



## Rigorous Curriculum Design Unit Planning Organizer

<b>Subject:</b>	Course 1	<b>Grade:</b>	6
<b>Unit Number:</b>	6	<b>Unit Name:</b>	Human Impacts
<b>Unit Length</b>	Days: 25 days + 5 buffer days	<b>Mins/Day:</b>	
<b>Unit Synopsis</b>	<p>The performance expectations in <b>ESS3: Earth and Human Activity</b> help students formulate an answer to questions such as: “How do human activities affect Earth systems, How do we know our global climate is changing?” The ESS3 Disciplinary Core Idea from the NRC Framework is broken down into four sub-ideas: natural resources, natural hazards, human impact on Earth systems, and global climate change. Students understand the ways that human activities impacts Earth’s other systems. Students use many different practices to understand the significant and complex issues surrounding human uses of land, energy, mineral, and water resources and the resulting impacts of their development. The crosscutting concepts of patterns, cause and effect, and stability and change are called out as organizing concepts for these disciplinary core ideas. In the ESS3 performance expectations, students are expected to demonstrate proficiency in asking questions, developing and using models, analyzing and interpreting data, constructing explanations and designing solutions and engaging in argument; and to use these practices to demonstrate understanding of the core ideas.</p>		

	NGSS	Science and Engineering Practice(s)
Priority Performance Expectations	<p><b>MS-ESS3-3. Apply scientific principles to design a method for monitoring and minimizing a human impact on the environment.*</b> [Clarification Statement: Examples of the design process include examining human environmental impacts, assessing the kinds of solutions that are feasible, and designing and evaluating solutions that could reduce that impact. Examples of human impacts can include water usage (such as the withdrawal of water from streams and aquifers or the construction of dams and levees), land usage (such as urban development, agriculture, or the removal of wetlands), and pollution (such as of the air, water, or land).]</p>	<ul style="list-style-type: none"> <li><input type="checkbox"/> <b>Asking Questions and Defining Problems</b></li> <li><input type="checkbox"/> Planning and Carrying Out Investigations</li> <li><input type="checkbox"/> Analyzing and Interpreting Data</li> <li><input type="checkbox"/> Developing and Using Models</li> <li><input type="checkbox"/> <b>Constructing Explanations and Designing Solutions</b></li> <li><input type="checkbox"/> Engaging in Argument from Evidence</li> <li><input type="checkbox"/> Using Mathematics and Computational Thinking</li> <li><input type="checkbox"/> Obtaining, Evaluating, and Communicating Information</li> </ul>
	<p><b>MS-ESS3-5. Ask questions to clarify evidence of the factors that have caused the rise in global temperatures over the past century.</b> [Clarification Statement: Examples of factors include human activities (such as fossil fuel combustion, cement production, and agricultural activity) and natural processes (such as changes in incoming solar radiation or volcanic activity). Examples of evidence can include tables, graphs, and maps of global and regional temperatures, atmospheric levels of gases such as carbon dioxide and methane, and the rates of human activities. Emphasis is on the major role that human activities play in causing the rise in global temperatures.]</p>	<p style="text-align: center;">Disciplinary Core Ideas</p> <p><b>ESS3.C: Human Impacts on Earth Systems</b></p> <ul style="list-style-type: none"> <li>▪ Human activities have significantly altered the biosphere, sometimes damaging or destroying natural habitats and causing the extinction of other species. But changes to Earth’s environments can have different impacts (negative and positive) for different living things. (MS-ESS3-3)</li> </ul>

