# Unit 2 Technology Shark Tank, Invention & Innovation

Content Area: **Computer Science**
Course(s):
Time Period: **Marking Period 1**
Length: **10**
Status: **Published**

## Summary

In this project-based unit, students step into the role of inventors and entrepreneurs to design a technology-based product and pitch it “Shark Tank” style. Working alone or with partners, students brainstorm a real-world problem, decide whether their solution is an invention (something new) or an innovation (an improvement to existing technology), and submit a New Business Request for teacher approval. They then move through the engineering design process to create a prototype, design an advertisement, and write and rehearse a persuasive pitch. Finally, students present to a panel of “sharks” (classmates, teachers, or guests) and answer questions about their product. The unit emphasizes the design process, trade-offs and constraints, the relationship between technology and human needs, and clear, persuasive communication.

Revision Date: July 2026

## Essential Questions

- How does technology develop in response to human needs and wants?
- What is the difference between an invention and an innovation?
- How do designers use a process — and manage trade-offs and constraints — to turn an idea into a product?
- What makes a pitch persuasive, and how do you convince others your product has value?

## Enduring Understandings

- New technologies are created to solve problems and meet human needs; existing technologies are often improved (innovated) to meet new demands.
- The engineering design process is iterative — ideas are proposed, modeled, tested, and refined based on feedback.

- Every design involves trade-offs among competing requirements such as cost, materials, time, and audience.
- Clear, persuasive communication is essential to bringing a product to an audience or market.

## Students Will Know

- The difference between an invention and an innovation, and how a product can be modified to meet a new demand.
- The basic steps of the engineering/design process (identify a problem, brainstorm, propose, prototype, test, refine).
- That design decisions involve trade-offs and constraints, and that products are evaluated for function, value, and aesthetics.
- How technology influences — and is influenced by — economic, social, and cultural needs.
- The elements of an effective advertisement and a persuasive pitch.

## Students Will Be Skilled At

- Generating and refining a technology-based product idea that solves a real problem.
- Documenting design decisions, constraints, and trade-offs.
- Building a prototype (physical model, sketch, or digital mock-up) of their product.
- Designing a persuasive advertisement with all required elements.
- Writing, rehearsing, and delivering a persuasive pitch, and fielding questions from the “sharks.”

## Learning Plan

- Day 1 – Launch & Foundations
    - Show 1–2 Shark Tank clips and discuss what made them persuasive.

    - Introduce the project, timeline, and rubric.
    - Teach invention vs. innovation with quick examples of products modified to meet a new demand (8.2.8.NT.4).
- Day 2 – Design Process & Technology's Role
    - Walk through the engineering design process, constraints, and trade-offs (8.2.8.ED.2, 8.2.8.ED.6).
    - Briefly connect technology to human needs and ethics (8.2.8.ITH.1, 8.2.8.EC.1, 8.1.8.IC.1).
    - Set up solo/partner groups and distribute the packet.
- Day 3 – Brainstorm
    - Complete brainstorm pages: real problem, product idea, target customer, competitors, name, and slogan.
    - Begin the New Business Request form.
- Day 4 – New Business Request & Approval
    - Finish the form.
    - Teacher conferences and approves or sends back for revision before any building begins.
- Day 5 – Prototype Planning & Build
    - Sketch/spec the design.
    - List materials.
    - Start building the prototype — physical model, detailed sketch, or digital mock-up.
    - Document decisions, constraints, and trade-offs (8.2.8.ED.3, 8.2.8.ED.7).
- Day 6 – Build & Advertisement
    - Continue the prototype.
    - Complete a mini-lesson on advertisement elements.
    - Begin the advertisement, including name, slogan, cost, where to buy, what it does/problem solved, and visuals.
- Day 7 – Check-In & Iterate
    - Conduct a prototype and advertisement check-in with peer feedback.
    - Refine the prototype and advertisement based on feedback.
    - Reinforce the iterative nature of design (8.2.8.ED.1 — evaluating function, value, and aesthetics).

