Grade Curriculum Map
Instructional Plan for Grade 6  Science
Steve Lehman
St. Paul's Lutheran School
Revised: June 2021

**Grade 6 Curriculum**
**Instructional Plan for Grade 6 Science**
**Submitted by Robert J. Buss**
**Written: July 2019**

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| | Content Type | Objectives | Standards | Assessment | Materials |
|---|---|---|---|---|---|
| **AUGUST & SEPTEMBER** | • 24 | Students will deduce the Nature of Science and STEM<br>• Types and Steps of Investigations<br>• Controlled Experiment Process<br>• Science Tools<br>• Learning from Observation<br>• Scientific Method<br>Students will explore the nature and scope of Engineering<br>• Design Process<br>• Problem Soving through Innovation<br>• Technology as a solution and catalyst for solution finding | • SCI.ETS2.A.3-5 Science and technology support each other.<br>• SCI.ETS2.B.3-5 People's needs and wants change over time, as do their demands for new and improved technologies.<br>• SCI.CC1.3-5 Students identify similarities and differences in order to sort and classify natural objects and designed products. They identify patterns related to time, including simple rates of change and cycles, and use these patterns to make predictions<br>• SCI.CC2.3-5 Students routinely identify and test causal relationships and use these relationships to explain change. They understand events that occur together with regularity may or may not signify a cause and effect relationship.<br>• SCI.CC3.3-5 Students recognize natural objects and observable phenomena exist from the very small to the immensely large. They use standard units to measure and describe physical quantities such as mass, time, temperature, and volume.<br>• SCI.SEP1.B.3-5 Students use prior knowledge to describe and define simple design problems that can be solved through the development of an object, tool, process, or system. They include several criteria for success and constraints on materials, time, or cost. | • Daily homework<br>• Weekly quizzes<br>• "muddiest point" formative interview assessment<br>• Lab reports (3)<br>• Chapter tests (2) | FOSS Science: Engineering & Design |
| **OCTOBER** | • 20 | • Cells to Body Systems<br>o Define cells<br>o observe cells<br>o explore systems of cells in the boady and in plants.<br>▪ circulatory<br>▪ digestive<br>▪ respiratory<br>• Growth and reproduction<br>o Classification<br>o Dichotomous Keys<br>o Plant cells and growth<br>o germination and environmental factors<br>o adaptation | • SCI.CC4.3-5 Students understand a system is a group of related parts that make up a whole and can carry out functions its individual parts cannot. They also describe a system in terms of its components and their interactions.<br>• SCI.SEP7.A.3-5 Students critique the scientific explanations or solutions proposed by peers by citing relevant evidence about the natural and designed world.<br>• SCI.SEP8.A.3-5 Students evaluate the merit and accuracy of ideas and methods.<br>o This includes the following: Read and comprehend gradeappropriate complex texts and other reliable media to summarize and obtain scientific and technical ideas, and describe how they are supported by evidence. | • Daily homework<br>• Weekly quizzes<br>• vocabulary sort formative assessment<br>• Lab reports (3)<br>• Chapter tests (2) | FOSS Science: Cells to Body Systems |

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| **NOVEMBER** | • 19 | • Ecosystems<br>  o elements of a land-based ecosystem<br>  o environmental change and organisms<br>  o droughts and plant life<br>• Energy and Ecosystems<br>  o Roles of orgnaisms in ecosystems<br>  o Energy movement in ecosystems<br>  o Decomposition as a vital role in ecosystems' sustainability | • SCI.SEP1.A.3-5 Students ask questions that specify qualitative relationships. This includes the following: Ask questions about what would happen if a variable is changed. Identify scientific (testable) and non-scientific (non-testable) questions. Ask questions that can be investigated and predict reasonable outcomes based on patterns such as cause and effect relationships.<br>• SCI.CC3.3-5 Students recognize natural objects and observable phenomena exist from the very small to the immensely large. They use standard units to measure and describe physical quantities such as mass, time, temperature, and volume.<br>• SCI.CC2.3-5 Students routinely identify and test causal relationships and use these relationships to explain change. They understand events that occur together with regularity may or may not signify a cause and effect relationship. | • Daily homework<br>• Weekly quizzes<br>• exit slips - formative assessment<br>• Lab reports (3)<br>• Chapter tests (2) | FOSS Science: Ecosystems |
| **DECEMBER** | • 15 | • Natural Resources<br>  o Soil composition<br>  o What's in the Water?<br>  o Oil drilling and refining<br>• Conservation of resources<br>  o Hydroponics<br>  o Recycling<br>• Changes to Earth's Surface<br>  o How weathering and eroison affect the land and seas<br>  o Extreme weather<br>  o How water changes the surface fo the earth<br>  o geology and seismic activity<br>  o plate tectonics | • ESS2.A: Earth's Materials and Systems<br>• State Standard for General Education: MS-ESS2-2: Construct an explanation based on evidence for how geoscience processes have changed Earth's surface at varying time and spatial scales.<br>• Essential Element: EE.MS-ESS2-2<br>  ○ Target Level: Explain how geoscience processes that occur daily (e.g.,wind, rain, runoff) slowly change the surface of Earth, while catastrophic events (e.g., earthquakes, tornadoes, floods) can quickly change the surface of Earth.<br>  ○ Precursor Level: Identify geoscience processes (e.g., wind, rain, runoff) that have an impact on landforms (e.g., landslides, erosion such as gullies).<br>  ○ Initial Level: Identify differences in weather conditions from day to day.<br>• SCI.CC7.3-5 Students measure change in terms of differences over time, and observe that change may occur at different rates. They understand some systems appear stable, but over long periods of time they will eventually change.<br>• SCI.ESS1.C.4 Certain features on Earth can be used to order events that have occurred in a landscape.<br>• SCI.ESS2.B.4 Earth's physical features occur in patterns, as do earthquakes and volcanoes. Maps can be used to locate features and determine patterns in those events. | • Daily homework<br>• Weekly quizzes<br>• essay assessment on ecology and stewardship - rubric scored<br>• Lab reports (2)<br>• Chapter tests (2) | FOSS Science: Resources and Conservation |

