



Camp Invention®

Innovation Exploration Kit™,  
Elevate Series

# DESIGN THINKING PROJECT™



Discover the power of the  
**CAMP INVENTION®**  
**DESIGN THINKING PROCESS™**

Identify, Explore, Sketch, Prototype, Protect,  
and Pitch your own original invention!

Read prior to using the product.

# SAFETY AND HYGIENE



**Warning: Choking hazard– small parts.  
Not for children under 3 years.**

- All activities require adult supervision.
- Ages 5+.
- Read and follow all instructions.
- For safety and hygiene purposes, please be sure all children wash their hands after each activity.
- Demonstrate how to properly hold and use scissors. Do not run with scissors.
- Do not allow children to put materials in or near anyone's eyes, mouths, and ears.
- Do not play with or place plastic bags near the face or mouth.
- Ventilate the room when using markers.



## MATERIALS

- Black paper
- Black permanent marker
- Clay
- Clay tool
- Deal Cards sheet
- Design Thinking Portfolio
- Graph paper
- Inventor Log
- Markers
- Masking tape
- Patent Drawings sheet
- Patterned duct tape
- Pencil
- Pipe cleaners
- Plastic base
- Ruler
- Scissors
- The Creator's Key to Intellectual Property poster
- Tracing paper
- Transparency
- Video Game Controller Patent sheets
- White chalk



For an enhanced experience, MUSIC, POSTERS, AND VIDEOS can be found online at [invent.org/Elevate/Design-Thinking](https://invent.org/Elevate/Design-Thinking)

Use this password to access your Camp Invention experience:

**PROTOTYPE**

Need help? Please reach out to our Customer Relations Department at 800-968-4332.



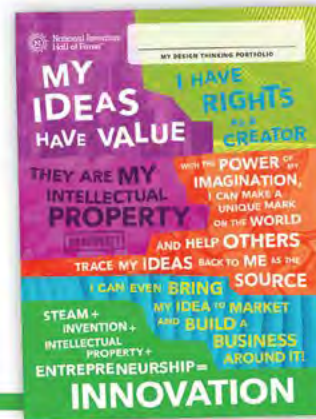
**YOUR  
IDEAS  
HAVE  
VALUE**



- 1** Get ready to use the **Camp Invention Design Thinking Process** to bring a new idea from your mind out into the world!

Did you know your ideas have value? It's true! They are your Intellectual Property and it is important to protect them.

- 2** Write your name on the front cover of your very own **Design Thinking Portfolio**.

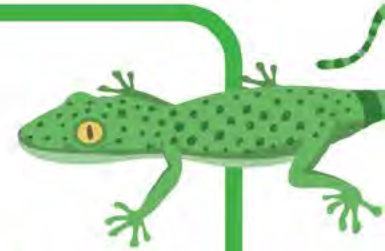


USE MARKERS, STICKERS, OR OTHER DECORATIVE ITEMS FROM HOME TO FURTHER PERSONALIZE YOUR PORTFOLIO.

Design can be a verb: "I love to **design** gecko habitats!" It can also be a noun: "Don't you just love the **design** of my gecko's habitat?"

If you've ever molded an object out of clay, then you've designed something!

**This is what designing is all about—molding and shaping an idea to take it out of your head and put it out into the world.**



- 3** Do any of the Camp Invention Design Thinking steps look familiar?



Let's jump into the process and get to know each one!

IF POSSIBLE, WATCH THE **DESIGN VIDEO** FOR MORE INFORMATION ON DESIGN THINKING.



Camp Invention® Design Thinking Process™ Challenge:  
**DESIGN A NEW VIDEO GAME CONTROLLER!**

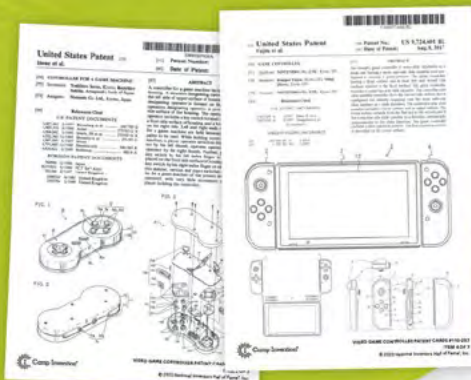
EXPERIENCE A RAPID ROUND OF THE PROCESS BY DESIGNING A CONTROLLER. THEN, CREATE YOUR OWN ORIGINAL INVENTION FROM SCRATCH.