- Day 8 – Pitch Writing
    - Complete a mini-lesson on persuasive speaking.
    - Review the speech guidelines: hook, problem, solution, differentiation, price/customer, and close.
    - Draft the pitch.
- Day 9 – Rehearsal
    - Rehearse with peer feedback.
    - Anticipate likely Shark questions.
    - Run mock Q&A.
    - Make final tweaks to the pitch, advertisement, and prototype.
- Day 10 – Shark Tank Presentations & Debrief
    - Deliver pitches.
    - Present advertisements and prototypes.
    - Field Shark questions.
    - Optional voting/awards: Best Idea, Most Marketable, Most Innovative.
    - Close with a brief debrief revisiting the essential questions.

## Assessment

Assessments

- Formative: Brainstorm pages, approved New Business Request form, prototype check-ins, and pitch rehearsal feedback.
- Summative: The final Shark Tank pitch, advertisement, and prototype, scored with the project rubric.
- Benchmark: Check-for-understanding on the design process and the invention vs. innovation distinction.
- Alternative Assessment: Written business proposal or recorded pitch for students who need an alternative to a live presentation.

## The Project: Interactive Invention & Innovation

Each student (or pair) designs and pitches a technology-based product. The product must be a technology — a

new device, gadget, app, tool, or software, or a meaningful improvement to an existing technology. Students complete the project in four phases.

What counts as “technology-based”?

- A new device or gadget (e.g., a smart accessory, wearable, or household tool).
- An app or piece of software that solves a problem.
- An improvement (innovation) to an existing technology — a new feature, redesign, or repurposing of a current product.

# Phase 1 – Brainstorm

Students brainstorm freely before committing to an idea, considering:

- What problem will my product solve? What inspires me?
- Who is my customer? How much will I sell it for?
- What makes my product different from others in the market? Who are my competitors?
- What will I need to create the product?
- How will I persuade others to buy it?
- What is the name of my product, and what is a catchy slogan?

# Phase 2 – New Business Request (Teacher Approval Required)

Students complete and submit this form for approval before building anything.

| | | |
|---|---|---|
| Name(s) | | |
| Name of Product | | |
| Type | Invention □ | Innovation □ |
| What does your product do? | | |
| What problem does it solve? | | |
| Who is the customer? | | |
| How will you create it? (materials/tools needed) | | |
| Teacher Approval | | |

# Phase 3 – Create

Advertisement – must include:

- Name of product and catchy slogan

- Cost of product and where it can be bought
- What the product does and what problem it solves
- Pictures of the product and other supporting visuals

Prototype – a model of the invention/innovation (physical build, detailed sketch, or digital mock-up).

Persuasive Pitch ("speech") – written following the speech guidelines below.

# Phase 4 – Pitch to the Sharks

- Deliver the rehearsed, memorized pitch to the panel of "sharks."
- Present the advertisement and prototype.
- Answer questions the sharks ask about the product.
- Optional: sharks "invest" or vote on products (Best Idea, Most Marketable, Most Innovative, etc.).

# Speech / Pitch Guidelines

1. Hook – open with a question, statistic, or short story about the problem.
2. Problem – clearly state the problem your product solves.
3. Solution – introduce your product and explain what it does and how it works.
4. Why it's different – how it stands out from competitors.
5. Price & customer – who it's for and how much it costs.
6. Close – a strong, persuasive ending and your slogan.

# Student Checklist

- I brainstormed, completed the New Business Request, and got it approved.
- I created an advertisement with all required elements (name, cost, where to buy, what it does, problem it solves, pictures, visuals, slogan).
- I wrote a persuasive pitch following the speech guidelines.
- I created a prototype of my invention/innovation.
- I practiced and rehearsed my pitch multiple times.
- I reviewed the rubric and know what is expected.
- I am ready to answer questions the sharks might ask.

