

Diocese of Jefferson City Curriculum Guide

Content Area: Science
 Grade Range: Sixth Grade
 Section/Heading: 6.A.1

Strand: Science Connections

Diocesan Standard Terra Nova Objective	Benchmark Statement
Science Connections	Develop their understanding of the science themes by using the themes to frame questions about science related issues and problems.

Performance Indicators		
<ol style="list-style-type: none"> 1. Develop an understanding of the main components of the earth (atmosphere, hydrosphere, and lithosphere) and use this understanding to frame questions about the shape and location of continents and ocean basins. 2. Develop an understanding of the age of the earth and use this understanding to form questions about the age of things around us. 		
Suggested Activities	Assessment	Resources

Diocese of Jefferson City Curriculum Guide

Content Area: Science
 Grade Range: Sixth Grade
 Section/Heading: 6.A.2

Strand: Science Connections

Diocesan Standard Terra Nova Objective	Benchmark Statement
Science Connections	Describe limitations of science systems and give reasons why specific science themes are included in or excluded from those systems.

Performance Indicator		
1. Describe how a science system may include processes as well as physical things.		
Suggested Activities	Assessment	Resources

Diocese of Jefferson City Curriculum Guide

Content Area: Science
 Grade Range: Sixth Grade
 Section/Heading: 6.A.3

Strand: Science Connections

Diocesan Standard Terra Nova Objective	Benchmark Statement
Science Connections	Defend explanations and models by collecting and organizing evidence that supports them and critique explanations and models by collecting and organizing evidence that conflicts with them.

Performance Indicator		
1. Explain the difference between a physical model and a conceptual model; and describe how both types of models can be used to compare and contrast how two are alike or different.		
Suggested Activities	Assessment	Resources

Diocese of Jefferson City Curriculum Guide

Content Area: Science
 Grade Range: Sixth Grade
 Section/Heading: 6.A.5

Strand: Science Connections

Diocesan Standard Terra Nova Objective	Benchmark Statement
Science Connections	Show how models and explanations, based on systems, were changed as new evidence accumulated (the effects of constancy, evolution, change, and measurement should all be part of these explanations).

Performance Indicator		
1. Use models to represent processes that happen too slowly/quickly, or on too small/large of a scale to be observed directly.		
Suggested Activities	Assessment	Resources

Diocese of Jefferson City Curriculum Guide

Content Area: Science
 Grade Range: Sixth Grade
 Section/Heading: 6.A.6

Strand: Science Connections

Diocesan Standard Terra Nova Objective	Benchmark Statement
Science Connections	Use models and explanations to predict actions and events in the natural world.

Performance Indicator
1. Demonstrate that the usefulness of a model can be tested by comparing its predictions to actual observations in the real world.

Suggested Activities	Assessment	Resources

Diocese of Jefferson City Curriculum Guide

Content Area: Science
 Grade Range: Sixth Grade
 Section/Heading: 6.A.7

Strand: Science Connections

Diocesan Standard Terra Nova Objective	Benchmark Statement
Science Connections	Design real or thought investigations to test the usefulness and limitations of a model.

Performance Indicator		
1. Ask “How do I know?” questions in appropriate situations and design simple investigations to test the question posed.		
Suggested Activities	Assessment	Resources

Diocese of Jefferson City Curriculum Guide

Content Area: Science
 Grade Range: Sixth Grade
 Section/Heading: 6.A.8

Strand: Science Connections

Diocesan Standard Terra Nova Objective	Benchmark Statement
Science Connections	Use the themes of evolution, equilibrium, and energy to predict future events or changes in the natural world.

Performance Indicator		
1. Utilize models to demonstrate how physical/biological systems tend to change until they become stable (e.g. in equilibrium) and then remain that way unless their surroundings change.		
Suggested Activities	Assessment	Resources

Diocese of Jefferson City Curriculum Guide

Content Area: Science
 Grade Range: Sixth Grade
 Section/Heading: 6.B.1

Strand: Nature of Science

Diocesan Standard Terra Nova Objective	Benchmark Statement
Nature of Science	Describe how scientific knowledge and concepts have changed over time in the earth and space, life and environment and physical sciences.

