http://www.doe.k12.de.us/</a>  <i>Stem Cell Now</i> by Christopher Scott</p> <p>The Cell:  <a href="http://www.cellsalive.com/">http://www.cellsalive.com/</a>  <a href="http://www.jcb.org/">http://www.jcb.org/</a>  <a href="http://www.cellbio.com/">http://www.cellbio.com/</a>  <a href="http://www.nature.com/ncb/index.html">http://www.nature.com/ncb/index.html</a>  <a href="http://www.biology.arizona.edu/cell_bio/cell_bio.html">http://www.biology.arizona.edu/cell_bio/cell_bio.html</a></p> <p>Stem Cell:  <a href="http://learn.genetics.utah.edu/units/stemcells/whatis/c/">http://learn.genetics.utah.edu/units/stemcells/whatis/c/</a></p>		

Concepts/Big Ideas	Essential Questions/Learning Targets	Assessments
<p> <a href="http://www.stemcellresearchfoundation.org/">http://www.stemcellresearchfoundation.org/</a>  <a href="http://www.stemcellresearch.org/">http://www.stemcellresearch.org/</a>  <a href="http://www.stemcellresearchnews.com/">http://www.stemcellresearchnews.com/</a>  <a href="http://www.whitehouse.gov/news/releases/2001/08/20010809-2.html">http://www.whitehouse.gov/news/releases/2001/08/20010809-2.html</a>  <a href="http://www.isscr.org/">http://www.isscr.org/</a>  <a href="http://www.news.wisc.edu/packages/stemcells/">http://www.news.wisc.edu/packages/stemcells/</a> </p> <p>Nervous System:  <a href="http://users.tpg.com.au/users/amcgann/body/nervous.html">http://users.tpg.com.au/users/amcgann/body/nervous.html</a>  <a href="http://www.innerbody.com/image/nervov.html">http://www.innerbody.com/image/nervov.html</a>  <a href="http://www.emc.maricopa.edu/faculty/farabee/BIOBK/BioBookNERV.html">http://www.emc.maricopa.edu/faculty/farabee/BIOBK/BioBookNERV.html</a> </p> <p>Disorders:  <a href="http://www.nlm.nih.gov/medlineplus/brainandnervoussystem.html">http://www.nlm.nih.gov/medlineplus/brainandnervoussystem.html</a>  <a href="http://www.nlm.nih.gov/medlineplus/peripheralnervedisorders.html">http://www.nlm.nih.gov/medlineplus/peripheralnervedisorders.html</a>  <a href="http://www.spineuniverse.com/displayarticle.php/article2007.html">http://www.spineuniverse.com/displayarticle.php/article2007.html</a> </p> <p> <a href="http://www.cellsalive.com/toc_cellbio.htm">http://www.cellsalive.com/toc_cellbio.htm</a>  <a href="http://www.biology.arizona.edu/CELL_BIO/problem_sets/membranes/index.html">http://www.biology.arizona.edu/CELL_BIO/problem_sets/membranes/index.html</a>  <a href="http://www.biology.arizona.edu/CELL_BIO/tutorials/pev/main.html">http://www.biology.arizona.edu/CELL_BIO/tutorials/pev/main.html</a>  <a href="http://www-class.unl.edu/biochem/gp2/m_biology/animation/gene/gene_a1.html">http://www-class.unl.edu/biochem/gp2/m_biology/animation/gene/gene_a1.html</a>  <a href="http://www.cellsalive.com/cells/golgi.htm">http://www.cellsalive.com/cells/golgi.htm</a>  <a href="http://www.phschool.com/science/biology_place/biocoach/cellresp/intro.html">http://www.phschool.com/science/biology_place/biocoach/cellresp/intro.html</a>  <a href="http://www.doe.k12.de.us/">http://www.doe.k12.de.us/</a> </p> <p><b>Science Standards</b>  As a member of the Science Coalition, the Delaware STEM Academy will adopt the biology curriculum recommended by the Science Coalition and aligned to Next Generation Science Standards. When those materials become available, the content will be integrated into BioLit.</p> <p><b>ELA Standards:</b>  <b>Reading Standards for Literary Texts</b>  Cite strong and thorough textual evidence to support analysis of what the text says explicitly as well as inferences drawn from the text. <b>CC9-10RL1</b>  Determine a theme or central idea of a text and analyze in detail its development over the course of the text, including how it emerges and is shaped and refined by specific details; provide an objective summary of the text. <b>CC9-10RL2</b>  Analyze how complex characters (e.g., those with multiple or conflicting motivations) develop over the course of a text, interact with other characters, and advance the plot or develop the theme. <b>CC9-10RL3</b>  Analyze how an author's choices concerning how to structure a text, order events within it (e.g., parallel plots), and manipulate time (e.g., pacing, flashbacks) create such effects as mystery, tension, or surprise. <b>CC9-10RL5</b></p>		

