



Ohio Revised Science Standards and Model Curriculum

OHIO'S COGNITIVE DEMANDS FOR SCIENCE THAT APPLY TO THE COMMUNITY ACTION AND PROBLEM-SOLVING PROCESS FOR ALL AGES

DESIGNING TECHNOLOGICAL/ ENGINEERING SOLUTIONS USING SCIENCE CONCEPTS (T) Requires student to solve science-based engineering or technological problems through application of scientific inquiry. Within given scientific constraints, propose or critique solutions, analyze and interpret technological and engineering problems, use science principles to anticipate effects of technological or engineering design, find solutions using science and engineering or technology, consider consequences and alternatives, and/or integrate and synthesize scientific information.

DEMONSTRATING SCIENCE KNOWLEDGE (D) Requires student to use scientific inquiry and develop the ability to think and act in ways associated with inquiry, including asking questions, planning and conducting investigations, using appropriate tools and techniques to gather and organize data, thinking critically and logically about relationships between evidence and explanations, constructing and analyzing alternative explanations, and communicating scientific arguments. (Slightly altered from National Science Education Standards) Note: Procedural knowledge (knowing how) is included in Recalling Accurate Science.

INTERPRETING AND COMMUNICATING SCIENCE CONCEPTS (C) Requires student to use subject-specific conceptual knowledge to interpret and explain events, phenomena, concepts and experiences using grade-appropriate scientific terminology, technological knowledge and mathematical knowledge. Communicate with clarity, focus and organization using rich, investigative scenarios, real-world data and valid scientific information.

SCIENCE INQUIRY AND APPLICATION FOR GRADES 5-8

During the years of grades 5-8, all students must use the following scientific processes, with appropriate laboratory safety techniques, to construct their knowledge and understanding in all science content areas:

- Identify questions that can be answered through scientific investigations;
- Design and conduct a scientific investigation
- Use appropriate mathematics, tools and techniques to gather data and information
- Analyze and interpret data
- Develop descriptions, models, explanations and predictions
- Think critically and logically to connect evidence and explanations
- Recognize and analyze alternative explanations and predictions
- Communicate scientific procedures and explanations



GRADE 6

EARTH AND SPACE SCIENCE (ESS):

Demonstrating Science Knowledge:

Plan and implement an investigation to compare a specific and identifiable soil horizon in different locations within the community. Compare and contrast the depth and width of the soil horizons. Research and explain the differences that are measured.

Recalling Accurate Science:

Use specific tools to measure soil characteristics and properties (e.g., permeability, porosity, texture, color)

SOCIAL STUDIES:

Content Statements:

3. Globes and other geographic tools can be used to gather, process and report information about people, places and environments. Cartographers decide which information to include and how it is displayed.

9. Different perspectives on a topic can be obtained from a variety of historic and contemporary sources. Sources can be examined for accuracy

12. The choices people make have both present and future consequences. The evaluation of choices is relative and may differ across individuals and societies.



GRADE 7

LIFE SCIENCES (LS):

Content Statements:

Biomes are regional ecosystems characterized by distinct types of organisms that have developed under specific soil and climatic conditions.

Ecosystems are dynamic in nature; the number and types of species fluctuate over time. Disruptions, deliberate or inadvertent, to the physical (abiotic) or biological (biotic) components of an ecosystem impact the composition of an ecosystem.

Demonstrating Science Knowledge:

Monitor the local environment (e.g., stream, river, construction site) for the impact Ohio's wetland mitigation plans have on water quality (e.g., oxygen levels, pH, phosphorus levels, nitrogen levels) and how the plans will impact living organisms (e.g., algae, diatoms, mussels, insect larvae).

The variety of physical (abiotic) conditions that exists on Earth gives rise to diverse environments (biomes) and allows for the existence of a wide variety of organisms (biodiversity).

SOCIAL STUDIES

Content Statements:

16. The ability to understand individual and group perspectives is essential to analyzing historic and contemporary issues.



GRADE 8

LIFE SCIENCES (LS):

Content Statement:

Changes in environmental conditions can affect how beneficial a trait will be for the survival and reproductive success of an organism or an entire species.

SOCIAL STUDIES

Content Statements:

1. Primary and secondary sources are used to examine events from multiple perspectives and to present and defend a position.
18. Participation in social and civic groups can lead to the attainment of individual and public goals.
19. Informed citizens understand how media and communication technology influence public opinion.