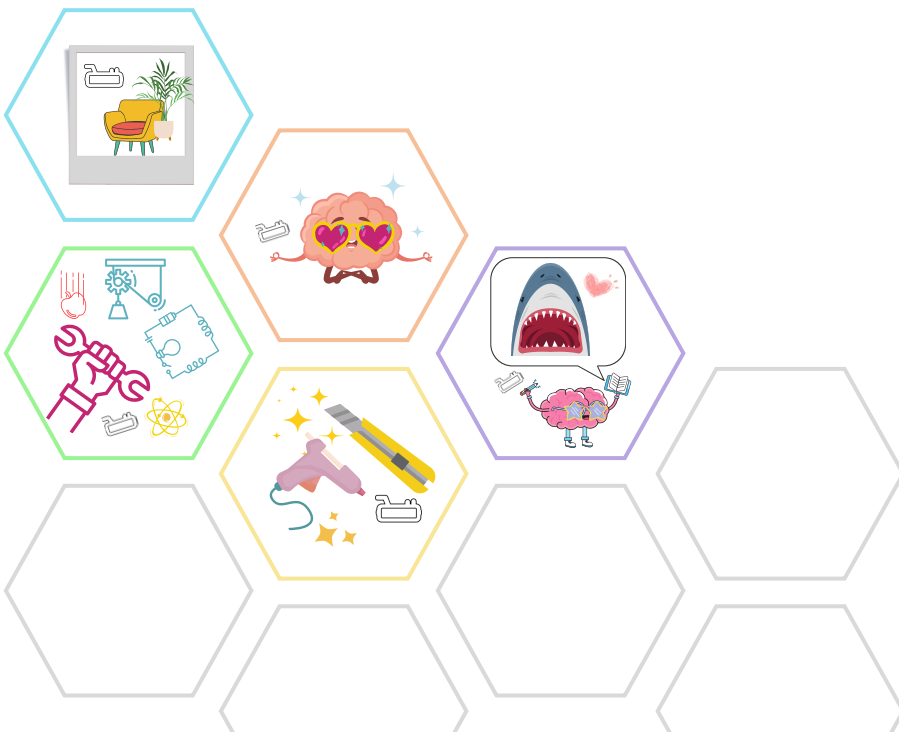




STEAMHEAD
MAKE • GREAT • THINGS

STEAMHEAD MAKES!

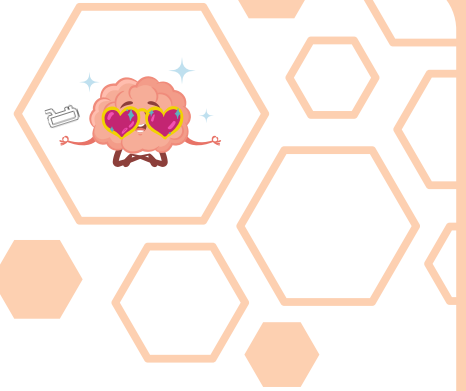
MAKER _____



Hexagons # 1 - 25

HEXAGON

#1



Skill

Maker Mindset: Learn from Failures

Activity

I learned from a mistake I made today.

The mistake I made was...

Circle how you felt about the mistake:



Did you learn from your mistake?

Yes / No

Circle how you felt after you learned from the mistake:



What did you learn?

I won't make the same mistake next time because I will...

REFLECTION

Hexagon #

Date

I learned...

Empty text area for reflection on what was learned.

I want to know more about...

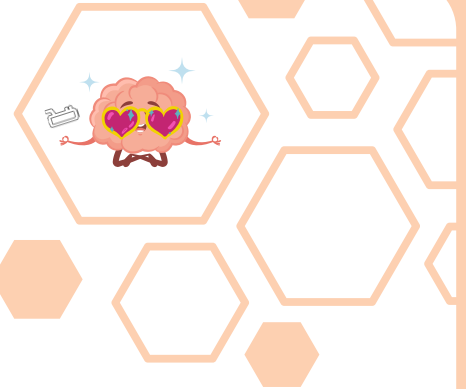
Empty text area for reflection on what more is wanted to know.

Notes / Feedback

Empty text area for notes or feedback.



HEXAGON #2



Skill

Maker Mindset: Collaborative (Team Work)

Activity

Circle one and answer the relevant section below:

- I asked for help.
- I gave help.

I needed help with...

Who helped me?

How helpful were they? 1 - 10

How can the helpers do better next time?

I gave help to... (who?)

I helped them with...

I felt... (circle one emoticon)... after the helping.