Concepts/Big Ideas	Essential Questions/Learning Targets	Assessments
<p>By the end of grade 10, read and comprehend literature, including stories, dramas, and poems, at the high end of the grades 9-10 text complexity band independently and proficiently. <b>CC10RL10</b></p> <p><b>Reading Informative Texts</b>            Cite strong and thorough textual evidence to support analysis of what the text says explicitly as well as inferences drawn from the text. <b>CC9-10RI1</b>            Determine a central idea of a text and analyze its development over the course of the text, including how it emerges and is shaped and refined by specific details; provide an objective summary of the text. <b>CC9-10RI2</b>            Analyze how the author unfolds an analysis or series of ideas or events, including the order in which the points are made, how they are introduced and developed, and the connections that are drawn between them. <b>CC9-10RI3</b>            Delineate and evaluate the argument and specific claims in a text, assessing whether the reasoning is valid and the evidence is relevant and sufficient; identify false statements and fallacious reasoning. <b>CC9-10RI8</b>            By the end of grade 9, read and comprehend literary nonfiction in the grades 9-10 text complexity band proficiently, with scaffolding as needed at the high end of the range. <b>CC9RI10</b></p> <p><b>Writing Standards</b>            Write arguments to support claims in an analysis of substantive topics or texts, using valid reasoning and relevant and sufficient evidence. <b>CC9-10W1</b>            a. Introduce precise claim(s), distinguish the claim(s) from alternate or opposing claims, and create an organization that establishes clear relationships among claim(s), counterclaims, reasons, and evidence. <b>CC9-10W1a</b>            b. Develop claim(s) and counterclaims fairly, supplying evidence for each while pointing out the strengths and limitations of both in a manner that anticipates the audience's knowledge level and concerns. <b>CC9-10W1b</b>            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. <b>CC9-10W1c</b>            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. <b>CC9-10W1d</b>            e. Provide a concluding statement or section that follows from and supports the argument presented. <b>CC9-10W1e</b>            Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience. (Grade-specific expectations for writing types are defined in standards 1-3 above.) <b>CC9-10W4</b>            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. (Editing for conventions should demonstrate command of Language standards 1-3 up to and including grades 9-10 on page 54.) <b>CC9-10W5</b>            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. <b>CC9-10W6</b>            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. <b>CC9-10W7</b>            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. <b>CC9-10W8</b>            Draw evidence from literary or informational texts to support analysis, reflection, and research. <b>CC9-10W9</b></p>		

