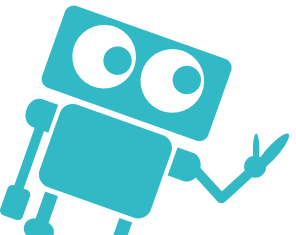
T
Tinker

5
Points

Hummingbird

Going the Distance

Use the distance sensor to trigger either an LED light or a servo. What will your robot do?



MackinMaker

T
Tinker

5
Points

Materials:

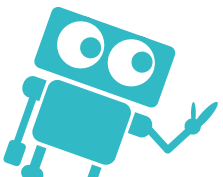
- Hummingbird Robotics Premium Kit
- Hummingbird Bit Compatible Device

Any additional low-tech engineering supplies that may include but are not limited to:

- Cardboard
- Tape (masking, scotch, and/or duct)
- Hot glue gun/glue
- Scissors
- Craft sticks
- Tinfoil
- String
- Coloring supplies

Quick Start:

1. Brainstorm and decide what you are going to communicate through the distance sensor, lights, and/or servo.
2. Follow the setup instructions laid out in the Hummingbird Robotics Kit user guide.
3. Make sure the micro:bit and battery pack are plugged into the Hummingbird Bit Controller.
4. Use the terminal tool to plug the distance sensor and any other components that you need into the Hummingbird Bit Controller corresponding terminal. Are all the colored wires plugged into the correct spot?
5. Use a coding program of your choice (Snap!, MakeCode, Java, Python, or BirdBlox) to code your distance sensor.



Hints and Tips:

- Need help figuring out which pieces do all the different functions? Look through the kit contents that are laid out in the Hummingbird Robotics Kit user guide.
- Will your Hummingbird program be used to alert people when others are nearby? Could it be used to turn on a light to help people see when they are in the space? What other objects could use a distance sensor to communicate a message or assist people?
- Having trouble figuring out how to program the Hummingbird Bit? Watch one of the tutorials here: **https://www.birdbraintechnologies.com/portal/**

Extended Challenges

Computer Science: Use the distance sensor, two rotation servos, and low-tech engineering materials to build a vehicle.

Computer Science: Instead of the distance sensor, use the light sensor to trigger other outputs.

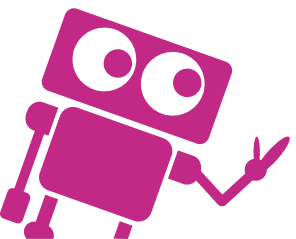
S
Skill-Up

8
Points

Hummingbird

Light It Up

Can you code the Hummingbird Bit to turn on an LED light? Can you code it to flash on and off?



MackinMaker

S
Skill-Up

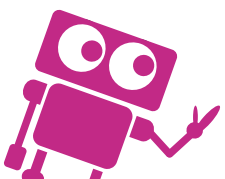
8
Points

Materials:

- Hummingbird Robotics Premium Kit
- Hummingbird Bit Compatible Device
- Paper and drawing supplies (optional)

Quick Start:

1. Follow the setup instructions laid out in the Hummingbird Robotics Kit user guide.
2. Make sure the micro:bit and battery pack are plugged into the Hummingbird Bit Controller.
3. Use the terminal tool to plug a single-colored LED light into the Hummingbird Bit Controller single-colored LED terminal.
4. Use a coding program of your choice (Snap!, MakeCode, Java, Python, or BirdBlox) to code the singled-colored LED to turn on when you start the program.
5. Can you code your single-colored LED light to flash on and off?



Hints and Tips:

- Need help figuring out which pieces do all the different functions? Look through the kit contents that are laid out in the Hummingbird Robotics Kit user guide.
- Remember, a single-colored LED wire plugs into the terminal a specific way. The colored wire goes into the + terminal, black wire goes into the – terminal.
- Having trouble figuring out how to program the Hummingbird Bit? Watch one of the tutorials here: **https://www.birdbraintechnologies.com/portal/**

Extended Challenges

Computer Science: Can you add a tri-colored LED to your Hummingbird Bit Controller, and program it to change colors? Can you make the colors purple and/or turquoise?

Art: Make a drawing that uses the lights as a part of the design.

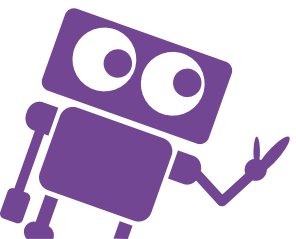
D
Design

15
Points

Hummingbird

Dialing in on Literature

How can you communicate something about the book you are reading through the dial sensor and visual displays of lights?



MackinMaker

D
Skill-Up

15
Points

Materials:

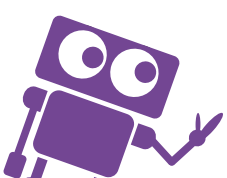
- Hummingbird Robotics Premium Kit
- Hummingbird Bit Compatible Device

Any additional low-tech engineering supplies that may include but are not limited to:

- Cardboard
- Tape (masking, scotch, and/or duct)
- Hot glue gun/glue
- Scissors
- Craft sticks
- Tinfoil
- String
- Coloring supplies

Quick Start:

1. Brainstorm and decide what you are going to communicate through the dial sensor and lights.
2. Create your display using any materials you have available to you.
3. Follow the setup instructions laid out in the Hummingbird Robotics Kit user guide.
4. Make sure the micro:bit and battery pack are plugged into the Hummingbird Bit Controller.
5. Use the terminal tool to plug LED lights into the Hummingbird Bit Controller LED terminals and plug the dial sensor into the sensor terminal.
6. Use a coding program of your choice (Snap!, MakeCode, Java, Python, or BirdBlox) to code the lights to turn on and off when you turn the dial to a specific point.