**1** Take a piece of clay and roll it in your hands for a few minutes to make it easy to shape.



**2** Consider the **Identified** challenge: designing a new video game controller.

**3** Check out the Video Game Controller Patent sheets to **Explore** controller designs that already exist. Decide how yours will be unique.



**4**

Open your Inventor Log to the Controller Sketch and Logo page and **Sketch** your ultimate controller.



SKETCHES ARE MEANT TO BE ROUGH AND IMPERFECT.

**5**



THE PROCESS YOU ARE GOING THROUGH IS SIMILAR TO WHAT INVENTORS EXPERIENCE AS THEY COME UP WITH A GREAT IDEA. THEY SEARCH PRIOR ART—DRAWINGS AND DESCRIPTIONS OF INVENTIONS THAT ALREADY EXIST.

6

Open your Inventor Log to the Controller Sketch and Logo page and sketch a logo for your controller. Make sure your logo is original and not someone else's Intellectual Property.



7

Next, **Protect** your logo with a Trademark by placing a TM next to it.

ANY ITEM WITH THE SYMBOL TM OR ® MEANS THAT ITS PRODUCT NAME, SYMBOL, DESIGN, OR SLOGAN IS PROTECTED, AND NO ONE ELSE CAN USE IT WITHOUT PERMISSION.

Grab the clay and use it to make a **Prototype**, or model, or your one-of-a-kind controller. You can use the clay tool to add details to your controller.

USE OTHER TOOLS, LIKE CRAFT STICKS OR TOOTHPICKS, FROM AROUND YOUR HOME TO ADD FINER DETAILS TO THE CLAY.

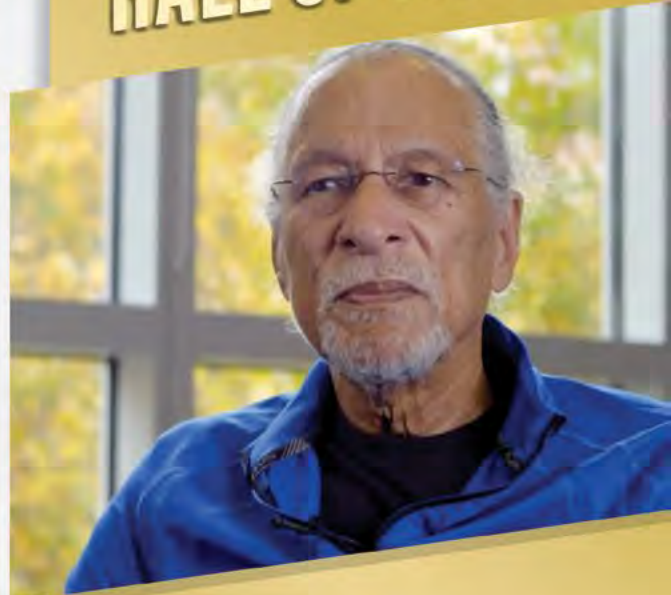
8

Now, **Pitch** your new controller to someone by sharing your prototype and logo. Describe its most unique features to convince them it is the next big thing!

9

Congratulations, you just completed a rapid round of the Camp Invention Design Thinking Process!

## MEET A HALL OF FAMER



National Inventors Hall of Fame® (NIHF) Inductee **James (Jim) West** coinvented the electret microphone. In addition to its high performance, accuracy, and reliability, the electret microphone became widely used because of its low cost, small size, and light weight. Electret microphones are used in everyday items from hearing aids and smartphones to sound and music recording equipment. West took apart his grandfather's pocket watch as a young boy. He encourages youth to design invention prototypes of their ideas!

