Northern York County School District

Curriculum Overview

Course: 2nd Grade Discovery	
Grade Level: 2	
Development/Revision Date:	**Length of Time:** 30 Days

Course Description:

This course introduces students to the world of technology, design, and engineering through hands-on, inquiry-based learning that connects to their everyday lives. Students explore how technology has shaped the way people live, learn, and work, investigating tools and innovations from the past and present, and taking on the roles of scientists, engineers, and technologists through creative challenges. They learn practical ways to reduce, reuse, and recycle, examine everyday technologies in their homes and communities, and consider how these inventions solve problems and improve daily life. Additionally, students investigate the characteristics, variety, and interconnectedness of human-made and natural designs, exploring how systems work, comparing solutions, and understanding that no single design is perfect. Throughout the course, students develop critical thinking, observation, collaboration, and problem-solving skills while discovering that design and technology are part of the world around them and that everyone can contribute ideas and solutions.

Course Objectives:

- Explore how technology has changed the way people live and work throughout history.
- Identify the roles of scientists, engineers, technologists, and others who create and use technology.
- Explain how technology supports everyday tasks and improves daily life.
- Engage in hands-on engineering challenges to apply problem-solving, creativity, and teamwork skills.
  Reflect on how technological innovations affect personal life, learning, and the broader community.
- Identify and illustrate both helpful and harmful effects of technology on people, communities, and the environment.
- Apply concepts and skills from technology and engineering activities to reinforce learning across multiple subject areas.
- Demonstrate essential skills of the engineering design process, including planning, building, testing, and refining solutions.
- Describe the characteristics of various designs and systems.
- Identify multiple solutions to a design problem and recognize that no solution is perfect.
- Illustrate how parts or components of a system work together to accomplish a goal.
- Compare and contrast the natural world and human-made systems to understand structure and function.

Related Standards:

Pennsylvania STEELS State Standards

3.5.K-2.Y – Discuss how the way people live and work has changed throughout history because of technology.
3.5.K-2.CC Discuss the roles of scientists, engineers, and technologists and others who work with technology.
3.5.K-2.C Explain ways that technology helps with everyday tasks.
3.5.K-2.E Illustrate helpful and harmful effects of technology.
3.5.K-2.W Apply concepts and skills from technology and engineering activities that reinforce concepts and skills across multiple areas.
3.5.K-2.M – Demonstrate essential skills of the engineering design process.
3.5.K-2.P – Discuss that all designs have different characteristics that can be described.
3.5.K-2.O – Illustrate that there are different solutions to a design and that none are perfect.
3.5.K-2.Z – Illustrate how systems have parts or components that work together to accomplish a goal.
3.5.K-2.BB – Compare the natural world and the human made world.

Units:

- Computer Science Essentials
- Engineering Design Process
- Engineering Practices

Concepts:

- INTEGRATION OF KNOWLEDGE, TECHNOLOGIES, AND PRACTICES - Different solutions need to be tested in order to determine which of them best solves the problem, given the criteria and the constraints.
- CORE CONCEPTS OF TECHNOLOGY AND ENGINEERING - Effective problem-solving in engineering and technology involves researching before designing, testing solutions under various conditions, considering material constraints, and refining designs through collaboration and failure analysis to best meet specified criteria.
- IMPACTS OF TECHNOLOGY - Historical examples of daily life before modern technologies such as airplanes, computers, modern agriculture, sanitation, and so on will provide opportunities to consider how their lives have been impacted by technology.
- NATURE AND CHARACTERISTICS OF TECHNOLOGY AND ENGINEERING - People use appropriate tools and skills to help them do their work as well as use resources to make things they use every day.

Competencies:

- Develop design processes, tools, and critical thinking skills.
- Analyze evidence to construct explanations and solutions to problems.
- Select and practice ways to reduce, reuse, and recycle to help the environment.
- Understand and explain how technology connects to people's daily lives.
- Investigate and describe technologies used at home and in the community.

• APPLICATION, MAINTENANCE, AND ASSESSMENT TECHNOLOGICAL PRODUCTS AND SYSTEMS - Effective design requires researching the problem, testing solutions under various conditions, and collaborating with peers to improve ideas.	
Learning Activities: • Designing, constructing, testing, tool skills, and collaboration. • Collaboration, designing, problem solving, and communication. • Learns that use of technology affects humans and the environment. •	**Performance Tasks:** • Formative assessments such as student discussion, questioning, peer collaborative activities, reflections, and projects.
Other Assessment Measures: • SeeSaw portfolio	
Textbook/Primary Resource: Engineering is Elementary. (2024). *Engineering is elementary (2nd ed.)*. Youth Engineering Solutions.	
Supplemental Resource Materials:	