Hints and Tips:

- Can you make something that shows how a character changed throughout the story (dial has an arrow attached to it that points to "beginning," "middle," and "end," and the LED lights are programmed to light up different images to show how the character changed in action, appearance, or another way)?
- Can you create a map of an event over time (for example, if reading a novel on WWII, the map could light up different parts of Europe correlating to specific years and/or events)?
- Need help figuring out which pieces do all the different functions? Look through the kit contents that are laid out in the Hummingbird Robotics Kit user guide.
- Having trouble figuring out how to program the Hummingbird Bit? Watch one of the tutorials here: **https://www.birdbraintechnologies.com/portal/**

Extended Challenges

Social Studies: Can you use the dial sensor and lights to express important events during a war or other significant time period?

Science: Can you build something to help communicate the sequence of different body systems (or any other sequential system)?

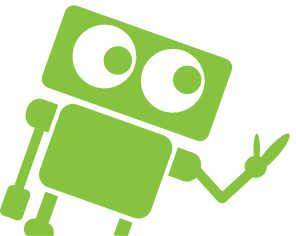
G
Global

20
Points

Hummingbird

Creative Gaming

Make a new game or a prototype of a new sport that could be played by at least two people.



MackinMaker

G
Global

20
Points

Materials:

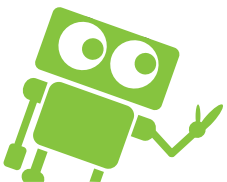
- Hummingbird Robotics Premium Kit
- Hummingbird Bit Compatible Device
- Multi-colored paper, cardstock, and/or copy paper
- Recycled cardboard, containers, cups, and/or plastic bottles

Any additional low-tech engineering supplies that may include but are not limited to:

- Cardboard
- Tape (masking, scotch, and/or duct)
- Hot glue gun/glue
- Scissors
- Craft sticks
- Tinfoil
- String
- Coloring supplies

Quick Start:

1. Brainstorm and decide what kind of game or sport you are going to create using the Hummingbird Bit. What other objects or materials will you need to play your game? Engineer them!
2. Construct the item(s) using materials that are available to you.
3. Make sure the micro:bit and battery pack are plugged into the Hummingbird Bit Controller.
4. Use the terminal tool to plug any components that you need into the Hummingbird Bit Controller corresponding terminal. Are all of the colored wires plugged into the correct spot?
5. Use a coding program of your choice (Snap!, MakeCode, Java, Python, or BirdBlox) to code different components.



Hints and Tips:

- Be creative and incorporate lights, servos, and maybe even sensors into your design!
- What are typical elements of a game? How do you track scores or points? Think through the game design and rules before building.
- Want to add moving objects or targets into your game? Build a "basic mechanism" like one on the Birdbrain Technologies website. You can find them here: **https://www.birdbraintechnologies.com/hummingbirdbit/build/**
- Need help figuring out which pieces do all the different functions? Look through the kit contents that are laid out in the Hummingbird Robotics Kit user guide.
- Having trouble figuring out how to program the Hummingbird Bit? Watch one of the tutorials here: **https://www.birdbraintechnologies.com/portal/**

Extended Challenges

Computer Science: Can you use the Makey Makey to help keep track of scores during the game? Use Scratch to help code a counter using the Makey Makey.
Physical Education: What kind of physical activity could you incorporate into the game or sport that you have created?

I
Innovator

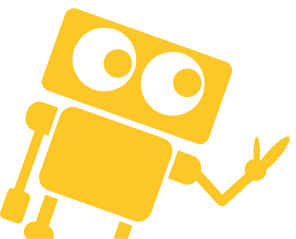
21
Points

Hummingbird

Holiday Design

Choose a holiday and make something that you can use to assist in celebrating it. Will you make something interactive that you can leave out as a decoration? Maybe something you could use to deliver a special message to people?

MackinMaker



I
Innovator

21
Points

Materials:

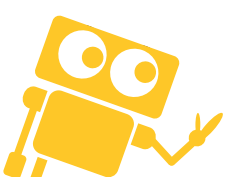
- Hummingbird Robotics Premium Kit
- Hummingbird Bit Compatible Device
- Multi-colored paper, cardstock, and/or copy paper
- Recycled cardboard, containers, cups, and/or plastic bottles

Any additional low-tech engineering supplies that may include but are not limited to:

- Cardboard
- Tape (masking, scotch, and/or duct)
- Hot glue gun/glue
- Scissors
- Craft sticks
- Tinfoil
- String
- Coloring supplies

Quick Start:

1. Choose a holiday, brainstorm, and decide what you are going to create using the Hummingbird Bit.
2. Construct the item using materials that are available to you.
3. Follow the setup instructions laid out in the Hummingbird Robotics Kit user guide.
4. Make sure the micro:bit and battery pack are plugged into the Hummingbird Bit Controller.
5. Use the terminal tool to plug any components that you need into the Hummingbird Bit Controller corresponding terminal. Are all of the colored wires plugged into the correct spot?
6. Use a coding program of your choice (Snap!, MakeCode, Java, Python, or BirdBlox) to code your sensor(s), light(s), and/or servo(s).



Hints and Tips:

- Be creative and incorporate lights, servos, and maybe even sensors into your design!
- Want to make your creation more animated? Build a "basic mechanism" like one on the Birdbrain Technologies website. You can find them here: **https://www.birdbraintechnologies.com/hummingbirdbit/build/**
- Need help figuring out which pieces do all the different functions? Look through the kit contents that are laid out in the Hummingbird Robotics Kit user guide.
- Having trouble figuring out how to program the Hummingbird Bit? Watch one of the tutorials here: **https://www.birdbraintechnologies.com/portal/**

Extended Challenges

Social Studies: Make something that honors a historical leader of your choice.
English/Language Arts: Design and build an item that somehow represents a story that you have read or that you are currently reading.

