

Winslow Township School District

Grade 7 Science

Unit 3: Life Structure and Function

Overview: Students develop a basic understanding of the role of cells in body systems and how those systems work to support the life functions of the organism. Students will construct explanations for the interactions of systems in cells and organisms. Students understand that special structures are responsible for particular functions in organisms, and that for many organisms, the body is a system of subsystems that form a hierarchy, from cells to the body. Students construct explanations for the interactions of systems in cells and organisms and for how organisms gather and use information from the environment.

Overview	Standards for Science	Unit Focus	Essential Questions
<p>Unit 3</p> <p>Life Structure and Function</p>	<ul style="list-style-type: none"> • MS-LS1-1 • MS-LS1-2 • MS-LS1-3 • MS-LS1-8 • WIDA 4 	<ul style="list-style-type: none"> • Investigate cell theory and engage in argument from evidence to show that all living things are made up of cells • Differentiate between living and non-living things. • Describe the requirements for cells to live. • Compare and contrast single-celled and multicellular organisms according to organization, growth and development, response to stimuli, and reproduction. • Investigate microorganisms and observe and identify structures using a microscope • Research and compile information about cell structures/organelles, their functions, photosynthesis, and cellular respiration. • Create a model comparing the structures to an everyday functioning facility like a school. • Compare and contrast specialized/differentiated cells and tissues according to their structures and functions and verify that organisms have interacting subsystems made up of specialized structures. • Investigate the nervous system and the senses. • Verify that organisms have interacting subsystems made up of specialized cells 	<ul style="list-style-type: none"> • What characteristics do living things share? • What do the structures in a cell do? • How did scientists understanding of the cell develop? • What basic substances make up a cell? • What do the structures in a cell do? • How does cell differentiation lead to the organization within a multicellular organism? • What are the functions of the human body systems? • What organs make up the human body? • In what ways do human body system interact?

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Unit 5: Enduring Understandings	<ul style="list-style-type: none"> • Students observe characteristics of both living and nonliving things and are able to determine if something is alive or not based on those characteristics. • Students can observe cells and how they grow. • Students compare the structure of an egg to how a cell functions. • Students use microscopes to compare how plant cells are the same, and how they're different. • Students will be able to Use argument supported by evidence for how the body is a system of interacting subsystems composed of groups of cells. • Students will be able to Use argument supported by evidence for how the body is a system of interacting subsystems composed of groups of cells. 	
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Curriculum Unit 3	Standards		Pacing	
			Days	Unit Days
Unit 3: Life Structure and Function	•MS-LS1-1	Conduct an investigation to provide evidence that living things are made of cells; either one cell or many different numbers and types of cells	5	20
	•MS-LS1-2	Develop and use a model to describe the function of a cell as a whole and ways parts of cells contribute to the function.	4	
	•MS-LS1-3	Use argument supported by evidence for how the body is a system of interacting subsystems composed of groups of cells.	5	
	•MS-LS1-8	Gather and synthesize information that sensory receptors respond to stimuli by sending messages to the brain for immediate behavior or storage as memories	4	
	Assessment, Re-teach and Extension		2	

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Disciplinary Core Ideas	Indicator #	Indicator
<p>LS1.A: Structure and Function - All living things are made up of cells, which is the smallest unit that can be said to be alive. An organism may consist of one single cell or many different numbers and types of cells (MS-LS1-1)</p> <p>Within cells, special structures are responsible for particular functions, and the cell membrane forms the boundary that controls what enters and leaves the cell. (MS-LS1-2)</p> <p>In multicellular organisms, the body is a system of multiple interacting subsystems. These subsystems are groups of cells that work together to form tissues and organs that are specialized for particular body functions. (MS-LS1-3)</p> <p>LS1.D: Information processing - Each sense receptor responds to different inputs (electromagnetic, mechanical, chemical), transmitting them as signals that travel along nerve cells to the brain. The signals are then processed in the brain, resulting in immediate behaviors or memories.</p>	MS-LS1-1	Conduct an investigation to provide evidence that living things are made of cells; either one cell or many different numbers and types of cells.
	MS-LS1-2	Develop and use a model to describe the function of a cell as a whole and ways parts of cells contribute to the function.
	MS-LS1-3	Use argument supported by evidence for how the body is a system of interacting subsystems composed of groups of cells.
	MS-LS1-8	Gather and synthesize information that sensory receptors respond to stimuli by sending messages to the brain for immediate behavior or storage as memories.