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| **JANUARY** | • 21 | • Geology and the Rock Cycle<br>o Minerals and Crystals<br>o Clasification of rocks and minerals<br>o modeling changes in rocks<br>• Fossils and Paleontology<br>o Oil and the pre-flood world<br>o Science and the BIble before the Flood<br>o How science interprets fossils | • ESS2.A: Earth's Materials and Systems<br>• State Standard for General Education: MS-ESS2-1: Develop a model to describe the cycling of Earth's materials and the flow of energy that drives this process.<br>• Essential Element: EE.MS-ESS2-1<br>o Target Level: Use a model to describe the change within the rock cycle between igneous, metamorphic, and sedimentary rock.<br>o Precursor Level: Use a model to describe the change from igneous to sedimentary rock.<br>o Initial Level: Identify the process that forms igneous rock (e.g., volcanoes).<br>• SCI.ESS2.A.4,5 Four major Earth systems interact. Rainfall helps to shape the land and affects the types of living things found in a region. Water, ice, wind, organisms, and gravity break rocks, soils, and sediments into smaller pieces and move them around. | • Daily homework<br>• Weekly quizzes<br>• 3 new forms of foramtive assessment<br>• Lab reports (3)<br>• Chapter tests (2) | FOSS Science:<br>Geology and the Rock Cycle |
| **FEBRUARY** | • 18 | • Oceanography and Marine Life<br>o Modeling the sea floor<br>o submarine exploration<br>o modeling waves with a jetty<br>o Ocean Ecosystems<br>• Our Solar System and the Universe<br>o What is part of the solar system and what are foreign objects?<br>o Observing the solar system<br>o Stars and Galaxies<br>o Astronomy and the tools of astronomers | • ESS1.B: Earth and the Solar System<br>• State Standard for General Education: MS-ESS1-1: Develop and use a model of the Earth-Sun-Moon system to describe the cyclic patterns of lunar phases, eclipses of the Sun and Moon, and seasons.<br>• Essential Element: EE.MS-ESS1-1 Target Level: Use an Earth-Sun-Moon model to show that Earth's orbit around the Sun corresponds to a calendar year and the orbit of the Moon around Earth corresponds to a month.<br>o Precursor Level: Use a model to show that Earth's Moon moves around Earth, and Earth and its Moon move around the Sun.<br>o Initial Level: Recognize models of the Earth, Moon, and Sun system. | • Daily homework<br>• Weekly quizzes<br>• chains of knowledge literacy coneceptual organizer<br>• Lab reports (3)<br>• Chapter tests (2) | FOSS Science:<br><br>Oceanography<br><br>Our Solar System and the Universe |

