SETTING THE STAGE FOR INNOVATION

Solving real-world problems using innovation and technology.



Exploring Your Tech Knowledge

Technology Profile List two reasons why this is your Draw your favorite type of favorite type of technology. technology. List two or three fun/interesting facts about yourself. Do you have a favorite app or game you like to play on a phone, tablet, or computer? Explain what is it?

Show What You Know Questionnaire

1. Which of the following is an example of an innovative solution to a problem?

- A) Using traditional farming methods to increase crop yield.
- B) Developing biodegradable packaging to reduce waste.
- C) Ignoring environmental concerns to maximize profit.
- D) Following the same process without changes.

2. How does technology impact society?

- A) It has no effect on social interactions.
- B) It can change how people communicate and work.
- C) It only affects large businesses.
- D) It decreases productivity.

3. How does the engineering design process help solve realworld problems?

- A) By providing steps to solve problems quickly.
- B) By encouraging creativity and innovation within guidelines.
- C) By avoiding testing and experimenting with ideas.
- D) By focusing on innovative ideas without practical use.

4. What is augmented reality (AR)?

- A) Overlays digital information onto the real world.
- B) Replaces the real world with a virtual environment.
- C) Enhances communication through holograms.
- D) Creates realistic graphics for video games.

5.	Short Answer: Describe a way you think technology might change in the future.				

Mastering the
Engineering
Design Process
Through
Documentation

IS IT TECHNOLOGY?

Next to each word, place a checkmark to indicate whether you think the item is technology, is not technology, or if you are undecided. Then, provide the **criteria** you used to make that decision.

Item	It is technology?	Is not technology?	Undecided	What criteria did you use to make your decision?
pencil				
water				
paper towels				

Career Exploration

Career Field/ Job Title	Job Related Skills

Engineering Design Process ARK-Educate Identify and Define the Problem Research Ideas and **Explore Possibilities** Brainstorm Possible Solutions Select the Best Based on Possible Solution testing and data, make changes to Create a Model the model, conduct another test. Test and and collect **Evaulate** data. Improve the Design Communicate the Results

Engineering Design Process

ARK-Educate

Identify and Define the Problem	 What is the problem that needs to be solved? Who or what population is the design product or solution for? Why is it important to solve this problem? What are the design criteria and constraints?
Research Ideas and Explore Possibilities	 Conduct research to identify if existing products or solutions already exist. Explore who the users or customers were of each product or solution and its strengths and weaknesses.
Brainstorm Solutions	 Generate a list of design solutions and technology that could be used to solve the problem. Withhold judgment to increase the number of potential solutions.
Select the Best Possible Solution	 Examine and analyze all brainstormed solutions to identify their strengths, weaknesses, and their ability to solve the design challenge. Select one solution, draw an annotated diagram, and create a materials list.
Create a Model	 Build the model (design product) using the diagram and materials list. If revisions are made to the model during construction, document these changes on the existing diagram and materials list.
Test and Evaluate	 Test the design product. Record observations, measurements, and data taken during the test. Evaluate how well the model solves the problem and meets the design criteria. What improvements should be made to improve the design.
Improve the Design	 Modify the model using the notes, data, and observations collected from the test phase. If revisions are made, document the changes on the diagram and materials list.
Communicate the Results	Collaborate with team members to determine the best way to communicate the teams' design solution, how it should be displayed during the presentation, and how the results will be shared.

Empowering Changemakers

A GLOBAL CHANGEMAKER

The United Nations (U.N.) is a global organization with the goal of promoting **cooperation**, **development**, **security**, and **peace** among nations worldwide.

In 2000, the U.N. created **17** "Sustainable Development Goals" to **promote worldwide collaboration**, **action** and **improvement** by the year 2030.

THE GLOBAL GOALS For Sustainable Development





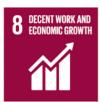
































United Nations. "Sustainable Development Goals." United Nations, 2024, https://www.un.org/sustainabledevelopment/sustainable-development-goals/

These 17 *United Nations Sustainable Development Global Goals* can guide you toward a better understanding of how issues such as:

basic needs
innovation
empathy
collaboration
sustainable development

are connected by

innovation technology industry

INNOVATIVE CHANGEMAKERS

PART 1: Complete the table below.		
WHAT IS YOUR DEFINITION OF AN "INNOVATIVE CHANGEMAKER?"		
WHO CAN BECOME AN "INNOVATIVE CHANGEMAKER?"		
LIST NAMES OF "INNOVATIVE CHANGEMAKERS" (if you know any)		
PART 2: In the box	k below, draw what you think an "innovative like.	

A FUTURE INNOVATIVE CHANGEMAKER

APPENDIX

VOCABULARY TERMS

BRAINSTORM to suggest and discuss ideas for solving a

problem

COMMUNICATE to share information orally, in written

form and/or graphically through various

forms of media

CONSTRAINT a limit or condition on the features or

functions of a design

CRITERIA a list of items (specifications) that must

be met in order for a solution to be

considered successful

DESIGN the process for creating structures or

systems to meet specific needs

ENGINEER a person who designs structures and

systems that address specific needs

ENGINEERING a series of flexible problem solving steps

DESIGN PROCESS that move a model from problem to

solution

IMPACT the effects of an engineering design

INNOVATION process of creating new ideas, processes,

services, or products that solve problems

in new or improved ways

INNOVATIVE new or improved tool, system or process that introduces significant improvements

or solve problems in new and clever ways

MODEL a diagram, replica, mathematical

representation, or computer simulation used to analyze a system for flaws, test a solution, visualize or refine a design, and/or

communicate design features

MODIFY changes made to a design/build

PLAN a systematic approach to solving a

problem

PROCESS a series of steps that form a pathway to a

solution

REFINE to improve through small changes

REFLECT to analyze a course of action, process, or

experience in order to generate a future

improvement or modification

TECHNOLOGY any tool system of process created by

humans to solve problems or make

tasks/life easier

TEST to determine whether or not a design,

model, process, or system meets the

criteria as a possible solution