	<p><b>ESS3.D: Global Climate Change</b>  Human activities, such as the release of greenhouse gases from burning fossil fuels, are major factors in the current rise in Earth’s mean surface temperature (global warming). Reducing the level of climate change and reducing human vulnerability to whatever climate changes do occur depend on the understanding of climate science, engineering capabilities, and other kinds of knowledge, such as understanding of human behavior and on applying that knowledge wisely in decisions and activities. (MS-ESS3-5)</p>		
<p>Crosscutting Concepts</p>	<ul style="list-style-type: none"> <li><input type="checkbox"/> Patterns</li> <li><input type="checkbox"/> <b>Cause and Effect</b></li> <li><input type="checkbox"/> Scale, proportion, and Quantity</li> <li><input type="checkbox"/> Systems and System Models</li> <li><input type="checkbox"/> Energy and Matter</li> <li><input type="checkbox"/> Structure and Function</li> <li><input type="checkbox"/> <b>Stability and Change</b></li> </ul>		
<p>Supporting Performance Expectations</p>	<p style="text-align: center;"><b>NGSS</b></p> <p>Students who demonstrate understanding can:</p> <p>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.</p> <p>MS-ETS1-2. Evaluate competing design solutions using a systematic process to determine how well they meet the criteria and constraints of the problem.</p> <p>MS-ETS1-3. Analyze data from tests to determine similarities and differences among several design solutions to identify the best characteristics of each that can be combined into a new solution to better meet the criteria for success.</p> <p>MS-ETS1-4. Develop a model to generate data for iterative testing and modification of a proposed object, tool, or process such that an optimal design can be achieved.</p>	<p style="text-align: center;"><b>Math CCSS</b></p> <p><b>MP.2</b> Reason abstractly and quantitatively. (MS-ESS3-2),(MS-ESS3-5)</p> <p><b>6.RP.A.1</b> Understand the concept of a ratio and use ratio language to describe a ratio relationship between two quantities. (MS-ESS3-3),(MS-ESS3-4)</p> <p><b>7.RP.A.2</b> Recognize and represent proportional relationships between quantities. (MS-ESS3-3),(MS-ESS3-4)</p> <p><b>6.EE.B.6</b> Use variables to represent numbers and write expressions when solving a real-world or mathematical problem; understand that a variable can represent an unknown number, or, depending on the purpose at hand, any number in a specified set. (MS-ESS3-1),(MS-ESS3-2),(MS-ESS3-3),(MS-ESS3-4),(MS-ESS3-5)</p> <p><b>7.EE.B.4</b> Use variables to represent quantities in a real-world or mathematical problem, and construct simple equations and inequalities to solve problems by reasoning about the quantities. (MS-ESS3-1),(MS-ESS3-2),(MS-ESS3-3),(MS-ESS3-4),(MS-ESS3-5)</p>	<p style="text-align: center;"><b>Literacy CCSS</b></p> <p><b>RST.6-8.1</b> Cite specific textual evidence to support analysis of science and technical texts. (MS-ESS3-1),(MS-ESS3-2),(MS-ESS3-4),(MS-ESS3-5)</p> <p><b>WHST.6-8.7</b> 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. (MS-ESS3-3)</p> <p><b>WHST.6-8.8</b> 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. (MS-ESS3-3)</p>

	NG ELD Standards	Literacy / Science / History / Other
Interdisciplinary Connections	<p><b>Collaborative 1:</b> Exchanging information and ideas with others through oral collaborative discussions on a range of social and academic topics.</p> <p><b>Interpretive 6:</b> Reading closely literary and informational texts and viewing multimedia to determine how meaning is conveyed explicitly and implicitly through language.</p> <p><b>Productive 10:</b> Writing literary and informational texts to present, describe, and explain ideas and information, using appropriate technology.</p> <p><b>Productive 11:</b> Justifying own arguments and evaluating others' arguments in writing.</p>	<p><b>Key Ideas and Details</b></p> <p><b><u>CCSS.ELA-Literacy.RST.6-8.1</u></b> Cite specific textual evidence to support analysis of science and technical texts.</p> <hr/> <p><b><u>CCSS.ELA-Literacy.RST.6-8.2</u></b> Determine the central ideas or conclusions of a text; provide an accurate summary of the text distinct from prior knowledge or opinions.</p> <p><b><u>CCSS.ELA-Literacy.RST.6-8.3</u></b> Follow precisely a multistep procedure when carrying out experiments, taking measurements, or performing technical tasks.</p> <p><b>Craft and Structure</b></p> <hr/> <p><b><u>CCSS.ELA-Literacy.RST.6-8.4</u></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 6–8 texts and topics</i>.</p> <p><b><u>CCSS.ELA-Literacy.RST.6-8.5</u></b> Analyze the structure an author uses to organize a text, including how the major sections contribute to the whole and to an understanding of the topic.</p> <p><b><u>CCSS.ELA-Literacy.RST.6-8.6</u></b> Analyze the author's purpose in providing an explanation, describing a procedure, or discussing an experiment in a text.</p> <p><b>Integration of Knowledge and Ideas</b></p> <hr/> <p><b><u>CCSS.ELA-Literacy.RST.6-8.7</u></b> Integrate quantitative or technical information expressed in words in a text with a version of that information expressed visually (e.g., in a flowchart, diagram, model, graph, or table).</p> <p><b><u>CCSS.ELA-Literacy.RST.6-8.8</u></b> Distinguish among facts, reasoned judgment based on research findings, and speculation in a text.</p> <p><b><u>CCSS.ELA-Literacy.RST.6-8.9</u></b> Compare and contrast the information gained from experiments, simulations, video, or multimedia sources with that gained from reading a text on the same topic.</p> <p style="text-align: center;">Range of Reading and Level of Text Complexity</p> <p><b><u>CCSS.ELA-Literacy.RST.6-8.10</u></b> By the end of grade 8, read and comprehend science/technical texts in the grades 6–8 text complexity band independently and proficiently.</p>

## Unwrapped Priority Performance Expectations

PE: MS-ESS3-3 Skills	Concepts	Bloom's	DOK ( <a href="#">Rigor Matrix</a> )	Language Demand
Apply	Scientific principles	Create	4	
To design	a method for monitoring and minimizing a human impact on the environment.			