I felt that way because...

REFLECTION

Hexagon #

Date

I learned...

Empty text area for reflection on what was learned.

I want to know more about...

Empty text area for reflection on what more is wanted to know.

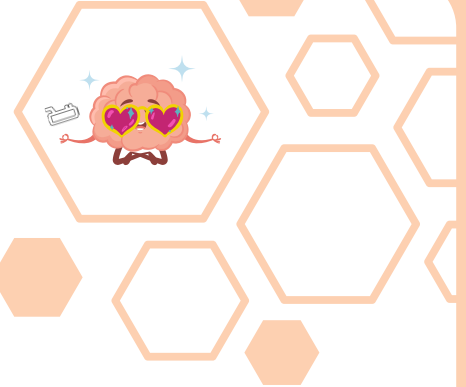
Notes / Feedback

Empty text area for notes or feedback.



HEXAGON

#3



Skill

Maker Mindset: Time Management

Activity

The station I wanted was full, so I worked on something else.

The station I wanted to work on was...

While I waited, I worked on...

Good job on managing your time!

REFLECTION

Hexagon #

Date

I learned...

Empty text area for reflection on what was learned.

I want to know more about...

Empty text area for reflection on what more is wanted to know.

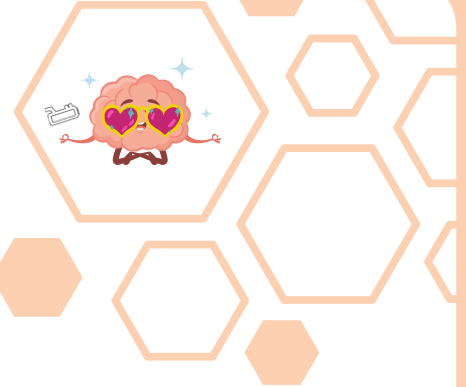
Notes / Feedback

Empty text area for notes or feedback.



HEXAGON

#4



Skill

Maker Mindset: Being Excellent to One Another

Activity

I helped clean up a mess I did not make.

What did you help clean up?

How did you feel about helping clean it up? Circle how you feel.



Why?

How did your assistance help our team?

REFLECTION

Hexagon #

Date

I learned...

Large empty rectangular box for writing reflections.

I want to know more about...

Large empty rectangular box for writing reflections.

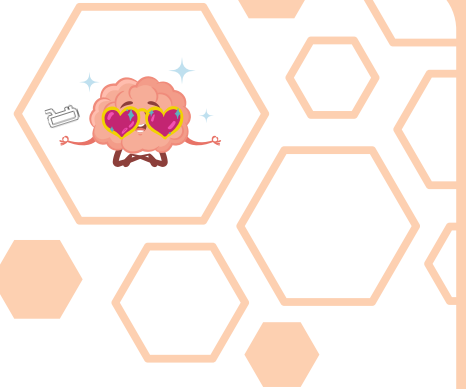
Notes / Feedback

Large empty rectangular box for writing reflections.



HEXAGON

#5



Skill

Maker Mindset: Being Excellent to Myself

Activity

I am proud of myself for...

Circle one:

I am proud of myself for...

- Learning from a mistake
- Overcoming a challenge
- Working hard on something
- Being thoughtful
- Helping a teammate
- Other

Write a reason:

I am proud of myself because...

REFLECTION

Hexagon #

Date

I learned...

Empty text area for reflection on what was learned.

I want to know more about...

Empty text area for reflection on what more is wanted to know.

Notes / Feedback

Empty text area for notes or feedback.



HEXAGON #6



Skill

Hand Skills: Do It Together

Activity

Cardboard Cutter Safety

Goal: Learn how to use the cardboard cutter safely

Materials:

- Cardboard cutter
- Cardboard
- Surface protection (put a piece of cardboard on cutting surface)
- Optional: Pencil and ruler for planning

Do:

1. Understand the cardboard and the cardboard cutter:
 - a. Where it is sharp
 - b. How it can cut
2. Safety is paramount:
 - a. Safety for your teammates
 - b. Safety for yourself
 - c. Safety for our surfaces
3. How to hold: the cutter and the cardboard - THUMBS!
4. How to cut:
 - a. It should feel smooth
 - b. If you have to force it, you are doing it wrong - NOT SAFE!
 - i. Re-examine the cardboard
 - ii. Review how you hold the cardboard
 - iii. Cut it another way
5. Leave the work area better than you found it. If there is a name on the waiting list, please let them know when you are done.

