

Science Curriculum- St. Thomas's Day School

Grade One Science Overview 2013-2014

Fall: Students examine collections of objects as they observe and describe their **Properties**. They will play games to sort by property and to arrange objects in serial order. Classroom collections include natural objects such as pinecones, bones, rocks, shells, woods, metals, plastics and buttons. On a **Properties Hunt Field Hunt** students will make and describe their own collections of natural objects. They will manipulate objects on **Pan Balances** to make different amounts equal. An illustrated diagram of their system is encouraged. They will begin small group visits to the Science Center on Fridays, using special materials to challenge their **spacial and problem solving** abilities using Duplo Lego simple machines and Block 'n Roll Marble Drop.

Winter: Students will continue their investigations of **Materials**, observing, dissolving, filtering, and evaporation. Students will experiment with **Solids, Liquids, and Gases** as they make lava lamps and gel disks. Group graphs will be assembled to display data collected during the **Frog Math** games. They will be special quests at the annual **Science Festival** and participate in special activities from February 3-7.

Spring: **Growing Seeds-** Students will plant a variety of seeds, make measurements and observations, and design experiments to answer student generated questions about how plants grow. Each student will begin a garden plot to take home and plant. As part of the World of Plants project at the Peabody Museum students will explore **Plants and Seeds**. They will make **Bubbles** in the park and classroom. The students investigate floating and non-floating objects and experiment with air, flowing water, and ice cubes.

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Grade Two Science Overview 2013-2014

Fall: Students experiment with **Sponges**. They learn to compare, observe, and describe characteristics. Measuring tools will be used to calculate and graph the mass and volume of the water held by each sponge. As a final project students create drawings and stories about their experiences. In October they observe **Chemical Interactions** and make chromatography patterns, dancing raisins, pH indicators and slime and silly putty (to take home). In late fall they experiment with **Batteries, Bulbs and Motors**. The students discover interactions and systems as they complete their own electrical circuits. Year long journal projects are begun.

Winter: Students will experiment with a variety of **Magnets**, complete an illustrated lab report about their experiments, and create a magnet maze game to take home. They will build and explore **Gear Systems** to observe and describe the ways in which they interact. They will test out their own predictions about speed and direction of movement for their gear system. They will be special guests of the Science Festival and participate in special activities from February 3-7.

Spring: In their study of the **Earth in Space**, they will make observations of the models in the classroom, draw diagrams, read books on the Solar System, map shadows through the day, and discuss space. They will explore **Bubbles** in the classroom and the park. Year long journal projects will be completed.

Online resources through our membership in Discovery Science will enhance the children's experience in all subject areas throughout the year.

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Grade Three Science Overview

2013-2014

Fall: The Third Graders begin the year with a **Measuring** project. They learn to recognize linear, square and cubic units as they work with their tiles, cubes and rectangles. A focus on the **Animal Kingdom** will be conducted this term, beginning with activities to observe and classify animals. Students will examine a variety of **Invertebrate Animal** models. A special study of redworm, isopod, cockroach and mealworm behavior will be conducted in class. Students will be encouraged to record their observations of invertebrate form and behavior.

Winter: An overview of **Vertebrate Classification** will consider characteristics of larger animals as students learn to categorize fish, amphibians, reptiles, birds and mammals. They will complete activity pages for each vertebrate group. As part of our healthy human body theme the students will study senses. They will experiment with **Sight** and binocular vision, the senses of **Touch, Taste, and Smell, and Sound** and consider the effects of **Smoking**. Using a special computer program and model we will investigate the **Water Cycle** and continue our study of weather through books, videos and a visit to the Whitney Water Center. They will also be special guests of the Science Festival from February 3-7.

Spring: Students will consider **Plant Adaptations** and compare plants from differing habitats. Students will conduct **Controlled Experiments** using spinning whirly-birds, and ramps and balls. They will work in groups to measure, collect and record data and draw conclusions.

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Grade Four 2013-2014

Physical Science

Simple Machines [technic LEGO]

Sept./October

Build models with levers, gears, wheels and pulleys

Compare systems for mechanical advantage

Follow directions from technical drawings

Utilize the scientific method to investigate the effect of microgravity on simple machines

Compare the results on earth to those found on the ISS

Examine scientific topics such as force, friction, simple machines and gravity.

Develop skills for reading in the content area through Delta Science Readers

Batteries and Bulbs

Nov./Dec.

Build simple electric circuits

Interpret circuit diagrams to predict and test results

Conduct bulb lighting projects

Experiment with generators and conductivity

Build motors and electromagnets

Design and conduct team experiments

Keep lab journals on electricity experiments

Practice skills for reading in the content area through Delta Science Readers

Properties of Light / ESS & AIMS

Feb./March

Reflect rays off mirrors to measure the angle of refraction

Use mirrors to solve tunnel puzzles

Experiment with concave and convex mirrors

Refract rays through lenses

Create colored light for mixing and subtraction

Observe pictures viewed through colored filters

More...