PE: MS-ESS3-5 Skills	Concepts	Bloom's	DOK ( <a href="#">Rigor Matrix</a> )	Language Demand
Ask	Questions	Analyze	3	
To clarify	evidence of the factors that have caused the rise in global temperatures.			

## Learning Progressions of Skills and Concepts

PE: ESS 3-3	Previous Courses	Current Course	Next Courses
	<p><b>K-ESS3-3. Communicate solutions that will reduce the impact of humans on the land, water, air, and/or other living things in the local environment.*</b>                      [Clarification Statement: Examples of human impact on the land could include cutting trees to produce paper and using resources to produce bottles. Examples of solutions could include reusing paper and recycling cans and bottles.]</p>	<p><b>MS-ESS3-3. Apply scientific principles to design a method for monitoring and minimizing a human impact on the environment.*</b> [Clarification Statement: Examples of the design process include examining human environmental impacts, assessing the kinds of solutions that are feasible, and designing and evaluating solutions that could reduce that impact. Examples of human impacts can include water usage (such as the withdrawal of water from streams and aquifers or the construction of dams and levees), land usage (such as urban development, agriculture, or the removal of wetlands), and pollution (such as of the air, water, or land).]</p>	<p><b>HS-ESS3-3. Create a computational simulation to illustrate the relationships among management of natural resources, the sustainability of human populations, and biodiversity.</b>                      [Clarification Statement: Examples of factors that affect the management of natural resources include costs of resource extraction and waste management, per-capita consumption, and the development of new technologies. Examples of factors that affect human sustainability include agricultural efficiency, levels of conservation, and urban planning.] <b>[Assessment Boundary: Assessment for computational simulations is limited to using provided multi-parameter programs or constructing simplified spreadsheet calculations.]</b></p>

PE: ESS 3-5		
Previous Courses	Current Course	Next Courses
N/A	<p><b>MS-ESS3-5. Ask questions to clarify evidence of the factors that have caused the rise in global temperatures over the past century.</b> [Clarification Statement: Examples of factors include human activities (such as fossil fuel combustion, cement production, and agricultural activity) and natural processes (such as changes in incoming solar radiation or volcanic activity). Examples of evidence can include tables, graphs, and maps of global and regional temperatures, atmospheric levels of gases such as carbon dioxide and methane, and the rates of human activities. Emphasis is on the major role that human activities play in causing the rise in global temperatures.]</p>	<p>HS-ESS3-5. Analyze geoscience data and the results from global climate models to make an evidence-based forecast of the current rate of global or regional climate change and associated future impacts to Earth systems. [Clarification Statement: Examples of evidence, for both data and climate model outputs, are for climate changes (such as precipitation and temperature) and their associated impacts (such as on sea level, glacial ice volumes, or atmosphere and ocean composition).] [Assessment Boundary: Assessment is limited to one example of a climate change and its associated impacts.]</p>

Big Idea(s)	Corresponding Essential Question(s)
<p>ESS3-3 Humans can reduce impact on the environment by reducing water use, land use, and pollution. Use of fossil fuels should also be reduced and replaced with alternative energy sources.</p> <p>ESS3-5 Global temperatures have risen over the past century because of use of fossil fuels, agriculture, overuse of natural resources (specifically land, water, and fossil fuels) and pollution.</p>	<p>ESS3-3 How can humans minimize their impact on the environment?</p> <p>ESS3-5 What factors have contributed to global warming?</p>
Unit Vocabulary Words	
Academic Cross-Curricular Vocabulary (Tier 2)	Content/Domain Specific Vocabulary (Tier 3)
Impact, Solution, Evaluate, Reduce, Method, Monitor, Agriculture, Alternative, Impact	Fossil Fuels, Global Warming, Natural Resources, Renewable Resources, Non-renewable Resources, Climate
Supporting Vocabulary (Tier 2)	Supporting Vocabulary (Tier 3)

Resources for Vocabulary Development (Strategies, Routines and Activities)			
<ul style="list-style-type: none"> <li>Instagram vocab activity</li> <li>Vocabulary Matchbooks/Frayer model/Looping</li> <li>Vocabulary Flashcards</li> </ul>	<ul style="list-style-type: none"> <li>Vocabulary Flipbook/Foldable</li> <li>Vocabulary around the World</li> <li>Vocabulary Snowball Fight</li> </ul>	<ul style="list-style-type: none"> <li>Vocabulary Examples/non-examples</li> <li>Vocabulary Matrix</li> <li>Vocabulary Web</li> </ul>	<ul style="list-style-type: none"> <li>Vocabulary Focus Word Wall</li> <li>Mnemonics</li> </ul>