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| **MARCH** | • 17 | • Matter and the Elements<br>o Solids, Liquids, Gases<br>o Exploring engineering of new materials for construction: Strong. Light, or Both?<br>o Water changes and engineering<br>o Matter changes and engineering<br>o Mixtures and solutions<br>o DIssolving and the factors affecting speed<br>o Atomic Theory and modern science in search of the root of all matter<br>▪ Marie Curie<br>▪ Ines` Triay | • PS1.A: Structure and Properties of Matter<br>• State Standard for General Education:<br>• MS-PS1-2: Analyze and interpret data on the properties of substances before and after the substances interact to determine if a chemical reaction has occurred.<br>• Essential Element: EE.MS-PS1-2<br>o Target Level: Interpret and analyze data on the properties (e.g., color, texture, odor, and state of matter) of substances before and after chemical changes have occurred (e.g., burning sugar or burning steel wool, rust, effervescent tablets).<br>o Precursor Level: Gather data on the properties (e.g., color, texture, odor, and state of matter) of substances before and after chemical changes have occurred (e.g., burning sugar or burning steel wool, rust, effervescent tablets).<br>o Initial Level: Observe and identify examples of change (e.g. state of matter, color, temperature, and odor).<br>• SCI.ESS2.C.5 Most of Earth's water is in the ocean, and much of the Earth's freshwater is in glaciers or underground. | • Daily homework<br>• Weekly quizzes<br>• illustration and caption poster project<br>• Lab reports (2)<br>• Chapter tests (1) | FOSS Science: Matter & Elements |
| **APRIL** | • 20 | • The Physics of Light and Sound<br>o Sound, Vibration, and Waves<br>o Engineering and materials to sound proof the world<br>o Sounds properties while traveling through solids, liquids, and gases<br>o The Physics of Light<br>o defining light<br>o properties of light<br>o engineering and light<br>o reflecting light<br>o refraction of light<br>o waves beyond light and sound | • SCI.SEP4.A.3-5 Students begin to use quantitative approaches to collect data and conduct multiple trials of qualitative observations. (When possible, digital tools should be used.) This includes the following: Represent data in tables or various graphical displays (bar graphs, pictographs, and pie charts) to reveal patterns that indicate relationships. Analyze and interpret data to make sense of phenomena, using logical reasoning, mathematics, or computation. Compare and contrast data collected by different groups in order to discuss similarities and differences in their findings.<br>• MS-PS3-3: Apply scientific principles to design, construct, and test a device that either minimizes or maximizes thermal energy transfer.<br>• Essential Element: EE.MS-PS3-3<br>o Target Level: Test and refine a device (e.g., foam cup, insulated box, or thermos) to either minimize or maximize thermal energy transfer (e.g., keeping liquids hot or cold, preventing liquids from freezing, keeping hands warm in cold temperatures). | • Daily homework<br>• Weekly quizzes<br>• entrance five point list formative assessment<br>• Lab reports (2)<br>• Chapter tests (1) | FOSS Science: Physics of Light and Sound |

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| | | | ○ Precursor Level: Investigate objects/materials, and predict their ability to maximize or minimize thermal energy transfer.<br>○ Initial Level: Identify objects/materials used to minimize or maximize thermal energy transfer (e.g., gloves, vacuum flask, insulated hot pad holder or foam cup).<br>● PS4.A: Wave Properties State Standard for General Education:<br>● MS-PS4-2: Develop and use a model to describe that waves are reflected, absorbed, or transmitted through various materials.<br>● Essential Element: EE.MS-PS4-2<br>o Target Level: Use a model to show how light waves (e.g., light through a water glass, light on colored objects) or sound waves are reflected, absorbed, or transmitted through various materials (e.g., water, air, table).<br>o Precursor Level: Investigate changes in vibrations and sources of sound in everyday life.<br>o Initial Level: Use a model to recognize that sound waves are transmitted by vibrations. | | |

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| **MAY** | • 24 | • Understanding Basic Physics: Forces and Motion<br>o Design a Balloon Racer<br>o Reinventing the Wheel<br>o Foces and the Great Egg Drop<br>o Balanced and Unbalanced Forces: What makes the world go 'round?<br>o Newton's Laws and Galileo's Observations<br>o Rockets and Space Exploration through science and engineering | • PS2.A: Forces and Motion State Standard for General Education:<br>• MS-PS2-2: Plan an investigation to provide evidence that the change in an object's motion depends on the sum of the forces on the object and the mass of the object.<br>• Essential Element: EE.MS-PS2-2<br>o Target Level: Investigate and predict the change in motion of objects based on the forces acting on those objects.<br>o Precursor Level: Investigate and identify ways to change the motion of an object (e.g., change an incline's slope to make an object go slower, faster, farther).<br>o Initial Level: Identify ways to change the movement of an object (e.g., faster, slower, stop). | • Daily homework<br>• Weekly quizzes<br>• "muddiest point" formative interview assessment<br>• Lab reports (2)<br>• Chapter test (1) | FOSS Science:<br>• Understanding Basic Physics: Forces and Motion<br><br>Investigative Lab and Research projects for: Ballon Racers, Egg Drop Contest, Model Rockets |