

STEM Project Overview

Imagine that you won the lottery and had an unlimited budget to design and build your dream home. What unique features would you include? Anything from the story? New ideas of your own?

Your task is to design and build a house that:

- Includes 3-D shapes
- Stands on its own
- Is two stories tall (grades 4-6)
- Has at least five rooms
- Includes a cantilever

You may build your house out of anything you have at home. We can't wait to see your ideas!

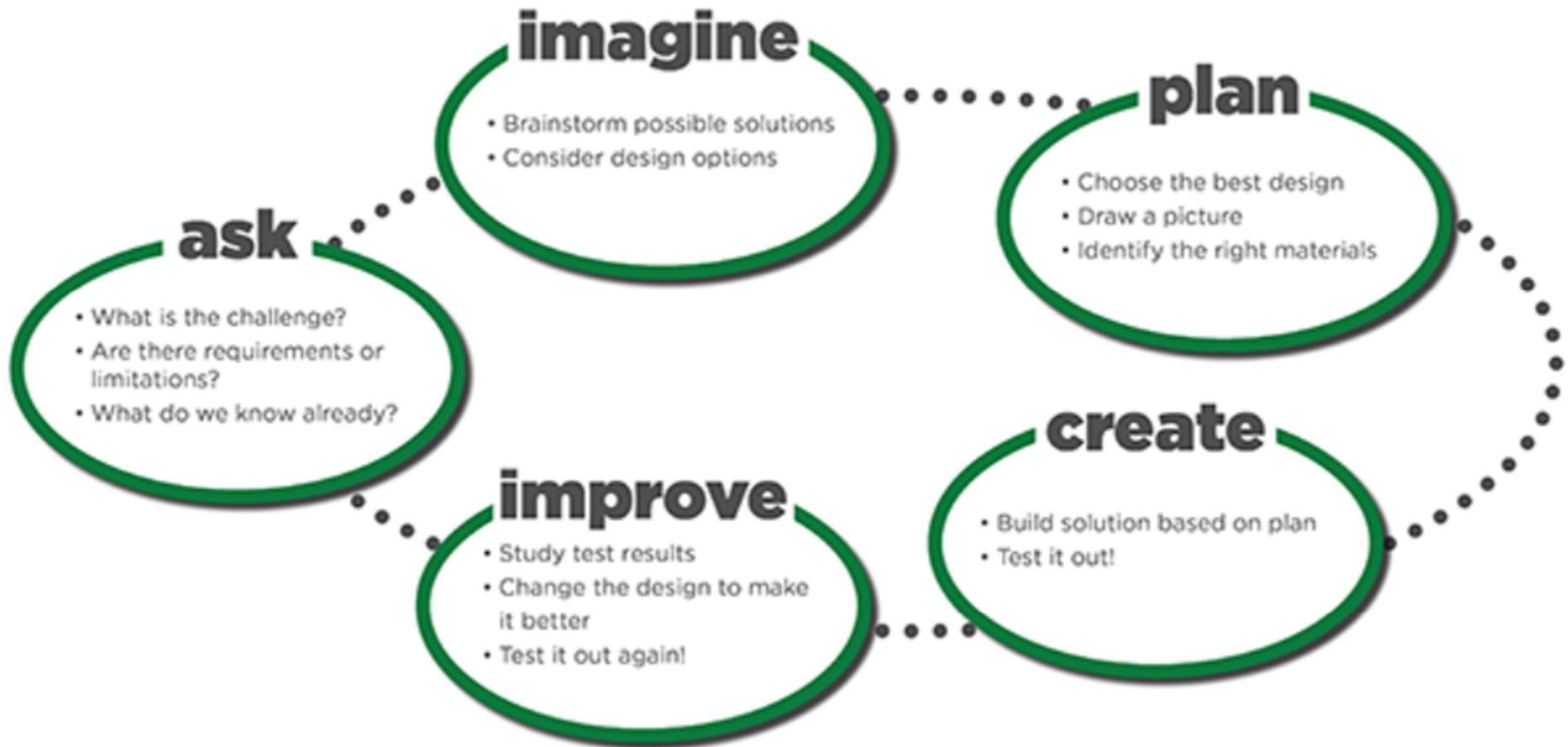


Steps to complete this project:

- ✓ **Step 1:** Complete the Nearpod to learn all the STEM skills you need to do this project. The link to this Nearpod is on Mrs. McGrath's webpage.
- ✓ **Step 2:** Design and build your house.
- ✓ **Step 3:** Write about your design. Go back to Mrs. McGrath's webpage for this step.
- ✓ **Step 4:** Share your design. You will make a Flipgrid to share what you have done. Go back to Mrs. McGrath's website for the link. Log in to Flipgrid with your student number.

Step 2: Design and build your house.

Below you see the stages of the design process that you will be using. For Step 2 of this project, you will work on the first three stages of the design process: ask, imagine and plan. You may print these pages or write on your own paper.



Ask and Imagine: What is the challenge? What do you need to know?
Brainstorm your ideas. Use the questions below and sketch some ideas on your own paper.

Challenge: Design and build a house that:

- Includes 3-D shapes
- Stands on its own
- Is two stories tall (grades 4-6)
- Has at least five rooms
- Includes a cantilever

What unique features would you like to put in your house?

What are some 3D shapes that you could use?

What is a cantilever?

What rooms would you like to have in your house?

Plan: Choose the ideas you want to use.

On your own paper, sketch and describe each room of your house. Use the questions below to help you.

Room Name: _____

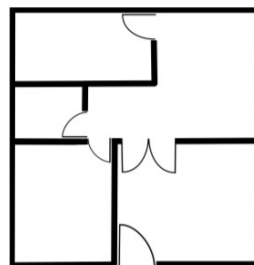
What shapes will you use in this room?

What unique features will this room have?

What will you use to build this room?

Now, put it all together and draw a floor plan for your house. A floor plan shows the shape of rooms and how they fit together. It also shows where the doors between rooms are. If you are doing two or more floors, draw a floor plan for each floor. The example below has five rooms indicated by the dark lines.

Sometimes using grid paper helps with this. There is some printable grid paper in the project resources tab of my website.



Floor Plan: a drawing that shows the view from directly above a building.

Create: Gather your materials and build your house.

You can use any materials you can find. Consider recyclables, blocks, Legos, straws, playdough, sticks or anything you can think of. Use your imagination!

Make sure your house meets the criteria below:

- Includes 3-D shapes
- Stands on its own
- Is two stories tall (grades 4-6)
- Has at least five rooms
- Includes a cantilever

Improve: If any of your plans are not working, redesign and try again. Keep trying until you have a house that meets the criteria above.

Question: What is the perimeter of your house? If your house does not have equal sides, measure the longest point of each side.

****Go back to Mrs. McGrath's webpage for the next steps of the project****