Wizkids Club
IMAGINE. BUILD. PLAY.

FAMOUS STEM INVENTORS

True Stories of Famous Young Inventors with Awesome Sketching and Building Activities for Kids Ages 6-10 years

Author: Sumita Mukherjee

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Written by:
Sumita Mukherjee

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New Release

Grades: 1-5
Skill level: Beginner
Time: 21 projects; 30-40 minutes each

STEAM AHEAD! DIY FOR KIDS is an amazing book full of hands-on activities. With awesome Science, Technology, Engineering, Art and Math project ideas, it is an easy way to entertain any bored kid! A great way to acquire 21st century skills and STEM learning.

Inside this book you will find projects on LED cards, dance pads, handmade scraps, bubble blowers, Play-Doh circuits, cloud lanterns, scribbling bots and more!

Awarded 5 stars by READERS' FAVORITE site, Parents, Educators, Bloggers and Homeschoolers.

BUY NOW ON AMAZON

Grades: 1-5
Skill level: Beginner
Time: 19 projects; 30-40 minutes each

COOL SCIENCE EXPERIMENTS FOR KIDS is an amazing book full of hands-on activities. With awesome Science, Technology, Engineering, Art and Math project ideas, it is an easy way to entertain any bored kid!
A great way to acquire 21st century skills and STEM learning.

Inside this book you will find projects on Simple Machines, a Merry-go-Round, Spinning Doll, Exploding Bottle, Safe Slime, Architecture, Crafts, Games and more!

Loads of fun with projects that burst, glow, erupt, spin, run, tick and grow!

BUY NOW ON AMAZON

Table of Contents

Getting Started

I am absolutely thrilled that you picked this book.

I hope that this book will inspire you to be creative, inquisitive and inventive. It has stories about real kids who became inventors, some by accident and some by hard work. If they could do it, then you know you can too! You'll read about awesome kid creators from all over the world. Let their success encourage you to invent your own cool things. I've included lots of guidance and prompts to show you how.

PRINT IT: The "Invention, Engineering & Design for Kids" book can be printed in order to do the activities easily.

DECORATE THE ROOM: You can pin it near the place you do your homework. You'll find the Engineering Design Process template on page 6; it can be your reference for trying out your inventions.

TRY THE ACTIVITY: Use the stories of the kid inventors and try out your own creation using the design prompts or invent something unique of your choice.

There are lots of experiments for you to try which will also help you become a great inventor. Some of themrequire you to ask for your parent's or an adult's help. They are all so fun to do with your friends, neighbors and siblings.

I can't wait to hear about what you create! I would love to see photos of your inventions and invite you to share them on Facebook:
https://www.facebook.com/wizkidsclub.com

Go ahead and access the inventions from the WIZKIDS CLUB!
Let's explore and invent together!

Introduction- How Do People Invent Things?

People from every corner of the world, of different ages, with different levels of education invent by finding out problems, using creative ideas, and developing new solutions. Inventors' and engineers' initial ideas rarely solve a problem. Instead, they try different ideas, learn from mistakes, and try again. There are a series of steps they use to arrive at a solution and it is called the Engineering Design Process. As you work through your invention process, use the guide below to understand the invention process and tie it to specific steps of the Engineering design process.

Five steps that can help you to invent something new

ASK:

- What are some different ways to tackle today's problem? Brainstorm ideas.
- How creative can we be? Off-the-wall suggestions often spark GREAT ideas!

IMAGINE:

- Which brainstormed ideas are really possible given our time, tools, and materials? Choose the idea that seems to work the best.

PLAN:

- Design and sketch out your idea.
- What materials will you need to build your invention?
- Come up with the step-by-step process in order to build it.

CREATE:

- Build it using the plan and the materials. Test it out and see what works and what doesn't.

IMPROVE:

- What do you think is the best feature of your invention? Why?
- If you had more time, how could you improve your invention?

Both inventors and engineers look for ways to improve things in areas like health, food, safety, transportation, aerospace, electronics, communication, and the environment. How about you try your own?

Engineering Design Process

Ask

- What is the problem?

Imagine

- Brainstorm
- Choose a solution

Plan

- Draw it!
- Make a material list

Create

- Make it
- Try out

Improve

- Make it better

GLOWING PAPER

Introducing Becky Schroeder- The Inventor of Paper that Glows in the Dark!

Do you ever wish that you could make the task of doing homework easier? Becky Schroeder didn't just wish this; she invented a tool to make it happen at the age of 12!

In 1974, when Becky was 10 years old, she was trying to do her math homework in her mom's car. Soon it got dark outside and she couldn't see the paper. She didn't have a flashlight nor did she want to turn on the car's light, as it would light up the entire car. She asked herself "Why not light up the paper instead?"