REFLECTION

Hexagon #

Date

I learned...

I want to know more about...

Notes / Feedback



HEXAGON #7



Skill

Hand Skills: Learning Station

Activity

Use a cardboard cutter

Goal: Get a feel for using a cardboard cutter safely

Materials:

- Cardboard cutter
- Cardboard
- Surface protection (put a piece of cardboard on cutting surface)
- Optional: Pencil and ruler for planning

Do:

1. Review safety by saying it out loud to yourself:
 - a. Elbows length from teammates
 - b. Tuck thumbs
 - c. Plan carving route
 - d. When not in use, place cardboard cutter back in holder
2. Cut a square - for practicing straight cuts.
3. Cut a circle - for practicing curvy cuts.
4. Cut a star - for practicing tight cuts.
5. Leave the workspace better than you found it (usable materials back in pile scraps in trash, tools back in place, etc).

REFLECTION

Hexagon #

Date

I learned...

I want to know more about...

Notes / Feedback



HEXAGON #8



Skill

Hand Skills: Do It Together

Activity

Hot Glue Gun Safety

Goal: Learn how to use a hot glue gun safely

Materials:

- Hot glue gun + hot glue sticks
- Cardboard + hot glue gun worksheet
- Surface protection (put a piece of cardboard on cutting surface)
- (Optional) Popsicle stick or a strip of cardboard to move edges

Do:

1. Understand how the hot glue gun and the hot glue works:
 - a. Where it is dangerous on the gun
 - b. Properties of the hot glue after it comes out of the extruder
 - c. What happens when you burn yourself with the glue or the gun (and you will!)
2. Safety is paramount:
 - a. Safety for your teammates - WATCH THE WIRES!
 - b. Safety for yourself
 - c. Safety for our surfaces
3. How to hold the hot glue gun and heating the glue
4. How to glue:
 - a. Review safety by saying it out loud to yourself:
 - i. Elbows length from teammates
 - ii. Wires are out of the way
 - iii. Know glue path and estimate glue amount
 - iv. When not in use, place hot glue gun back in holder
 - b. Can you do it yourself? Do you need a helping hand?
 - c. Apply the glue.
 - d. Hold until glue cools.
 - e. Place hot glue gun back and wires into a safe position.
 - f. Leave the work area better than you found it.
 - g. If there is a name on the waiting list, please let them know it is their turn.

REFLECTION

Hexagon #

Date

I learned...

Empty text area for reflection on what was learned.

I want to know more about...

Empty text area for reflection on what more is wanted to know about.

Notes / Feedback

Empty text area for notes or feedback.



HEXAGON #9



Skill

Hand Skills: Learning Station

Activity

Use a hot glue gun

Goal: Get a feel for controlling a hot glue gun safely

Materials:

- Hot glue gun + hot glue sticks
- Cardboard + hot glue gun worksheet
- Surface protection (put a piece of cardboard on cutting surface)
- (Optional) Popsicle stick or a strip of cardboard to move edges

Do:

1. Get a hot glue gun control worksheet.
2. Review safety by saying it out loud to yourself:
 - a. Elbows length from teammates
 - b. Wires
 - c. Plan glue path
 - d. When not in use, place hot glue gun back in a safe position
3. Carefully follow the glue paths on the worksheet. The goal is control! Focus on only applying enough glue to cover the path. Hint: after the glue is applied it will spread a bit depending on the heat.
4. Put the glue gun back in a safe position. Wait for the glue to cool.
5. Leave the work area better than you found it:
 - a. Glue gun and wires are in a safe position.
 - b. All materials and tools are where they are supposed to be.
 - c. If there is a name on the waiting list, please let them know it is their turn.

REFLECTION

Hexagon #

Date

I learned...

I want to know more about...

Notes / Feedback



HEXAGON #10



Skill

Hand Skills: Learning Station

Activity

Construct a cube

Goal: Practice using multiple skills to create a product (cardboard cutting, hot glue gun, measurement, attachment) – a cube

Materials:

- Hot glue gun + hot glue sticks
- Cardboard
- Surface protection (put a piece of cardboard on cutting surface)
- (Optional) Ruler, pencil, scratch paper, cube template

Do:

1. Gather your materials. You will use the hot glue gun at the hot glue gun station.
2. Plan how you will construct your cube. You may choose to use scratch paper, a pencil, a ruler, and/or the cube template.
3. Cut out the cardboard pieces. Please remember cardboard safety and the surface is protected!
4. Attach your cardboard pieces at the hot glue gun station.
 - a. If there is a wait, put your name on the list.
 - b. Please remember hot glue gun safety!
 - c. Leave the hot glue gun station better than you found it (glue gun and wires are in a safe position, tools and materials are put away, trash in trash).
 - d. Tell the next person on the waiting list it is their turn.
5. Decorate your cube! When you are done, please leave the work area better than you found it:
 - a. Throw away small cardboard pieces.
 - b. Put cardboard cutters, all materials, and tools away.
 - c. Check the floor for trash or tools.

