



Engineering on the Go: The Technology Deck



2+ PLAYERS



FOR AGES 4+

★ How to Play ★

Technology Tales

Goal: Tell an imaginative story as a family.

Setup: Print and cut out the technology cards. Shuffle the deck. Deal five cards to each player.

Rules: One player starts the story by describing a character and a problem they have. (For example, a kid misses the school bus.) The player plays a technology card and explains how that technology solves the problem. (For example, the kid rides a bicycle and makes it to school on time.) The next player continues the story by describing another problem and playing a technology that solves it. Interesting or unusual uses of technology are okay, as long as you explain your thinking.

Ending the Game: Keep playing until you decide the story is over.

Bonus: If you enjoyed this game, check out the others! See the last two pages for six more games you can play with this deck.

Difficulty: Each card includes gear symbols, which show how hard a technology will probably be to use. Choose your level of difficulty.



Easy



Hard



Medium



Very Hard



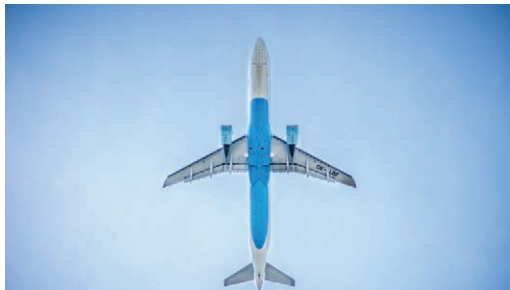
Air Conditioning



WHAT DO YOU THINK?

Air conditioning is a technology that changes the temperature. What other technologies change the temperature?

Airplane



CAREER CONNECTION

An **aerospace engineer** figures out how to make technologies like airplanes, rockets, and satellites.

Alphabet



WHAT DO YOU THINK?

The alphabet is not a physical object, but it is a technology. What problem did people design the alphabet to solve?

Bandage



CAREER CONNECTION

A **biomedical engineer** figures out how to make technologies related to health and medicine, like bandages and crutches.

Bicycle



WHAT DO YOU THINK?

What technologies help keep people safe when they are riding bicycles?

Book



WHAT DO YOU THINK?

How did people share and store information before they invented books? Name technologies they might have used.



Bottle



CAREER CONNECTION

A **packaging engineer** figures out how to create technologies like bottles and boxes to hold materials.

Bridge



CAREER CONNECTION

A **civil engineer** figures out how to make structures like bridges, dams, and highways.

Calendar



WHAT DO YOU THINK?

Many cultures around the world use calendars with twelve months. Why do you think they chose this number?

Camera



WHAT DO YOU THINK?

How did people record images before they invented cameras? Name some technologies they might have used.

Can Opener



WHAT DO YOU THINK?

What other technologies help people open things?

Car



WHAT DO YOU THINK?

How did people go from place to place before they invented cars? Name some technologies they might have used.



Cell Phone



WHAT DO YOU THINK?

A cell phone is a technology that can solve many different problems. What problems can a cell phone solve?

Clock



CAREER CONNECTION

A **mechanical engineer** figures out how to create machines, like clocks and engines.

Computer



WHAT DO YOU THINK?

An **input** is a way that a computer gets information, like a keyboard. What are other ways a computer gets information?

Dam



WHAT DO YOU THINK?

Dams solve many problems, like storing water and making electricity. Do dams cause any problems?

Fan



WHAT DO YOU THINK?

The energy to move some fans comes from electricity. What are other forms of energy that technologies use?

Flashlight



WHAT DO YOU THINK?

How did people make light before they invented flashlights? Name some technologies they might have used.



Game



WHAT DO YOU THINK?

Are there games you can play without any pieces or equipment?

Glasses



WHAT DO YOU THINK?

Glasses are a technology that people wear. What other technologies do people wear?

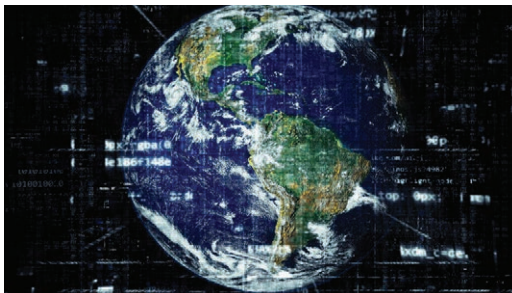
Helicopter



WHAT DO YOU THINK?