She took out her glow-in-the-dark Frisbee and thought, "what makes it glow?" She wrote down some ideas and did some research. She found out that the manufacturers used a substance called "PHOSPHORUS" to make things glow in the dark. Next day her parents took her to buy the paint. Soon she experimented with phosphorescent paint, spreading it over to cover an acrylic board. She created this board that glowed so she could write on it even when she was in a dark room. With further experiments and modifications, she finally developed her invention and named it "The Glow-Sheet".

Two years later at the young age of 12, Becky became the youngest woman to be granted patent in the United States for her Glo-Sheet invention.

Phosphorous: It is a chemical that glows in the dark and in moist air.

YOUR TURN: INVENT SOMETHING THAT GLOWS!

Use the Engineering Design Prompt to come up with an invention of your own.

ASK

What glowing thing can you make, that will solve a problem or make it better?

IMAGINE

Use your imagination to think of some solutions. Brainstorm ideas and choose the best option.

PLAN

Sketch your idea. Use the next page to make the design. Make a list of the things you will require.

CREATE

Using the materials, follow your plan and create it.

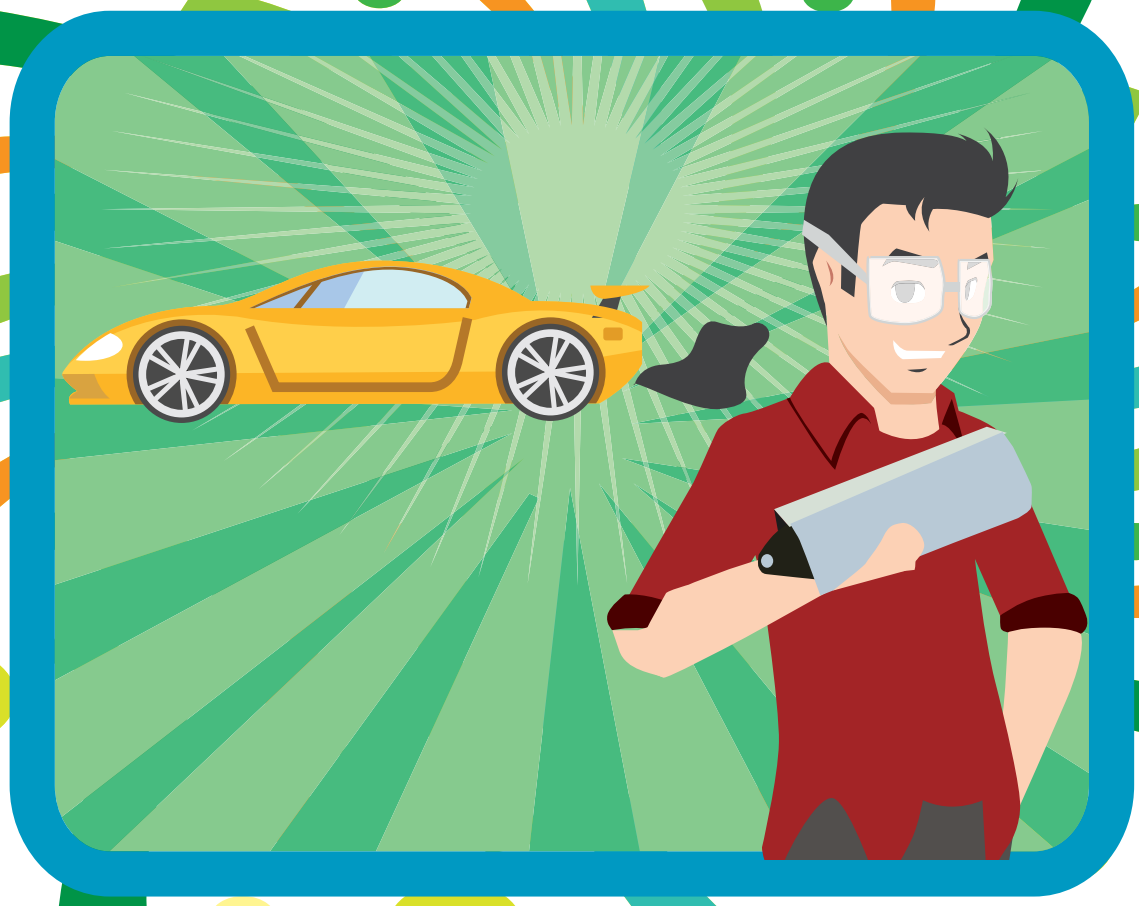
IMPROVE

What worked? What didn't? Modify your creation to make it even better.

PLAN: Sketch your idea here!

I created a glow-in-the dark jellyfish for my room at night. The secret ingredient was glow-in the dark acrylic paint!

OXYGEN PRODUCING CAR



Introducing Param Jaggi- Inventor of A Device that Cleans Car Exhaust!