REFLECTION

Hexagon #

Date

I learned...

I want to know more about...

Notes / Feedback



HEXAGON

#11



Skill

Engineering Skills: Do It Together

Activity

Paper Tower Challenge #1: How well do we work together?

Goal: Build the tallest free standing paper tower

Materials:

- Paper
- Lots of clear floor or table space
- Meterstick
- Timer

Requirements:

- Must be free standing
 - Cannot lean it against anything
 - Cannot hold it up
 - Must stand on its own for 20 seconds
- Only paper, no other materials
- After activity – leave it better than you found it

Constraints:

- No tools to aid your building
- Cannot anchor base, this includes taping or gluing
- 15 mins to build
- Only 7 pieces of paper

REFLECTION

Hexagon #

Date

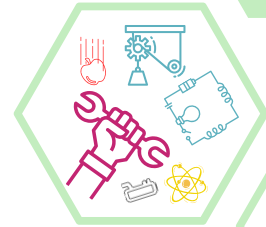
What worked well?

What can you do better next time?

How were you excellent to yourself and each other?

HEXAGON

#12



Skill

Engineering Skills: Self-Reflection

Activity

Engineering Reflection and Feedback Session

Materials:

- Poster paper, one per team
- Sticky notes
- Markers

Words to know:

- **Reflection** - thinking about your thoughts, actions, feelings, and choices good or bad. When you reflect you are like a detective on the things you did, how you did them, and why you did them so that you can progress.
- **Feedback** - is getting or giving advice. It should be helpful, useful, and kind. Feedback should be about the work and not the person. Sometimes it may be hard to hear, but the purpose of feedback is so we can improve.

Do:

1. Stay in your groups
2. Follow instructions from the teacher
3. Remember this is about progress, so don't forget to be excellent to one another
4. Present your posters

REFLECTION

Hexagon #

Date

I learned...

Empty text area for reflection on what was learned.

I want to know more about...

Empty text area for reflection on what more is wanted to know.

Notes / Feedback

Empty text area for notes or feedback.



HEXAGON

#13



Skill

Engineering Skills: Do It Together

Activity

Paper Tower Challenge #2: Carrying Over What We Learned

Goal: Build the tallest free standing paper tower that can hold 500 grams +

Materials:

- Paper
- Lots of clear floor or table space
- Meterstick
- Timer
- Weights - coffee or cans

Requirements:

- Must be free standing
 - Cannot lean it against anything
 - Cannot hold it up
 - Must stand on its own for 20 seconds
- Only paper, no other materials
- After activity - leave it better than you found it

Constraints:

- No tools to aid your building
- Cannot anchor base, this includes taping or gluing
- 15 mins to build - 5 mins to plan as a team first

REFLECTION

Hexagon #

Date

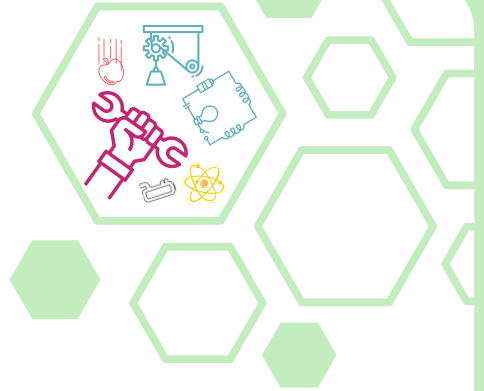
What worked well?

What can you do better next time?

How were you excellent to yourself and each other?

HEXAGON

#14



Skill

Engineering Skills: Learning Station

Activity

Cardboard attachments and joints (without adhesives)

Goal: Connect cardboard in as many ways as possible without adhesives (glue, tape, etc.)

* Remember the cardboard cutter safety! Review Hexagon #6. If you have questions, ask!

Materials:

- Cardboard
- Cardboard cutter
- (Optional) Device for research

REFLECTION

Hexagon #

Date

How many different ways did you connect the cardboard?

Imagine: What could you do if you were an expert Cardboard Connector?

What was hard?

