GOOD SHEPHERD EPISCOPAL SCHOOL
5th Grade Science Year at a Glance

Unit: Safety, Scientific Method, and Metric

Standards:

- Draw on information from multiple print or digital resources, demonstrating the ability to locate an answer to a question quickly or to solve a problem efficiently.
- Define a simple design reflecting a need or a want that includes specified criteria for success and constraints on material, time, or cost
- Plan and carry out fair tests in which variables are controlled and failure points are considered to identify aspects of a prototype that can be improved.
- Students will be able to identify the six major prefixes of the metric system and identify the base units for weight , distance, and volume.

Skills:

- Plan and conduct an investigation while observing safety protocols
- Develop and use a model
- Use argument supported by data including graphs
- Conduct an investigation to provide evidence
- Gather and Synthesize information

Projects

- Gummy Bear Lab (could not do, due to Covid)
- Ketchup Lab(could not do, due to Covid)
- Boat Loads lab(could not do, due to Covid)

Unit: COE and Constellations

Standards

- Students will become familiar with the flora and fauna of Quartz Mountain State Park in Oklahoma.
- Students will learn the seven principles of leave no trace
- Students will learn patterns in the sky seasonally (constellations)
- Learn what can be done to protect resources and the environment
- Support an argument that differences in the apparent brightness of the sun compared to other stars is due to their relative distances from
- Obtain and combine information about ways individual communities use science ideas to protect the Earth's resources and environment.

Skills:

- Develop and use a model
- Use argument supported by data
- Graph and measure quantities
- Gather and synthesize information
- Practice outdoor safety

Projects

- Students Create a Field Guide to help identify flora and fauna
- Constellation research and presentation

Unit: Solar System, Sun, and Gravity
Standards:
- Support an argument that the gravitational force exerted by Earth on objects is directed down.
- Support an argument that differences in the apparent brightness of the sun compared to other stars is due to their relative distances from Earth.
- Represent Data in graphical displays to reveal patterns of daily changes in length and direction of shadows, day and night and the seasonal appearance of some stars in the night sky.

Skills:
- Develop and use a model
- Use argument supported by data
- Graph and measure quantities
- Gather and synthesize information

Projects:
- Research Project on the sun that allows for student choice to demonstrate learning

Unit: Coding
Standards:
- Developing possible solutions; tests are often designed to identify failure points or difficulties which suggest the elements of design that need to be improved.
- Optimizing the design solution; different solutions need to be tested in order to determine which of them solves the problem, given the criteria and constraints.
- Understand and use the basic steps in algorithmic problem-solving (e.g., problem statement and exploration, examination of sample instances, design, implementation, and testing)
- Understand the connections between computer science and other fields.
Computing Practice and Programming
- Use technology resources (e.g., calculators, data collection probes, mobile devices, videos, educational software, and web tools) for problem-solving and self-directed learning.
- Implement problem solutions using a block-based visual programming language.
Computers and Communication Devices:
- Demonstrate an appropriate level of proficiency with keyboards and other input and output devices

Skills:
- Critical thinking, planning, testing, identifying solutions
- Evaluate design solutions
- Working together and communicating with a team

Projects:
- Lego Coding Challenge in the Sparq Lab (we will need to do something else, due to Covid)
- Hour of Code Activities

Units: Biomes, Food Chains, Plants, and Photosynthesis
Standards:
- Use models to describe that the energy in animals' food (used for body repair, growth, motion and warmth) was once energy from the sun.
- Develop a model to describe the movement of matter among plants, animals, decomposers, and the environment.
- Support an argument that plants get the materials they need for growth chiefly from air and water.

Skills:
- Develop a model
- Make observations and measurements
- Plan and conduct an investigation
- Measure and graph quantities

Projects
- Creation of a food web to demonstrate understanding of the transfer of energy in a food web
- Self selected research, planning and carrying out of an investigation on plants
- Owl Pellet Lab

Unit: States and Properties of Matter and Atomic Theory
Standards:
- Develop a model to describe that matter is made of particles too small to be seen.
- Measure and graph quantities to provide evidence that regardless of the type of change that occurs when heating, cooling, or mixing substances, the total weight of matter is conserved.
- Make observations and measurements to identify materials based on their properties.
- Conduct an investigation to determine whether the mixing of two or more substances results in new substances.

Skills:
- Understand the basic properties of matter
- Understand the structure of an atom
- Use/construct/ develop models
- Support arguments
- Plan and conduct an investigation
- Measure and graph quantities

Projects:
- Root Beer Float Lab (will have to see.. Maybe get individual ice cream cups and cans for this lab?)
- Phase Change Ice Cream Lab (possible with individual ice cream cups?)

Unit: Bridges
Standards:
- Define a simple design reflecting a need or a want that includes specified criteria for success and constraints on material, time, or cost
- Generate and compare multiple possible solutions to a problem based on how well each is likely to meet the criteria and constraints of a problem
- Plan and carry out fair tests in which variables are controlled and failure points are considered to identify aspects of a prototype that can be improved.

Skills:
- Define design problems
- Generate possible solutions
- Plan and carry out investigation
- Work and communicate together as a team together as a team
- Learn about the history of bridges and their importance
- Be able to identify and describe forces at work on a bridge

Projects:
- Strength of Shapes Sparq Activity (do in classroom)
- Design and build a bridge while staying in a prescribed budget

Unit: Geosphere, Hydrosphere, Atmosphere, Water and Earth's Resources
Standards:
- Develop a model using an example to describe ways the geosphere, biosphere, hydrosphere, and/or atmosphere interact
- Describe and graph the amounts and percentages of water and fresh water in various reservoirs to provide evidence about the distribution of water on Earth.
- Obtain and combine information about ways individual communities use science ideas to protect the Earth's resources and environment.

Skills:
- Plan and conduct an investigation
- Develop a model
- Describe and graph information
- Obtain and Combine Information

Unit: Design Thinking
Standards/ objectives:
- Learn and practice the eight core design abilities: navigate ambiguity, learn from others, experiment rapidly, move between concrete and abstract, build and craft intentionally ,communicate deliberately, and design your design work.

Skills:
- Communication and teamwork
- Rapid ideation
- Critical and creative problem solving
- Demonstrating grit

Projects:
- (Note: these skills are taught throughout the year, building on skills and not in just one unit.)
- Pringles Challenge
- Build a Hovercraft
- 25 Uses for a Paperclip
- CLimb Through a sheet of Paper
- Paper Chains
- Stack'em, Don't Touch em
- Index Card Towers
- Best Paper Tower
- Various team communication challenges

This YAG will change. It is meant only to provide a quick look at the topics that will be addressed during the school year. Class progress, ERB testing, school trips, and inclement weather will all merit YAG adjustments.