While other teenagers in the United States were just learning how to drive, Param Jaggi at 15 came up with an idea to reduce pollution coming from a car and keep the air clean.

In 2008, Param was at a stop sign when he saw smoke coming out of the car in front. Through further investigation, he found out that the polluting agent was "carbon dioxide". An idea struck him and he wondered, "Why not create a device that cleans the smoke coming out of cars?"

Param started working on a solution and designed the "Algae Mobile". This device needs to be inserted into the tailpipe of a car. Through photosynthesis, algae inside the device converts carbon dioxide into oxygen and releases it into the air.

Param applied for a patent in 2009 and has been continuously improving his design. In May 2011, he received the U.S Environmental Protection Agency's award. With a cost of only about $30 per unit, there's a good chance we will one day have an Algae Mobile on our cars.

Carbon Dioxide: A gas, which is released into the air when car engines burn fuel. It isn't usually harmful unless there is too much in the air.
Photosynthesis: The process by which plants make their own food using sunlight, water and carbon dioxide from air.
Oxygen: Food in the air we breathe. It is given out by plants after photosynthesis takes place.

YOUR TURN: DESIGN A MACHINE THAT CAN CLEAN!

Use the Engineering Design Prompt to come up with an invention of your own.

ASK

What cleaning thing can you make that will solve a problem or make it better?

IMAGINE

Use your imagination to think of some solutions. Brainstorm ideas and choose the best option.

PLAN

Sketch your idea. Use the next page to make the design. Make a list of the things you will require.

CREATE

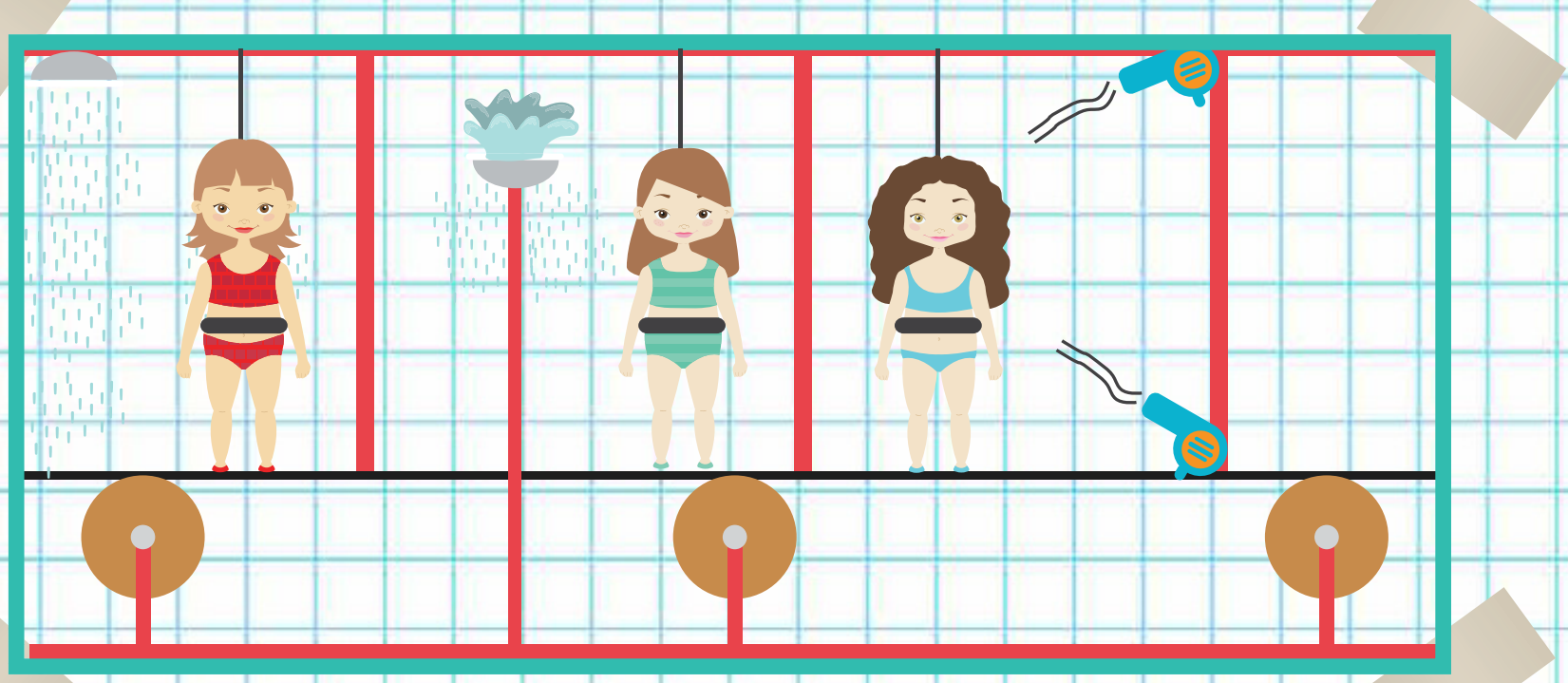
Using the materials, follow your plan and create it.