What is the same about helicopters and airplanes? What is different?

Internet



WHAT DO YOU THINK?

The Internet is a network that connects devices. What devices does it connect? How does it connect them?

Map



WHAT DO YOU THINK?

Some maps show countries. What other kinds of things do maps show?

Match



WHAT DO YOU THINK?

How did people start fires before they invented matches? Name some technologies they might have used.



Microphone



WHAT DO YOU THINK?

Some microphones make sounds louder. What are some technologies that make sounds quieter?

Microscope



WHAT DO YOU THINK?

A microscope is a technology used by scientists to see very small things. What other technologies do scientists use?

Mirror



CAREER CONNECTION

An **optical engineer** figures out how to make technologies related to light and vision, like mirrors and lasers.

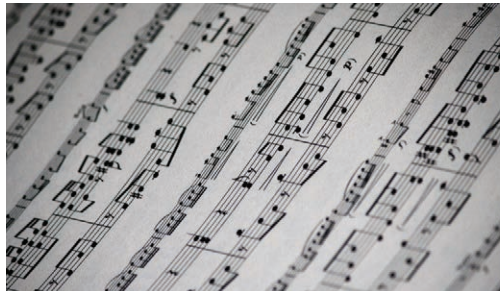
Money



WHAT DO YOU THINK?

Money is a technology because it was designed by people to solve a problem. What problem does money solve?

Music



WHAT DO YOU THINK?

What are some technologies people use to make music? What technologies do they use to record and share it?

Oven



WHAT DO YOU THINK?

Do ovens cause any pollution? What kind of pollution might they cause?



Pencil



WHAT DO YOU THINK?

A **material** is what something is made of. What are the materials in a pencil?

Printer



WHAT DO YOU THINK?

An **output** is a way that a computer gives information, like a printer. What are other ways a computer gives information?

Radio



CAREER CONNECTION

An **acoustical engineer** figures out how to make technologies related to sound, like radios and headphones.

Recipe



WHAT DO YOU THINK?

An **algorithm** is a set of step-by-step instructions to complete a task, like a recipe. What are some other algorithms?

Recycling



WHAT DO YOU THINK?

A **process** is a series of actions or steps leading to a result or goal, like recycling. What are some other processes?

Refrigerator



WHAT DO YOU THINK?

How did people keep food fresh before they invented refrigerators? Name some technologies they might have used.



Road



CAREER CONNECTION

A **transportation engineer** figures out how to make technologies for moving, like road and train systems.

Sailboat



CAREER CONNECTION

An **ocean engineer** figures out how to make technologies like ships, platforms, and measuring devices.

School



WHAT DO YOU THINK?

School is a technology that uses many other technologies. What are some technologies you use at school?

Scissors



WHAT DO YOU THINK?

A **property** is a special quality of a material, like being soft or shiny. What properties should scissors have?

Solar Panel



CAREER CONNECTION

A **green engineer** figures out how to make technologies that don't harm the environment, like solar panels.

Stethoscope

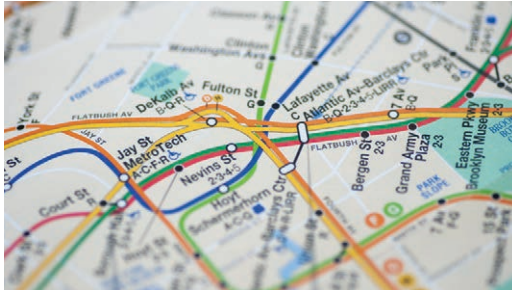


WHAT DO YOU THINK?

Doctors use stethoscopes to check people's health. What other technologies do doctors use to check people's health?



Subway System



WHAT DO YOU THINK?

A **system** is a group of parts that work together, like the trains and tracks in a subway. What are some other systems?

Sundial



WHAT DO YOU THINK?

How does a sundial work? What might be challenges for using one?

Sunscreen



CAREER CONNECTION

A **chemical engineer** figures out how to make technologies using chemicals, like sunscreen and shampoo.

Television



WHAT DO YOU THINK?

How did people watch performances before they invented televisions? Name some technologies they might have used.

Toothbrush



WHAT DO YOU THINK?

Some toothbrushes are electric and some are not. What other technologies can be electric or non-electric?

Tractor



CAREER CONNECTION

An **agricultural engineer** figures out how to make technologies related to food, like farming methods and equipment.