Did you leave the station better than you found it? (Don't lie!)

HEXAGON #15



Skill

Engineering Skills: Learning Station

Activity

Paper headwear challenge (can do it together first as a challenge for self, sketch and then open station)

Goal: Craft stylish headwear, for yourself!

Materials:

- Paper
- Scissors
- Ruler
- (Optional) Device for research

Requirements:

- Steady: it stays on your head
 - When you are dancing
 - Without using your hands
- Paper: your only material!
- Documented: Write two sentences
 - One sentence on how the headwear represents you
 - One sentence on the construction of the headwear

Constraints:

- No glue, tape, or any other kind of adhesives
- No more than ____ sheets of paper
- Time: _____

Reflection:

- Would you craft the headwear differently if you were making it for one of your teachers? Why?
- How can an engineer, who is building something, design for someone else? What could they think about, ask, or do?

REFLECTION

Hexagon #

Date

Would you craft the headwear differently if you were making it for one of your teachers? Why?

How can an engineer, who is building something, design for someone else? What could they think about, ask, or do?

HEXAGON #16



Skill

Design Skills: Do It Together

Activity

Design Challenge #1: Problem? Design a solution!

Goal: Prototype a solution to a problem

Words to know: Prototype – a practice version of what you want to make. Prototypes help you test out your idea.

Materials:

- Paper and/or cardboard
- Scissors
- Ruler & pencil
- Various crafting/upcycle materials that can include pipe cleaners, popsicle sticks, paper clips, etc.
- (Optional) Coloring pencils
- (Optional) Device for research

Requirements:

- Must be useful
- Must be beautiful
- Using the guide (5-8 mins)
 - Identify the problem
 - Brainstorm by sketching solutions
 - Pick a solution
 - Check out the materials table (do NOT grab materials yet) and make a materials list (be mindful of the constraints!)
 - Get approval for the materials
- Write a statement (3 mins):
 - One sentence on the problem you want to find a solution to
 - One sentence on the purpose of your prototype
 - One sentence on who it is for
- After prototyping – leave it better than you found it
- Mini-exhibition and feedback session

Constraints:

- No more than _____ items from the materials table
- Time: _____

REFLECTION

Hexagon #

Date

I learned...

Empty text area for reflection on what was learned.

I want to know more about...

Empty text area for reflection on what more is wanted to know.

Notes / Feedback

Empty text area for notes or feedback.



HEXAGON

#16



Skill

Design Skills: Do It Together

Design Guide

Design Guide for Design Challenge #1

I am designing for...

The problem is...

Brainstorm at least three solutions:

Solution #1

Solution #2

Solution #3

Circle the solution you will prototype.

HEXAGON

#16



Skill

Design Skills: Do It Together

Design Guide

Design Guide for Design Challenge #1

Materials List:

My Statement:

HEXAGON #17



Skill

Design Skills: Do It Together

Activity

Design Challenge #2: Wearable for a teammate

Goal: Prototype a wearable for someone at school or at home

Words to know:

- Functional - how something is used
- Aesthetic - how something looks and makes you feel

Materials:

- Paper and/or cardboard
- Scissors
- Hot glue & tape
- Ruler & pencil
- Various crafting/upcycle materials that can include pipe cleaners, popsicle sticks, paper clips, etc.
- (Optional) Coloring pencils
- (Optional) Device for research

Requirements:

- Must be useful
- Must be comfortable to wear
- Using the guide (5-8 mins)
 - Identify who you are making this wearable for
 - Brainstorm by sketching solutions
 - Pick an idea
 - Check out the materials table (do NOT grab materials yet) and make a materials list (be mindful of the constraints!)
 - Get approval for the materials
- Write a Maker's Statement & take a picture.
 - In 5 sentences or less, make a statement on your build:
 - Who you are
 - Who is this build for
 - What is its purpose
 - Why it's important or unique
- After prototyping - leave it better than you found it

Constraints:

- No more than ____ items from the materials table
- Time: _____

REFLECTION

Hexagon #

Date

I learned...

I want to know more about...

Notes / Feedback



HEXAGON

#17



Skill

Design Skills: Do It Together

Design Guide

Design Guide for Design Challenge #2

I am designing a wearable for...

The main function of the wearable is...

The aesthetics that my user would enjoy are...

Brainstorm for two wearable ideas:

Wearable #1: Sketch and explanation

Wearable #2: Sketch and explanation

Circle the solution you will prototype.