IMPROVE

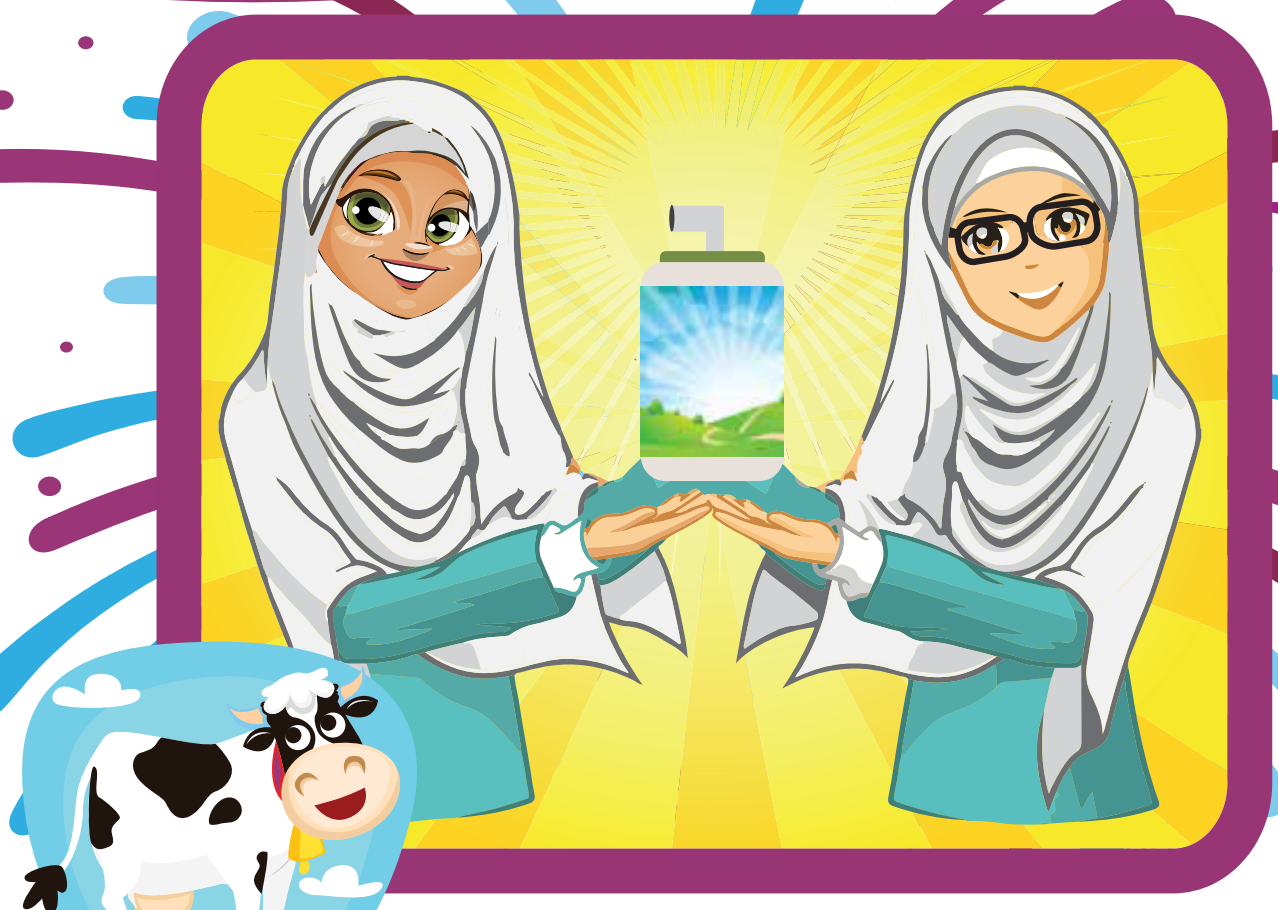
What worked? What didn't? Modify your creation to make it even better.

PLAN: Sketch your idea here!

What do you think of a washing zone for people?



COW POOP FRESHENER!



Introducing Dwi Nailul Izzah and Rintya Aprianti Miki- Inventors of Air Freshener!

Who would think of making air freshener using cow manure? The answer is two high school students from Indonesia! In 2013, these girls impressed judges at the National Science Project Olympiad with their ingenious air freshener made from cow dung. Believe it or not, the organic produce actually has a pleasant plant-like fragrance.