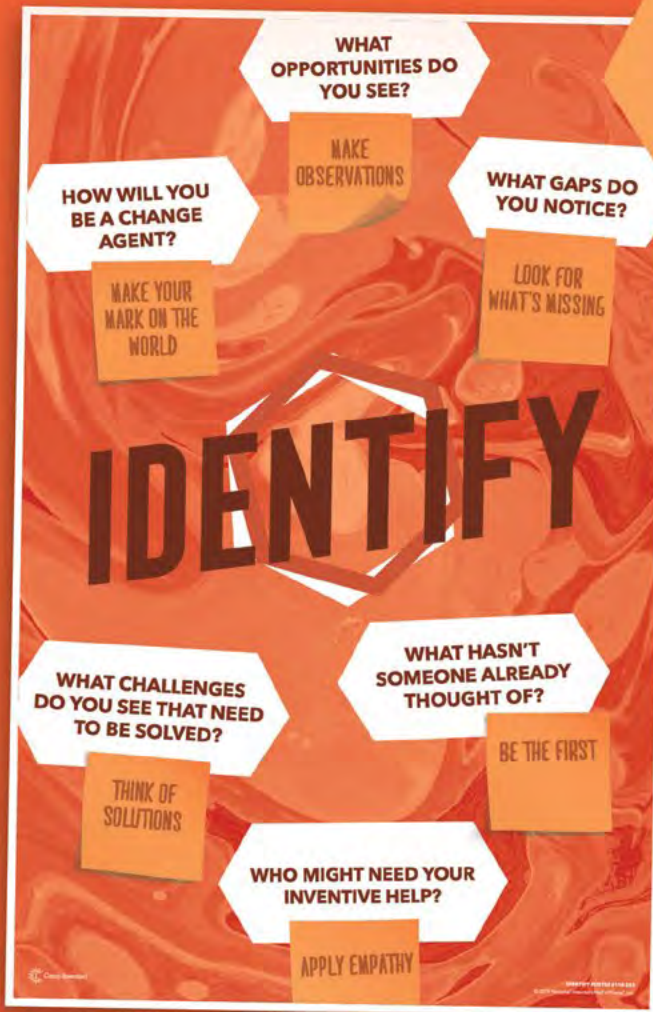


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Hall of Fame®



# IDENTIFY

Check out the **Identify** poster for quick tips on this step.



- 1 Now that you have experienced a rapid round of the Camp Invention Design Thinking Process, it's time to create your own invention!
- 2 **Identify** a challenge for which you want to design an inventive solution.

## DESIGN THINKING PROJECT™

Do you already have ideas for a challenge you want to solve or an invention you want to create? Write them on the Design Thinking Project Notes page and keep an open mind as you consider other possibilities.



3

Check out the Rules of Brainstorming page in your Inventor Log.

## TIPS AND TRICKS



## RULES OF BRAINSTORMING

Accept all ideas.  
Think of as many ideas as possible.  
Build on another's idea.  
Keep looking for new ideas.

## TEAM RULES

Agree on the same goal.  
Have a good attitude toward others and their ideas.  
Be patient with yourself and with your team.  
Include everyone.  
Have fun!



DESIGN THINKING  
PROJECT™

## MY INVENTION IDEAS

4

Now, turn to the Invention Ideas Page and write the following at the top:

**I wish I had a \_\_\_\_\_  
that could \_\_\_\_\_ .**

5

Generate at least three ideas for each blank and write them down.

If it is challenging to get started, fill in the first blank with three of the inventions from the Patent Drawings sheet.

IF POSSIBLE, WATCH THE IDENTIFY AND EXPLORE VIDEO FOR INSPIRATION.



**1**

Find the **Patent Drawings** sheet to see the Prior Art of some well-known inventions.

**2**

Circle three patent drawings you may want to **Explore** using as inspiration for your invention.

**3**

Place the tracing paper over one of the inventions you chose and trace it using a pencil.