Concepts/Big Ideas	Essential Questions/Learning Targets	Assessments
<p>a. Apply grades 9-10 <i>Reading standards</i> to literature (e.g., "Analyze how an author draws on and transforms source material in a specific work [e.g., how Shakespeare treats a theme or topic from Ovid or the Bible or how a later author draws on a play by Shakespeare]"). <b>CC9-10W9a</b></p> <p>b. Apply grades 9-10 <i>Reading standards</i> to literary nonfiction (e.g., "Delineate and evaluate the argument and specific claims in a text, assessing whether the reasoning is valid and the evidence is relevant and sufficient; identify false statements and fallacious reasoning"). <b>CC9-10W9b</b></p>		
<p><b>Speaking and Listening</b>  Evaluate a speaker's point of view, reasoning, and use of evidence and rhetoric, identifying any fallacious reasoning or exaggerated or distorted evidence. <b>CC9-10SL3</b>  Present information, findings, and supporting evidence clearly, concisely, and logically such that listeners can follow the line of reasoning and the organization, development, substance, and style are appropriate to purpose, audience, and task. <b>CC9-10SL4</b></p>		
<p><b>Language Conventions</b>  Demonstrate command of the conventions of standard English grammar and usage when writing or speaking. <b>CC9-10L1</b></p> <p>a. Use parallel structure.* <b>CC9-10L1a</b></p> <p>b. Use various types of phrases (noun, verb, adjectival, adverbial, participial, prepositional, absolute) and clauses (independent, dependent; noun, relative, adverbial) to convey specific meanings and add variety and interest to writing or presentations. <b>CC9-10L1b</b></p> <p>Demonstrate command of the conventions of standard English capitalization, punctuation, and spelling when writing. <b>CC9-10L2</b></p> <p>a. Use a semicolon (and perhaps a conjunctive adverb) to link two or more closely related independent clauses. <b>CC9-10L2a</b></p> <p>b. Use a colon to introduce a list or quotation. <b>CC9-10L2b</b></p> <p>c. Spell correctly. <b>CC9-10L2c</b></p> <p>Apply knowledge of language to understand how language functions in different contexts, to make effective choices for meaning or style, and to comprehend more fully when reading or listening. <b>CC9-10L3</b></p> <p>a. Write and edit work so that it conforms to the guidelines in a style manual (e.g., <i>MLA Handbook</i>, <i>Turabian's Manual for Writers</i>) appropriate for the discipline and writing type. <b>CC9-10L3a</b></p>		
<p><b>Reading Standards for Literacy in Science and Technical Subjects</b>  Write arguments focused on <i>discipline-specific content</i>. <b>CC9-10WH/SS/S/TS1</b></p> <p>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>CC9-10WH/SS/S/TS1a</b></p> <p>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. <b>CC9-10WH/SS/S/TS1b</b></p> <p>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. <b>CC9-10WH/SS/S/TS1c</b></p> <p>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. <b>CC9-10WH/SS/S/TS1d</b></p> <p>f. Provide a concluding statement or section that follows from or supports the argument presented. <b>CC9-10WH/SS/S/TS1e</b></p>		

Concepts/Big Ideas	Essential Questions/Learning Targets	Assessments
<p>Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience. <b>CC9-10WH/SS/S/TS4</b></p> <p>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. <b>CC9-10WH/SS/S/TS5</b></p> <p>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. <b>CC9-10WH/SS/S/TS6</b></p> <p>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. <b>CC9-10WH/SS/S/TS7</b></p> <p>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. <b>CC9-10WH/SS/S/TS8</b></p> <p>Draw evidence from informational texts to support analysis, reflection, and research. <b>CC9-10WH/SS/S/TS9</b></p>		
<p><b><u>Biology Concepts</u></b>  Sexual and asexual reproduction  Mitosis and Meiosis  Genotype and phenotype  Mendel's research  Genetic crosses, Punnett squares, and pedigrees  Patterns of inheritance  Genes, alleles, chromosomes, and DNA  Flow of genetic information  Selective breeding  Genetically modified organisms  Biotechnology</p> <p><b><u>ELA Concepts</u></b>  Research  Citing Evidence  Data  Truth  Immortality  Ethics  Biography</p> <p><b><u>Science Big Ideas:</u></b>  Organisms reproduce, develop, have predictable life cycles, and pass on heritable traits to their offspring.</p>	<p><b><u>Science Essential Questions:</u></b></p> <p>Why do offspring resemble their parents and why are some sexes more likely than others to inherit specific traits?</p> <p>How does natural selection encourage inter and intra-specific diversity over time?</p> <p>How can our understanding of Mendelian genetics be used to predict patterns of inheritance?</p> <p>How do mutations influence the survival of an organism/species and how can a change of a nucleotide in a gene affect the structure and function of the protein for which it codes?</p> <p>How does recombinant DNA technology, as it is applied to genetic engineering, meet human needs and wants?</p> <p>What issues surround selective breeding and genetic modification?</p> <p>How can we collect data to make an informed decision about these evolving issues?</p> <p>How are genetically modified organisms, particularly in</p>	<p><b><u>Formative Assessments:</u></b>  Teacher observation  Graphic organizers  Journal Entries  KWLs  Pre-tests  Conferences  Observations  Question and Answer Sessions  First Drafts / Quizzes  Journals  Interviews  Short responses  Quickwrites  Tickets in/out of the door  Participation in lab work  Notetaking</p> <p><b><u>Summative Assessments:</u></b>  Tests on specific areas  Essays/written report  Presentations  Projects  Presentations  Model of key ideas</p>