Performance Indicator		
1. Describe how from time to time, major shifts occur in the scientific view of how the world works (most often, however, the changes that take place in the body of scientific knowledge are small modifications of prior knowledge).		
Suggested Activities	Assessment	Resources

Diocese of Jefferson City Curriculum Guide

Content Area: Science
 Grade Range: Sixth Grade
 Section/Heading: 6.B.2

Strand: Nature of Science

Diocesan Standard Terra Nova Objective	Benchmark Statement
Nature of Science	Identify and describe major changes that have occurred in conceptual models and explanations in the earth and space, life and environmental, and physical science and identify the people, cultures, and conditions that led to these developments.

Performance Indicator		
1. Identify and describe the main changes in scientists' conceptions of the earth's surface-the shape and location of the continents and ocean basins. Key scientist: Wegener 2. Identify and describe the main changes in the scientists' conceptions of the age of the earth-from a few thousand years to many million of years. Key scientists: Lyell, Darwin		
Suggested Activities	Assessment	Resources

Diocese of Jefferson City Curriculum Guide

Content Area: Science
 Grade Range: Sixth Grade
 Section/Heading: 6.B.3

Strand: Nature of Science

Diocesan Standard Terra Nova Objective	Benchmark Statement
Nature of Science	Explain how the general rules of science apply to the development and use of evidence in science investigations, model-making and applications.

Performance Indicator		
1. Explain that scientific investigations are conducted for different reasons (for example, to explore new phenomena; to verify, previous results; to test personal ideas/thinking ; to test how well an existing theory predicts; or to compare/contrast different theories). 2. Explain that scientist differ greatly in the phenomena they study and how they work (although there are no fixed steps that all scientist follow, scientific investigations usually involve: application of imagination in devising a hypotheses to guide investigation, developing a methodology, collecting relevant evidence, using logical reasoning to interpret evidence, and developing persuasive explanations to make sense of collected evidence.		
Suggested Activities	Assessment	Resources

Diocese of Jefferson City Curriculum Guide

Content Area: Science
 Grade Range: Sixth Grade
 Section/Heading: 6.B.4

Strand: Nature of Science

Diocesan Standard Terra Nova Objective	Benchmark Statement
Nature of Science	Describe types of reasoning and evidence used outside of science to draw conclusions about the natural world.

Performance Indicator		
1. Explain there are different traditions in science about what counts as evidence, and how an investigation should be conducted (for example, scientist have a common basic belief about the value of evidence, logic and good argument.		
Suggested Activities	Assessment	Resources

Diocese of Jefferson City Curriculum Guide

Content Area: Science
 Grade Range: Sixth Grade
 Section/Heading: 6.B.5

Strand: Nature of Science

Diocesan Standard Terra Nova Objective	Benchmark Statement
Nature of Science	Explain ways in which science knowledge is shared, checked, and extended, and show how these processes change over time.

Performance Indicator		
1. Explain that scientific knowledge is shared through a strong commitment to the process of peer review and publication. This process serves to keep the vast majority of scientists well within the bounds of ethical behavior.		
Suggested Activities	Assessment	Resources

Diocese of Jefferson City Curriculum Guide

Content Area: Science
 Grade Range: Sixth Grade
 Section/Heading: 6.B.6

Strand: Nature of Science

Diocesan Standard Terra Nova Objective	Benchmark Statement
Nature of Science	Explain the ways in which scientific knowledge is useful and also limited when applied to social issues.

Performance Indicator		
1. Explain that scientists can bring information, insight, and analytical skills to bear on matters of public concern (for example, scientists can help people understand cause and effects of events). Outside their expertise, however, scientists do not possess special credibility.		
Suggested Activities	Assessment	Resources

Diocese of Jefferson City Curriculum Guide

Content Area: Science
 Grade Range: Sixth Grade
 Section/Heading: 6.C.1

Strand: Science Inquiry

Diocesan Standard Terra Nova Objective	Benchmark Statement
Science Inquiry	Identify a question to investigate using resources and equipment available.

Performance Indicator		
1. Observe and describe the physical properties of matter.		
Suggested Activities	Assessment	Resources

Diocese of Jefferson City Curriculum Guide

Content Area: Science
 Grade Range: Sixth Grade
 Section/Heading: 6.C.2, 6.C.7, 6.C.8

Strand: Science Inquiry

Diocesan Standard Terra Nova Objective	Benchmark Statement
Science Inquiry	Use the science content being learned to ask questions, plan investigations, make observations, make predictions, and offer explanations.