Dwi Nailul Izzah and Rintya Aprianti Miki collected the necessary material from a cattle farm in East Java, and let it ferment for three days. Then they extracted the water from the fermented manure and mixed it with coconut water. Finally, they distilled the liquid to eliminate all impurities. The whole process took 7 days, which is pretty long, but in the end they obtained what they were looking for – a liquid air freshener with an herbal aroma from digested cow food. They said that their air freshener did not contain chemicals to smell fragrant and it was pure. They had removed all the harmful materials from the dung; also the chemicals that made it smell bad. This made the air freshener better than most air fresheners as many of them include chemicals, which are known to make people sick.

Manure: The term used to refer to the droppings of some plant-eating animals. Their droppings consist of large amounts of partially digested plant material broken down into small fragments.
Ferment: The process in which a substance breaks down into a simpler substance

YOUR TURN: CREATE SOMETHING USEFUL FROM WASTE.

Use the Engineering Design Prompt to come up with an invention of your own.

ASK

What useful thing can you make from waste, that will solve a problem or make it better?

IMAGINE

Use your imagination to think of some solutions. Brainstorm ideas and choose the best option.

PLAN

Sketch your idea. Use the next page to make the design. Make a list of the things you will require.

CREATE

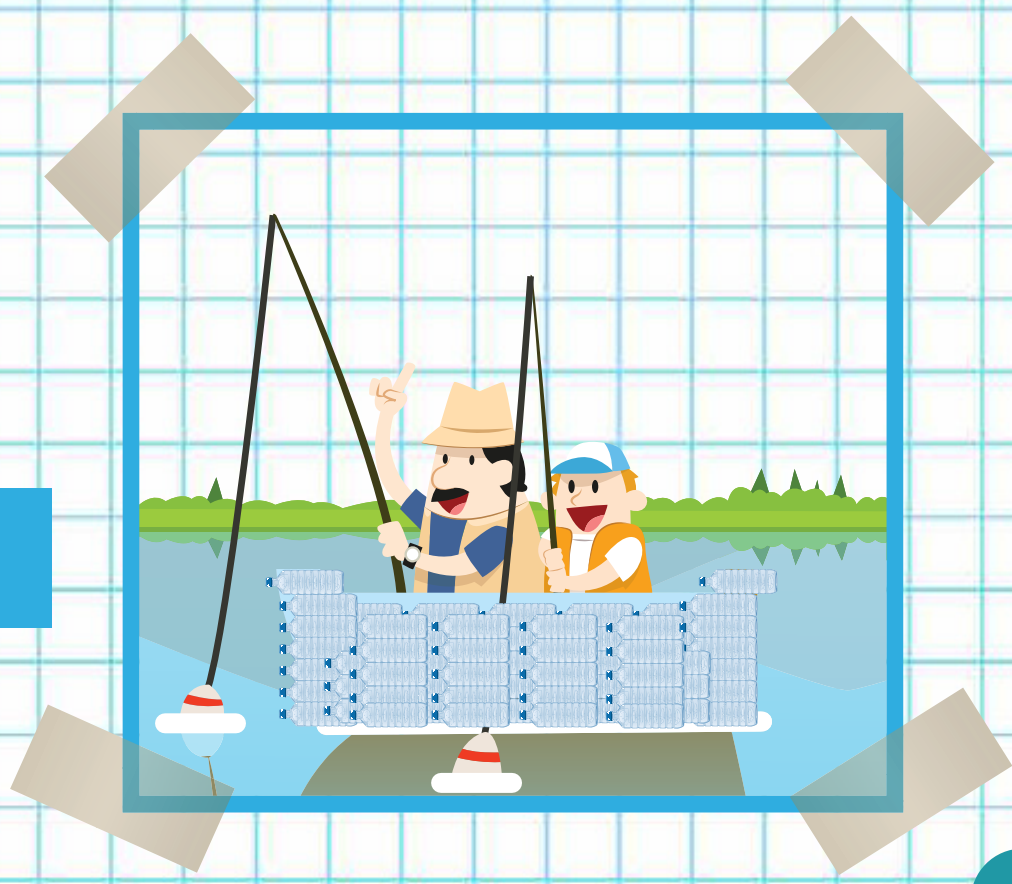
Using the materials, follow your plan and create it.

IMPROVE

What worked? What didn't? Modify your creation to make it even better.

PLAN: Sketch your idea here!

I am working on my plastic bottle boat!



HEALTHY POPSICLE

Introducing Frank Epperson- Inventor of Frozen Food on a Stick.

Sometimes inventions happen by accident: Frank Epperson will agree to that! In 1905, one winter night, 11-year-old Frank left a powder-flavored soda water concoction with a stirring stick out on the porch overnight. Of course, the next morning the mixture had frozen solid. When he pulled it, out came the stick with the tasty soda.