Concepts/Big Ideas	Essential Questions/Learning Targets	Assessments
<p>Modern scientists study genetics to learn more about how genes work and to solve such practical problems as enhancing crop productivity, curing diseases, and producing new fuels.</p> <p>One dynamic, and sometimes controversial, technology that has emerged from genetics is genetic modification.</p> <p>The development of technology has allowed us to apply our knowledge of genetics, reproduction, development and evolution to meet human needs and wants.</p> <p>Living systems, from the organismic to the cellular level, demonstrate the complementary nature of structure and function.</p> <p><b><u>ELA Big Ideas</u></b>            Good readers ask questions about text to better understand what ideas require making inferences.</p> <p>Reading for meaning often requires imagining conversation with and questioning of the author. You must consider and respond.</p> <p>Ethical debates of stem cell research need to be reflected in politics to balance scientific progress with with the responsibilities to the unborn and the sick.</p> <p>Good researchers use criteria to determine if a source is authoritative.</p> <p>Good researchers extract information from sources and draw logical conclusions.</p> <p><b><u>Integrated Big Ideas:</u></b></p>	<p>the production of agricultural crops, being used? Who benefits from their use?</p> <p><b><u>ELA Essential Questions:</u></b>            How do different texts shape their message to present different views of the same issue?</p> <p>How does a text reveal us to ourselves?</p> <p>How can a reader recognize truth in text?</p> <p>How do credible sources contribute to a successful research paper?</p> <p>How should research projects be organized so that themes and patterns emerge from the research details?</p> <p><b><u>Science Learning Targets:</u></b></p> <ul style="list-style-type: none"> <li>• Learn about the historical desire to breed animals to create more desirable offspring.</li> <li>• Consider how learning to manipulate the genes of various species can help or hinder animals and people.</li> <li>• Debate if being about to modify genes will lead to unintended consequences for the environment and/or human health.</li> <li>• Investigate how genes and patterns of inheritance function in organisms and generations of organisms.</li> <li>• Describe the procedures and results of genetic modification</li> <li>• Debate some of the benefits and trade-offs of producing specific genetically modified organisms.</li> </ul> <p><b><u>ELA Learning Targets:</u></b></p> <ul style="list-style-type: none"> <li>• Cite strong and thorough textual evidence to support analysis of what the text says explicitly as well as inferences drawn from the text.</li> </ul>	<p>Lab reports            Portfolios            Checklists/rubrics            Debates</p>

Concepts/Big Ideas	Essential Questions/Learning Targets	Assessments
<p>We can use our scientific expertise to make decisions about stem cell research and justify/defend our position during a debate.</p> <p>Research is only as good as the resources used to support it. Good researchers look for reliable sources to find information.</p>	<ul style="list-style-type: none"> <li>• Determine a central idea of a text and analyze its development over the course of the text, including how it emerges and is shaped and refined by specific details; provide an objective summary of the text.</li> <li>• Analyze how the author unfolds an analysis or series of ideas or events, including the order in which the points are made, how they are introduced and developed, and the connections that are drawn between them.</li> <li>• Determine the meaning of words and phrases as they are used in a text, including figurative, connotative, and technical meanings; analyze the cumulative impact of specific word choices on meaning and tone (e.g., how the language of a court opinion differs from that of a newspaper).</li> <li>• Analyze in detail how an author’s ideas or claims are developed and refined by particular sentences, paragraphs, or larger portions of a text (e.g., a section or chapter).</li> <li>• Use reading skills and strategies for analyzing graphic information, analyzing historical context, summarizing, comparing and contrasting, evaluating evidence, recognizing bias, comparing literature, and generating a purpose for reading.</li> <li>• Conduct research project based on focused questions, demonstrating understanding of the subject under investigation</li> <li>• Develop a multimedia product using audio/visual components simultaneously</li> <li>• Develop and defend opinion through a debate.</li> <li>• Accurately cite sources.</li> </ul>	

**Project Four: Ecology and Sustainability**

**Biology Content:** Our world holds an amazing variety of organisms living in all sorts of environments. Organisms affect their environments, and in turn the environment affects them. Understanding the complex web of relationships within ecosystems is essential to understanding their sustainability. In this unit students will examine a variety of ecological issues including the impact of human activities on ecosystems. Students will explore what can happen when people cause pollution in an area vital to nonhuman and human organisms. Students will use scientific articles to research the cause and effect of algal blooms off the

