

Trinity Lutheran School

Science and Health Curriculum



Rationale based on Scripture

We believe that all things are a direct creation of God as found in His Holy Word. Therefore, Scripture is the only true account of the origin of all living and nonliving things. Scripture refutes the idea that life happened by chance. God is the great designer, sustainer, and preserver of all life. Without God, the design and laws of nature would be inexplicable. It is with this attitude that we approach all things in life and, therefore, the study of science as well. Science enables us to predict, design, and explain our observations of God's universe in a logical manner. It also defines the ongoing process by which we interpret explanations of God's universe in which we live by using facts, theories, and laws. Through the teaching of science, students gain scientific knowledge that enables them to fulfill the Genesis command to subdue the earth according to God's will and direction.

Exit goals for graduation

Students will demonstrate proficiency, understanding, and/or commitment to the following set of exit goals upon graduation. The level of proficiency of these exit goals will be dependent upon the individual gifts and effort of the student and at what grade the student started attending Trinity.

Through Christ-centered science instruction, teachers strive to lead each child to:

1. Recognize the Triune God of the Bible as the creator of the universe who rules and controls all that happens
2. Correlate the subject of science with the power of God and his creation of the universe
3. Differentiate the teachings of evolution and God's creation of the universe in six days
4. Demonstrate a positive attitude toward science
5. Be driven by curiosity in the observation and study of creation
6. Create connections between the science text and their everyday lives
7. Apply the scientific method when carrying out experiments
8. Have basic knowledge in the following domains: Physical Science, Earth and Space Science, Life and Environmental Science, and Health Science

Grade level measurable objectives

At the end of each school year, students will demonstrate proficiency, understanding, and/or commitment to the following set of grade-specific measurable objectives in these classifications: knowledge, skills, and attitudes.

Preschool

By the end of Preschool, the students will:

1. Identify God the Father as the creator of the world and of themselves
2. Ask questions that lead to understanding and learning
3. List the changing seasons
4. Name parts of the body
5. Report daily weather
6. Associate hand-washing with removal of germs
7. Match adult animals with their offspring
8. Classify which objects sink and which float

Kindergarten & First Grade

Year A:

By the end of year A, the students will:

1. Explain that God created all things in six days
2. Construct an argument supported by evidence for how plants and animals (including humans) can change the environment to meet their needs. [K-ESS2-2](#)
3. Use a model to represent the relationship between the needs of different plants and animals (including humans) and the places they live. [K-ESS3-1](#)
4. Communicate solutions that will reduce the impact of humans on the land, water, air, and/or other living things in the local environment. [K-ESS3-3](#)
5. Use observations to describe patterns of what plants and animals (including humans) need to survive. [K-LS1-1](#)
6. Use and share observations of local weather conditions to describe patterns over time. [K-ESS2-1](#)
7. Ask questions to obtain information about the purpose of weather forecasting to prepare for, and respond to, severe weather. [K-ESS3-2](#)
8. Make observations to determine the effect of sunlight on Earth's surface. [K-PS3-1](#)
9. Use tools and materials provided to design and build a structure that will reduce the warming effect of sunlight on an area. [K-PS3-2](#)
10. Plan and conduct an investigation to compare the effects of different strengths or different directions of pushes and pulls on the motion of an object [K-PS2-1](#)
11. Analyze data to determine if a design solution works as intended to change the speed or direction of an object with a push or a pull. [K-PS2-2](#)

Year B:

By the end of year B, the students will:

1. Explain that God created all things in six days
2. Use materials to design a solution to a human problem by mimicking how plants and/or animals use their external parts to help them survive, grow, and meet their needs. [1-LS1-1](#)
3. Read texts and use media to determine patterns in behavior of parents and offspring that help offspring survive. [1-LS1-](#)
4. Make observations to construct an evidence-based account that young plants and animals are like, but not exactly like, their parents. [1-LS3-1](#)
5. Use observations of the sun, moon, and stars to describe patterns that can be predicted. [1-ESS1-1](#)
6. Make observations at different times of year to relate the amount of daylight to the time of year. [1-ESS1-2](#)
7. Plan and conduct investigations to provide evidence that vibrating materials can make sound and that sound can make materials vibrate. [1-PS4-1](#)
8. Make observations to construct an evidence-based account that objects in darkness can be seen only when illuminated. [1-PS4-2](#)
9. Plan and conduct investigations to determine the effect of placing objects made with different materials in the path of a beam of light. [1-PS4-3](#)
10. Use tools and materials to design and build a device that uses light or sound to solve the problem of communicating over a distance. [1-PS4-4](#)

Health

The students will:

1. Develop age-appropriate cognitive understanding of health promotion concepts to improve health behaviors.
2. Know what an influence is and how it could affect behaviors.
3. Identify individuals who provide valid health information to enhance health behaviors.
4. Identify and apply effective interpersonal communication skills.
5. Identify when a decision-making process is needed to choose a healthy option.
6. Know the parts of a personal health goal.
7. Demonstrate health-enhancing behaviors.
8. Recognize the differences between health needs and personal wants.

Second, Third, and Fourth Grades

Year A: Physical Science

By the end of year A, the students will:

1. Explain that God created all living and nonliving things in six days
2. Ask questions that lead to understanding and learning
3. Collect and record observations from scientific investigations
4. Plan and conduct an investigation to describe and classify different kinds of materials by their observable properties.
5. Analyze data obtained from testing different materials to determine which materials have the properties that are best suited for an intended purpose.
6. Make observations to construct an evidence-based account of how an object made of a small set of pieces can be disassembled and made into a new object.
7. Construct an argument with evidence that some changes caused by heating or cooling can be reversed and some cannot.
8. Plan and conduct an investigation to provide evidence of the effects of balanced and unbalanced forces on the motion of an object.
9. Make observations and/or measurements of an object's motion to provide evidence that a pattern can be used to predict future motion.
10. Ask questions to determine cause and effect relationships of electric or magnetic interactions between two objects not in contact with each other.
11. Define a simple design problem that can be solved by applying scientific ideas about magnets.
12. Obtain and combine information to describe that energy and fuels are derived from natural resources and their uses affect the environment.
13. Use evidence to construct an explanation relating the speed of an object to the energy of that object.
14. Make observations to provide evidence that energy can be transferred from place to place by sound, light, heat, and electric currents.
15. Ask questions and predict outcomes about the changes in energy that occur when objects collide.
16. Apply scientific ideas to design, test, and refine a device that converts energy from one form to another.
17. Develop a model of waves to describe patterns in terms of amplitude and wavelength and that waves can cause objects to move.
18. Generate and compare multiple solutions that use patterns to transfer information.
19. Define a simple design problem reflecting a need or a want that includes specified criteria for success and constraints on materials, time, or cost.
20. Generate and compare multiple possible solutions to a problem based on how well each is likely to meet the criteria and constraints of the problem.

21. Plan and carry out fair tests in which variables are controlled and failure points are considered to identify aspects of a model or prototype that can be improved.
22. Ask questions, make observations, and gather information about a situation people want to change to define a simple problem that can be solved through the development of a new or improved object or tool.
23. Develop a simple sketch, drawing, or physical model to illustrate how the shape of an object helps it function as needed to solve a given problem.
24. Analyze data from tests of two objects designed to solve the same problem to compare the strengths and weaknesses of how each performs.

Year B: Life Science

By the end of year B, the students will:

1. Explain that God created all living and nonliving things in six days
2. Ask questions that lead to understanding and learning
3. Make relevant observations and measurements in scientific investigations
4. Plan and conduct an investigation to determine if plants need sunlight and water to grow.
5. Develop a simple model that mimics the function of an animal in dispersing seeds or pollinating plants.
6. Make observations of plants and animals to compare the diversity of life in different habitats.
7. Construct an argument that some animals form groups that help members survive.
8. Analyze and interpret data from fossils to provide evidence of the organisms and the environments in which they lived long ago.
9. Construct an argument with evidence that in a particular habitat some organisms can survive well, some survive less well, and some cannot survive at all.
10. Make a claim about the merit of a solution to a problem caused when the environment changes and the types of plants and animals that live there may change.
11. Develop models to describe that organisms have unique and diverse life cycles but all have in common birth, growth, reproduction, and death.
12. Analyze and interpret data to provide evidence that plants and animals have traits inherited from parents and that variation of these traits exists in a group of similar organisms.
13. Use evidence to support the explanation that traits can be influenced by the environment.
14. Use evidence to construct an explanation for how the variations in characteristics among individuals of the same species may provide advantages in surviving, finding mates, and reproducing.
15. Construct an argument that plants and animals have internal and external structures that function to support survival, growth, behavior, and reproduction.
16. Use a model to describe that animals receive different types of information through their senses, process the information in their brain, and respond to the information in different ways.
17. Develop a model to describe that light reflecting from objects and entering the eye allows objects to be seen.
18. Define a simple design problem reflecting a need or a want that includes specified criteria for success and constraints on materials, time, or cost.
19. Generate and compare multiple possible solutions to a problem based on how well each is likely to meet the criteria and constraints of the problem.
20. Plan and carry out fair tests in which variables are controlled and failure points are considered to identify aspects of a model or prototype that can be improved.
21. Ask questions, make observations, and gather information about a situation people want to change to define a simple problem that can be solved through the development of a new or improved object or tool.

22. Develop a simple sketch, drawing, or physical model to illustrate how the shape of an object helps it function as needed to solve a given problem.
23. Analyze data from tests of two objects designed to solve the same problem to compare the strengths and weaknesses of how each performs.

Year C: Earth & Space Science

By the end of year C, the students will:

1. Explain that God created all living and nonliving things in six days
2. Ask questions that lead to understanding and learning
3. Collect and organize data from conducted scientific investigations
4. Use information from several sources to provide evidence that Earth events can occur quickly or slowly.
5. Compare multiple solutions designed to slow or prevent wind or water from changing the shape of the land.
6. Develop a model to represent the shapes and kinds of land and bodies of water in an area.
7. Obtain information to identify where water is found on Earth and that it can be solid or liquid.
8. Represent data in tables and graphical displays to describe typical weather conditions expected during a particular season.
9. Obtain and combine information to describe climates in different regions of the world.
10. Make a claim about the merit of a design solution that reduces the impacts of a weather-related hazard.
11. Identify evidence from patterns in rock formations and fossils in rock layers for changes in a landscape over time to support an explanation for changes in a landscape over time.
12. Make observations and/or measurements to provide evidence of the effects of weathering or the rate of erosion by water, ice, wind, or vegetation.
13. Analyze and interpret data from maps to describe patterns of Earth's features.
14. Generate and compare multiple solutions to reduce the impacts of natural Earth processes on humans.
15. Define a simple design problem reflecting a need or a want that includes specified criteria for success and constraints on materials, time, or cost.
16. Generate and compare multiple possible solutions to a problem based on how well each is likely to meet the criteria and constraints of the problem.
17. Plan and carry out fair tests in which variables are controlled and failure points are considered to identify aspects of a model or prototype that can be improved.
18. Ask questions, make observations, and gather information about a situation people want to change to define a simple problem that can be solved through the development of a new or improved object or tool.
19. Develop a simple sketch, drawing, or physical model to illustrate how the shape of an object helps it function as needed to solve a given problem.
20. Analyze data from tests of two objects designed to solve the same problem to compare the strengths and weaknesses of how each performs.

Health

The students will:

1. Develop age-appropriate cognitive understanding of health promotion concepts to improve health behaviors and prevent disease.
2. Identify how influences can impact health behaviors.
3. Identify valid sources of health information.
4. Demonstrate interpersonal communication skills.
5. Apply a decision-making process to evaluate health options.
6. Apply goal-setting skills to improve health.

7. Demonstrate a variety of health-enhancing behaviors.
8. Describe advocacy and health-related situations for which it is appropriate.