**4**

Place the transparency over the tracing paper. Explore how you might change or enhance an invention by using the permanent marker to add new details and features.

# EXPLORE

Check out the **Explore poster** for quick tips on this step.

**5**

Repeat these steps with the other inventions you selected.

**6**

Now, look over your ideas and notes in your Inventor Log, as well as your patent drawing tracing paper and transparency.

Does one of these ideas stand out to you as the invention idea you most want to sketch, prototype, protect, and pitch?

Ask someone about challenges they have with tasks in their daily life.



## MEET A HALL OF FAMER



NIHF Inductee **Kristina Johnson**, inventor of Polarization-Control Technology, shares, "My inventing style is to first learn everything I can about the problem, work to understand it, and then think deeply about how I can connect what I know to solving what I don't know."

As you have explored during this activity, an important part of creative thinking is keeping open to new ideas, solutions, and suggestions. Inspiration can come from anywhere!

## QUICK TIPS FOR IDENTIFYING A CHALLENGE

Design a robot. What will you program it to do?

Imagine what the future will be like. What new inventions will be needed?

Check out the drawings of the backpack and the bicycle on the Patent Drawings sheet. What might you add or change?



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# SKETCH



- 1** It's time to take your original invention idea out of your mind and into the world by creating a **Sketch** of it!
- 2** Open your Inventor Log to the Design Thinking Notes page and make one or more sketches of your invention idea.




- 3** Use a piece of graph paper and a pencil to create a detailed drawing of your invention prototype. Add as many notes as you can to your drawing, including words, symbols, and numbers.



- 4** Add measurements to your drawing using a ruler.





FOR AN EXTRA CHALLENGE, CONSIDER **SCALE** BY DECIDING THE MEASUREMENT RATIO BETWEEN YOUR GRAPH PAPER AND YOUR REAL-LIFE PROTOTYPE.

**Scale** represents the relationship between objects and their environment. To use scale, ratios are assigned to both the actual object and the drawing. For example, one foot on an object may be represented as one square on the graph paper. You can use a ruler or the squares on the graph paper to experiment with scale.

5

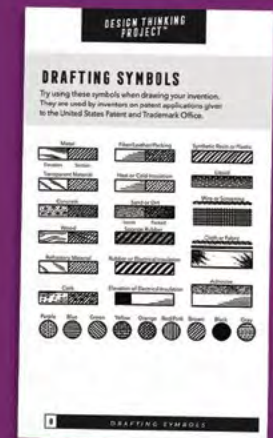
Consider adding arrows to show which way your invention moves, and notes about how it functions.

6

Use the Drafting Symbols page in your Inventor Log when considering different materials to represent in your detailed drawing.

7

If possible, play one of the Background Music videos or one of your favorite songs while you are sketching.



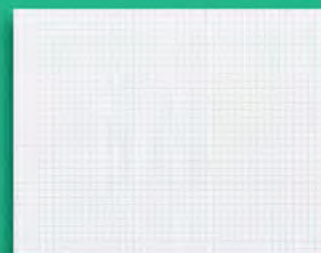
Check out the **Sketch** poster for quick tips on this step.



# PROTOTYPE

- 1 Now that you have a sketch and drawing of your invention, it's time to build a **Prototype**—a model of your invention. This is another way to communicate what your invention is and how it will work.

- 2 Gather the clay tools, clay, patterned duct tape, markers, masking tape, pipe cleaners, plastic base, and any leftover sketching materials.



3

Open your Inventor Log to the Prototype Materials List page to write down additional materials you might want to use, and then gather these materials from around your home.