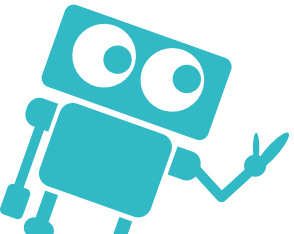
T
Tinker

3
Points

Makey Makey
Conductive Bongo

Create a bongo out of any conductive item using Makey Makey and an online bongo program.

https://apps.makeymakey.com/bongos/



MackinMaker

T
Tinker

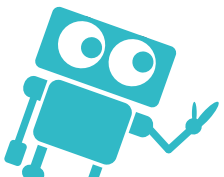
3
Points

Materials:

- Makey Makey, gator clips, USB cable, and computer with web access
- Assorted conductive items (metal, 6B pencil, copper tape, foil, etc.)

Quick Start:

1. Follow the Makey Makey setup instructions (plug in USB to Makey Makey and into the computer).
2. Attach one gator clip to "Earth."
3. Attach the other gator clips to arrow keys on Makey Makey.
4. Attach the other end of gator clip to a conductive item.
5. Hold the "Earth" gator clip with one hand and touch one of your conductive items with the other hand to trigger your bongo sounds.



Hints and Tips:

- Makey Makey has a wealth of information, games, apps, and ideas on how to use your Makey Makey.
- To make sure it's working, touch the "Earth" with one hand, and the "arrow" or, "space" with the other hand… if a red light turns on, the Makey Makey is working.

Extended Challenges

Music: Try out other virtual instruments like the piano at **https://apps.makeymakey.com/piano/**.

Music: Can you play the bongos in time with another Makey Makey piano (or other instrument)? Try making your own band!

S
Skill-Up

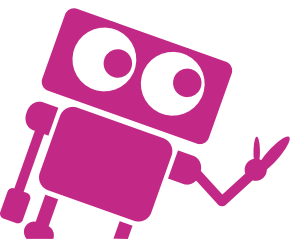
7
Points

Makey Makey

Scratch + Makey Makey

Learn to trigger sounds, movements and more by combining Scratch and Makey Makey. Try to make a simple video game, or a way to trigger custom sounds and recordings.

Scratch.mit.edu



MackinMaker

S
Skill-Up

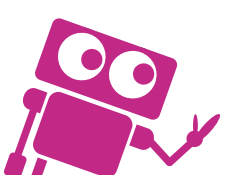
7
Points

Materials:

- Makey Makey, gator clips, USB cable, and computer with web access
- Assorted conductive items (metal, copper tape, foil, etc.)

Quick Start:

1. Follow the Makey Makey setup instructions (plug in USB to Makey Makey and into the computer).
2. Attach one gator clip to "Earth."
3. Attach the other gator clips to arrow keys on Makey Makey.
4. Attach the other ends of the gator clips to conductive items.
5. Use MIT's Scratch block coding to map keyboard keys to sounds, or make digital characters move.



Hints and Tips:

- Look in the "Events" section of Scratch to find the "when ____ is pressed" block to get started.
- You can trigger sounds or even record your voice with Scratch and trigger that!

Extended Challenges

Computer Science: Use Makey Makey and Scratch to program a simple game. Discuss inputs and outputs, variables, loops, and more.
Music: Challenge yourself to theme your program around a famous composer.
Social Studies: Research a topic and engineer a way to share something you learned through Scratch and Makey Makey.

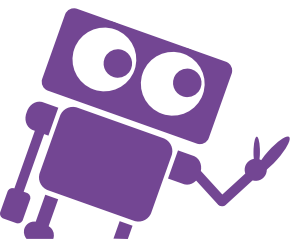
D
Design

14
Points

Makey Makey

Interactive Book Talk

Build an interactive book talk from a book that you are currently reading or that you have recently read. Use the website Scratch.mit.edu.



MackinMaker

D
Skill-Up

14
Points

Materials:

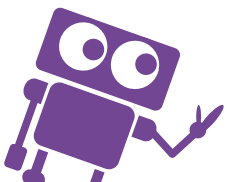
- Makey Makey kit
- Device with USB plug
- 6B Graphite pencil
- Multi-colored paper, cardstock, and/or copy paper
- Recycled cardboard, containers, cups, and/or plastic bottles

Any additional low-tech engineering supplies that may include but are not limited to:

- Tape (masking, scotch, and/or duct)
- Hot glue
- Craft sticks
- Aluminum foil
- String
- Coloring supplies
- Copper tape
- Brass fasteners

Quick Start:

1. What makes a good book talk? Brainstorm key elements of book talks and choose a book that you will discuss.
2. Write out a book talk script.
3. Plug your Makey Makey into the computer.
4. Create a new project in Scratch and record your voice on Scratch. Code them to trigger when specific keys are pressed.
5. Add conductive pads to your message and hook up to Makey Makey.
6. Build an interactive "book talk" with Makey Makey that will play in the library or another space near a book collection.



Hints and Tips:

- Looking for ideas? Create a pressure sensitive switch and place it next to the book on the shelf.
- If you are finding it difficult to choose a book or to review a novel, complete a book talk for a picture book instead. Make something that could be shared with or given to an elementary library to entice younger readers.

Extended Challenges

Social Studies: Research an element from a history unit and use Makey Makey and materials available to teach key facts about this time.

