

7th Grade - Unit 1 - Technology, Financial Literacy

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

Enduring Understanding

Basic financial literacy is critical in all people's lives.

Essential Questions

- How does responsible financial planning and money management improve the quality of our lives?

Standards

TECH.8.1.8.A	Students demonstrate a sound understanding of technology concepts, systems and operations.
TECH.8.1.8.A.4	Graph and calculate data within a spreadsheet and present a summary of the results
TECH.8.1.8.A.5	Create a database query, sort and create a report and describe the process, and explain the report results.
WORK.5-8.9.2.8.2	Income often comes from different sources, including alternative sources.
WORK.5-8.9.2.8.A.5	Explain the difference between "earned income" and "unearned income" (e.g., gifts) and why earned income is important.
WORK.5-8.9.2.8.3	Income affects spending decisions and lifestyle.
WORK.5-8.9.2.8.5	Taxes and the cost of employee benefits affect the amount of disposable income.
WORK.5-8.9.2.8.2	Money management is reliant on developing and maintaining personal budgets.
WORK.5-8.9.2.8.B.6	Construct a budget to save for long-term, short-term, and charitable goals.
TECH.8.1.8.A.CS2	Select and use applications effectively and productively.
	Graph and calculate data within a spreadsheet and present a summary of the results
	Create a database query, sort and create a report and describe the process, and explain the report results.

Student Learning Objectives

Differentiate between financial wants and needs.

Explain the difference between earned and passive income.

Explain the purpose of taxes and how they affect disposable income.

Evaluate why and how debt happens.

Instructional Activities

Money Island online simulation sponsored by Hope Bank.

Class trip planning using MS Excel.

Interdisciplinary Connections

Math: Finances, spreadsheets, formulas

Texts and Resources

Money Island online program

Money Island Workbooks

Money Island Passports

Computers with Internet access

Excel

Assessment

- Class trip planning in Excel
- Money Island Quizzes

7th Grade - Unit 2 - Technology, Research Project

Content Area: **Technology**

Course(s): **Technology**

Time Period: **November**

Length: **8 weeks**

Status: **Published**

Enduring Understanding

Conducting research projects and presenting findings in the form of effective essays and presentations is an important skill for high school, college, and beyond.

Essential Questions

- How do I conduct research in a way in which I will get accurate and useful information?
- How do I create an effective multimedia presentation?

Standards

TECH.8.1.8.F.CS1 TECH.8.1.8	Identify and define authentic problems and significant questions for investigation. All students will use digital tools to access, manage, evaluate, and synthesize information in order to solve problems individually and collaborate and to create and communicate knowledge.
TECH.8.1.8.A LA.6-8.CCSS.ELA-Literacy.WHST.6-8.2a	Students demonstrate a sound understanding of technology concepts, systems and operations. Introduce a topic clearly, previewing what is to follow; organize ideas, concepts, and information into broader categories as appropriate to achieving purpose; include formatting (e.g., headings), graphics (e.g., charts, tables), and multimedia when useful to aiding comprehension.
LA.6-8.CCSS.ELA-Literacy.WHST.6-8.2b	Develop the topic with relevant, well-chosen facts, definitions, concrete details, quotations, or other information and examples.
LA.6-8.CCSS.ELA-Literacy.WHST.6-8.2c	Use appropriate and varied transitions to create cohesion and clarify the relationships among ideas and concepts.
LA.6-8.CCSS.ELA-Literacy.WHST.6-8.2d	Use precise language and domain-specific vocabulary to inform about or explain the topic.
LA.6-8.CCSS.ELA-Literacy.WHST.6-8.2e	Establish and maintain a formal style and objective tone.
LA.6-8.CCSS.ELA-Literacy.WHST.6-8.2f	Provide a concluding statement or section that follows from and supports the information or explanation presented.
LA.6-8.CCSS.ELA-Literacy.WHST.6-8.4	Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.
LA.6-8.CCSS.ELA-Literacy.WHST.6-8.5	With some guidance and support from peers and adults, develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach, focusing on how well purpose and audience have been addressed.
LA.6-8.CCSS.ELA-Literacy.WHST.6-8.6	Use technology, including the Internet, to produce and publish writing and present the relationships between information and ideas clearly and efficiently.
LA.6-8.CCSS.ELA-Literacy.WHST.6-8.7	Conduct short research projects to answer a question (including a self-generated question), drawing on several sources and generating additional related, focused questions that allow for multiple avenues of exploration.
LA.6-8.CCSS.ELA-Literacy.WHST.6-8.8	Gather relevant information from multiple print and digital sources, using search terms effectively; assess the credibility and accuracy of each source; and quote or paraphrase the data and conclusions of others while avoiding plagiarism and following a standard format for citation.
LA.6-8.CCSS.ELA-Literacy.WHST.6-8.9	Draw evidence from informational texts to support analysis, reflection, and research.
TECH.8.1.8.D.CS1	Advocate and practice safe, legal, and responsible use of information and technology.
TECH.8.1.8.F.CS3	Collect and analyze data to identify solutions and/or make informed decisions.
LA.7.CCSS.ELA-Literacy.SL.7.4	Present claims and findings, emphasizing salient points in a focused, coherent manner with pertinent descriptions, facts, details, and examples; use appropriate eye contact, adequate volume, and clear pronunciation.
LA.7.CCSS.ELA-Literacy.SL.7.5	Include multimedia components and visual displays in presentations to clarify claims and findings and emphasize salient points.
TECH.8.1.8.D.2	Demonstrate the application of appropriate citations to digital content.
TECH.8.1.8.D.4	Assess the credibility and accuracy of digital content.
TECH.8.1.8.A.2	Create a document (e.g. newsletter, reports, personalized learning plan, business letters or flyers) using one or more digital applications to be critiqued by professionals for usability.
TECH.8.1.8.A.CS2	Select and use applications effectively and productively.
TECH.8.1.8.D.3	Demonstrate an understanding of fair use and Creative Commons to intellectual property.
TECH.8.1.8.F.1	Explore a local issue, by using digital tools to collect and analyze data to identify a solution and make an informed decision.