21 <sup>st</sup> Century Skills	
<input type="checkbox"/> Creativity and Innovation <input type="checkbox"/> Critical Thinking and Problem Solving <input type="checkbox"/> Communication and Collaboration <input type="checkbox"/> Flexibility and Adaptability <input type="checkbox"/> Globally and Financially Literate <input type="checkbox"/> Communicating and Collaborating	<input type="checkbox"/> Initiative and Self-Direction <input type="checkbox"/> Social and Cross-Cultural Skills <input type="checkbox"/> Productivity and Accountability <input type="checkbox"/> Leadership and Responsibility <input type="checkbox"/> _____ <input type="checkbox"/> _____
<b>Connections between 21<sup>st</sup> Century Skills, NGSS, and Unit Overview:</b>	

Costa & Kallick, 2008

Unit Assessments	
Pre-Assessment	Post-Assessment
Scoring Guides and Answer Keys	

Assessment Differentiation	
Students with Disabilities	<p><b>Accommodations</b> Reference IEP to ensure appropriate testing environment</p>
	<p><b>Modifications</b></p>
English Language Learners	Emerging
	Expanding

Engaging Scenario Overview (Situation, challenge, role, audience, product or performance)		
Description:		Suggested Length of Time Days:  Mins/Day:
Engaging Learning Experiences Synopsis of Authentic Performance Tasks		
Authentic Performance Tasks	Description	Suggested Length of Time
Task 1:	Problem Solving:  SEP:	Days:  Mins/Day:
Task 2:	Problem Solving:  SEP:	Days:  Mins/Day:
Task 3:	Problem Solving:	Days:

	SEP:	Mins/Day:
Task 4:	Problem Solving:  SEP:	Days:  Mins/Day:

### Authentic Performance Task 1

Name:		Suggested Length	Days: Mins/Day:	
Performance Expectations / Standards Addressed	Priority Standards			
	NGSS	Science and Engineering Practice(s)		
		Disciplinary Core Idea(s)		
		Crosscutting Concept(s)		
Supporting Standards				
NGSS	CCSS Math	CCSS Literacy	NG ELD	
Teaching and Learning Progression			Bloom's	DOK
	Scoring Rubric			
Instructional Strategies				
All Students	SWD	ELs	Enrichment	
	<b>Accommodations</b>	Emerging		



	<b>Modifications</b>	Expanding	
		Bridging	

**Authentic Performance Task 2**

Name:		Suggested Length		Days: Mins/Day:	
Performance Expectations / Standards Addressed	Priority Standards				
	NGSS		Science and Engineering Practice(s)		
			Disciplinary Core Idea(s)		
			Crosscutting Concept(s)		
	Supporting Standards				
	NGSS	CCSS Math	CCSS Literacy	NG ELD	
			Bloom's		DOK
Scoring Rubric					
Teaching and Learning Progression	Instructional Strategies				
	All Students	SWD	ELs	Enrichment	
		<b>Accommodations</b>	Emerging		
		<b>Modifications</b>	Expanding		

		Bridging	
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### Authentic Performance Task 3

Name:				Suggested Length	Days: Mins/Day:		
Performance Expectations / Standards Addressed	Priority Standards						
	NGSS			Science and Engineering Practice(s)			
				Disciplinary Core Idea(s)			
Crosscutting Concept(s)							
Supporting Standards							
NGSS		CCSS Math		CCSS Literacy		NG ELD	
Teaching and Learning Progression					Bloom's		DOK
					Scoring Rubric		
Instructional Strategies							
All Students		SWD		ELs		Enrichment	
		<b>Accommodations</b>		Emerging			
		<b>Modifications</b>		Expanding			
				Bridging			

### Authentic Performance Task 4

Name:		Suggested Length	Days: Mins/Day:
Performance Expectations / Standards Addressed	Priority Standards		
	NGSS	Science and Engineering Practice(s)	
		Disciplinary Core Idea(s)	
		Crosscutting Concept(s)	
Supporting Standards			
NGSS	CCSS Math	CCSS Literacy	NG ELD
Teaching and Learning Progression			Bloom's
			DOK
	Scoring Rubric		
Instructional Strategies			
All Students	SWD	ELs	Enrichment
	<b>Accommodations</b>	Emerging	
	<b>Modifications</b>	Expanding	
		Bridging	

#### Engaging Scenario

Detailed Description (situation, challenge, role, audience, product or performance)

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Instructional Strategies			
All Students	SWD	ELs	Enrichment
	<b>Accommodations</b>	Emerging	
		Expanding	
		Bridging	
	<b>Modifications</b>		

**Scoring Guide:**

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Feedback to Curriculum Team		
Reflect on the teaching and learning process within this unit of study. What were some successes and challenges that might be helpful when refining this unit of study?		
	Successes	Challenges
Student Perspective		
Teacher Perspective		