English/Language Arts: Create a book talk from a character's point of view within a novel you are reading for class

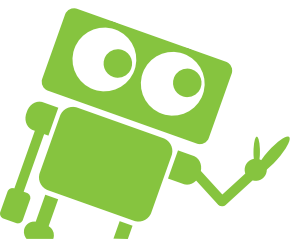
G
Global

18
Points

Makey Makey

Interactive Poster

Make a poster that is interactive! Will you add sound to a map or trigger audio from a civil rights march? It's up to you and your imagination.



MackinMaker

G
Global

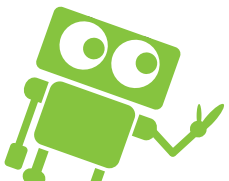
18
Points

Materials:

- Makey Makey, gator clips, USB cable, and computer with web access
- Conductive tape, foil, 6B pencil, or paint
- An assortment of crafty supplies

Quick Start:

1. Gather assorted craft materials, paper, and markers.
2. Plan your poster. What elements will be conductive and what will they trigger?
3. Create your poster masterpiece.
4. Add conductive pads to your poster and hook them up to Makey Makey.
5. Plug your Makey Makey into the computer and go to Scratch.
6. Create a new project in Scratch with your outputs (sounds, sprite movement, etc.) mapped to various keyboard keys.
7. Show it off to others.



Hints and Tips:

- Brass fasteners (or brads) are conductive, easy to punch through paper/poster board, and work great for Makey Makey triggering

Extended Challenges

Social Studies: Can you make a poster about a famous inventor or a historical event?

Science: Try to create a teaching poster where each conductive pad will trigger an explanation. This could be the parts of a cell diagram, animal kingdoms chart, or parts of a habitat.

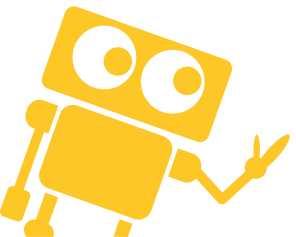
I
Innovator

25
Points

Makey Makey

Makey Make-ing Solutions

Think of a problem or inconvenience in your life or the life of someone you know. Can you make a device to help solve that inconvenience?



MackinMaker

I
Innovator

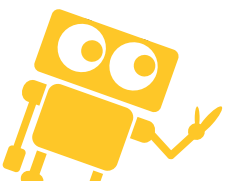
25
Points

Materials:

- Makey Makey, gator clips, USB cable, & computer with web access
- A supply of crafty materials
- Conductive objects, tape, 6B pencil, copper tape, etc.

Quick Start:

1. Brainstorm problems in your life or talk to someone about obstacles or things they need help with throughout the day. How will you use design thinking to create a prototype of a device to support them and/or solve a problem?
2. Gather materials and start to create.
3. Test and iterate your design.
4. Show off your final prototype to your class or friends.



Hints and Tips:

- Really get to know your user. Have empathy for what it might be like to live every day in their shoes.
- If you need help with inspiration, go to **https://www.instructables.com/howto/makey+makey/**

Extended Challenges

Social Studies: Research the people of various countries and what issues they may be facing. Can you develop a device that would help them?

Computer Science: Think about how you can do other things with the Makey Makey to help people. Can you code a calculator app? Or a way to help measure things with Makey Makey?

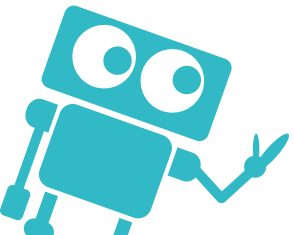
T
Tinker

1
Points

K'NEX

K'NEX Vehicle

Design a prototype of a vehicle that moves and add on a new creative component or innovation. What can you add to your vehicle to make it unique?



MackinMaker

T
Tinker

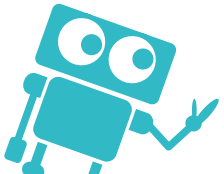
1
Points

Materials:

- K'NEX Education Maker's Kit Large
- Paper and writing utensil
- Additional materials of your choice (optional)

Quick Start:

1. Gather K'NEX pieces.
2. Brainstorm vehicle possibilities. Sketch out ideas on paper.
3. Do you need any additional materials to make your vehicle become a reality? Find them.
4. Build your vehicle! When you are finished, test it. What can you add or modify to improve it?



Hints and Tips:

- Look at pictures of other vehicles to get ideas and then make them your own to improve them.
- Can you think of ways that your vehicle might be able to collect important data or help the world in some way?

Extended Challenges

Science: Build a rover for exploring Mars. What unique components would you need to collect important data about an unknown planet? Research the methods used in the past and be creative about what you may want to collect in the future.

Science: Build a different machine with wheels that completes a task. What does it do? What are the different features of it? If it exists already, how can you make it better?

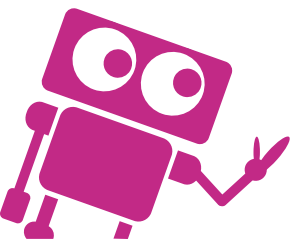
S
Skill-Up

6
Points

K'NEX

Making a Name for Yourself

Make your name using only K'NEX.



MackinMaker

S
Skill-Up

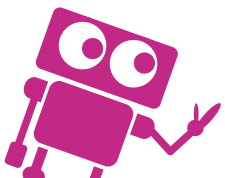
6
Points

Materials:

- K'NEX Education Maker's Kit Large

Quick Start:

1. Gather K'NEX pieces.
2. Do you know how to connect and disconnect K'NEX pieces? Experiment until you figure out the best methods.
3. Will you create your name by building a 3D model or 2D shapes that sit on a surface? Decide on your preference and start connecting K'NEX to make your name.



Hints and Tips:

- Smaller pieces connected together allow for more precise shapes (this helps with curved letters like S and B).
- If you are new to using K'NEX, it might help to start by making sure you know how to connect the pieces and break them apart. To attach a rod to a connector, line the rod up on top of an open space on the connector and push down until the rod snaps into place. Connect the open slots on the blue and gray pieces to build in 3D.