HEXAGON

#17



Skill

Design Skills: Do It Together

Design Guide

Design Guide for Design Challenge #2

Materials List:

My Maker's Statement:

- I posted my wearable and Maker's Statement in my portfolio.

HEXAGON

#18



Skill

Design Skills: Design Feedback

Activity

Reflection for Design Challenge #1

Do:

1. Make a nice presentation space for your build (follow Ms. Carrie's instructions).
2. Don't forget your statement. (Don't forget, you wrote it in Hexagon #16!)
3. Follow instructions on giving useful, helpful, and kind feedback.

REFLECTION

Hexagon #

Date

I learned...

Empty text area for reflection on what was learned.

I want to know more about...

Empty text area for reflection on what more is wanted to know.

Notes / Feedback

Empty text area for notes or feedback.



**Skill**

Design Skills: Learning Station

Activity**What is Design? Use vs. Looks**

Goal: Know the difference between functional and aesthetic design by designing a nice home for your client

Words to know:

- Functional - how something is used
- Aesthetic - how something looks and makes you feel

Materials:

- Client to design for
- Pencil and color pencils
- (Optional) Device for research
- (Optional) Dotted or grid paper

Do:

1. Pick one of the clients at the Learning Station.
2. Follow the guide for your design.
3. Reflect.

REFLECTION

Hexagon #

Date

I learned...

I want to know more about...

Notes / Feedback



HEXAGON

#19



Skill

Design Skills: Learning Station

Design Guide

Design Guide: What is Design? Use vs. Looks

Client Name:

Client Needs:

Client Wants (Likes):

Sketch a design with explanations labels: (Need more paper? Get it!)

A large rectangular area filled with a grid of small, light blue dots, intended for sketching a design.

REFLECTION

Hexagon #

Date

I learned...

Large empty rectangular box for writing reflections on what was learned.

I want to know more about...

Large empty rectangular box for writing reflections on what the user wants to know more about.

Notes / Feedback

Large empty rectangular box for writing notes or feedback.



HEXAGON #20



Skill

Design Skills: Learning Station

Activity

Functional vs. Aesthetics

Goal: Practice functional and aesthetic design by giving feedback on everyday objects.

Words to know:

- Functional - how something is used
- Aesthetic - how something looks and makes you feel

Materials:

- Water bottles to study
- Pencil and color pencils
- (Optional) Device for research
- (Optional) Dotted or grid paper

Do:

1. Study the water bottles at the Learning Station.
2. Follow the guide for your design.
3. Reflect.

REFLECTION

Hexagon #

Date

What is the difference between functional design vs aesthetic design?

Is one more important than another? Why or why not?

HEXAGON #20



Skill

Design Skills: Learning Station

Design Guide

Design Guide: Functional vs. Aesthetic, Everyday Objects

Water Bottle #1

Improve the **functions** of the water bottle for someone your age. Sketch and explain.

Improve the **aesthetics** of the water bottle for someone your age. Sketch and explain.

Water Bottle #2

Improve the **functions** of the water bottle for Ms. Leung. Sketch and explain.

Improve the **aesthetics** of the water bottle for Ms. Leung. Sketch and explain.

REFLECTION

Hexagon #

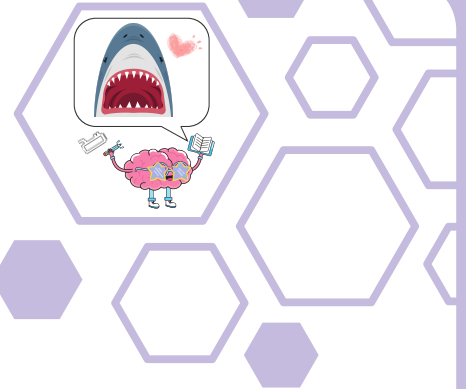
Date

What is the difference between functional design vs aesthetic design?

Is one more important than another? Why or why not?

HEXAGON

#21



Skill

Storytelling Skills: Learning Station

Activity

Using your tools: Taking a picture and save it to your picture folder

Goals:

1. **Create your own picture folder.**
2. **Take a picture on your device and save it into your folder.**

Tools:

- Device
- Help from a teammate (Optional)

Do:

1. Add the Ms. Carrie's Google Class
2. Follow the directions in the Google Class

REFLECTION

Hexagon #

Date

I learned...

Empty text area for reflection on what was learned.

I want to know more about...

Empty text area for reflection on what more is wanted to know.

