Winslow Township School District

Grade 5 Science

Unit 4: Earth Systems

Overview: In this unit of study students develop models to describe the interactions that occur within and between major Earth systems and conduct research to learn how humans protect the Earth's resources. Students will also describe and graph data to provide evidence about the distribution of water on Earth. Lastly, students will demonstrate grade appropriate proficiency in using mathematics and computational thinking and in obtaining, evaluating, and communicating information.

<table>
<tr><th>Overview</th><th>Standards for Science</th><th>Unit Focus</th><th>Essential Questions</th></tr>
<tr><td>Unit 4

Earth Systems</td><td>• 5-ESS2-1
• 5-ESS2-2
• WIDA 1,4</td><td>• Understand the influence of oceans on ecosystems, landform shape, or climate.
• Describe the impact of the atmosphere on landforms or ecosystems through weather and climate.
• Explain the influence of mountain ranges on wind and clouds in the atmosphere.
• Describe the role of living organisms (both plants and animals) in the creation of soils.</td><td rowspan="2">• How are growth, behavior and reproduction important to plant and animal life?
• How do animals process the world around them?
• How is survival for animals & plants similar/different?</td></tr>
<tr><td>Unit 4: Enduring Understandings</td><td colspan="2">• The hydrosphere is composed of water in all its forms.
• Some processes that occur in the hydrosphere include evaporation, condensation, precipitation, run-off, percolation, freezing, thawing, and flow.
• The atmosphere is a critical system made up of the gases that surround the Earth. T
• The atmosphere helps to regulate Earth's climate and distribute heat around the globe, and it is composed of layers with specific properties and functions. This system, composed mainly of nitrogen, oxygen, argon, and carbon dioxide, also contains small amounts of other gases, including water vapor, which is found in the lowest level of the atmosphere where weather-related processes occur.
• The biosphere comprises living things, including humans. Living organisms can be found in each of the major systems of the Earth (the atmosphere, hydrosphere, and geosphere). Some processes that occur within the biosphere include transpiration, respiration, reproduction, photosynthesis, metabolism, growth, and decomposition.</td></tr>
</table>

Winslow Township School District

Grade 5 Science

Unit 4: Earth Systems

Curriculum Unit 4	Standards		Pacing	
			Days	**Unit Days**
Unit 4: **Earth Systems**	**5-ESS2-1**	Develop a model using an example to describe ways the geosphere, biosphere, hydrosphere, and/or atmosphere interact.	20	45
	5-ESS2-2	Describe and graph the amounts of salt water and fresh water in various reservoirs to provide evidence about the distribution of water on Earth.	20	
	Assessment, Re-teach and Extension		5	

Winslow Township School District

Grade 5 Science

Unit 4: Earth Systems

Unit 4 Grade 5		
Disciplinary Core Ideas	**Indicator #**	**Indicator**
ESS2.A: Earth Materials and Systems Earth's major systems are the geosphere (solid and molten rock, soil, and sediments), the hydrosphere (water and ice), the atmosphere (air), and the biosphere (living things, including humans). These systems interact in multiple ways to affect Earth's surface materials and processes. The ocean supports a variety of ecosystems and organisms, shapes landforms, and influences climate. Winds and clouds in the atmosphere interact with the landforms to determine patterns of weather. (5-ESS2-1) **ESS2.C: The Roles of Water in Earth's Surface Processes** Nearly all of Earth's available water is in the ocean. Most fresh water is in glaciers or underground; only a tiny fraction is in streams, lakes, wetlands, and the atmosphere. (5- ESS2-2)	**5-ESS2-1**	Develop a model using an example to describe ways the geosphere, biosphere, hydrosphere, and/or atmosphere interact.
	5-ESS2-2	Use a model to describe that animals receive different types of information through their sense, process the information in their brain, and respond to the information in different ways.