Traffic Light



WHAT DO YOU THINK?

Traffic lights tell drivers what to do. What other technologies tell drivers what to do?

Vaccine



WHAT DO YOU THINK?

Vaccines are a technology that help people stay healthy. What other technologies help people stay healthy?

Wind Turbine



CAREER CONNECTION

An **electrical engineer** figures out how to make technologies that make or use electricity, like wind turbines and lights.

X-Ray



WHAT DO YOU THINK?

Why do doctors use x-rays?

Add your own technology on this card!

Add your own technology on this card!

★ Other Games to Play ★

Sorting

Goal: Sort all the cards into categories.

Setup: Lay all the technology cards out face-up on a flat surface.

Rules: As a group, choose a topic. For example: “Material,” “Power Source,” “Problem Solved,” or “Type of Engineer.” You can write the topic on a piece of paper for everyone to see.

Sort the cards into piles based on that topic. For example, if the topic is “Material,” you can sort the cards into technologies made mostly from

- glass (for example, a bottle)
- metal (for example, scissors)
- paper
- plastic
- stone or cement
- wood

Ending the Game: Keep playing until you have sorted as many cards as you can.

Mashups

Goal: Combine two technologies to design a new technology.

Setup: Shuffle the deck and fan it out.

Rules: Draw one card at random. Flip all the other cards face up and choose one to go with your first card. Imagine a technology you could create by combining those two technologies.

Some questions to think about:

- What problems do the technologies solve? What problem will the combined technology solve?
- Do the technologies share any parts? What parts will the new technology have?
- What materials are the technologies made from? What materials will the new technology be made from?
- What will you call the new technology?

Ending the Game: When you have designed your new technology, you can draw a picture or tell people about it.

Foreheads

Goal: Guess a technology without looking at it.

Setup: Shuffle the deck and place it face down.

Rules: One player draws the top card of the deck and holds it on their forehead without looking at it. That player asks other players yes-or-no questions to figure out what the technology is. For example:

- Is it used to _____?
- Is it powered by _____?
- Is it made mostly of _____?
- Is it designed by a(n) _____ engineer?

Ending the Game: When the player guesses the technology, another person takes a turn as the guesser.

Bonus: For added challenge, have multiple players with cards on their foreheads at the same time.

Difficulty

The gear symbols show how hard a technology will probably be to use in a game. You can choose which difficulties to play with.

 Easy   Medium   Hard     Very Hard

★ Other Games to Play ★

Descriptions

Goal: Get other players to guess a technology without saying what it is.

Setup: Shuffle the deck and place it face down.

Rules: One player draws the top card of the deck. That player describes the technology on the card without naming it. For example:

- It is made of glass.
- It helps people see behind them.
- An optical engineer designed it.

The other players try to guess what it is.

Ending the Game: When someone guesses the technology, they take a turn as the describer.

Bonus: For added challenge, play on teams. See how many technologies each team can guess within a time limit.

Charades

Goal: Get other players to guess a technology by acting it out.

Setup: Shuffle the deck and place it face down.

Rules: One player draws the top card of the deck. That player acts out the technology on the card without using words. For example, the actor can

- pretend to be the technology.
- pretend to be a person using it.

The other players try to guess the technology. This game works well if you play after a different game and use the same cards.

Ending the Game: When someone guesses the technology, they take a turn as the actor.

Bonus: For added challenge, play on teams. See how many technologies each team can guess within a time limit.

Dominoes

Goal: Play all the cards in your hand by connecting them to cards on the table.

Setup: Shuffle the deck. Deal each player seven cards. Flip one card faceup in the center of the playing space.

Rules: Players take turns placing a card in a grid on the playing space. Each card must touch one or more other cards already played that it has something in common with. For example,

- they solve a similar problem.
- they have a shared part.
- they use the same power source.
- they are made from the same material.

If a player can't go, they draw a card instead.

Ending the Game: When someone plays their last card, the game is over!

Keep Playing

Once you have played with the deck for a while, you can

- choose new technologies to play with. If you want, you can make cards for them.
- find new games to play with the deck. For example, you can play **20 Questions**, **Concentration**, or **Go Fish!**
- use the prompts at the bottom of the cards to start conversations about technologies and engineering careers.

If you play for a few minutes each day, you can make thinking about technology and engineering part of your family routine!