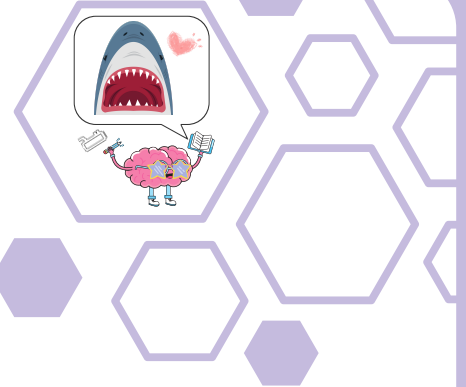
Notes / Feedback

Empty text area for notes or feedback.



HEXAGON

#22



Skill

Storytelling Skills: Learning Station

Activity

Using your tools: Make your own website

Goals:

1. **Create your own website in Google.**
2. **Add a picture you have taken.**

Tools:

- Device
- Help from a teammate (Optional)

Do:

1. Open Ms. Carrie's Google Class
2. Follow the directions in Google Class

REFLECTION

Hexagon #

Date

I learned...

Empty text area for reflection on what was learned.

I want to know more about...

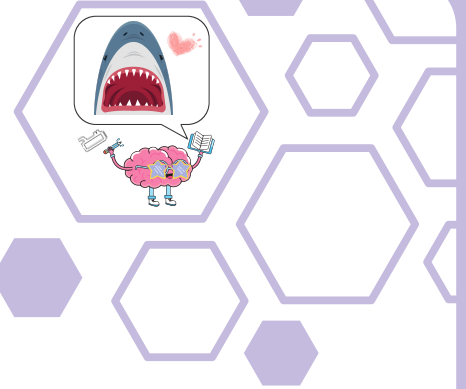
Empty text area for reflection on what more is wanted to know.

Notes / Feedback

Empty text area for notes or feedback.



HEXAGON #23



Skill

Storytelling Skills: Learning Station

Activity

Let the world know who you are: Maker's Statement

Goals:

1. **Learn to add sections to your website.**
2. **Add a section for your Maker's Statement. (You can use the one you wrote in Hexagon 16, revise it, OR you can write a new one! Your choice!)**

Tools:

- Device
- Pencil & paper (Optional)

Do:

1. Open Ms. Carrie's Google Class
2. Follow the directions in Google Class

REFLECTION

Hexagon #

Date

I learned...

Empty text area for reflection on what was learned.

I want to know more about...

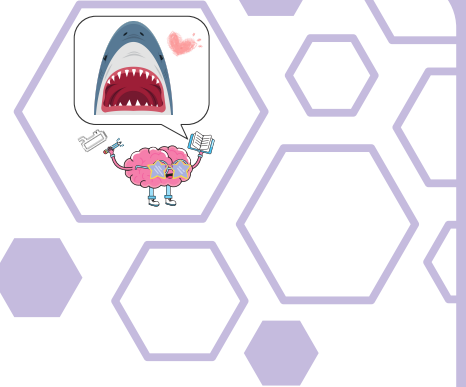
Empty text area for reflection on what more is wanted to know.

Notes / Feedback

Empty text area for notes or feedback.



HEXAGON #24



Skill

Storytelling Skills: Learning Station

Activity

Share your work like a designer, artist, or engineer! Make a post to your website on one of your builds.

Goals: Make a post to your website on one of your designs/builds. Make sure it has a photo and a statement!

Tools:

- Device

Do:

1. Open Ms. Carrie's Google Class
2. Follow the directions in Google Class

REFLECTION

Hexagon #

Date

I learned...

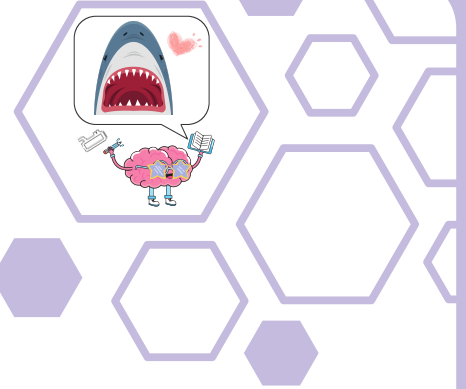
I want to know more about...

Notes / Feedback



HEXAGON

#25



Skill

Storytelling Skills: Learning Station

Activity

Why is storytelling important to you?

Goals:

1. Give examples of storytelling.
2. Give examples of how storytelling has inspired you.
3. Give examples of how storytelling can help you inspire others.

Words to know: Storytelling is sharing thoughts, activities, feelings through speaking, writing, videos, experiences in hopes of inspiring an audience.