Performance Indicator		
1. Choose appropriate tools and techniques to gather data.		
Suggested Activities	Assessment	Resources

Diocese of Jefferson City Curriculum Guide

Content Area: Science
 Grade Range: Sixth Grade
 Section/Heading: 6.C.3

Strand: Science Inquiry

Diocesan Standard Terra Nova Objective	Benchmark Statement
Science Inquiry	Design and safely conduct investigations that provide reliable quantitative or qualitative data, as appropriate, to answer their questions.

Performance Indicator
<ol style="list-style-type: none"> 1. Cite knowledge of subject matter when making judgments. 2. Demonstrate ability to make systematic observations and accurate measurements of variables.

Suggested Activities	Assessment	Resources

Diocese of Jefferson City Curriculum Guide

Content Area: Science

Strand: Science Inquiry

Grade Range: Sixth Grade

Section/Heading: 6C.4, 6.C.5, 6.C.6, 6.C.9

Diocesan Standard Terra Nova Objective	Benchmark Statement
Science Inquiry	Use inferences to help decide possible results of investigations and uses observations to check inferences.

Performance Indicator
<ol style="list-style-type: none"> 1. Differentiate between an explanation, a description, and a theory. 2. Demonstrate that mathematics is an important aspect of scientific inquiry.

Suggested Activities	Assessment	Resources

Diocese of Jefferson City Curriculum Guide

Content Area: Science
 Grade Range: Sixth Grade
 Section/Heading: 6.D.1

Strand: Physical Science

Diocesan Standard Terra Nova Objective	Benchmark Statement
Physical Science	Observe, describe, and measure physical and chemical properties of elements and other substances to identify and group them according to properties such as density, melting points, boiling points, conductivity, magnetic attraction, solubility, and reactions to common physical and chemical tests.

Performance Indicator		
1. Observe and describe the physical properties of matter.		
Suggested Activities	Assessment	Resources

Diocese of Jefferson City Curriculum Guide

Content Area: Science
 Grade Range: Sixth Grade
 Section/Heading: 6.D.2

Strand: Physical Science

Diocesan Standard Terra Nova Objective	Benchmark Statement
Physical Science	Use the major ideas of atomic theory and molecular theory to describe physical and chemical interactions among substance, including solids, liquids and gases.

Performance Indicator
<ol style="list-style-type: none"> 1. Using the atomic and molecular theory, describe the physical properties of matter. 2. Using models, illustrate that matter is made up of atoms.

Suggested Activities	Assessment	Resources

Diocese of Jefferson City Curriculum Guide

Content Area: Science
 Grade Range: Sixth Grade
 Section/Heading: 6.D.3

Strand: Physical Science

Diocesan Standard Terra Nova Objective	Benchmark Statement
Physical Science	Understand how chemical interactions and behaviors lead to new substance with different properties.

Performance Indicator		
1. Observe chemical changes as new products are made.		
Suggested Activities	Assessment	Resources

Diocese of Jefferson City Curriculum Guide

Content Area: Science
 Grade Range: Sixth Grade
 Section/Heading: 6.D.6

Strand: Physical Science

Diocesan Standard Terra Nova Objective	Benchmark Statement
Physical Science	While conducting investigations, explain the motion of objects using concepts of speed, velocity, acceleration, friction, momentum, and changes over time, among others, and apply these concepts and explanations to real-life situations outside the classroom.

Performance Indicator		
<ol style="list-style-type: none"> 1. Investigate the motion of an object in relation to its position, speed, and direction of motion. 2. Discover how the force of friction alters the motion of an object. 		
Suggested Activities	Assessment	Resources

Diocese of Jefferson City Curriculum Guide

Content Area: Science
 Grade Range: Sixth Grade
 Section/Heading: 6.D.7

Strand: Physical Science

Diocesan Standard Terra Nova Objective	Benchmark Statement
Physical Science	While conducting investigations of common physical and chemical interactions occurring in the laboratory and the outside world, use commonly accepted definitions of energy and the idea of energy conservation.