Concepts/Big Ideas	Essential Questions/Learning Targets	Assessments
<p>coast of the U.S. and write a letter to the Environmental Protection Agency to inform them of the problem as well as suggest possible solutions. Students will also learn about invasive species and their impacts on established ecosystems. You will also investigate how different management strategies affect the sustainability of fisheries. Finally, you will suggest actions humans can take to help sustain ecosystems for the future.</p> <p><b>ELA Content:</b> To examine the interaction of people and the ecosystems in which they live, students engage in literature circles, discussing common themes that run throughout a group of essays compiled in the anchor text <i>Driven from the Land</i>. In this book, a variety of authors focuses on two ears of westward expansion, highlighting the Dust Bowl, the people who lived there, and how they survived the shifting ecosystem. Students will also complete a thematic study of nature writing. This section will be anchored by essays such as <i>Walking</i> from Henry David Thoreau, along with other essays, short stories, and poems. Students will investigate nature and the relationship that people have with nature. In a nature writing anthology, students will reflect on Thoreau who writes about human’s role in nature “as an inhabitant, or a part or parcel of Nature.” The final project will be the composition of a children's book to show solutions to an environmental problem, using the <i>Lorax</i> as a model. The book can include other characters from the Dr. Seuss books. Students will also reference excerpts from <i>Writing Picture Books: A Hands-On Guide from Story Creation to Publication</i>, examining the concept of multiple audiences – the children who will love the book and the parents who need to love it to purchase it. These concepts will be applied to their understanding to the children’s book they will create, including a research brief to be include on the last page of the book.</p> <p><b>Potential Projects:</b> <i>The Lorax</i> and Tales of Environment Sustainability, Saltmarsh Sponge, Turning Brownfield Green, Writing in the Natural World, Community Court: Development vs. Conservation, Sandpiper’s Plight, Sustainability and Development: Problem Solved!</p> <p><b>Timeline: 9 weeks</b></p> <p><b>Resources:</b>  <i>Science and Global Issues: Biology</i>, Lab Aids  <i>Driven from the Land – the Story of the Dust Bowl</i> by Milton Meltzer  <i>Walking</i> by Henry David Thoreau  <a href="http://www.nature.org/initiatives/climatechange/calculator/">http://www.nature.org/initiatives/climatechange/calculator/</a> - Allows you to determine your carbon footprint  <a href="http://www.howstuffworks.com">www.howstuffworks.com</a> – search for brownfield  <a href="http://www.brownfieldassociation.org">www.brownfieldassociation.org</a>  <a href="http://www.doe.k12.de.us/">http://www.doe.k12.de.us/</a>  <i>Writing Picture Books: A Hands-On Guide from Story Creation to Publication</i> by Ann Whitford Paul  <i>The Lorax</i> by Dr. Suess  <i>DEAD IN THE WATER</i>. By: Weir, Kirsten. <i>Current Science</i>, 3/4/2005, Vol. 90 Issue 12, p10-11, 2p.  <i>Red Tide's Weather Trail</i>. By: Cutlip, Kimbra. <i>Weatherwise</i>, Nov/Dec2001, Vol. 54 Issue 6, p10, 2p.  <i>"The Gulf of Mexico Dead Zone and Red Tides"</i> by Elizabeth Carlisle. <a href="http://www.tulane.edu/~bfleury/envirobio/enviroweb/DeadZone.htm">http://www.tulane.edu/~bfleury/envirobio/enviroweb/DeadZone.htm</a></p> <p><b>Science Standards</b>  As a member of the Science Coalition, the Delaware STEM Academy will adopt the biology curriculum recommended by the Science Coalition and aligned to Next Generation Science Standards. When those materials become available, the content will be integrated into BioLit.</p> <p><b>ELA Standards:</b></p>		

