



Northern York County School District

Curriculum Overview

Course: 1st Grade Discovery

Grade Level: 1

Development/Revision Date:

Length of Time: 30 Days

Course Description:

This course introduces students to the world of design, engineering, and technology through hands-on, inquiry-based learning that emphasizes problem-solving, creativity, and collaboration. Students begin by exploring how people design, build, and improve tools and products, learning to follow design requirements, test and refine their ideas, and describe the qualities of everyday items. They then develop teamwork and organizational skills by analyzing how things work, planning projects, and using everyday symbols to navigate tasks effectively. Finally, students investigate how technology meets the needs and wants of individuals and communities, examining material choices, the design process, and how inventions improve daily life. Throughout the course, students gain critical thinking, observation, and communication skills while discovering that anyone can be a creative problem-solver and contributor to innovation.

Course Objectives:

- Recognize and explain design requirements by identifying the criteria a design must follow to work effectively.
- Describe and demonstrate tools and techniques people use to make tasks easier, faster, or safer.
- Identify and describe qualities of everyday products, such as size, shape, color, function, and material.
- Observe, test, and explain how simple objects and systems work.
- Work effectively with others by sharing ideas, listening, and contributing to group tasks.
- Create and follow a plan to complete a task successfully, identifying each step needed.
- Recognize and use everyday symbols such as signs, labels, and icons to gather information and complete activities.
- Analyze how familiar objects and systems work.
- Develop and follow a plan to complete a task.
- Recognize and use symbols to communicate ideas.
- Explain how technologies are developed to meet the needs and wants of individuals and communities.
- Describe how design responds to specific needs and wants.
- Identify and discuss the needs and wants of individuals and communities.
- Select appropriate materials for a design or task based on their properties and characteristics.
- Demonstrate that anyone can create by participating in hands-on projects and sharing original ideas.

Related Standards:**Pennsylvania STEELS State Standards**

3.5.K-2.T Demonstrate that designs have requirements.

3.5.K-2.G Explain the tools and techniques that people use to help them do things.

3.5.K-2.B Describe qualities of everyday products.

3.5.K-2.N – Analyze how things work.

3.5.K-2.DD – Collaborate effectively as a member of a team.

3.5.K-2.X – Develop a plan in order to complete a task.

3.5.K-2.A Identify and use everyday symbols.

3.5.K-2.L Explore how technologies are developed to meet individual and societal needs and wants.

3.5.K-2.U. Explain that design is a response to wants and needs.

3.5.K-2.H Explain the Needs and wants of individuals and societies.

3.5.K-2.V Explain that materials are selected for use because they possess desirable properties and characteristics.

3.5.K-2.AA Demonstrate that creating can be done by anyone.

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.
- Explain in simple terms how common objects work.
- Create and follow a clear plan to finish a task.
- Use everyday symbols to share information and ideas.

<ul style="list-style-type: none"> • 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: <ul style="list-style-type: none"> • Designing, constructing, testing, and tool use. • Collaboration, designing, problem solving, and communication. 	Performance Tasks: <ul style="list-style-type: none"> • Formative assessments such as student discussion, questioning, peer collaborative activities, reflections, and projects.
Other Assessment Measures: <ul style="list-style-type: none"> • SeeSaw portfolio 	
Textbook/Primary Resource: Engineering is Elementary. (2024). <i>Engineering is elementary (2nd ed.)</i> . Youth Engineering Solutions.	
Supplemental Resource Materials:	