4th grade, Unit #1, Technology, Research and Information Literacy

Content Area: **Technology**
Course(s): **Technology**
Time Period: **September**
Length: **7 weeks**
Status: **Published**

Enduring Understanding

Information is spread worldwide within seconds due to technological advancements and has and immediate impact.

Essential Questions

Why is the evaluation and appropriate use of accurate information more important than ever in the technological age?

Standards

TECH.8.1.5.A.CS1	Understand and use technology systems
TECH.8.1.5.A.4	Graph data using a spreadsheet, analyze and produce a report that explains the analysis of the data.
WORK.K-4.9.1.4.A.4	Use data accessed on the Web to inform solutions to problems and the decision-making process.
TECH.8.1.5.A.6	Export data from a database into a spreadsheet; analyze and produce a report that explains the analysis of the data.
TECH.8.1.5.A.1	Select and use the appropriate digital tools and resources to accomplish a variety of tasks including solving problems
TECH.8.1.5.A.3	Use a graphic organizer to organize information about problem or issue.
TECH.8.1.5.A.CS2	Select and use applications effectively and productively.
TECH.8.1.5.A.5	Create and use a database to answer basic questions.

Student Learning Objectives

Use digital effectively to gather and manage information.

Create spreadsheets from data accessed on the Web.

Instructional Activities

Use online resources to locate places around the world where access to clean water is an issue.

Gather data about how much water students use each day (showers, water bottles) and record information in a spreadsheet. Create a digital chart.

Research strategies that have been proven effective in saving water using appropriate websites or by contacting the local water department.

Use email, Skype or Facetime to contact students in other schools to discover how they save water.

Interdisciplinary Connections

Math- Creation of charts and spreadsheets

Health- Research regarding clean water issues

Texts and Resources

Computers with internet access

Ipads

Epals

Appropriate websites

Excel

Skype, Facetime, Email

Assessment

•**Observation**
•**Participation**
•**PowerPoint**

4th grade, Unit #2, Technology, Interviews

Content Area: **Technology**
Course(s): **Technology**
Time Period: **October**
Length: **12 weeks**
Status: **Published**

Enduring Understanding

Primary sources, such as first-person interviews, can be a valuable method of research for many topics.

Essential Questions

- How does one synthesize the answers given during an interview into a summary or story?
- How has technology both solved and created problems?
- What is a primary source and how does an interview qualify as a primary source?

Standards

TECH.8.1.5.C.CS2	Communicate information and ideas to multiple audiences using a variety of media and formats.
TECH.8.1.5.B.CS2	Create original works as a means of personal or group expression.
TECH.8.1.5.F.CS2	Plan and manage activities to develop a solution or complete a project.
TECH.8.1.5.B.1	Collaborative to produce a digital story about a significant local event or issue based on first-person interviews.
TECH.8.1.5.E.CS1	Plan strategies to guide inquiry.
TECH.8.1.5.A.1	Select and use the appropriate digital tools and resources to accomplish a variety of tasks including solving problems
TECH.8.1.5.D.CS1	Advocate and practice safe, legal, and responsible use of information and technology.

Student Learning Objectives

Distinguish between a primary and secondary source.

Identify the question and answer format of an interview.

Research and type questions to ask a family or community member dealing with how technology has changed their lives and the world.

Record answers and summarize as part of a media-rich digital story.

Utilize proper keyboarding skills.

Instructional Activities

Prepare questions about technology changes over time to ask of a family or community member.

Ask the questions and record answers.

Use a digital tool to create a story based on interview results.

Interdisciplinary Connections

Language Arts - writing and interview activities

Texts and Resources

Interviewees - Family members, school staff, or other community members.

Digital tools for typing questions, recording answers, and creating the final product.

- •Media-rich story
- •Observation

4th grade, Unit #3, Technology, Design Process

Content Area: **Technology**
Course(s): **Technology**
Time Period: **January**
Length: **14 weeks**
Status: **Published**

Enduring Understanding

Technological outcomes have the potential for anticipated and unanticipated positive and negative results.

Essential Questions

- •How does technology extend human capabilities?
- •Is it always beneficial to use the most economical materials for production of a technological product?
- •Should technologies that produce a negative impact continue to be used?