Materials:

- Writing or drawing tools

Do:

1. Follow Ms. Carrie's directions for mind mapping about what storytelling means to you and others.

REFLECTION

Hexagon #

Date

I learned...

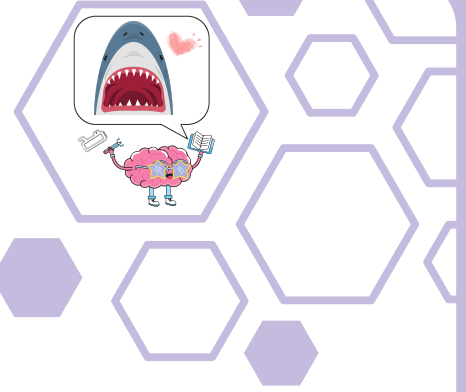
I want to know more about...

Notes / Feedback



HEXAGON

#25



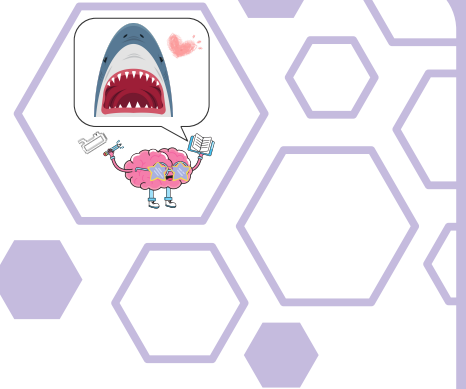
Skill

Storytelling Skills: Learning Station

Activity

A large, empty rectangular box with a light purple border, intended for writing or drawing during the activity.

HEXAGON #25



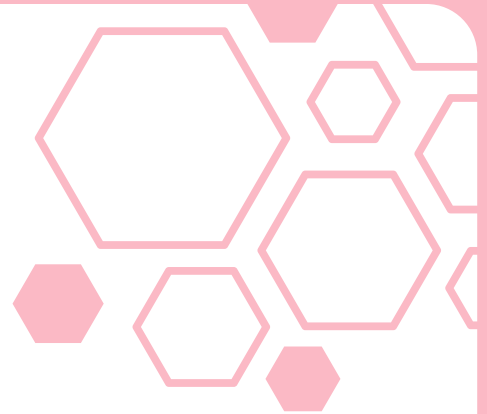
Skill

Storytelling Skills: Learning Station

Activity

A large, empty rectangular box with a purple border, intended for writing or drawing during the activity.

HEXAGON



Skill

Activity

REFLECTION

Hexagon #

Date

I learned...

Large empty rectangular box for writing reflections.

I want to know more about...

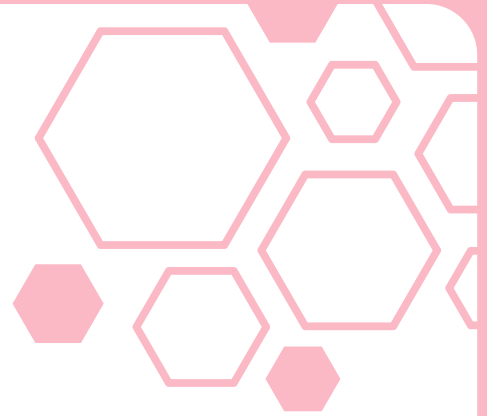
Large empty rectangular box for writing reflections.

Notes / Feedback

Large empty rectangular box for writing reflections.



HEXAGON



Skill

Activity

REFLECTION

Hexagon #

Date

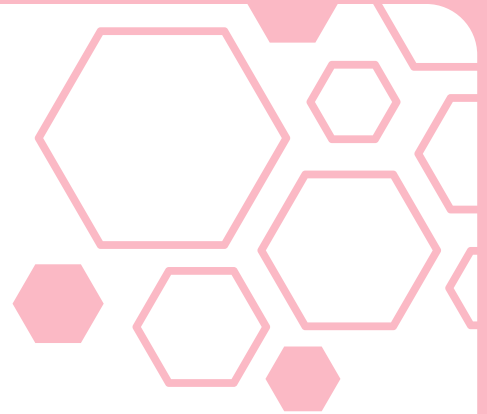
I learned...

I want to know more about...

Notes / Feedback



HEXAGON



Skill

Activity

REFLECTION

Hexagon #

Date

I learned...

Empty text area for reflection on what was learned.

I want to know more about...

Empty text area for reflection on what more is wanted to know.

Notes / Feedback

Empty text area for notes or feedback.





STEAMHEAD

<http://steamhead.space/Labs>

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