Student Learning Objectives

Research a topic using a variety of sources.

Evaluate sources for usefulness and accuracy.

Collect information from web sources in order to create a properly formatted bibliography.

Take notes from web sources to use as part of a research project.

Type a 5-paragraph essay using a word processing program.

Include an effective introductory paragraph and thesis statement.

Develop body paragraphs with a topic sentence and supporting details.

Include an effective conclusion that sums up the topic.

Improve writing through revision and proofreading.

Use Word Processing features including text formatting, alignment, margins, and indents.

Include pictures and captions following an essay.

Create a multimedia presentation based on an essay that generates interest in the topic and presents the most important facts.

Instructional Activities

Students will choose or be given a topic to research. They will then conduct research using Internet and print sources, take notes from their sources and create a rough outline, type the rough draft of the essay, revise, proofread, and print the final essay.

Create a short presentation for the class.

Interdisciplinary Connections

Language Arts: Essay writing and research

Research topics may connect to Social Studies, Science, and other subjects.

Texts and Resources

Kids Discover magazines

Internet

Access to word processing software

Assessment

- Final essay project
- Preliminary research sheets
- Presentation
- Rough draft

7th Grade - Unit 3 - Technology, Engineering Design Process

Content Area: **Technology**
Course(s): **Technology**
Time Period: **January**
Length: **8 weeks**
Status: **Published**

Enduring Understanding

Engineers are professionals who use the Engineering Design Process to solve problems.

Essential Questions

- How do I follow the steps in the Engineering Design Process to solve problems?
- How does the Engineering Design Process facilitate improvements to products through the use of prototypes?
- How has globalization impacted engineering?

Standards

TECH.8.2.8.C.4	Identify the steps in the design process that would be used to solve a designated problem.
TECH.8.2.8.D.2	Identify the design constraints and trade-offs involved in designing a prototype (e.g., how the prototype might fail and how it might be improved) by completing a design problem and reporting results in a multimedia presentation, design portfolio or engineering notebook.
TECH.8.2.8.A.2	Examine a system, consider how each part relates to other parts, and discuss a part to redesign to improve the system.
TECH.8.2.8.A.4	Redesign an existing product that impacts the environment to lessen its impact(s) on the environment.
TECH.8.2.8.C.5b	Create a technical sketch of a product with materials and measurements labeled.
TECH.8.2.8.C.CS2	The application of engineering design.
TECH.8.2.8.C.5a	Explain the interdependence of a subsystem that operates as part of a system.
TECH.8.2.8.D.1	Design and create a product that addresses a real world problem using a design process under specific constraints.
TECH.8.2.8.C.7	Collaborate with peers and experts in the field to research and develop a product using the design process, data analysis and trends, and maintain a design log with annotated sketches to record the developmental cycle.
TECH.8.2.8.A.1	Research a product that was designed for a specific demand and identify how the product has changed to meet new demands (i.e. telephone for communication-smart phone for mobility needs).
TECH.8.2.8.A.3	Investigate a malfunction in any part of a system and identify its impacts.
TECH.8.2.8.A.5	Describe how resources such as material, energy, information, time, tools, people, and capital contribute to a technological product or system.
	Examine a system, consider how each part relates to other parts, and discuss a part to redesign to improve the system.

