FALMOUTH PUBLIC SCHOOLS
SCIENCE CURRICULUM

Unit Overview: Physical Science (PS) Simple Machines **Grade 4**

Science Curriculum Goals

1. SCIENTIFIC LITERACY. Provide all students with science experiences that are appropriate to their cognitive stages of development and serve as a foundation for more advanced ideas that prepare them for life in an increasingly complex scientific and technological world.

2. INSTRUCTIONAL EFFICIENCY. Provide all teachers with a comprehensive, flexible, attainable science curriculum based upon current research on learning; including collaborative learning, student discourse, and embedded assessment, and uses effective instructional methodologies including: hands-on active inquiry-based learning, integration of disciplines and content areas, and multisensory methods.

3. SYSTEMIC REFORM. Aligned to the Massachusetts State Curriculum Frameworks Science Standards and societal expectations that will prepare students with the knowledge, skills and understandings to succeed in the 21st century.

Pedagogy

Young people need an understanding of basic scientific concepts and methods in order to comprehend the scientific issues that will shape their lives. It is equally important for students to develop and apply the concepts and process skills used in scientific inquiry so that they will be prepared to solve problems encountered in other areas of study and in dealings with the everyday world.

This unit emphasizes basic science concepts and skills presented through a range of engaging, inquiry-based, hands-on instructional experiences that focus on the processes and techniques of discovery. This unit is designed to promote scientific literacy and provide opportunities for students to satisfy their innate curiosity as they develop techniques for observing, questioning, and testing basic scientific concepts.

Unit Summary

The Simple Machines unit introduces students to how machines, both simple and complex, make work easier. They will have many hands on experiences with simple machines and will be involved in experiments that will show the effort you have to put into a task will decrease with the use of simple machines.

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Curriculum Standards and Enduring Understandings

T/E 1.3 Compare and contrast the differences between simple and complex machines

- Simple machines make our lives easier.

PS 1 Identify the properties of objects and materials

- Connections between ordinary things (simple and complex machines) and the physical world (properties of objects, energy, etc.) assist in generalizations about the physical world.

PS 1 Identify the properties of objects and materials

- Simple and complex machines play a key role in understanding our physical world.

Essential Questions

- How do simple machines make our lives easier? How do simple machines fit together to make complex machines?
- How do ordinary objects and materials help us to understand how our world works?
- How do tools play a key role in the study of the physical world?

Unit Vocabulary

axle
complex
effort
force
friction
fulcrum
inclined plane
lever
load
mechanical advantage
pulley
screw
wedge
wheel

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Evidence of Scientific Method within Instruction

- ✓ Reading (shared, guided, independent) – *share information, collaborate*
- ✓ KWL – *activate, predict, analyze, hypothesize*
- ✓ Think – Pair – Share – *share information, collaborate*
- ✓ Modeling – *share information, observe, experiment*
- ✓ Participating in experiments - *share information, procedure, measure, record, compare, sort & classify*

Assessments

- ❖ Observations
- ❖ Anecdotal notes
- ❖ Class discussions
- ❖ Activity sheets
- ❖ Lab report(s)
- ❖ ORQ(s) *from Essential Questions
- ❖ Performance Assessments