



Our Savior Christian Academy

Curriculum Framework for: **Science**

Our Savior Christian Academy's "Curriculum Framework for Science" is designed as a tool that will follow the same format for Early Childhood students 3-5. Each age level will have a separate section based on classroom structure, and it will be up to each individual teacher to design a lesson plan that fits their classroom needs based on these standards and suggestions.

Our Savior Christian Academy's "Curriculum Framework for Science" is offered to the glory of God that it may be a blessing among Lutheran school educators and their students.

✠ PHILOSOPHY ✠

God is the Creator of all things living and non-living. He lovingly upholds all created things. God's glory and His character are revealed through exploration, observation, and scientific study of His world. Man's fall into sin has impacted all of creation, and it literally groans in expectation waiting for Christ's second return, when all things will be made new. We seek to serve God as wise stewards of His resources and work to restore Creation's original beauty.

Our Savior Christian Academy

Broad Goals

Our Savior Christian Academy's Science goals include:

- Incorporating Jesus Christ in all core areas of Science.
- Providing the children with a wide range of knowledge, skills, and related activities that help him/her to develop an understanding of the physical world.
- Encouraging the children to be confident and to communicate Science effectively through reading, writing, speaking, and listening.
- Using higher order thinking skills including comprehension, application, analysis, evaluation, and synthesis in the learning concepts in life science, earth science, and physical science.
- Displaying respect in their interactions with the environments of which they are members.
- Exhibiting organizational skills, intellectual curiosity and growth, and application of what has been learned in science both to future schoolwork and to lifelong learning.
- Providing learning experiences in which students will recognize, develop, and apply effective communication skills at or above grade level in the areas of Science.
- Students are shown strategies on how to be knowledgeable and proficient thinkers who will make positive Christ-like contributions to society.

Our Savior Christian Academy obtains this through:

- Keeping Our Savior, Jesus Christ, as the center focus on our campus and in our curriculum
- Fascinating and significant Science experiences through multi-sensory activities that incorporate the world around them.
- Applying Science to other core areas of learning.
- Adapting other subjects to add valuable perspectives to the Science curriculum.
- Teaching on an individual basis with the knowledge that children acquire an understanding of Science in an uneven way.
- Continuous assessment for analysis and planning in Science.
 - Focuses on the identification of the children's existing knowledge and strategies.
 - Updating curriculum to meet changing state standards along with student needs.
 - Provides information that will enable the teacher to cater for individual differences in ability, previous learning and learning style, and to resist pressure to push the child to premature mastery.
- Work samples and results that are shared with the parents, congregants, and community.

Missouri Early Learning Standards for Science

I. Physical Science – integrating faith in understanding that the Creator and God of the universe is the God of science and the author of all scientific laws that govern His universe. Only the God of science could cause scientific facts to be recorded in a book, the Bible , hundreds or thousands of years before scientists discover them. Genesis 1

1. Explores physical properties of objects and materials. “Come now, and let us reason together, saith the LORD: though your sins be as scarlet, they shall be as white as snow; though they be red like crimson, they shall be as wool”. (Is 1:18, KJV).

Indicators	Examples The child ...
a. Shows interest in the physical world.	<ul style="list-style-type: none"> • engages in a number of sensory activities using a sensory table. For example, during a classroom unit on fall the sensory table was filled with leaves and acorns. During another unit students experimented with plastic bags filled with rice and different colors of paint. Students also explored the inside of pumpkin during a unit on pumpkins and observed the seed formation inside an apple during a unit on apples.
b. Uses one or more senses to observe the physical world.	<ul style="list-style-type: none"> • During the first week of school students discuss the creation story from Genesis 1-2. In conjunction with this discussion students are lead on a nature walk around the school yard during which they are instructed to pick up one example of a living thing and one example of a non-living thing to share with the class. The class also charts examples of living and non-living things.
c. Experiments with simple tools.	<ul style="list-style-type: none"> • Uses tweezers to separate two different materials (e.g., two different kinds of pasta). • Uses a magnifying glass to more closely examine the parts of pre-soaked lima beans. • Uses magnets to experiment with metallic and non-metallic materials. • Uses cups and small pitchers at the water table as well as small shovels and miniature rakes when the table is filled with sand or plastic confetti.