Performance Indicator		
1. Observe that energy can neither be created nor destroyed, yet can be transformed from one form to another.		
Suggested Activities	Assessment	Resources

Diocese of Jefferson City Curriculum Guide

Content Area: Science
 Grade Range: Sixth Grade
 Section/Heading: 6.D.8

Strand: Physical Science

Diocesan Standard Terra Nova Objective	Benchmark Statement
Physical Science	Describe and investigate the properties of light, heat, gravity, radio waves, magnetic fields, and sound waves as they interact with material objects in common situations.

Performance Indicator
1. Observe how light interacts with matter by transmission, absorption or scattering.

Suggested Activities	Assessment	Resources

Diocese of Jefferson City Curriculum Guide

Content Area: Science
 Grade Range: Sixth Grade
 Section/Heading: 6.E.1

Strand: Earth and Space Science

Diocesan Standard Terra Nova Objective	Benchmark Statement
Earth and Space Science	Using the science themes, explain and predict changes in major features of land, water, and atmospheric systems.

Performance Indicator		
1. Identify, observe and describe the biomes of the earth.		
Suggested Activities	Assessment	Resources

Diocese of Jefferson City Curriculum Guide

Content Area: Science
 Grade Range: Sixth Grade
 Section/Heading: 6.E.2

Strand: Earth and Space Science

Diocesan Standard Terra Nova Objective	Benchmark Statement
Earth and Space Science	Describe underlying structures of the earth that cause changes in the earth's surface.

Performance Indicator		
<ol style="list-style-type: none"> 1. Demonstrate how rocks are classified into categories by properties. 2. Observe and identify that soil is found in layers. 		
Suggested Activities	Assessment	Resources

Diocese of Jefferson City Curriculum Guide

Content Area: Science
 Grade Range: Sixth Grade
 Section/Heading: 6.E.3

Strand: Earth and Space Science

Diocesan Standard Terra Nova Objective	Benchmark Statement
Earth and Space Science	Using the science themes during the process of investigation, describe climate, weather, ocean currents, soil movements and changes in the forces acting on the earth.

Performance Indicator		
<ol style="list-style-type: none"> 1. Describe and illustrate the process of the water cycle. 2. Identify atmospheric contents. 3. Describe the various properties of the atmosphere at different layers. 		
Suggested Activities	Assessment	Resources

Diocese of Jefferson City Curriculum Guide

Content Area: Science
 Grade Range: Sixth Grade
 Section/Heading: 6.E.4

Strand: Earth and Space Science

Diocesan Standard Terra Nova Objective	Benchmark Statement
Earth and Space Science	Using the science themes, analyze the influence living organisms have had on the earth's systems, including their impact on the composition of the atmosphere and the weathering of rocks.

Performance Indicator
<ol style="list-style-type: none"> 1. Describe how soil is made of weathered rocks and decomposed organic material. 2. Describe how living organisms have played many roles in the earth system.

Suggested Activities	Assessment	Resources

Diocese of Jefferson City Curriculum Guide

Content Area: Science
 Grade Range: Sixth Grade
 Section/Heading: 6.E.5

Strand: Earth and Space Science

Diocesan Standard Terra Nova Objective	Benchmark Statement
Earth and Space Science	Analyze the geologic and life history of the earth, including change over time, using various forms of scientific evidence.

Performance Indicator
1. Analyze layers of sedimentary rocks to confirm the long history of the earth.

Suggested Activities	Assessment	Resources

Diocese of Jefferson City Curriculum Guide

Content Area: Science
 Grade Range: Sixth Grade
 Section/Heading: 6.E.7

Strand: Earth and Space Science

Diocesan Standard Terra Nova Objective	Benchmark Statement
Earth and Space Science	Describe the general structure of the solar system, galaxies, and the universe, explaining the nature of the evidence used to develop current models of the universe.

Performance Indicator
1. Discover, describe and show that the solar system contains a variety of bodies.

Suggested Activities	Assessment	Resources

Diocese of Jefferson City Curriculum Guide

Content Area: Science
 Grade Range: Sixth Grade
 Section/Heading: 6.E.8

Strand: Earth and Space Science

Diocesan Standard Terra Nova Objective	Benchmark Statement
Earth and Space Science	Using past and current models of the structure of the solar system, explain the daily, monthly, yearly, and long-term cycles of the earth, citing evidence gained from personal observation as well as evidence used by scientists.