Extended Challenges

Social Studies: Instead of your name, make the name of a famous historical leader that you admire. Show your creation with someone you know and talk about why you chose them.

English/Language Arts: Make a new vocabulary word you recently learned.

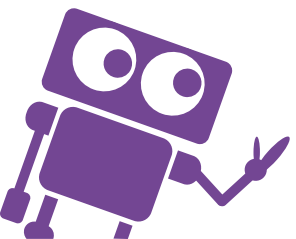
D
Design

11
Points

K'NEX

Picture It with K'NEX

Design a picture frame using only K'NEX. Can it stand up on its own?



MackinMaker

D
Skill-Up

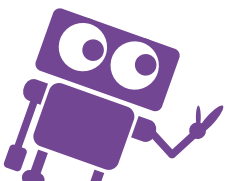
11
Points

Materials:

- K'NEX Education Maker's Kit Large
- Paper
- Pencils and other writing utensils

Quick Start:

1. Gather K'NEX pieces.
2. Brainstorm picture frame possibilities. Gather ideas by thinking about the different components of a picture frame that you need.
3. Build your picture frame! When you are finished, find a picture to test it with. What can you add or modify to improve it?



Hints and Tips:

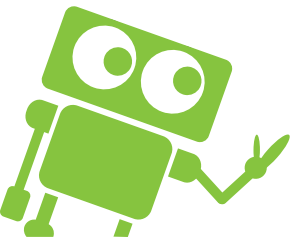
- Having a hard time coming up with a design? Look at images of picture frames and even K'NEX picture frames if you need to. What are some common elements? What frames do you like the best? Imitate them using K'NEX.
- What picture will you test your frame with? Make sure to measure the size of the picture before you build your frame.

Extended Challenges

Social Studies: Create something to symbolize someone from history that you admire. Sketch your idea and make a frame for your creation using only K'NEX.
English/Language Arts: Write a poem using the form of your choice (concrete poetry, blackout poetry, haiku, free verse, etc.). Make a frame for your poem using only K'NEX.

G
Global

17
Points



K'NEX

K'NEX Picker Upper

Create a device that picks up trash from the ground. What unique features can you include in this design? Brainstorm, build, and test this prototype.

MackinMaker

G
Global

17
Points

Materials:

- K'NEX Education Maker's Kit Large
- Paper and writing utensil
- Additional materials of your choice (optional)

Quick Start:

1. Gather K'NEX pieces.
2. Brainstorm garbage picker upper possibilities. Sketch out ideas on paper.
3. Do you need any additional materials to make your garbage picker upper become a reality? Find them.
4. Build your device! When you are finished, test it. What can you add or modify to improve it?

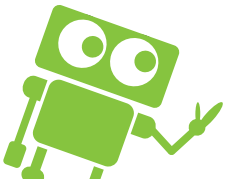
Hints and Tips:

- Having trouble coming up with ideas? Look at images of machines or devices that grab things.
- Start with a type of sweeper or dustpan and build something unique from there.

Extended Challenges

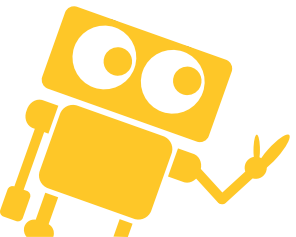
Science: Make a device that is useful for you or others. Would a storage box be useful in helping to store supplies? Would a device to help turn on and off a light switch help to eliminate the spread of germs?

Science: Create a device to hold your phone in place for your desk, your bike, or your car.



I
Innovator

23
Points



K'NEX

K'NEX Carnival

Create an amusement park ride with at least one moving part. Can you incorporate Hummingbird materials to make it move and/or light up on its own?

MackinMaker

I
Innovator

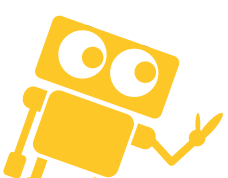
23
Points

Materials:

- K'NEX Education Maker's Kit Large
- Hummingbird Robotics Premium Kit

Quick Start:

1. Gather K'NEX pieces. Gather your Hummingbird Kit as well if you are choosing to program moving parts.
2. Brainstorm what makes a good amusement park or carnival ride. Sketch out ideas and decide on a design.
3. Build your ride. Program your Hummingbird Bit.
4. When you are finished, test it. What can you add or modify to improve it?



Hints and Tips:

- Need help figuring out which pieces do all the different functions? Look through the kit contents that are laid out in the Hummingbird Robotics Kit user guide.
- Remember, a single-colored LED wire plugs into the terminal a specific way. The colored wire goes into the + terminal, the black wire goes into the – terminal.
- Having trouble figuring out how to program the Hummingbird Bit? Watch one of the tutorials here: **https://www.birdbraintechnologies.com/portal/**

Extended Challenges

English/Language Arts: Create the setting from a story you have recently read.
Social Studies: Create a prototype (or model) of a famous structure. Can you make an Eiffel Tower that lights up? Or a Big Ben?

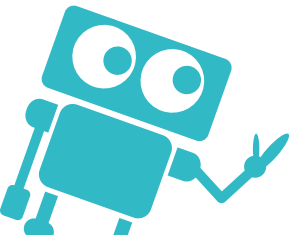
T
Tinker

2
Points

3Doodler

Molding Minds

Find a common object, cover it with masking tape, and mold something of your choice using the 3Doodler Pen.