Concepts/Big Ideas	Essential Questions/Learning Targets	Assessments
<p><b>Reading Standards for Literary Texts</b>  Cite strong and thorough textual evidence to support analysis of what the text says explicitly as well as inferences drawn from the text. <b>CC9-10RL1</b>  Determine a theme or central idea of a text and analyze in detail its development over the course of the text, including how it emerges and is shaped and refined by specific details; provide an objective summary of the text. <b>CC9-10RL2</b>  Determine the meaning of words and phrases as they are used in the text, including figurative and connotative meanings; analyze the cumulative impact of specific word choices on meaning and tone (e.g., how the language evokes a sense of time and place; how it sets a formal or informal tone). <b>CC9-10RL4</b>  Analyze how an author's choices concerning how to structure a text, order events within it (e.g., parallel plots), and manipulate time (e.g., pacing, flashbacks) create such effects as mystery, tension, or surprise. <b>CC9-10RL5</b></p> <p><b>Reading Informative Texts</b>  Cite strong and thorough textual evidence to support analysis of what the text says explicitly as well as inferences drawn from the text. <b>CC9-10RI1</b>  Determine a theme or central idea of a text and analyze in detail its development over the course of the text, including how it emerges and is shaped and refined by specific details; provide an objective summary of the text. <b>CC9-10RI2</b>  Determine the meaning of words and phrases as they are used in a text, including figurative, connotative, and technical meanings; analyze the cumulative impact of specific word choices on meaning and tone (e.g., how the language of a court opinion differs from that of a newspaper). <b>CC9-10RI4</b>  Analyze in detail how an author's ideas or claims are developed and refined by particular sentences, paragraphs, or larger portions of a text (e.g., a section or chapter). <b>CC9-10RI5</b>  Analyze seminal U.S. documents of historical and literary significance (e.g., Washington's Farewell Address, the Gettysburg Address, Roosevelt's Four Freedoms speech, King's "Letter from Birmingham Jail"), including how they address related themes and concepts. <b>CC9-10RI9</b>  By the end of grade 10, read and comprehend literature, including stories, dramas, and poems, at the high end of the grades 9-10 text complexity band independently and proficiently. <b>CC10RL10</b></p> <p><b>Writing Standards</b>  Write narratives to develop real or imagined experiences or events using effective technique, well-chosen details, and well-structured event sequences. <b>CC9-10W3</b></p> <ol style="list-style-type: none"> <li>Engage and orient the reader by setting out a problem, situation, or observation, establishing one or multiple point(s) of view, and introducing a narrator and/or characters; create a smooth progression of experiences or events. <b>CC9-10W3a</b></li> <li>Use narrative techniques, such as dialogue, pacing, description, reflection, and multiple plot lines, to develop experiences, events, and/or characters. <b>CC9-10W3b</b></li> <li>Use a variety of techniques to sequence events so that they build on one another to create a coherent whole. <b>CC9-10W3c</b></li> <li>Use precise words and phrases, telling details, and sensory language to convey a vivid picture of the experiences, events, setting, and/or characters. <b>CC9-10W3d</b></li> <li>Provide a conclusion that follows from and reflects on what is experienced, observed, or resolved over the course of the narrative. <b>CC9-10W3e</b></li> </ol> <p>Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience. <b>CC9-10W4</b>  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. <b>CC9-10W5</b>  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. <b>CC9-10W6</b></p>		

Concepts/Big Ideas	Essential Questions/Learning Targets	Assessments
<p>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. <b>CC9-10W7</b></p> <p>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. <b>CC9-10W8</b></p> <p>Draw evidence from literary or informational texts to support analysis, reflection, and research. <b>CC9-10W9</b></p> <p>a. Apply grades 9-10 Reading standards to literature (e.g., "Analyze how an author draws on and transforms source material in a specific work [e.g., how Shakespeare treats a theme or topic from Ovid or the Bible or how a later author draws on a play by Shakespeare]"). <b>CC9-10W9a</b></p> <p>b. Apply grades 9-10 Reading standards to literary nonfiction (e.g., "Delineate and evaluate the argument and specific claims in a text, assessing whether the reasoning is valid and the evidence is relevant and sufficient; identify false statements and fallacious reasoning"). <b>CC9-10W9b</b></p> <p>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. <b>CC9-10W10</b></p> <p><b>Speaking and Listening</b></p> <p>Initiate and participate effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grades 9-10 topics, texts, and issues, building on others' ideas and expressing their own clearly and persuasively. <b>CC9-10SL1</b></p> <p>a. Come to discussions prepared, having read and researched material under study; explicitly draw on that preparation by referring to evidence from texts and other research on the topic or issue to stimulate a thoughtful, well-reasoned exchange of ideas. <b>CC9-10SL1a</b></p> <p>b. Work with peers to set rules for collegial discussions and decision-making (e.g., informal consensus, taking votes on key issues, presentation of alternate views), clear goals and deadlines, and individual roles as needed. <b>CC9-10SL1b</b></p> <p>c. Propel conversations by posing and responding to questions that relate the current discussion to broader themes or larger ideas; actively incorporate others into the discussion; and clarify, verify, or challenge ideas and conclusions. <b>CC9-10SL1c</b></p> <p>d. Respond thoughtfully to diverse perspectives, summarize points of agreement and disagreement, and, when warranted, qualify or justify their own views and understanding and make new connections in light of the evidence and reasoning presented. <b>CC9-10SL1d</b></p> <p>Present information, findings, and supporting evidence clearly, concisely, and logically such that listeners can follow the line of reasoning and the organization, development, substance, and style are appropriate to purpose, audience, and task. <b>CC9-10SL4</b></p> <p><b>Language Standards</b></p> <p>Demonstrate command of the conventions of standard English grammar and usage when writing or speaking. <b>CC9-10L1</b></p> <p>Use parallel structure.* <b>CC9-10L1a</b></p> <p>Use various types of phrases (noun, verb, adjectival, adverbial, participial, prepositional, absolute) and clauses (independent, dependent; noun, relative, adverbial) to convey specific meanings and add variety and interest to writing or presentations. <b>CC9-10L1b</b></p> <p>Demonstrate command of the conventions of standard English capitalization, punctuation, and spelling when writing. <b>CC9-10L2</b></p> <p>Use a semicolon (and perhaps a conjunctive adverb) to link two or more closely related independent clauses. <b>CC9-10L2a</b></p> <p>Use a colon to introduce a list or quotation. <b>CC9-10L2b</b></p> <p>Spell correctly. <b>CC9-10L2c</b></p> <p>Apply knowledge of language to understand how language functions in different contexts, to make effective choices for meaning or style, and to comprehend more fully when reading or listening. <b>CC9-10L3</b></p>		