Many years later in 1922, when he was 28, he gave out his frozen treat at a fireman's ball. Everyone loved them and it was a huge hit. He patented his idea and called it an "Epsicle Ice Pop." Later he changed the name to "Popsicle."

In 1925, Frank sold the rights to NY's Joe Lowe Company. That's when the Popsicle sales really took off as it gained popularity. Later the frozen treats were improvised as the twin Popsicle, Fudgsicle, Creamsicle, Dreamsicle and many more.

Concoction: To make a food or drink by mixing different things together.

YOUR TURN: CREATE A NEW SNACK

Use the Engineering Design Prompt to come up with an invention of your own.

ASK

What snack can you make from any food that already exists?

IMAGINE

Use your imagination to think of some solutions. Brainstorm ideas and choose the best option.

PLAN

Sketch your idea. Use the next page to make the design. Make a list of the things you will require.

CREATE

Using the materials, follow your plan and create it.

IMPROVE

What worked? What didn't? Modify your creation to make it even better.

PLAN: Sketch your idea here!

Nothing like the fruit pop!

How about veg-soup pops?

Do you want to try mine?

WINDSURFING MYSTERY

Introducing Peter Chilvers- Inventor of the first surfboard with a sail!

In 1958, 12-year-old Peter Chilvers created the very first sailboard.

As a young boy on Hayling Island, located on the southern coast of Britain, Chilvers enjoyed a variety of water sports. He was very fond of water surfing and one day he thought "I wonder what would happen if I put a sail on my surfboard?"

He decided to build his first windsurf with plywood and put a sail on it. This became the first sailboard and soon a sport. It was a remarkable achievement being one of the youngest inventors we know of.

Later on, he grew up to be a part of the Lotus Car Manufacturing Company that produced some of the fastest racing cars in the United Kingdom.

Peter is also involved in building a windsurfing and sailing center on Hayling Island to remember the place where windsurfing was invented and where he grew up..

Surfboard: A long, narrow board that is used for surfing
Water surfing: The activity or sport of riding ocean waves on a special board called a surfboard.

YOUR TURN: MAKE A WATER TO AIR FLYING MACHINE!

Use the Engineering Design Prompt to come up with an invention of your own.

ASK

What flying machine can you make, that can travel from water to sky?

IMAGINE

Use your imagination to think of some solutions. Brainstorm ideas and choose the best option.

PLAN

Sketch your idea. Use the next page to make the design. Make a list of the things you will require.

CREATE

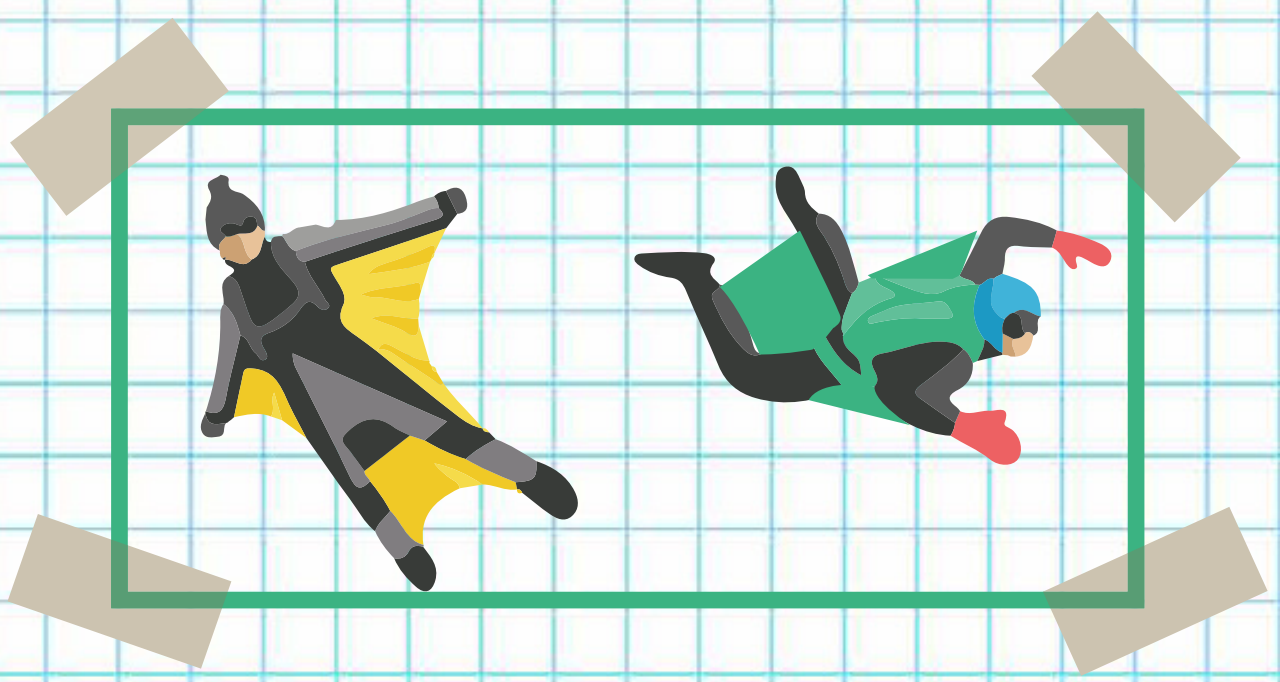
Using the materials, follow your plan and create it.