Student Learning Objectives

Explain what engineers do and how engineering is related to science, technology, and math.

List the steps in the Engineering Design Process.

Analyze how globalization has affected product design and manufacturing.

Recognize that many products are, in effect, systems that can be broken down into subsystems.

Explain how bias and ethics need to be considered in the Engineering Design Process.

Evaluate how the Engineering Design Process, including prototypes, facilitates improvements to a design.

Apply the Engineering Design Process in the course of solving a variety of design problems/challenges.

Conduct research to get expert advice in solving a design problem.

Instructional Activities

Designing and creating various projects. Some examples could be simple machines, paper cubes, floor plans, scale drawings, improving cell phone design, rube goldberg project, and Lego robots.

Interdisciplinary Connections

Projects may connect to engineering and science or math

ELA: Research

Texts and Resources

Depending on the projects chosen:

STEM kits such as K'Nex, Lego Mindstorms

West Point Bridge Design

Game Star Mechanics

Minecraft

Assessment

- Brainstorming/Notes
- Design plan/Scale drawings/etc.
- Prototype

7th Grade - Unit 4 - Technology, Polling, Surveying, Data Analysis

Content Area: **Technology**
Course(s): **Technology**
Time Period: **March**
Length: **4 weeks**
Status: **Published**

Enduring Understanding

Technology enables us to use and analyze data to make better decisions.

Essential Questions

- How does data help us understand a topic and make decisions?
- What are some examples of data collection technology?

Standards

TECH.8.1.8.F.1

Explore a local issue, by using digital tools to collect and analyze data to identify a solution and make an informed decision.

Student Learning Objectives

Use data collection tools such as web-based survey tools or computer-connected probes to assist in collecting and analyzing data.

Organize data into useful information.

Draw conclusions about a topic or experiment by analyzing results.

Instructional Activities

Opinion polls using polling tools

Political simulation with recording votes

Science experiments using probes to collect data

Interdisciplinary Connections

Math: data analysis

Texts and Resources

Socrative

Vernier Probes

Assessment

Rubric to assess selected project

7th Grade - Unit 5 - Technology, Programming

Content Area: **Technology**

Course(s): **Technology**

Time Period: **April**

Length: **5 weeks**

Status: **Published**

Enduring Understanding

Computer programming is a valuable skill that involves problem solving, critical thinking, and creativity.

Essential Questions

- How are computer programs structured?
- How do programmers solve problems?

Standards

TECH.8.2.8.E	Computational thinking builds and enhances problem solving, allowing students to move beyond using knowledge to creating knowledge.
TECH.8.1.8.B.CS2	Create original works as a means of personal or group expression.
TECH.8.2.8.D.5	Explain the impact of resource selection and the production process in the development of a common or technological product or system.
TECH.8.2.8.D.CS2	Use and maintain technological products and systems.
TECH.8.2.8.D.CS1	Apply the design process.
TECH.8.2.8.D.1	Design and create a product that addresses a real world problem using a design process under specific constraints.
TECH.8.2.8.E.CS1	Computational thinking and computer programming as tools used in design and engineering.
TECH.8.1.8.A.CS2	Select and use applications effectively and productively.
TECH.8.2.8.D.6	Identify and explain how the resources and processes used in the production of a current technological product can be modified to have a more positive impact on the environment.
TECH.8.1.8.A.1	Demonstrate knowledge of a real world problem using digital tools.

Student Learning Objectives

Identify the way computer software is programmed.

Define programming terminology such as objects, variables, loops, and conditional statements.

Follow directions to complete programming assignments.