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Assessment Plan

- Exploratory activities
- Warm-up activities
- Individual/Group Lab report
- Class discussions
- Student Participation
- Teacher Observations

- Quizzes
- Tests
- Authentic assessments and projects
- Exploratory activities
- Presentations

Resources

- Chromebooks
- Textbook – Nature of science
- Web Quests
- Video Streaming
- [BrainPOP](#)
- Readworks.com
- Edpuzzle.com
- Quizizz.com
- Diversity, Equity & Inclusion Educational Resources
<https://www.nj.gov/education/standards/dei/>

Activities

- Animal Life cycle Launch lab: is it alive?
- Characteristics of life foldable
- launch lab: What’s in a cell?
- cell theory foldable (google drive)
- Microscope lab: How are plant cells and animal cells similar and how are the different?
- Mini Lab: How do cells work together to make an organism?
- Launch lab: How do the size of egg and sperm compare?
- Cells Brainpop and quiz

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

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

9.4.8.CI.2: Repurpose an existing resource in an innovative way (e.g., 8.2.8.NT.3).

9.4.8.DC.2: Provide appropriate citation and attribution elements when creating media products (e.g., W.6.8).

9.4.8.TL.2: Gather data and digitally represent information to communicate a real-world problem (e.g., MS-ESS3-4, 6.1.8.EconET.1, 6.1.8.CivicsPR.4).

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/>

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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

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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

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English Language Learners	Modifications for Gifted Students
<p>All WIDA Can Do Descriptors can be found at this link: https://wida.wisc.edu/teach/can-do/descriptors</p> <p><input type="checkbox"/> Grades 6-8 WIDA Can Do Descriptors:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Listening <input type="checkbox"/> Speaking <input type="checkbox"/> Reading <input type="checkbox"/> Writing <input type="checkbox"/> Oral Language <p>Students will be provided with accommodations and modifications that may include:</p> <ul style="list-style-type: none"> • 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 	<p>Students excelling in mastery of standards will be challenged with complex, high level challenges related to the topic.</p> <ul style="list-style-type: none"> • 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 <p>Additional Strategies may be located at the links:</p> <ul style="list-style-type: none"> ❖ Gifted Programming Standards ❖ Webb’s Depth of Knowledge Levels and/or Revised Bloom’s Taxonomy ❖ REVISED Bloom’s Taxonomy Action Verbs

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Interdisciplinary Connections

- ELA:**
- RST.6-8.1** Cite specific textual evidence to support analysis of science and technical texts.
 - RST.6-8.3** Follow precisely a multistep procedure when carrying out experiments, taking measurements, or performing technical tasks.
 - RST.6-8.7** Integrate quantitative or technical information expressed in words in a text with a version of that information expressed visually
 - RST.6-8.10** read and comprehend science/technical texts in the grades 6-8 text complexity band independently and proficiently.
 - RI.6.8** Trace and evaluate the argument and specific claims in a text, assessing whether the reasoning is sound and the evidence is relevant and sufficient to support the claims.
 - WHST.6-8.1** Write arguments focused on *discipline-specific content*.
 - WHST.6-8.7** Conduct short research projects to answer a question (including a self-generated question), drawing on several sources and generating additional related, focused questions that allow for multiple avenues of exploration
 - WHST.6-8.8** Gather relevant information from multiple print and digital sources, using search terms effectively; assess the credibility and accuracy of each source; and quote or paraphrase the data and conclusions of others while avoiding plagiarism and following a standard format for citation
 - WHST.6-8.9** Draw evidence from informational texts to support analysis, reflection, and research.
 - SL.7.1** Engage effectively in a range of collaborative discussions with diverse partners on grade 7 topics, texts, and issues, building on others' ideas and expressing their own clearly.
 - SL.7.4** Present claims and findings, emphasizing salient points in a focused, coherent manner with pertinent descriptions, facts, details, and examples; use appropriate eye contact, adequate volume, and clear pronunciation.
 - SL.7.5** Include multimedia components and visual displays in presentations to clarify claims and findings and emphasize salient points.
- Math:**
- 6.EE.B.6** 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.
 - 6.EE.C.9** Use variables to represent two quantities in a real-world problem that change in relationship to one another; write an equation to express one quantity, thought of as the dependent variable, in terms of the other quantity, thought of as the independent variable.
 - 6.RP.A.1** Understand the concept of a ratio and use ratio language to describe a ratio relationship between two quantities.

Integration of Computer Science and Design Thinking NJSL 8

- 8.1.8.DA.1: Organize and transform data collected using computational tools to make it usable for a specific purpose.
- 8.1.8.DA.5: Test, analyze, and refine computational models.