IMPROVE

What worked? What didn't? Modify your creation to make it even better.

PLAN: Sketch your idea here!

I made this costume inspired by the flying fish. Now I can shoot out of the water and fly straight to the sky!



AMAZING TELEVISION

Introducing Philo Farnsworth - Inventor of Television

Can you imagine life without television? Without Philo Farnsworth, electronic television would not have been possible.

Philo T. Farnsworth was a talented scientist and inventor as a young boy. He was a farm boy and one day, while going up and down the rows, he came up with an idea. It occurred to him that an image could be sliced into such rows, back and forth, and then each row transmitted in a continuous sequence. In 1920, at 14 years, he consulted his school chemistry teacher by drawing a sketch on the blackboard. He received encouragement from his teacher and pursued this concept. In 1927, at 21, he developed and patented the world's first television. He is considered to be the godfather of the modern television. Some of his many creations also include the video camera tube.

Transmitted: The process of sending electrical signals or messages from one person or thing to another.

YOUR TURN: MAKE A PROJECTOR WITH A BOX AND MAGNIFYING GLASS!

Make a projector with a box and magnifying glass!

ASK

Can you make a projector using a smartphone, magnifying glass and a shoebox?

IMAGINE

Use your imagination to think of some solutions. Brainstorm ideas and choose the best option.

PLAN

Sketch your idea. Use the next page to make the design and make a list of the things you will require.

IMPROVE

Using the materials, follow your plan and create it.

ASK

What worked? What didn't? Modify your creation to make it even better.

PLAN: Sketch your idea here

I made this projector with a shoebox. Now, I can project any video from my smartphone on the wall!

EASY MUFFLER

Introducing Chester Greenwood - Inventor of Earmuffs

Previously, when Chester Greenwood was 15 years old, he was ice skating. But the bitter cold of winter in Farmington, Maine, was hard on his bare ears. He tried covering them with gloved hands, but that made skating difficult. He tried wrapping a woollen scarf around his head, but his ears were so sensitive to the fabric that it made them itch.

Chester had an idea. He took two pieces of wire and made them into circles to cover his ears, and then connected them with a longer wire to form a headband. His grandmother sewed velvet to the inside and beaver fur to the outside of the circles, to block out the winter air. His lightweight, hands-free, itch-free ear protectors became an instant hit with the other kids who asked him to make more.

At the prime age of 18, Chester got a patent for his "ear-mufflers" in 1877. By 1883, his Farmington factory produced 30,000 earmuffs a year, climbing to 400,000 by his death in 1937. Chester became famous for the earmuffs, but he had also patented many ideas in his lifetime. Farmington people loved Chester so much that, in 1977, the state declared December 21st as "Chester Greenwood Day." They held its first earmuff parade, which became an annual event.

Skating: An activity where you move around on the ice wearing skates. Skates have a metal frame that can be fitted to the sole of a shoe for gliding over ice.

Parade: A ceremonial procession, including people marching with a band, held in honor of a person, event, or thing

YOUR TURN: Make a hat that can make you cool!

Use the Engineering Design Prompt to come up with an invention of your own.

ASK

Can you make a hat that can help you cool down on a hot summer day?

IMAGINE

Use your imagination to think of some solutions. Brainstorm ideas and choose the best option.

PLAN

Sketch your idea. Use the next page to make the design and make a list of the things you will require.

IMPROVE

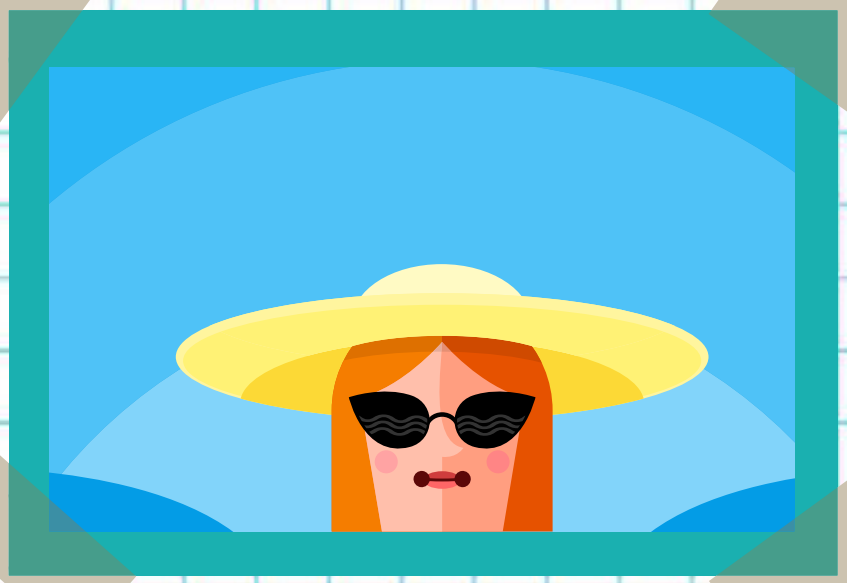
Using the materials, follow your plan and create it.