2. Investigates properties of objects and materials.

Indicators	Examples The child ...
a. Asks questions about objects and materials.	<ul style="list-style-type: none"> • Asks, “Why does the ice cube melt?” • Asks, “Why does this ball roll faster than that one?” • Asks, “Why do the magnets stick together?”

<p>b. Experiments with objects and materials to gather information and observe reactions.</p>	<ul style="list-style-type: none"> • Makes predictions about whether objects will sink or float and confirms predictions through structured play. • Experiments with magnets and a variety of metallic and non-metallic materials • Mixes colors using paint and watercolors • During a classroom unit on dinosaurs students created a diorama of what the world may have looked like when dinosaurs lived and then watched a teacher-conducted demonstration of a volcano eruption using baking soda and vinegar mixed with different colors of food coloring.
<p>c. Shows knowledge of physical properties of objects.</p>	<ul style="list-style-type: none"> • Sorts objects by what they are made of (e.g., rock, plastic, paper) • Sorts objects by various characteristics (e.g., hot/cold, smooth/bumpy, fur/feathers, animals by habitat) • Tells how pumpkins and apples grow • Explains how fire is extinguished

3. Solves problems involving physical properties of objects and materials.

Indicators	Examples The child ...
<p>a. Identifies problems involving physical properties of objects and materials.</p>	<ul style="list-style-type: none"> • Says, "I want the car to go faster" • Says, "I want to build a taller tower" • Says, "I have blue, red, and yellow paint, but I want to make green"
<p>b. Experiments with objects to produce desired effects.</p>	<ul style="list-style-type: none"> • Moves a ramp to make a toy car do different speeds • Rolls a pumpkin to knock down bowling pins • Tries to throw a ball at a target
<p>c. Makes predictions based on experiences with objects and materials.</p>	<ul style="list-style-type: none"> • Guesses whether an object will sink or float • Predicts which liquid (i.e., milk, lemon juice, or water) will keep a cut apple from browning • Predicts which objects magnets attract or repel

4. Represents observations of the physical world in a variety of ways.

Indicators	Examples The child ...
<p>a. Represents observations through pretend play.</p>	<ul style="list-style-type: none"> • Pretends to prepare/cook food • Engages in role playing • Uses simple tools in pretend play (e.g., rolling pins, play hammers, cups)
<p>b. Represents observations through music and movement.</p>	<ul style="list-style-type: none"> • Sings action songs (e.g., <i>Grand Old Duke of York</i>, <i>Going on a Bear Hunt</i> [Dr. Jean], <i>I'm a Mean Old Dinosaur</i> [to the tune of <i>I'm a Little Teapot</i>]). The songs for the annual Christmas program also include actions that mirror the words. • Acts out • Mimics the behavior of various animals (i.e., walks like a bear, waddles like a duck, etc.)

<p>c. Represents observations through art and construction.</p>	<ul style="list-style-type: none"> • Builds/draws towers, buildings, ramps, train tracks, etc. • Uses various shape cut-outs to “design” a dinosaur • Intentionally colors a pumpkin orange, a tree trunk brown, etc.
<p>d. Talks about the physical world.</p>	<ul style="list-style-type: none"> • Asks, “How does that happen?” and/or suggests reasons why things happen a certain way • Describes objects using size, color, speed, or shape • Uses names for tools (e.g., magnet, ramp, magnifying glass, shovel) • Uses texture words (e.g., soft/hard, rough/smooth) • Uses measurement words (e.g., tall/short, big/small, more than/less than, heavy/light, hot/cold)

II. Life Science – integrating faith through understanding that God the creator speaks through creation and nature (living things). Psalm 19:1-4, Job 12:7-8, Ps. 50: 1-6