Winslow Township School District

Grade 5 Science

Unit 4: Earth Systems

<table>
<tr><th colspan="2">Unit 4 Grade 5</th></tr>
<tr><th colspan="2">• Assessment Plan</th></tr>
<tr><td>• Class discussions
• Independent & group work/projects
• Teacher and/or book series provided quizzes, tests, and a performance task to assess student mastery.
• Homework monitor and assess class work
• Benchmark assessments</td><td>• Short Constructed Responses
• Students will design a way to promote local, sustainable agriculture, making healthy food available to more people in their communities while having minimizing the impact on the local environment.</td></tr>
<tr><th>Resources</th><th>Activities</th></tr>
<tr><td>• Chromebooks
• <u>HSP Science Book correlations:</u> 394-425
• https://ngss.nsta.org/Resource.aspx?ResourceID=65
Students take on the task of cleaning up a simulated oil spill.
• https://www.brainpop.com/science/earthsystem/watersupply/
• Diversity, Equity & Inclusion Educational Resources
https://www.nj.gov/education/standards/dei/</td><td>• Write about how human activities in agriculture, industry, and everyday life have had major effects on the land, vegetation, streams, ocean, air, and even outer space.
• Research how individuals and communities are doing to help protect Earth’s resources and the environment.
• mini-lessons
• independent reading
• films
• website exploration
• discussions, dialogues
• debates
• partner or small group work
• student presentations, reports, journals, reflections,
• in-class assessments,
• written reports, essays, research, and homework</td></tr>
</table>

Winslow Township School District

Grade 5 Science

Unit 4: Earth Systems

Instructional Best Practices and Exemplars	
1. Identifying similarities and differences 2. Summarizing and note taking 3. Reinforcing effort and providing recognition 4. Homework and practice 5. Nonlinguistic representations	6. Cooperative learning 7. Setting objectives and providing feedback 8. Generating and testing hypotheses 9. Cues, questions, and advance organizers 10. Manage response rates

9.1 Personal Financial Literacy, 9.2 Career Awareness, Exploration, Preparation and Training & 9.4 Life Literacies and Key Skills

9.1.5.EG.2: Describe how tax monies are spent

9.1.5.FP.4: Explain the role of spending money and how it affects well- being and happiness (e.g., "happy money," experiences over things, donating to causes, anticipation, etc.).

9.4.5.TL.3: Format a document using a word processing application to enhance text, change page formatting, and include appropriate images graphics, or symbols.

9.4.5.TL.1: Compare the common uses of at least two different digital tools and identify the advantages and disadvantages of using each.

9.4.5.IML.6: Use appropriate sources of information from diverse sources, contexts, disciplines, and cultures to answer questions (e.g., RI.5.7, 6.1.5.HistoryCC.7, 7.1.NM. IPRET.5).

The implementation of the 21st Century skills and standards for students of the Winslow Township District is infused in an interdisciplinary format in a variety of curriculum areas that include, English language Arts, Mathematics, School Guidance, Social Studies, Technology, Visual and Performing Arts, Science, Physical Education and Health, and World Language.

Additional opportunities to address 9.1, 9.2 & 9.4:

Philadelphia Mint

https://www.usmint.gov/learn/kids/resources/educational-standards

Different ways to teach Financial Literacy.

https://www.makeuseof.com/tag/10-interactive-financial-websites-teach-kids-money-management-skills/

Winslow Township School District

Grade 5 Science

Unit 4: Earth Systems

Modifications for Special Education/504

Students with special needs: The students' needs will be addressed on an individual and grade level using a variety of modalities. Accommodations will be made for those students who need extra time to complete assignment. Support staff will be available to aid students related to IEP specifications. 504 accommodations will also be attended to by all instructional leaders. Physical expectations and modifications, alternative assessments, and scaffolding strategies will be used to support this learning. The use of Universal Design for Learning (UDL) will be considered for all students as teaching strategies are considered.

- Small group instruction
- Audio books/ Text-to-speech platforms
- Leveled texts/Vocabulary Readers
- Leveled informational texts via online
- Modeling and guided practice
- Read directions aloud
- Repeat, rephrase and clarify directions
- Extended time as needed
- Break down assignments into smaller units
- Provide shortened assignments
- Modify testing format
- Repeat directions as needed
- Graphic organizers
- Study Guides, Study Aids and Re teaching as needed

Winslow Township School District

Grade 5 Science

Unit 4: Earth Systems

Modifications for At-Risk Students

Formative and summative data will be used to monitor student success. At first signs of failure, student work will be reviewed to determine support. This may include parent consultation, basic skills review and differentiation strategies. With considerations to UDL, time may be a factor in overcoming developmental considerations

- Audio books and Text-to-speech platforms
- Leveled texts/Vocabulary Readers
- Leveled informational texts via online
- Extended time as needed
- Read directions aloud
- Assist with organization
- Use of computer
- Emphasize/highlight key concepts
- Recognize success
- Provide timelines for work completion
- Break down multi-step tasks into smaller chunks
- Provide copy of class notes and graphic organizer