ASK

What worked? What didn't? Modify your creation to make it even better.

PLAN: Sketch your idea here!

I made this hat with a fan and water sprinklers on the side. It has an ice cube holder and the water sprays melted ice on a hot summer day, making my whole body cool down. The fan helps in making my face chilled and fresh.



GUMMY CHEWING GUM

Introducing Horatio Adams - Inventor of Bubble Gum

Though many attribute the creation of chewing gum to businessman Thomas Adams, it was actually his son Horatio that played an important role in the creation of this chewing gum.

In 1869, Adams had purchased Mexican chicle and was attempting to transform the natural substance into a rubber substitute. However, after spending some time with the substance, young Horatio quickly realized that chicle could be turned into a chewable substance.

He created 200 balls of what later became known as bubble gum. Horatio had the local druggist dispense the balls. By mid-afternoon that day, all bubble gum balls had been sold for 1 penny.

Chicle: It is a sticky white substance that seeps from the Sapodilla tree when its bark is cut.

YOUR TURN: MAKE A UNIQUE CANDY

Use the Engineering Design Prompt to come up with an invention of your own.

ASK

Can you make a unique candy that's safe to eat?

IMAGINE

Use your imagination to think of some solutions. Brainstorm ideas and choose the best option.

PLAN

Sketch your idea. Use the next page to make the design and make a list of the things you will require.

CREATE

Using the materials, follow your plan and create it.

IMPROVE

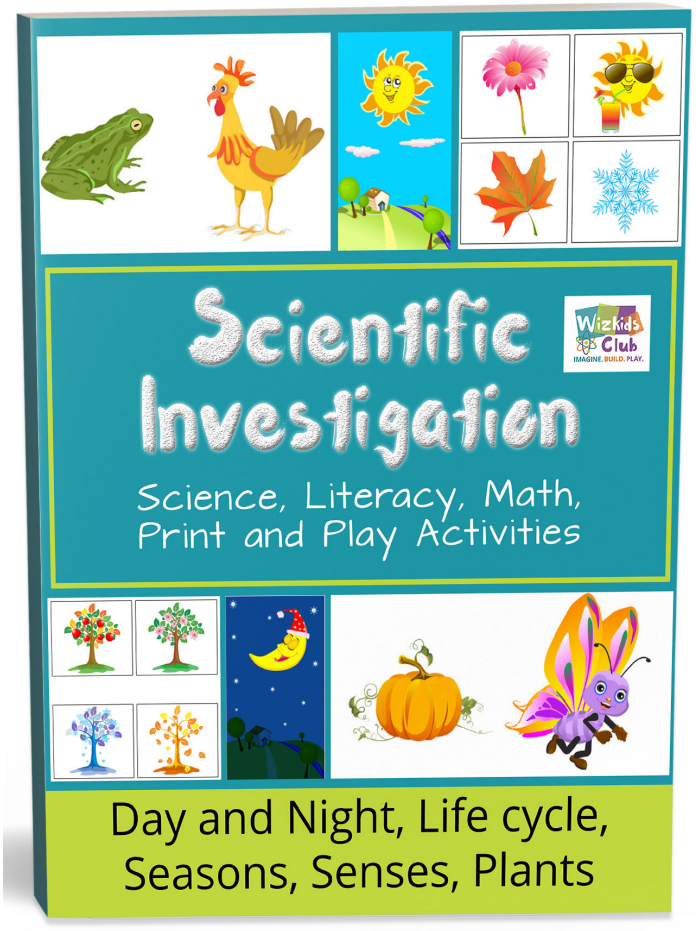
What worked? What didn't? Modify your creation to make it even better.

PLAN: Sketch your idea here!

I made this glow-in-the-dark lollipop. I mixed sugar syrup with tonic water and froze it on a stick. The tonic water makes it glow at night.

Books

MAKE: PAPER TOYS AND PLAY PACK



SCIENTIFIC INVESTIGATION

GHOST OF THE FORBIDDEN CITY

SUNKEN TREASURE HUNT

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