1. Explores characteristics of living things.

<p>Indicators</p>	<p>Examples The child ...</p>
<p>a. Shows interest in plant and animal changes.</p>	<ul style="list-style-type: none"> • Comments on changes in living things (e.g., seeds become plants, babies become “big kids,” trees lose their leaves, etc.) • Remarks that the leaves are changing colors, that their puppy or kitten has grown, etc.) • Looks at books, magazines, and posters that feature living things (e.g., <i>Bear Sleeps On, I’m a Seed, The Apple Pie Tree, The Big Red Barn</i>) • Chooses a favorite animal
<p>b. Uses one or more senses to observe the natural world.</p>	<ul style="list-style-type: none"> • Expresses wonder/excitement about living things • Uses a magnifying glass to examine living things • Examines leaves, seeds, pine cones, shells, etc. • Notices and comments on different bugs or animals they see outside (e.g., frog, cricket, etc.) • Comments on and explains the sound of a thunder storm • Comments on and describes the tastes of different foods (e.g., the flavor of different kinds of apples)

2. Investigates characteristics of living things.

<p>Indicators</p>	<p>Examples The child ...</p>
<p>a. Asks questions about the natural world.</p>	<ul style="list-style-type: none"> • Asks, “Why didn’t the seed grow?” • Asks, “Where does this animal live?” or “What does this animal eat?” • Asks, “Why do bears sleep during the winter?”
<p>b. Collects information to learn about living things.</p>	<ul style="list-style-type: none"> • Looks at books or magazines to learn about living things • Collects leaves, pine cones, acorns, etc. (Students collected these items to make a “fall wreath” for display in the classroom.) • Goes on nature walks to observe changes in nature and to collect examples of

	living and non-living things
c. Shows knowledge of the characteristics of living things.	<ul style="list-style-type: none"> • Matches mother animals with their babies • Matches animals with their habitat • Sequences the stages of the growth of an apple seed or pumpkin seed • Identifies living versus non-living things • Talks about differences in animals

3. Solves problems related to living things.

Indicators	Examples The child ...
a. Identifies problems involving living things.	<ul style="list-style-type: none"> • Comments that their pet is sick or that a plant is dying • Explains that it is too cold or hot for an animal or person to be outside •
b. Recognizes that living things have needs.	<ul style="list-style-type: none"> • Identifies personal needs (e.g., says, "I'm cold," or "I'm hungry") • Identifies animals needs (e.g., says "The dog needs a home,") • Identifies plant needs (e.g., says, "The plant needs water and the sun to grow.")
c. Makes predictions based on experiences with living things.	<ul style="list-style-type: none"> • Says things like, "If you play in the woods you might get poison ivy" or "If you make the bee mad it might sting you" • Says, "I think the plant will get taller." •

4. Represents observations about living things in a variety of ways.

Indicators	Examples The child ...
a. Represents observations through pretend play.	<ul style="list-style-type: none"> • Engages in role playing • Pretends to be an animal (e.g., During a unit on farm animals, students painted masks of farm animals and tried to walk and sound like their animal.)
b. Represents observations through music and movement.	<ul style="list-style-type: none"> • Moves like a certain animal • Sings songs about living things (<i>Old MacDonald</i>, <i>Alligator</i> [Dr. Jean], <i>Two by Two</i> [a song about Noah's Ark])
c. Represents observations through art and construction.	<ul style="list-style-type: none"> • Draws or paints pictures of animals • Uses blocks and toys to create horse/cow pastures, dinosaur landscapes, etc. • Uses legos and play dough to make a model of a dinosaur • Uses appropriate colors of paint to illustrate fall leaves • Draws or paints pictures of his or her family
d. Talks about plants and animals.	<ul style="list-style-type: none"> • Talks about family pet or trip to the zoo • Uses the names of living things (e.g., cricket, frog, chicken, flower, tree) • Uses appropriate words to talk about and describe living things (e.g., fur, tail, feathers, leaves, flower, petals)