5th-8th Grades:

By the end of 8th grade, the students will:

1. Explain that God created all living and nonliving things in the universe in six days
2. Ask questions that lead to understanding and learning
3. Acknowledge and explain that evolution is an unproven theory of science
4. Plan and conduct investigations that lead to the development of explanations
5. Describe the physical properties of matter and its state changes
6. Identify the influence of forces on motion
7. Observe and identify signs of energy transfer
8. Identify variations of inherited characteristics and life cycles of plants and animals
9. Explain how living and nonliving factors impact the survival of organisms in an ecosystem
10. Describe adaptations made by plants and animals to survive environmental changes over time
11. Observe and describe characteristics, patterns, and changes in the sky
12. Identify how Earth materials are used in everyday life (fuels, building materials, etc.)
13. Compare and contrast weather, climate, and seasons
14. Compare and contrast slow processes and rapid processes of Earth's changing surface
15. Design and conduct logical investigations with repeated trials
16. Identify differences between physical and chemical changes
17. List Newton's three laws of motion
18. Identify that waves move at different speeds in different materials
19. Relate the levels of organization in living organisms (cells, tissues, organs, etc.)
20. Describe how populations and ecosystems interact with each other
21. Identify characteristics of organisms that help them survive
22. List the components of the solar system
23. Compare and contrast the layers of Earth (core, mantle, crust, atmosphere)
24. Describe how energy from the Sun influences the atmosphere and provides energy for plant growth
25. Determine and apply controls and variables when conducting scientific investigations
26. Compare and contrast elements, compounds, and mixtures
27. Describe motion of an object by its position and velocity
28. Compare and contrast the waves of the different forms of energy
29. Identify the organs and functions of the major systems of the human body
30. Diagram the flow of energy through a simple food web comparing the roles of producers, consumers, and decomposers in an ecosystem
31. Describe how an inherited characteristic enables an organism to improve its survival rate
32. Describe the relationship between motion of objects in the solar system and the phenomena of day, year, eclipses, phases of the Moon and seasons
33. Compare and contrast constructive and destructive forces (deposition, erosion, weathering, plate motion causing uplift, volcanoes, earthquakes) that impact Earth's surface
34. Identify factors that influence daily and seasonal changes on Earth (tilt of the Earth, humidity, air pressure, air masses)
35. Design and conduct investigations that will lead to descriptions of relationships between evidence and explanations
36. Classify substances into similar groups based on physical properties
37. Explain that everything on or around Earth is pulled towards Earth's center by gravitational force
38. Identify and describe how energy systems and matter interact

39. Describe ways that the major systems of the human body interact with each other
40. Identify positive and negative effects of natural and human activity on an ecosystem
41. Describe that the extinction of a species is caused by the inability to adapt to an environmental change
42. Describe the effects of gravity on Earth and other objects in the solar system
43. Describe Earth's structure, systems, and processes
44. Describe atmospheric movements that influence weather and climate (air masses, jet streams)
45. Use evidence to draw conclusions about changes in Earth

Health

1. Comprehend and apply concepts related to health promotion and disease prevention.
2. Examine how internal and external factors influence personal health behaviors.
3. Demonstrate and apply strategies to access valid sources of health information.
4. Examine and demonstrate communication skills that enhance health and avoid health risks.
5. Apply a decision-making process in various health-related situations.
6. Apply goal-setting skills to health situations.
7. Apply health-enhancing behaviors that maintain or improve the health of self and others.
8. Develop health-promoting strategies that support family or friends to make positive health choices.
9. Complete training in CPR/First Aid/AED basics.

Assessment of the academic growth and achievement of each student

Each individual teacher assesses the academic growth of their students on a regular basis via class discussion, note-taking, worksheets, class activities, hands-on experiments, projects, quizzes, and tests.

Evidence of fundamental principles of student growth

Through class discussions, activities, projects, and hands-on experiments students will build on their previous knowledge as they learn new concepts from grade to grade. As students grow, they gain a deeper understanding of God's amazing creation of this world.