PROTOTYPE MATERIALS LIST

10

4

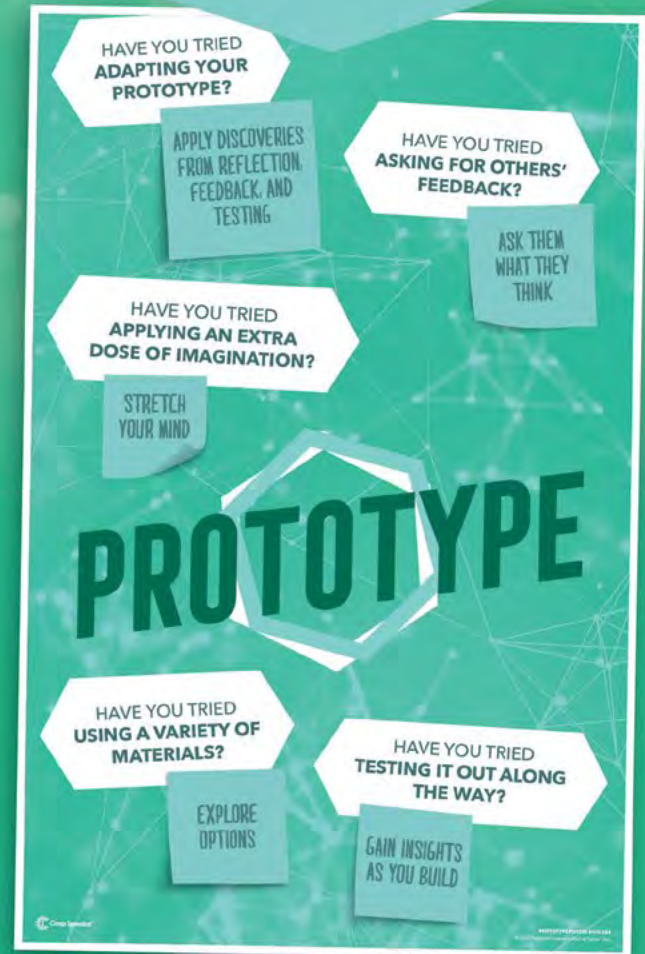
Build your invention prototype!

5

Test various materials to find out which ones work best.

6

If possible, play one of the Background Music videos or one of your favorite songs while you are building.

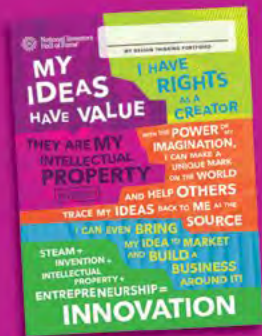


PATENT PENDING

# PROTECT

Check out the **Protect poster** for quick tips on this step.

- 1 It's time to **Protect** your invention, which is your Intellectual Property!



- 2 Check out the front of your Design Thinking Portfolio as a reminder that your ideas have value!

- 4 Once your application is complete, design a trademark-worthy logo for your invention. A logo is a symbol or picture that represents a company, product, or service.

- 3 Open to the Patent Application page in your Inventor Log and fill it in.



A **PATENT** IS A PROTECTION GRANTED BY THE UNITED STATES PATENT AND TRADEMARK OFFICE (USPTO) THAT GIVES AN INVENTOR THE RIGHT TO EXCLUDE OTHERS FROM MAKING OR USING THEIR INVENTION WITHOUT PERMISSION OR A LICENSE FROM THE INVENTOR.