MackinMaker

T
Tinker

2
Points

Materials:

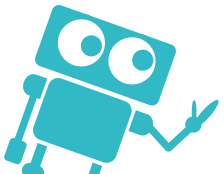
- 3Doodler pen
- Plastic
- Paper and writing utensil (optional)
- Masking tape
- Common object of student's choice
- Tinfoil (optional)

Quick Start:

1. Gather materials and brainstorm ideas for your mold. Will it be an animal? A container of some kind? Something from nature?
2. Find the object you will use for your mold and cover it with masking tape if needed. This will make the printed plastic easier to peel off.
3. Build your design.

Hints and Tips:

- What type of plastic are you using? Make sure you have your 3Doodler Pen set to the right temperature.
- Do you want to switch colors you are using? Double tap the start button to eject the plastic in the pen. Make sure to cut off the stringy part so it doesn't get stuck the next time you try to use it.
- It can help to sketch out a plan or template before trying to create it.
- Building the object in multiple pieces can be helpful. Mold them together later with more 3D-printed plastic.
- Having trouble finding the right common object to make your mold out of? Can you build a mold with tinfoil instead? Experiment to find the right method for creating your mold.



Extended Challenges

Math: Use a mold (or another method) to create a pyramid, cone, and/or a sphere. Then, calculate the surface area and volume of the shapes you created.

Social Studies: Use a mold to inspire you to make an important object from history. Will you make the Liberty Bell? A pyramid from Egypt? A crown from Yoruba? Do some research to come up with something you didn't know about before.

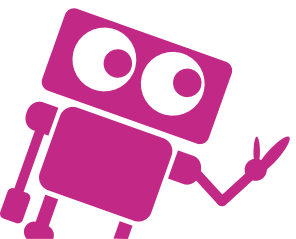
S
Skill-Up

9
Points

3Doodler

Printing a Postcard

Use the 3Doodler Pen to create a postcard message to a person of your choice. Who will you give your postcard to and what will it say?



MackinMaker

S
Skill-Up

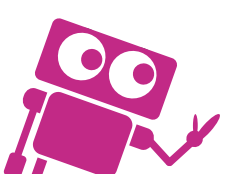
9
Points

Materials:

- 3Doodler Pen
- Plastic
- Paper (optional)
- Masking tape
- Templates (optional)
- Tinfoil or other objects to use as a mold (optional)

Quick Start:

1. Brainstorm ideas and gather materials for your postcard creation. Who will you send it to? What will it say? Keep your message simple and use the design of your postcard to help convey the message.
2. Sketch out your ideas to help make your postcard a reality. Build different components separately and mold them together later.
3. Build your design.
4. Give it to the person you made it for!



Hints and Tips:

- What type of plastic are you using? Make sure you have your 3Doodler Pen set to the right temperature.
- Do you want to switch colors you are using? Double tap the start button to eject the plastic in the pen. Make sure to cut off the stringy part so it doesn't get stuck the next time you try to use it.
- It can help to sketch out a plan or template before trying to create it.

Extended Challenges

Art: Do some research on an artist and create a postcard design that is influenced by their style. Could you make a Keith Haring-inspired postcard? A postcard influenced by the brightly colored textiles that Yinka Shonibare uses? A floral design influenced by Georgia O'Keeffe's works?

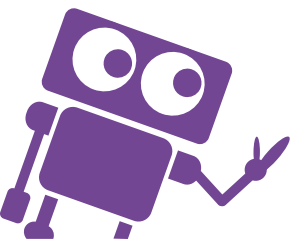
Social Studies: Research a holiday you don't typically celebrate. Make a postcard that you might give to someone who celebrates it that includes important elements of that specific holiday**.**

D
Design

12
Points

3Doodler
Sculpting a Song

Create a sculpture using the 3Doodler Pen that was in some way inspired by a song.



MackinMaker

D
Skill-Up

12
Points

Materials:

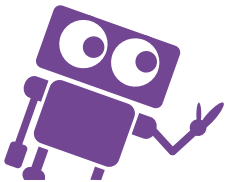
- 3Doodler Pen
- Plastic
- Paper and writing utensil (optional)

Quick Start:

1. Brainstorm some of your favorite songs. What sculpture might it inspire? Think about the lyrics and/or how the song makes you feel when brainstorming.
2. Sketch out your plan on paper. Create templates or find a mold to help you create your sculpture.
3. Build your design.
4. Make sure the sculpture stands on its own. Share the meaning with someone.

Hints and Tips:

- What type of plastic are you using? Make sure you have your 3Doodler Pen set to the right temperature.
- Do you want to switch colors you are using? Double tap the start button to eject the plastic in the pen. Make sure to cut off the stringy part so it doesn't get stuck the next time you try to use it.
- It can help to sketch out a plan or template before trying to create it.



Extended Challenges

English/Language Arts: Instead of a song, create a sculpture that represents a poem, a book, or another piece of writing that you like.

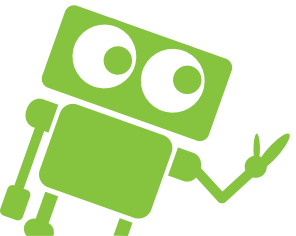
Geography: Create a sculpture that represents a country or other place that is meaningful to you. It could be your hometown, or it might be somewhere you have been that you have enjoyed.

G
Global

16
Points

3Doodler
Fashioning Fashion

Make something that you or someone you know would wear.



MackinMaker

G
Global

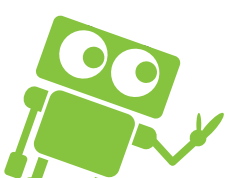
16
Points

Materials:

- 3Doodler Pen
- Plastic
- Paper (optional)
- Masking tape
- Templates (optional)
- Tinfoil or other objects to use as a mold (optional)

Quick Start:

1. Brainstorm ideas and gather materials for your fashion creation. What will you make that you or someone you know might actually wear? Think about different accessories that you don't like to leave the house without.
2. Sketch out your ideas to help think through creating your piece. Make different components separately and mold them together later. Can you use templates that have already been created or molds that you can think of?
3. Build your design.
4. Test it out! Does it work?