III. Earth and Space – integrating faith in understanding that the Heavens declare the glory of God. Psalm 115:16

1. Explores properties of earth and space.

Indicators	Examples The child ...
a. Shows interest in earth and space.	<ul style="list-style-type: none"> • Comments on the changes in the weather, clouds, or seasons. Students discuss the weather daily as well as describe the weather as it corresponds to the different seasons (i.e., the weather gets cooler during fall, etc.). Students are encouraged to notice the changes in the weather from day to day (e.g., “It was rainy yesterday, but today the sun is out.”) • Looks at books and magazines about earth and space (e.g.,
b. Uses one or more senses to observe earth and space.	<ul style="list-style-type: none"> • Plays with, notices, and collects rocks, mud, soil, sand, water, etc. (e.g., During their study of creation students were lead in a demonstration that involved molding soil into hills and “mountains” and then filling the valleys with water. This served as an illustration of the different stages of creation and gave students an opportunity to experiment with the ways in which different elements of creation interact.) • Notices shadows; students explore the concept of shadows more in-depth during a classroom unit on shadows. • Looks at the sky, clouds, sun, moon, and stars; students are encouraged to observe these more closely during a classroom unit on earth and space.
c. Uses simple tools to explore earth and space.	<ul style="list-style-type: none"> • Uses a flashlight to make shadows • Plays with different measuring devices (e.g., cup, bowl, ruler) • Uses garden tools to explore dirt, sand, and rocks

2. Investigates properties of earth and space.

Indicators	Examples The child asks ...
a. Asks questions about earth and space.	<ul style="list-style-type: none"> • “Why does the volcano erupt?” “What comes out of the volcano?” • “What happens to the stars when it’s daytime?” • “What is hail? Where does it come from?” • “Why is this rock shiny?”
b. Conducts experiments to gain knowledge of earth and space.	<ul style="list-style-type: none"> • Adds water to soil to make mud • Tries to change rocks by breaking them into smaller pieces or adding water or oil to make them shiny • Looks for rocks that will write on concrete
c. Shows knowledge of changes in earth and space.	<ul style="list-style-type: none"> • Comments on changes in the weather, clouds, temperature, daylight, and darkness • Comments on changes in puddles, grass, soil, etc.

3. Solves problems involving earth and space.

Indicators	Examples The child says ...
a. Identifies problems involving earth and space.	<ul style="list-style-type: none"> • “It’s too cold to walk to school.” • “It’s too dark to play outside.” • “I can’t swim when the water is too high.” • “It’s hard to run over hills.” • “Sometimes I trip on holes in the ground.”
b. Makes predictions based on experiences with earth and space.	<ul style="list-style-type: none"> • “If it rains, I can’t go to the park.” • “When the clouds get dark, it storms.” • “The rain will make puddles.” • “When it snows too much, we don’t go anywhere.” • “The sun will melt the snow.” • “If it doesn’t rain, the plants will die.”

4. Represents observations about earth and space in a variety of ways.

Indicators	Examples The child ...
a. Represents observations through pretend play.	<ul style="list-style-type: none"> • Engages in role playing (e.g., Students pretend to be paleontologists and dig up dinosaur bones.) • Dresses “Mr. Frog” for the weather (i.e., Every day during circle time students pick out “clothes” for Mr. Frog based on their observations about the weather.) • Uses simple tools to pretend (e.g., brushes, buckets, magnifying glasses, cup, pitchers, ramps, etc.)
b. Represents observations through music and movement.	<ul style="list-style-type: none"> • Moves like the wind, snowflake, rocket, tornado, dinosaur, etc. • Sings songs about earth and space such as <i>Twinkle, Twinkle Little Star</i>, <i>If All the Raindrops Were Lemon drops and Gumdrops</i>, <i>Mr. Sun</i>,) •
c. Represents observations through art and construction.	<ul style="list-style-type: none"> • Makes landscapes with mud, sand, and water • Draws or paints pictures of the sun, moon, stars, earth, etc. • Uses play dough or blocks to make mountains, caves, hills, etc.
d. Talks about earth and space.	<ul style="list-style-type: none"> • Describes rocks by size, shape, and color • Describes landscapes • Notices the differences between different land formations (e.g., hills, valleys, volcanoes, mountains, etc.) • Talks about night and day; students • Talks about the seasons • Uses weather words (e.g., rainy, windy, snowy, cloudy, sunny, cold, hot) • Uses earth words (e.g., rocks, soil, ground, mountain, ocean, river, lake) • Uses space words (e.g., sun, sky, moon, stars)