Concepts/Big Ideas	Essential Questions/Learning Targets	Assessments
<p><b>Reading Standards for Literacy in Science and Technical Subjects</b></p> <p>Cite specific textual evidence to support analysis of science and technical texts, attending to the precise details of explanations or descriptions. <b>CC9-10RS/TS1</b></p> <p>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. <b>CC9-10RS/TS2</b></p> <p>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 <i>grades 9-10 texts and topics</i>. <b>CC9-10RS/TS4</b></p> <p>Analyze the structure of the relationships among concepts in a text, including relationships among key terms (e.g., <i>force, friction, reaction force, energy</i>). <b>CC9-10RS/TS5</b></p> <p>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. <b>CC9-10RS/TS8</b></p> <p>By the end of grade 10, read and comprehend science/technical texts in the grades 9-10 text complexity band independently and proficiently. <b>CC9-10RS/TS10</b></p> <p>Write informative/explanatory texts, including the narration of historical events, scientific procedures/ experiments, or technical processes. <b>CC9-10WH/SS/S/TS2</b></p> <p>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>CC9-10WH/SS/S/TS2a</b></p> <p>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. <b>CC9-10WH/SS/S/TS2b</b></p> <p>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. <b>CC9-10WH/SS/S/TS2c</b></p> <p>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. <b>CC9-10WH/SS/S/TS2d</b></p> <p>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. <b>CC9-10WH/SS/S/TS2e</b></p> <p>g. 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). <b>CC9-10WH/SS/S/TS2f</b></p> <p>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. <b>CC9-10WH/SS/S/TS8</b></p> <p>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. <b>CC9-10WH/SS/S/TS10</b></p>		
<p><b>Concepts:</b>            Biomes            Stability and climate change in ecosystems            Invasive species</p>	<p><b>Science Essential Questions:</b>            How do we build sustainability from an ecosystems perspective? What does this mean for how humans impact various ecosystems?</p>	<p><b>Formative Assessments:</b>            Teacher observation            Graphic organizers            Journal Entries</p>

Concepts/Big Ideas	Essential Questions/Learning Targets	Assessments
<p>Population dynamics Energy flow through ecosystems Carbon and nitrogen cycles Photosynthesis and cellular respiration Symbiotic relationships Predator-prey relationships Sustainability Indicators Life cycle of products Correlation and causality</p> <p><b><u>ELA Concepts:</u></b> Point of View Multiple Voices Historical Accuracy Audience Research Cause and effect</p> <p><b><u>Science Big Ideas:</u></b> Our world holds an amazing variety of organisms living in all sorts of environments.  Organisms affect their environments, and in turn the environment affects them.  Matter needed to sustain life is continually recycled among and between organisms and the environment.  Energy from the Sun flows irreversibly through ecosystems and is conserved as organisms use and transform it.  One of the most critical global issues of our time is how to live in ways that will sustain our planet's systems and resources.  Humans can alter the living and non-living factors within an ecosystem, thereby creating changes to</p>	<p>How do matter and energy link organisms to each other and their environments?</p> <p>How should fisheries be managed to build sustainability in the oceans?</p> <p>How do humans have an impact on the diversity and stability of ecosystems?</p> <p>How can aspects of sustainability be viewed from a personal, community, and global perspective?</p> <p>How is matter transferred and energy transferred/transformed in living systems?</p> <p><b><u>ELA Essential Questions:</u></b> What is the value of collected essays from various authors over essays all written by one person?  How can poetry tell a story?  How do words and pictures interact to create a text that is more powerful than either the pictures or words alone?  How can a single text appeal to multiple readers?  What do I think about the natural world? What is my role in the society and "ecosystem" in which I live? How do I write about it?  What environmental issues are most pressing to Delaware and the surrounding issue?</p> <p><b><u>Science Learning Targets:</u></b></p> <ul style="list-style-type: none"> <li>Understand the complex web of relationships within ecosystems is essential to understanding their sustainability.</li> </ul>	<p>KWLs Pre-tests Conferences Observations Question and Answer Sessions First Drafts / Quizzes Journals Interviews Short responses Quickwrites Tickets in/out of the door Participation in lab work Notetaking</p> <p><b><u>Summative Assessments:</u></b> Tests on specific areas Essays/written report Presentations Projects Presentations Model of key ideas Lab reports Portfolios Checklists/rubrics Debates Nature Portfolio Children's Book Research brief</p>