Performance Indicator		
<ol style="list-style-type: none"> 1. Demonstrate how most objects in the solar system are in regular and predictable motion. 2. Show that predictable motions explain days, phases of the moon and eclipses. 3. Relate the relationship between the earth and everything else in the solar system. 		
Suggested Activities	Assessment	Resources

Diocese of Jefferson City Curriculum Guide

Content Area: Science
 Grade Range: Sixth Grade
 Section/Heading: 6.F.1

Strand: Life and Environmental Science

Diocesan Standard Terra Nova Objective	Benchmark Statement
Life and Environmental Sciences	Understand the structure and function of cells, organs, tissues, organ systems, and whole organisms.

Performance Indicator		
<ol style="list-style-type: none"> 1. Identify that cells carry on many functions needed to sustain life. 2. Discover that disease in organisms results from a failure in structures and functions or damage by infection. 		
Suggested Activities	Assessment	Resources

Diocese of Jefferson City Curriculum Guide

Content Area: Science
 Grade Range: Sixth Grade
 Section/Heading: 6.F.2

Strand: Life and Environmental Science

Diocesan Standard Terra Nova Objective	Benchmark Statement
Life and Environmental Sciences	Show how organisms have adapted structures to match their functions, providing means of encouraging individual and group survival within specific environments.

Performance Indicator		
1. Explain how plant and animal adaptations allow them to survive.		
Suggested Activities	Assessment	Resources

Diocese of Jefferson City Curriculum Guide

Content Area: Science
 Grade Range: Sixth Grade
 Section/Heading: 6.F.3

Strand: Life and Environmental Science

Diocesan Standard Terra Nova Objective	Benchmark Statement
Life and Environmental Sciences	Differentiate between single-celled and multiple-celled organisms (humans) through investigation, comparing the cell functions of specialized cells for each type of organism.

Performance Indicator		
<ol style="list-style-type: none"> 1. Recognize that organisms are grouped into kingdoms and broken down further into classifications based on characteristics. 2. Observe structure and activities of single-celled and multi-celled animals and classify their physical characteristics. 		
Suggested Activities	Assessment	Resources

Diocese of Jefferson City Curriculum Guide

Content Area: Science
 Grade Range: Sixth Grade
 Section/Heading: 6.F.6

Strand: Life and Environmental Science

Diocesan Standard Terra Nova Objective	Benchmark Statement
Life and Environmental Science	Understand that an organism is regulated both internally and externally.

Performance Indicator
1. Observe behavior as one kind of response an organism can make to an internal or environmental condition.

Suggested Activities	Assessment	Resources

Diocese of Jefferson City Curriculum Guide

Content Area: Science
 Grade Range: Sixth Grade
 Section/Heading: 6.F.7

Strand: Life and Environmental Science

Diocesan Standard Terra Nova Objective	Benchmark Statement
Life and Environmental Science	Understand that an organism's behavior evolves through adaptation to its environment.

Performance Indicator
<ol style="list-style-type: none"> 1. Identify that an ecosystem is composed of all populations of organisms living together and physical factors with which they react. 2. Describe how plants and animals adapt to their environment.

Suggested Activities	Assessment	Resources

Diocese of Jefferson City Curriculum Guide

Content Area: Science
 Grade Range: Sixth Grade
 Section/Heading: 6.F.8

Strand: Life and Environmental Science

Diocesan Standard Terra Nova Objective	Benchmark Statement
Life and Environmental Science	Show through investigations how organisms both depend on and contribute to the balance or imbalance of population and/or ecosystems, which in turn contribute to the total system of life on the planet.

Performance Indicator		
<ol style="list-style-type: none"> 1. Investigate the importance of habitat on an ecosystem. 2. Categorize populations of organisms as producers and consumers by the function they serve in the ecosystem. 		
Suggested Activities	Assessment	Resources

Diocese of Jefferson City Curriculum Guide

Content Area: Science
 Grade Range: Sixth Grade
 Section/Heading: 6.F.9

Strand: Life and Environmental Science

Diocesan Standard Terra Nova Objective	Benchmark Statement
Life and Environmental Science	Explain how some of the changes on the earth are contributing to changes in the balance of life and affecting the survival or population growth of certain species.