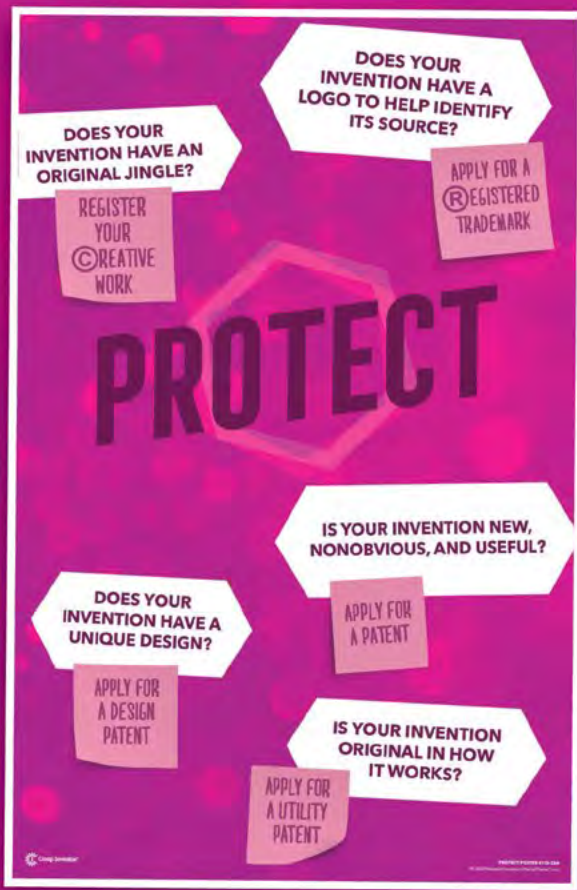
- 5

## DESIGN THINKING PROJECT™

Find the Logo Sketches page in your Inventor Log and sketch a few logo ideas for your invention, or for a company you would create to sell your invention.

Be sure to consider color, style, and originality!





- 7 Add a TM to your logo.

When you see a ® on a product, it means the creator filed a trademark application, paid a fee to the government, and was successful in federally registering their unique mark for use in commerce. Any item with a ™ has not yet been registered by the USPTO.

- 8 Grab The Creator's Key to Intellectual Property poster to see what other protection you might consider for your invention.



- 6 Select one of your logo sketches and create a final logo design using the black paper and white chalk.



- 9 Remember that Patent Application you filled out? Congratulations! It has been approved.

APPROVED

A **pitch** is a short story or presentation about your invention that tells others how it solves a problem and why it is unique and valuable.

A pitch tries to hook or draw a person in to want to buy or invest in an invention.

# PITCH

Check out the **Pitch poster** for quick tips on this step.

## DESIGN THINKING PROJECT™

**1** Now that you have protected your invention, it's time to **Pitch** it to the world!

**2** Open your Inventor Log to the Design Thinking Project Notes page and write down some notes for your pitch.

**3** As you are writing your ideas, remember to keep it exciting and energetic!



**WHAT IS THE HOOK THAT WILL PULL IN YOUR AUDIENCE?**  
DRAW THEM IN

**WHAT IS THE KEY DATA YOU WILL SHARE?**  
BOIL IT DOWN

**WHAT IS THE SHORT STORY YOU WILL TELL?**  
MAKE A CONNECTION

# PITCH

**WHAT ARE THE MOST UNIQUE FEATURES?**  
TELL THE DIFFERENCE

**WHAT ARE THE VISUALS YOU WILL USE?**  
SHOW YOUR VISION

**IS THERE A CALL TO ACTION FOR YOUR AUDIENCE?**  
SUGGEST NEXT STEPS

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- 4** Find the Deal Cards sheet and a pair of scissors.
- Cut out the individual Deal Cards by following the cut lines.



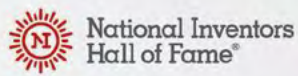
- 5** Hand the Deal Cards to a family member. Ask them to select a card to offer to you after they listen to your pitch.



IF POSSIBLE, WATCH THE **PITCH VIDEO** FOR MORE INSPIRATION.

**CONGRATULATIONS!**  
YOU HAVE MADE YOUR MARK  
ON THE WORLD!

What will your next big invention be?



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Camp Invention®

Camp Invention is an educational program  
from the National Inventors Hall of Fame.

Learn more at [invent.org](http://invent.org).

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## MORE TO EXPLORE



NIHF Inductee **Walt Disney** had a new business that was struggling, and he had lost the rights to a character named Oswald the Lucky Rabbit. His wife encouraged him to persist. He then sketched a mouse on a long train ride back to California.



Now, Mickey Mouse®\* is a character known  
around the world!

Sketches of Mickey Mouse®\* have changed and  
evolved over the years. No matter how simple or  
advanced your sketches are right now, keep Walt  
Disney and Mickey Mouse®\* in mind for inspiration.  
As Disney said, "It all started with a mouse."

*\*Mickey Mouse is a registered trademark of Disney Enterprises, Inc.*