# Project Rubric

Each category is scored 1–4 (16 points total). The rubric below fills in the editable template with level descriptors.

| Category | 1 – Beginning | 2 – Developing | 3 – Proficient | 4 – Exemplary |
|---|---|---|---|---|
| Preparedness | Unprepared; materials missing or incomplete. | Somewhat prepared; some materials missing. | Prepared with required materials ready. | Fully prepared, organized, and rehearsed. |
| Presentation / Speech | Reads directly; unclear; hard to follow. | Some eye contact; pacing or clarity uneven. | Clear, well-paced, mostly from memory. | Confident, persuasive, polished, memorized. |
| Knowledge of Product | Cannot explain how the product works. | Basic explanation; struggles with questions. | Explains function and answers most questions. | Expert command; answers all shark questions. |
| Advertisement | Missing several required elements. | Includes some required elements; basic visuals. | Includes all required elements; clear visuals. | All elements plus creative, polished design. |
| Product / Idea | Idea unclear or not technology-based. | Tech idea present but problem/solution vague. | Clear tech product that solves a real problem. | Original, well-justified tech solution with market awareness. |

## Materials

Core instructional materials:

- Project packet: brainstorm pages, New Business Request form, checklist, and rubric (provided above).
- Prototyping materials (craft/recycled materials) and/or digital design tools.
- Presentation and advertisement tools (e.g., Google Slides, Canva, poster board).
- Sample “Shark Tank” pitch clips and examples of advertisements.

Supplemental materials: Design-thinking and entrepreneurship resources.

Shark Tank Project

## Standards

Climate Change Standard: 8.2.12.ETW.3 – Identify a complex global environmental or climate change issue, develop a systemic plan of investigation, and propose an innovative sustainable solution.

Information Literacy:

This unit challenges students to locate, evaluate, and use information effectively. Information literacy includes, but is not limited to, digital, visual, media, textual, and technological literacy. Lessons may include the research process and how information is created and produced; critical thinking and using information resources; research methods, including the difference between primary and secondary sources; the difference between facts, points of view, and opinions, accessing peer-reviewed print and digital library resources; the economic, legal, social, and ethical issues surrounding the use of information.

| | |
|---|---|
| 1 | Developing Questions and Planning Inquiry |
| 3 | Seeking Diverse Perspectives |
| 5 | Presenting Arguments and Explanations |
| IC | Impacts of Computing |
| | Advancements in computing technology can change individuals' behaviors. Society is faced with trade-offs due to the increasing globalization and automation that computing brings. |
| 8.1.8.IC.1 | Compare the trade-offs associated with computing technologies that affect individual's everyday activities and career options. |
| ED | Engineering Design |
| | Engineering design is a systematic, creative, and iterative process used to address local and global problems. The process includes generating ideas, choosing the best solution, and making, testing, and redesigning models or prototypes. |
| 8.2.8.ED.1 | Evaluate the function, value, and aesthetics of a technological product or system, from the perspective of the user and the producer. |
| 8.2.8.ED.2 | Identify the steps in the design process that could be used to solve a problem. |
| 8.2.8.ED.3 | Develop a proposal for a solution to a real-world problem that includes a model (e.g., physical prototype, graphical/technical sketch). |
| 8.2.8.ED.6 | Analyze how trade-offs can impact the design of a product. |
| 8.2.8.ED.7 | Design a product to address a real-world problem and document the iterative design process, including decisions made as a result of specific constraints and trade-offs (e.g., annotated sketches). |
| ITH | Interaction of Technology and Humans |
| | Economic, political, social and cultural aspects of society drive development of new technological products, processes, and systems. |
| 8.2.8.ITH.1 | Explain how the development and use of technology influences economic, political, social, |

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|---|---|
| | and cultural issues. |
| 8.2.8.ITH.4 | Identify technologies that have been designed to reduce the negative consequences of other technologies and explain the change in impact. |
| EC | Ethics & Culture |
| | Technological disparities have consequences for public health and prosperity. |
| 8.2.8.EC.1 | Explain ethical issues that may arise from the use of new technologies. |

## Suggested Strategies for Modification

Suggested Strategies for Modification for Computer Science