Gr. 4 continued

Life Science

Introduction to Healthy Humans and Nutrition

April

- Learn about the Food Pyramid through projects and games
- Sort menu items on a chart to plan for a day
- Observe classroom models and posters of all the body systems
- Do activities in kits and online to explore how the body works
- View Discovery Science materials about the body

Nature of Science

Designing Experiments with dependent and independent variables May

- Students design experiments with controlled variables
- Students work together to record and analyze data
- Groups report on the scientific observations and conclusions

Special Projects

The Science Festival Week from February 3-7

Jan/Feb.

- Prepare special activities in class during January
- Experiment with special materials and conduct research with partners
- Complete a display board with written information about their topic
- Collaborate with students in other grades to share ideas and information
- Share their project with others; classmates, younger children, and adults
- Participate in special activities and speakers during the week

Utilize online resources through our membership in Discovery Science to enhance the children's experience in all subject areas throughout the year.

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Grade Five 2013-2014

The Fifth Grade Science Curriculum explores the themes of Inside Earth, the Earth in Space, Our Solar System and the Human Body. **Delta Science Content Readers** are used as a text resource in each area to build skills of reading in the content area.

Online resources through our membership in **Discovery Education** will enhance the children's experience in all subject areas throughout the year.

Earth Science

Inside Earth

Sept-Oct

- Compare Earth's layers and explore Earth's Surface
- Understand Earth's moving plates and the changes they cause
- Describe ways that mountains can form
- Compare three types of volcanoes
- Understand the causes of earthquakes

The Earth, Moon and Sun System

Nov-Dec

- Understand the Earth's location in the Solar System
- Discuss days, years and seasons
- Describe the patterns in moon phases
- Relate tides and eclipses to the position of the moon

Our Solar System

Jan-April

- Identify characteristics of planets and stars
- Compare and contrast inner and outer planets
- Read books and research the solar system using Discovery Science
- Discuss dwarf planets, asteroids, comets and meteoroids
- Explain what makes up the universe

More...

Gr. 5 Continued

Life Science

Healthy Human Body - Explore systems of the human body Circulation, Digestion and Reproduction Identify parts of classroom models and diagrams Learn functions of major organs Consider the inter-relatedness of cells, tissues, organs, and systems Use microscopes to examine prepared slides of cells	March-June
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Grading Plan:

Weekly work will be checked in and recorded; demonstrating effort
Frequent online quizzes, open book and retakable, will be considered
Classroom tests (often short answer) will follow each unit and be graded
Classroom participation and special projects will be considered

Spring Project Build a balance and conduct experiments in the workbook	May
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Special Projects

The Science Festival Week from February 3-7 Prepare special activities in class during January Experiment with special materials and conduct research with partners Complete a display with information about their topic Collaborate with students in other grades to share ideas and information Share their project with others; classmates, younger children, and adults Participate in special activities and speakers during the week	Jan./Feb.
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Field Trip

West Rock with David Evans; Observing Earth's history and Glacial Evidence Visit Leitner Family Planetarium at Yale	Oct. April
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Grade Six 2013-2014

Pearson interactive SCIENCE Modules:

- Unlock the Big Question by exploring key concepts
- Do hands-on inquiry in class to reinforce the lesson
- Reply to opportunities to explain what you have learned
- Apply skills learned to new situations, often with a math focus
- Practice new vocabulary through interactive flash cards
- Evaluate progress through summary questions, quizzes and tests

Students may do their work in the textbook

Ecology and the Environment

Fall

- Living things interact with their environment
 - How do living things affect one another?
 - How do energy and matter move through ecosystems?
 - How do people use Earth's resources?

Special Fall Projects

Project Water: with the Whitney Water Center

September

- Students will learn to identify watersheds using 3 dimensional models
- They will locate on topographic maps and visit the Mill River Watershed
- Teams will measure the dissolved oxygen and nutrients in the water
- The class will compare results of their water analysis from three locations

Tree Projects: Introduced in class, Completed as homework Due Nov.

Following projects omitted 2013-2014- have been done already

Monarchs: Transformation and Migration

Sept./Oct

- Raise monarch butterflies from caterpillars to tag and release
- Follow and map migration through the Journey North website

Vermicomposting: Monitor changes in the redworm composting box.

More...

Gr. 6 Continued

Introduction to Chemistry

Spring

Atoms are the building blocks of matter

How is matter described?

How is the Periodic Table organized?

How can bonding determine the properties of a substance?

Mass and Energy are conserved during chemical and physical changes

How is matter conserved in a chemical reaction?

Fall Project

Due Friday, Nov. 2

Students collect and identify 12 different tree leaves

Using field guides and keys students research their tree samples

Students organize their specimens and research

to present in an organized and informative way

Field Trips

Watershed Investigation

Ct. Science Center/ full day

September 16-19

April 10

The Science Festival from February 3-7

Jan/Feb.

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