Standards

TECH.8.1.5.C.CS1	Interact, collaborate, and publish with peers, experts, or others by employing a variety of digital environments and media
TECH.8.2.5.D.2	Evaluate and test alternative solutions to a problem using the constraints and trade-offs identified in the design process to evaluate potential solutions.
TECH.8.1.5.C.CS4	Contribute to project teams to produce original works or solve problems
TECH.8.2.5.D.CS3	Assess the impact of products and systems.
TECH.8.1.5.D	Students understand human, cultural, and societal issues related to technology and practice legal and ethical behavior.
TECH.8.2.5.A	Technology systems impact every aspect of the world in which we live.
TECH.8.2.5.C	The design process is a systematic approach to solving problems.
TECH.8.2.5.A.3	Investigate and present factors that influence the development and function of products and systems, e.g., resources, criteria and constraints.
TECH.8.2.5.C.5	Explain the functions of a system and subsystems.
TECH.8.2.5.D.1	Identify and collect information about a problem that can be solved by technology, generate ideas to solve the problem, and identify constraints and trade-offs to be considered.
TECH.8.2.5.A.1	Compare and contrast how products made in nature differ from products that are human made in how they are produced and used.
TECH.8.2.5.D.CS2	Use and maintain technological products and systems.
TECH.8.2.5.C.CS1	The attributes of design.
WORK.K-4.9.1.4.A.1	Recognize a problem and brainstorm ways to solve the problem individually or collaboratively.
WORK.K-4.9.1.4.A.2	Evaluate available resources that can assist in solving problems.
WORK.K-4.9.1.4.A.5	Apply critical thinking and problem-solving skills in classroom and family settings.
WORK.K-4.9.1.4.B.1	Participate in brainstorming sessions to seek information, ideas, and strategies that foster creative thinking.
WORK.K-4.9.1.4.1	Collaboration and teamwork enable individuals or groups to achieve common goals with greater efficiency.
WORK.K-4.9.1.4.C.1	Practice collaborative skills in groups, and explain how these skills assist in completing tasks in different settings (at home, in school, and during play).
TECH.8.1.5.F.CS2	Plan and manage activities to develop a solution or complete a project.
TECH.8.2.5.C.2	Explain how specifications and limitations can be used to direct a product's development.
TECH.8.2.5.A.CS1	The characteristics and scope of technology.
TECH.8.2.5.D.5	Describe how resources such as material, energy, information, time, tools, people and capital are used in products or systems.
TECH.8.2.5.C.1	Collaborate with peers to illustrate components of a designed system.
TECH.8.2.5.C.4	Collaborate and brainstorm with peers to solve a problem evaluating all solutions to provide the best results with supporting sketches or models.

Student Learning Objectives

Use the design process to create a product that addresses a real world need.

Describe the resources that would be needed to build a prototype of the product.

Describe how the resources are processed to create products.

Design an alternate use for an exiting product.

Explain how technology products have both positive and negative effects.

Design a trademark for your product and explain how it protects your product.

Instructional Activities

Brainstorm with a group possible products that could be developed to address a real-world problem.

Use the design process to create your product.

Use Google SketchUp to design a prototype of the product.

Research that resources that would be used to produce the product and report the findings in a Word document.

Post a printout of your product along with the resources used to share with classmates for suggestions on modifications to the product.

Use a graphics program to design a trademark for your product.

Create a Venn diagram which explains the positive and negative effects your product might have on the environment, humans, and other species.

Interdisciplinary Connections

Art- Design and graphics for trademarks

Science- Invention research

Texts and Resources

Computers with internet access

SketchUp

MS Word

Paint or other graphics program

Paper/pencil

Books and periodicals

Assessment

- **Observation**
- **Participation**
- **SketchUp design printout**
- **Venn Diagram (positive/negative effects)**

4th grade, Unit #4, Technology, Technology Design & Troubleshooting

Content Area: **Technology**
Course(s): **Technology**
Time Period: **April**
Length: **10 weeks**
Status: **Published**

Enduring Understanding

The design of a product includes looking at the user experience and troubleshooting.

Essential Questions

- **How do hardware and software work together to create a technology system?**
- **How should one go about troubleshooting a technology problem?**
- **What do software designers think about when designing a user experience/interface?**

Standards

TECH.8.2.5.E.CS1	**Computational thinking and computer programming as tools used in design and engineering.**
TECH.8.2.5.E.4	**Use appropriate terms in conversation (e.g., algorithm, program, debug, loop, events, procedures, memory,**

	storage, processing, software, coding, procedure, and data).
TECH.8.2.5.A.CS2	The core concepts of technology.
TECH.8.2.5.E.2	Demonstrate an understanding of how a computer takes input of data, processes and stores the data through a series of commands, and outputs information.
TECH.8.1.5.B.CS1	Apply existing knowledge to generate new ideas, products, or processes.
TECH.8.2.5.C.6	Examine a malfunctioning tool and identify the process to troubleshoot and present options to repair the tool.
TECH.8.2.5.C.CS3	The role of troubleshooting, research and development, invention and innovation and experimentation in problem solving.

Student Learning Objectives

Understand the basics of how computers work, such as the relationship between the hardware and operating system.

Identify how saving on a server or in cloud-storage differs from saving on a local drive.

Troubleshoot common problems such as freezing, missing files, and printer issues.

Evaluate the design of a computer and computer software with regards to user-interface and ease of use.

Instructional Activities

Explore the computer's interface and design.

Find out how to troubleshoot common problems.

Look at various alternatives in user interface and design (e.g. Windows, iOS, Android, etc.)

Interdisciplinary Connections

Art - Aesthetic design of a user interface

Texts and Resources

Computers, peripherals, and other devices

Assessment

- •Demonstration of skills
- •Quiz
- •Rubric for troubleshooting