Performance Indicator		
1. Identify changes which cause species to become endangered and/or extinct.		
Suggested Activities	Assessment	Resources

Diocese of Jefferson City Curriculum Guide

Content Area: Science
 Grade Range: Sixth Grade
 Section/Heading: 6.G.1

Strand: Science Applications

Diocesan Standard Terra Nova Objective	Benchmark Statement
Science Applications	Identify and investigate the skills people need for a career in science or technology and identify the academic courses that a person pursuing such a career would need.

Performance Indicator		
1. Identify the skills needed to pursue careers in environmental and medical careers.		
Suggested Activities	Assessment	Resources

Diocese of Jefferson City Curriculum Guide

Content Area: Science
 Grade Range: Sixth Grade
 Section/Heading: 6.G.2

Strand: Science Applications

Diocesan Standard Terra Nova Objective	Benchmark Statement
Science Applications	Explain how current scientific and technological discoveries have an influence on the work people do and how some of these discoveries also lead to new careers.

Performance Indicator		
1. Recognize and report on the importance of new technologies in the chemical and engineering fields.		
Suggested Activities	Assessment	Resources

Diocese of Jefferson City Curriculum Guide

Content Area: Science
 Grade Range: Sixth Grade
 Section/Heading: 6.G.3

Strand: Science Applications

Diocesan Standard Terra Nova Objective	Benchmark Statement
Science Applications	Illustrate the impact that science and technology have had both good and bad, on careers, systems, society, environment and quality of life.

Performance Indicator
1. Describe the impact, both good and bad, of technology on society, the environment, and everyday life.

Suggested Activities	Assessment	Resources

Diocese of Jefferson City Curriculum Guide

Content Area: Science
 Grade Range: Sixth Grade
 Section/Heading: 6.G.4

Strand: Science Applications

Diocesan Standard Terra Nova Objective	Benchmark Statement
Science Applications	Propose design (or re-design) of an applied science model or a machine that will have an impact in the community or elsewhere in the world and show how the design (or re-design) might work, including potential side-effects.

Performance Indicator		
1. Produce a model or experiment to demonstrate an environmental concern and solution.		
Suggested Activities	Assessment	Resources

Diocese of Jefferson City Curriculum Guide

Content Area: Science
 Grade Range: Sixth Grade
 Section/Heading: 6.G.6

Strand: Science Applications

Diocesan Standard Terra Nova Objective	Benchmark Statement
Science Applications	Use current texts, encyclopedias, source books, computers, experts, the popular press, or other relevant sources to identify examples of how scientific discoveries have resulted in new technology, and/or caused moral dilemmas.

Performance Indicator		
1. Report on current trends in the engineering or environmental fields utilizing various sources.		
Suggested Activities	Assessment	Resources

Diocese of Jefferson City Curriculum Guide

Content Area: Science
 Grade Range: Sixth Grade
 Section/Heading: 6.H.1

Strand: Social and Personal Perspectives

Diocesan Standard Terra Nova Objective	Benchmark Statement
Social and Personal Perspectives	Evaluate the scientific evidence used in various media (for example, television, radio, Internet, popular press, and scientific journals) to address a social issue, using criteria of accuracy, logic, bias, relevance of data and credibility of sources.

Performance Indicator		
1. Examine the issues of land use and environmental concerns of overpopulations and waste control.		
Suggested Activities	Assessment	Resources

Diocese of Jefferson City Curriculum Guide

Content Area: Science
 Grade Range: Sixth Grade
 Section/Heading: 6.H.2

Strand: Social and Personal Perspectives

Diocesan Standard Terra Nova Objective	Benchmark Statement
Social and Personal Perspectives	Present a scientific solution to a problem involving the earth and space, life and environmental or physical sciences and participate in a consensus-building discussion to arrive at a group decision.

Performance Indicator		
<ol style="list-style-type: none"> 1. Research and present solutions for discussion on the topics of recycling and/or land management. 2. Demonstrate and experiment on how electrical energy is produced and the problems associated with electrical power generation. 		
Suggested Activities	Assessment	Resources