Winslow Township School District

Grade 5 Science

Unit 4: Earth Systems

English Language Learners	Modifications for Gifted Students
All WIDA Can Do Descriptors can be found at this link: https://wida.wisc.edu/teach/can-do/descriptors ☐ Grades 4-5 WIDA Can Do Descriptors: ☐ Listening ☐ Speaking ☐ Reading ☐ Writing ☐ Oral Language Students will be provided with accommodations and modifications that may include: • Relate to and identify commonalities in science studies in student's home country • Assist with organization • Use of computer • Emphasize/highlight key concepts • Teacher Modeling • Peer Modeling • Label Classroom Materials - Word Walls	Students excelling in mastery of standards will be challenged with complex, high level challenges related to the topic. • Raise levels of intellectual demands • Require higher order thinking, communication, and leadership skills • Differentiate content, process, or product according to student's readiness, interests, and/or learning styles • Provide higher level texts • Expand use of open-ended, abstract questions • Critical and creative thinking activities that provide an emphasis on research and in-depth study • Enrichment Activities/Project-Based Learning/ Independent Study Additional Strategies may be located at the links: ❖ Gifted Programming Standards ❖ Webb's Depth of Knowledge Levels and/or Revised Bloom's Taxonomy ❖ REVISED Bloom's Taxonomy Action Verbs

Winslow Township School District

Grade 5 Science

Unit 4: Earth Systems

Interdisciplinary Connections
Interdisciplinary Connections: **ELA Standards:** **RI.5.1.** Quote accurately from a text and make relevant connections when explaining what the text says explicitly and when drawing inferences from the text. **RI.5.4.** Determine the meaning of general academic and domain-specific words and phrases in a text relevant to a *grade 5 topic or subject area*. **RI.5.7.** Draw on information from multiple print or digital sources, demonstrating the ability to locate an answer to a question quickly or to solve a problem efficiently. **NJSLSA.W7.** Conduct short as well as more sustained research projects, utilizing an inquiry-based research process, based on focused questions, demonstrating understanding of the subject under investigation. **NJSLSA.W8.** Gather relevant information from multiple print and digital sources, assess the credibility and accuracy of each source, and integrate the information while avoiding plagiarism. **NJSLSA.W6.** Use technology, including the Internet, to produce and publish writing and to interact and collaborate with others. **Math Standards:** **5.MDA.1.** Convert among different-sized standard measurement units within a given measurement system (e.g., convert 5 cm to 0.05 m), and use these conversions in solving multi-step, real world problems. **5.MDB.2.** Make a line plot to display a data set of measurements in fractions of a unit (1/2, 1/4, 1/8). Use operations on fractions for this grade to solve problems involving information presented in line plots. *For example, given different measurements of liquid in identical beakers, find the amount of liquid each beaker would contain if the total amount in all the beakers were redistributed equally.* **5.MDC.3.A** Recognize volume as an attribute of solid figures and understand concepts of volume measurement. A cube with side length 1 unit, called a "unit cube," is said to have "one cubic unit" of volume, and can be used to measure volume. **5.MDC.3.B**. A solid figure which can be packed without gaps or overlaps using *n* unit cubes is said to have a volume of *n* cubic units. **5.MDC.4.** Measure volumes by counting unit cubes, using cubic cm, cubic in, cubic ft, and non-standard units. **5.MDC.5.A.** Relate volume to the operations of multiplication and addition and solve real world and mathematical problems involving volume. Find the volume of a right rectangular prism with whole-number side lengths by packing it with unit cubes, and show that the volume is the same as would be found by multiplying the edge lengths, equivalently by multiplying the height by the area of the base. Represent threefold whole-number products as volumes, e.g., to represent the associative property of multiplication.

Winslow Township School District

Grade 5 Science

Unit 4: Earth Systems

Integration of Computer Science and Design Thinking NJSLS 8
8.1.5.CS.1: Model how computing devices connect to other components to form a system. **8.1.5.NI.1:** Develop models that successfully transmit and receive information using both wired and wireless methods. **8.2.5.ITH.1:** Explain how societal needs and wants influence the development and function of a product and a system. **8.2.5.ITH.2:** Evaluate how well a new tool has met its intended purpose and identify any shortcomings it might have. **8.2.5.ITH.3:** Analyze the effectiveness of a new product or system and identify the positive and/or negative consequences resulting from its use. **8.2.5.ITH.4:** Describe a technology/tool that has made the way people live easier or has led to a new business or career. **8.2.5.EC.1**: Analyze how technology has contributed to or reduced inequities in local and global communities and determine its short- and long-term effects.