Solve simple programming challenges.

Instructional Activities

Students will use a programming environment such as Scratch or Lego Mindstorms.

For some projects, they will follow a set of directions to create a program.

For other projects, they will create the program themselves.

Interdisciplinary Connections

Math: Problem solving

ELA: Direction following

Texts and Resources

Programming environment such as Scratch or Lego Mindstorms

Text resources for programming

Assessment

Anecdotal notes and observation of testing of programs

Quiz

Rubric to assess programming skills

7th Grade - Unit 6 - Technology - Inventions

Content Area: **Technology**
Course(s): **Technology**
Time Period: **May**

Length: **5 weeks**
Status: **Published**

Enduring Understanding

Inventions are designed by engineers to change the way people live, work, and play.

Essential Questions

How have various inventions changed the world?

How do inventions have both positive and negative impacts?

How can advanced word processing features such as text boxes and bulleted lists make for a more professional looking document?

How can design organization be used with corresponding images as well as words for presentation purposes?

Standards

TECH.8.2.8.B.5	Identify new technologies resulting from the demands, values, and interests of individuals, businesses, industries and societies.
TECH.8.2.8.A	Technology systems impact every aspect of the world in which we live.
TECH.8.2.8.B	Knowledge and understanding of human, cultural and society values are fundamental when designing technology systems and products in the global society.
TECH.8.2.8.B.1	Evaluate the history and impact of sustainability on the development of a designed product or system over time and present results to peers.
TECH.8.1.8.B.CS2	Create original works as a means of personal or group expression.
TECH.8.2.8.B.CS2	The effects of technology on the environment.
TECH.8.2.8.B.6	Compare and contrast the different types of intellectual property including copyrights, patents and trademarks.
TECH.8.2.8.B.2	Identify the desired and undesired consequences from the use of a product or system.
TECH.8.2.8.B.CS4	The influence of technology on history.
TECH.8.1.8.E.CS3	Evaluate and select information sources and digital tools based on the appropriateness for specific tasks.
TECH.8.2.8.B.3	Research and analyze the ethical issues of a product or system on the environment and report findings for review by peers and /or experts.
TECH.8.2.8.B.CS3	The role of society in the development and use of technology.
TECH.8.2.8.B.4	Research examples of how humans can devise technologies to reduce the negative consequences of other technologies and present your findings.
TECH.8.1.8.E.1	Effectively use a variety of search tools and filters in professional public databases to find information to solve a real world problem.
TECH.8.2.8.D.CS3	Assess the impact of products and systems.
TECH.8.2.8.A.CS1	The characteristics and scope of technology.
TECH.8.2.8.A.1	Research a product that was designed for a specific demand and identify how the product has changed to meet new demands (i.e. telephone for communication-smart phone for mobility needs).
TECH.8.1.8.A.2	Create a document (e.g. newsletter, reports, personalized learning plan, business letters or flyers) using one or more digital applications to be critiqued by professionals for usability.
TECH.8.1.8.E.CS2	Locate, organize, analyze, evaluate, synthesize, and ethically use information from a variety of sources and media.
TECH.8.2.8.B.7	Analyze the historical impact of waste and demonstrate how a product is up cycled, reused or remanufactured into a new product.
TECH.8.2.8.B.CS1	The cultural, social, economic and political effects of technology.
TECH.8.2.8.A.5	Describe how resources such as material, energy, information, time, tools, people, and capital contribute to a technological product or system.

TECH.8.2.8.C.3

Evaluate the function, value, and aesthetics of a technological product or system, from the perspective of the user and the producer.

TECH.8.1.8.E.CS4

Process data and report results.

TECH.8.1.8.E.CS1

Plan strategies to guide inquiry.

Student Learning Objectives

The students will:

Learn how to use word processing software to create a designed page layout using text boxes and various formatting techniques.

Use digital tools to research an invention.

Look at how their invention has impacted people in various ways.

Evaluate the design process behind various inventions.

Examine how inventions evolve over time - advancements, divergence, convergence.

Look at the environmental impact of inventions.

Instructional Activities

Students will create a mini-poster about an invention after researching it.

Interdisciplinary Connections

Language Arts, Science and Math

Texts and Resources

Word Processing program

Internet

Assessment

Observation and anecdotal notes evaluating participation

Rubric to assess the print of their final design