Concepts/Big Ideas	Essential Questions/Learning Targets	Assessments
<p>the overall system.</p> <p>The diversity and changing of life forms over many generations is the result of natural selection, in which organisms with advantageous traits survive, reproduce, and pass those traits to offspring.</p> <p>How can sustainable development/building minimize environmental impact and benefit human health?</p> <p><b><u>ELA Big Ideas</u></b> Multiple viewpoints provide a diversity of opinions that makes the reader’s understanding richer.</p> <p>Appealing to multiple audiences presents a unique challenge to children’s book authors.</p> <p>Pictures, words, and or graphics interact in book in a way that creates a story more powerful either the words or the picture alone.</p> <p><b><u>Integrated Big Ideas:</u></b> Speaking out and informing governmental agencies and others about ecological problems can help in efforts to address problems of imbalance in the ecosystem as well as expedite a solution.</p>	<ul style="list-style-type: none"> <li>• Describe how humans interact with ecosystems in many ways.</li> <li>• Recognize that we rely on ecosystems to supply us food, shelter, energy, and the oxygen we breathe. As we consume resources and discard our wastes, we change ecosystems and sometimes threaten their sustainability.</li> <li>• Examine a variety of ecological issues including the impact of human activities on ecosystems.</li> <li>• Examine what can happen when people cause pollution in an area vital to nonhuman and human organisms.</li> <li>• Learn about invasive species and their impacts on established ecosystems. You will also investigate how different management strategies affect the sustainability of fisheries.</li> <li>• Plan and advocate for actions humans can take to help sustain ecosystems for the future.</li> <li>• Investigate why sustainability often raises more questions than it can answer.</li> <li>• Estimate the impact of your own lifestyle on the ecological sustainability of the planet.</li> <li>• Discover that most sustainability problems are a result of people’s overuse and misuse of the earth’s resources.</li> <li>• Learn about communities that have applied scientific knowledge and technology to address their local resource challenges.</li> </ul> <p><b><u>ELA Learning Targets:</u></b></p> <ul style="list-style-type: none"> <li>• Create a children’s book describing a solution to an environmental problem.</li> <li>• Use technology, including the Internet, to produce and publish writing and to interact and collaborate with others.</li> <li>• Read purposefully and select relevant information; to summarize and/or paraphrase.</li> </ul>	

<b>Concepts/Big Ideas</b>	<b>Essential Questions/Learning Targets</b>	<b>Assessments</b>
	<ul style="list-style-type: none"> <li>• Apply strategies for developing an understanding of text(s) by locating words and phrases that identify key concepts and facts, or information.</li> <li>• Apply multiple viewpoints from a single event to create a more globalized learning opportunity.</li> <li>• Make observations about reading and relate these observations to key concepts and essential vocabulary learned.</li> <li>• Identify the central point and main supporting elements of a text.</li> <li>• Use and credit sources appropriately.</li> <li>• Establish a controlling idea and consolidate information relevant to task.</li> <li>• Develop a line of thought and text structure appropriate to an information/explanation task.</li> <li>• Construct an initial draft with an emerging line of thought and structure.</li> <li>• Refine text, including line of thought, language usage, and tone as appropriate to audience and purpose.</li> <li>• Proofread and format a piece to make it more effective.</li> </ul>	