Hints and Tips:

- What type of plastic are you using? Make sure you have your 3Doodler Pen set to the right temperature.
- Do you want to switch colors you are using? Double tap the start button to eject the plastic in the pen. Make sure to cut off the stringy part so it doesn't get stuck the next time you try to use it.
- It can help to sketch out a plan or template before trying to create it.

Extended Challenges

Social Studies: Research a culture from history. Can you create something that they might wear or use in some capacity?

Physical Education: Make something that you could wear or use while exercising and/or playing a sport. Will you make something that helps keep your phone safe? An object that holds something that might otherwise fall off? An accessory that helps keep you safe somehow?

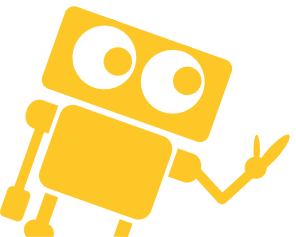
I
Innovator

24
Points

3Doodler

Distancing Device

Identify a problem in your everyday life (ex: tangled cords, wobbly pencil holder, misplaced keys) and design a 3Doodler solution to fix or improve it.



MackinMaker

I
Innovator

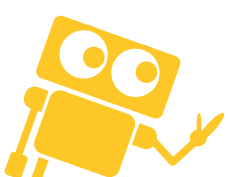
24
Points

Materials:

- 3Doodler Pen
- Plastic
- Paper and Templates(optional)
- Masking tape
- Tinfoil or other objects to use as a mold (optional)

Quick Start:

1. Think about common issues you or someone you know often encounters and talks about.
2. Gather the necessary materials.
3. Sketch out your ideas to help think through creating your device. Make different components separately and mold them together later. Can you use templates that have already been created or molds that you can think of?
4. Build your design.
5. Test it out! Does it work? Can you improve it at all?



Hints and Tips:

- What type of plastic are you using? Make sure you have your 3Doodler Pen set to the right temperature.
- Do you want to switch colors you are using? Double tap the start button to eject the plastic in the pen. Make sure to cut off the stringy part so it doesn't get stuck the next time you try to use it.
- It can help to sketch out a plan or template before trying to create it.
- Building the object in multiple pieces can be helpful. Mold them together later with more 3D-printed plastic.

Extended Challenges

Social Studies: Can you make a device to help solve a problem related to another world issue like climate change, lack of access to clean water, or something else?

Art: Make a device that you can use to paint or create art in some way. Will you make a new type of paint brush? Something that makes interesting patterns or textures? Experiment with different materials.

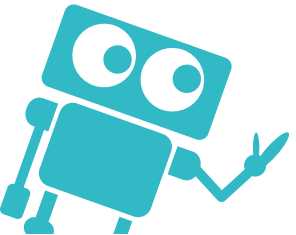
T
Tinker

4
Points

Makedo

Kinetic Art with Makedo

Build a sculpture that has kinetic components within it.



MackinMaker

T
Tinker

4
Points

Materials:

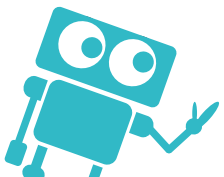
- Cardboard
- Makedo connectors and tools
- Markers, paper, tape, and/or other optional materials for decorating

Quick Start:

1. Collect scrap cardboard and a set of Makedo connectors and tools.
2. Test out some of the tools. How can you use the screws and make pieces of the sculpture move?
3. Draw out a quick idea of your cardboard sculpture.
4. Build your sculpture and add in kinetic features as you go.
5. Add color and other design elements as time allows.

Hints and Tips:

- The punch tool helps to make holes in cardboard so that the screw fasteners can really bite in.
- Regular scissors can be challenging when cutting cardboard. Instead try to use tools designed to cut cardboard like the Makedo cardboard saws or box cutters.
- Having trouble designing your sculpture? Look at other sculptures that have kinetic components to them. How can you imitate parts of them in your own design?
- Need additional support or direction? Check out this site that has a bunch of video tutorials on using the Makedo tools and making different projects: **https://know.make.do/collections/how-to**



Extended Challenges

English/Language Arts: Choose a book that you have recently read or that you have enjoyed. Create a kinetic object that represents that story or a part of that story. Be prepared to share how your sculpture relates to the story you chose.

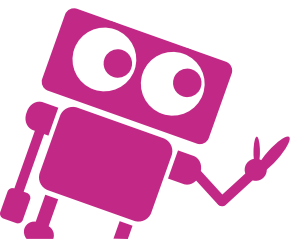
Art: Research some famous Kinetic Art artists. What mediums do they use? How do they use science in their work? If time allows, create a cardboard piece inspired by your favorite artist.

S
Skill-Up

10
Points

Makedo
Device Stand

Create a stand for a device that you use frequently.



MackinMaker

S
Skill-Up

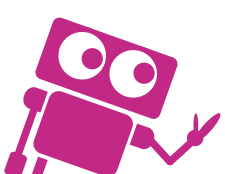
10
Points

Materials:

- Cardboard
- Makedo connectors and tools
- Markers, paper, tape, and/or other optional materials for decorating

Quick Start:

1. Choose a device (laptop, cell phone, remote control, etc.) and brainstorm a design for your stand.
2. Collect scrap cardboard and a set of Makedo connectors and tools.
3. Build your device support stand and think about the function as you go. What angle should the device rest at? How can you build something to ensure it stays in place?
4. (Carefully) test your device support stand. Does it work? If not, keep tinkering with it!
5. Add color and other design elements as time allows.



