345 Integrated Science Curriculum: YEAR FOUR -FALL

Curiosity Quest: Interactive Science Exploration for 3rd-5th Graders

Embark on an exciting journey through the wonders of science with Curiosity Quest: Interactive Science Exploration for 3rd-5th Graders! This 15-lesson program is designed to spark curiosity and deepen understanding through hands-on activities, engaging experiments, and creative projects in physical, life, and earth sciences, as well as engineering and technology. Each 90-minute session is packed with interactive learning experiences that make science fun and accessible for young explorers.

Students will dive into the properties and states of matter, explore the building blocks of life, and understand the dynamic forces shaping our planet. They'll also apply the engineering design process in practical, creative challenges. The curriculum can be enriched with field observations and art activities, ensuring that students can connect scientific concepts to the world around them.

Perfect for young learners with a passion for discovery, Curiosity Quest enhances critical thinking, fosters creativity, and provides a stimulating educational adventure. Whether your child is a budding scientist or simply curious, this course promises a captivating and enriching experience.

This outline ensures a balance of interactive learning, hands-on activities, and field or creative projects to reinforce the scientific concepts taught in each lesson.

Physical Science

Lesson 1: Properties of Matter

- Objective: Understand the properties of matter (solid, liquid, gas) through observation and experimentation.
- Activities:
    - Interactive discussion on what matter is.
    - Hands-on activity: Classify various objects (solids, liquids, gases).
    - Experiment: Test properties like density, magnetism, and buoyancy.

Lesson 2: States of Matter

- Objective: Learn about the states of matter and how matter changes state.

- Activities:
    - Demonstration: Water transitioning between solid, liquid, and gas.
    - Hands-on experiment: Make ice cream in a bag to observe state changes.
    - Discussion: Explain the concepts of melting, freezing, evaporation, and condensation.

Lesson 3: Changes in Matter

- Objective: Explore physical and chemical changes in matter.
- Activities:
    - Experiment: Mix baking soda and vinegar to observe a chemical reaction.
    - Activity: Dissolve sugar in water (physical change) and compare it to burning paper (chemical change).
    - Discussion: Differentiate between reversible and irreversible changes.

Lesson 4: Field Observation or Art Activity

- Objective: Reinforce concepts from the physical science lessons through observation or art.
- Activities:
    - Field trip: Visit a local science museum or nature center to observe different states and properties of matter.
    - Art project: Create a collage depicting solids, liquids, and gasses, or illustrate a sequence of a chemical reaction.

Life Science

Lesson 5: Cells - The Building Blocks of Life

- Objective: Understand the structure and function of cells.
- Activities:
    - Interactive presentation: Introduction to cells and their parts.
    - Hands-on activity: Use microscopes to observe plant and animal cells.
    - Craft: Build a cell model using craft materials.

Lesson 6: Genetics and Heredity

- Objective: Learn basic concepts of genetics and heredity.
- Activities:
    - Discussion: Introduction to DNA, genes, and traits.
    - Activity: Create a "DNA bracelet" using beads to represent genetic codes.
    - Experiment: Simulate genetic variation with a simple breeding activity using paper “organisms”  or flobbits.

Lesson 7: Biodiversity

- Objective: Explore the variety of life and importance of biodiversity.
- Activities:
    - Interactive presentation on ecosystems and species diversity.
    - Hands-on activity: Classify different species using images or specimens.
    - Field study: Conduct a mini-bioblitz on site to catalog different plants and animals.

Lesson 8: Field Observation or Art Activity

- Objective: Apply life science concepts through field observation or creative expression.
- Activities:
    - Field trip: Visit a local conservation area, a botanical garden or a zoo to observe biodiversity and cell structures in plants and animals.
    - Art project: Create a mural showcasing different ecosystems and the diversity within them.

Earth/Space Science

Lesson 9: Earth's Structure

- Objective: Understand the layers of the Earth.
- Activities:
    - Interactive presentation: Layers of the Earth (crust, mantle, core).
    - Model-making: Create a 3D model of the Earth's layers using clay.
    - Experiment: Simulate the Earth's crust.

Lesson 10: Plate Tectonics, Volcanoes, and Earthquakes

- Objective: Explore the concepts of plate tectonics and their effects.
- Activities:
    - Presentation on plate boundaries and tectonic movements.
    - Hands-on activity: Simulate plate movements using graham crackers and frosting.
    - Experiment: Create a volcano model using baking soda and vinegar.

Lesson 11: Weathering and Erosion

- Objective: Learn about weathering, erosion, and their impacts on Earth.
- Activities:
    - Demonstration: Show weathering using sugar cubes in water.

- Experiment: Simulate erosion with sand and water in a tray.
- Discussion: Explore the effects of weathering and erosion on landscapes.

Lesson 12: Field Observation or Art Activity
- Objective: Observe earth/space science concepts in a natural or creative context.
- Activities:
    - Field trip: Visit a local geological site or museum to see real-life examples of erosion and geological formations.
    - Art project: Create a diorama of a landscape showing weathering and erosion processes.

Engineering & Technology
Lesson 13: Engineering Design Process
- Objective: Understand the steps of the engineering design process.
- Activities:
    - Presentation: Steps of the engineering design process (ask, imagine, plan, create, improve).
    - Hands-on activity: Build a simple structure following the design process.
    - Group discussion: Reflect on what worked and what didn't.

Lesson 14: Structures and Stability
- Objective: Explore concepts of structural integrity and stability.
- Activities:
    - Interactive discussion on what makes structures stable.
    - Building challenge: Use various materials (straws, sticks, clay) to create stable structures.
    - Test and improve: Evaluate and strengthen structures based on observations.

Lesson 15: Simple and Compound Machines
- Objective: Learn about simple and compound machines and their uses.
- Activities:
    - Presentation on types of simple machines (lever, pulley, wheel and axle, etc.).
    - Hands-on activity: Build simple machines using everyday materials.
    - Experiment: Combine simple machines to create a compound machine.