Hints and Tips:

- The punch tool helps to make holes in cardboard so that the screw fasteners can really bite in.
- Regular scissors can be challenging when cutting cardboard. Instead try to use tools designed to cut cardboard like the Makedo cardboard saws or box cutters.
- Need additional support or direction? Check out this site that has a bunch of video tutorials on using the Makedo tools and making different projects: **https://know.make.do/collections/how-to**

Extended Challenges

Science: Research other device stands and analyze the design of their tool. What features do they have? What materials do they use? Brainstorm how you might incorporate some other design elements into your own work.
Science: What other kind of inventions/tools are helpful? Think of something that would help you or someone you know and prototype a tool to support you/them.

D
Design

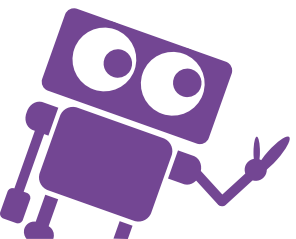
13
Points

Makedo

Architecture of your Dreams

You are an architect. Design and build a unique structure of your choice. Will you create a home? A museum? A new stadium? It is up to you and your interests!

MackinMaker



D
Skill-Up

13
Points

Materials:

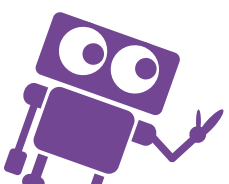
- Cardboard
- Makedo connectors and tools
- Markers, paper, tape, and/or other optional materials for designing and decorating

Quick Start:

1. Collect scrap cardboard and a set of Makedo connectors and tools.
2. Brainstorm what type of building you are creating and draw out ideas for your cardboard structure design.
3. Build your structure and add in architectural features as you go.
4. Add color and other design elements as time allows.

Hints and Tips:

- The punch tool helps to make holes in cardboard so that the screw fasteners can really bite in.
- Having trouble designing your structure? Look at other structures that have the same function to get some design ideas. Think about how the user interacts with the space as they are in it.
- Need additional support or direction? Check out this site that has a bunch of video tutorials on using the Makedo tools and making different projects: **https://know.make.do/collections/how-to**



Extended Challenges

Social Studies: Design a memorial to commemorate something from throughout history. How can you design something to help represent an event and making sure it honors the people involved?
Art: Research famous structures and/or architects that you've seen or heard of. Can you build something that is similar in design?

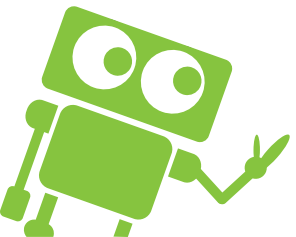
G
Global

19
Points

Makedo

Signs of Support

Build a sign of support or display for something you believe in.



MackinMaker

G
Global

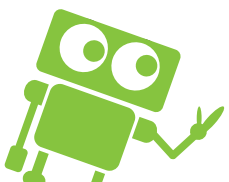
19
Points

Materials:

- Cardboard
- Makedo connectors and tools
- Markers, paper, tape, and/or other optional materials for decorating

Quick Start:

1. What will your sign/display communicate? Brainstorm issues you care about that are occurring in your community or in the world.
2. Sketch out your ideas, and make a plan for building with cardboard.
3. Collect scrap cardboard and a set of Makedo connectors and tools.
4. Build your sign/display. Add features as you go.



Hints and Tips:

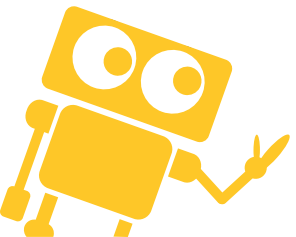
- The punch tool helps to make holes in cardboard so that the screw fasteners can really bite in.
- Need additional support or direction? Check out this site that has a bunch of video tutorials on using the Makedo tools and making different projects: **https://know.make.do/collections/how-to**

Extended Challenges

English/Language Arts: Think of a story you are reading or have recently read. What was a problem in that story? Can you create a sign or 3D model using Makedo that explores one of the problems the characters were dealing with?
Science: Create an informative object that educates people on climate change. Can you make it interactive?

I
Innovator

22
Points



Makedo
Cardboard Chair

Can you build a cardboard chair? Either prototype a new design for a chair, or build one that a friend can actually sit in.

MackinMaker

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Innovator

22
Points

Materials:

- Cardboard
- Makedo connectors and tools
- Hot Glue (recommended)
- Markers, paper, tape, and/or other optional materials

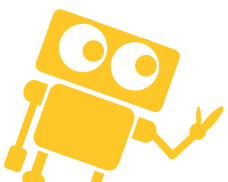
Quick Start:

1. Collect scrap cardboard and a set of Makedo connectors and tools.
2. Draw out a quick idea of your cardboard chair. Where will Makedo screws connect the cardboard? How can you design your chair to hold the most weight?
3. Build your chair and test it (carefully) as you go.
4. Does it work? How can you improve it?

Hints and Tips:

- Need additional support or direction? Check out this site that has a bunch of video tutorials on using the Makedo tools and making different projects: **https://know.make.do/collections/how-to**
- The punch tool helps to make holes in cardboard so that the screw fasteners can really bite in.
- For specific help on building a cardboard chair, visit the Instructables sites below:
  https://www.instructables.com/Designing-a-Functional-Cardboard-Chair/

  https://www.instructables.com/Makedo-sitting-stool/



Extended Challenges

Science: Done with your chair? Design a table to go with it, or another type of furniture you are interested in creating.
Social Studies: Do some research on a time period of your choice, and prototype a piece of furniture that is modeled after a design from that time.