

Teacher notes and tips

- In this STEM Challenge, learners design, build and test a slide and sledge to help a penguin get down the snowy mountain to safety.
- Time – allow approx 1h30 including tidy up time!
- Suggest teams of no more than 3
- After you have explained the rules of the challenge, give learners time to share ideas and make a plan in teams, then 20 mins to build and test their slides and sledges. Look at each others' designs and talk about what went well and how it could be improved.

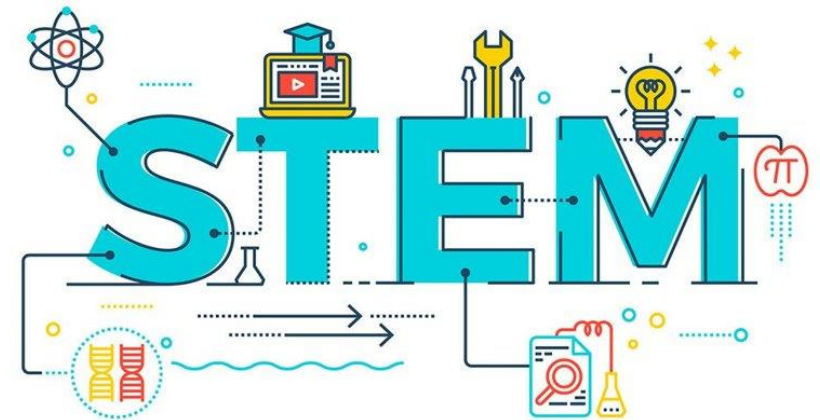
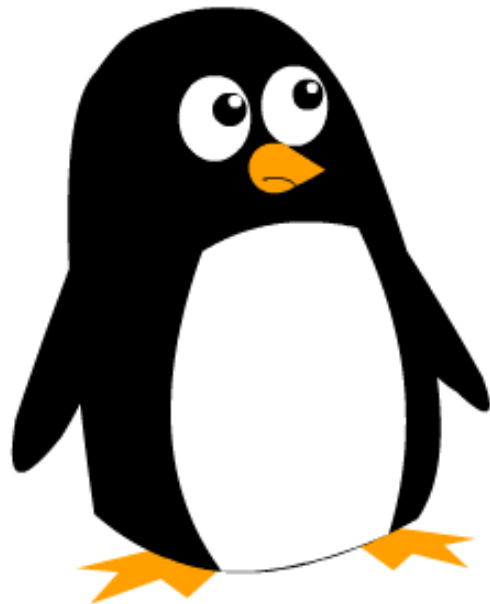
- Avoid making STEM Challenges competitive
- Don't provide instructions, a video or photo of what a finished design might look like – richer learning happens when learners use their creativity to design something to solve the problem rather than copying a design they have seen
- Try to get the learners to solve problems themselves – use questioning to support them – avoid giving answers and suggestions!

Teacher notes - resources

- All you will need is:
 - Pencils
 - Plenty of A4 paper
 - Sellotape (suggest you avoid glue)
 - Scissors
 - Something to use as a penguin for groups to test their designs – such as small soft toys, beanbags etc. – check PE resources

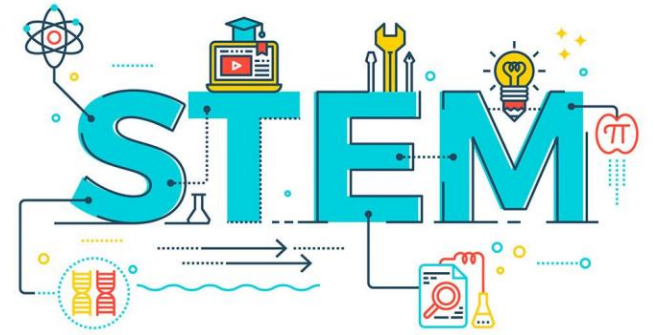
Winter STEM Challenge

Penguin Slide and Sledge



Learning Intentions

- To **design and build** something to solve a problem
- To build up our **skills** such as
 - **teamwork**
 - **kind and helpful communication**
 - **creativity**
 - **problem-solving**



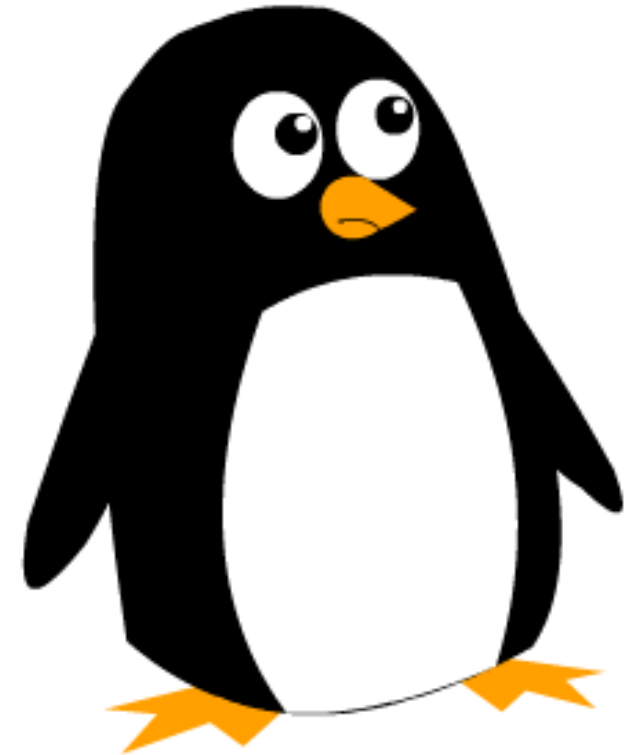
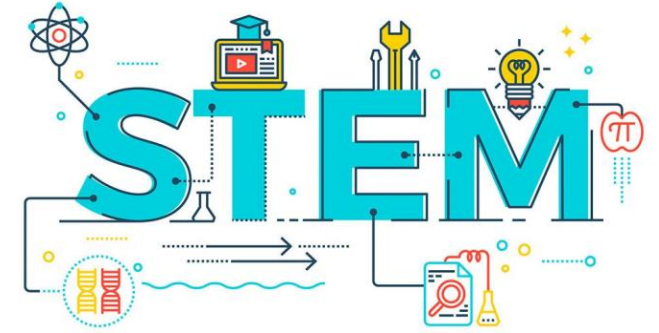
Engineering Design Process



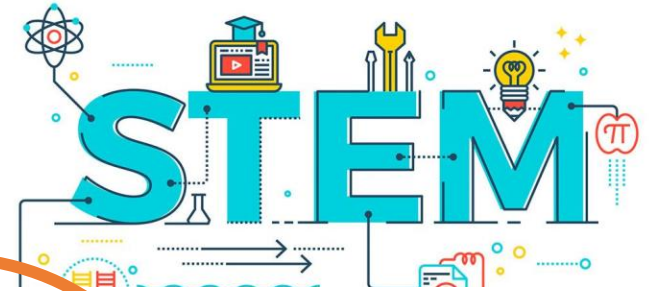
**We will go
through each
step in the
STEM
Challenge**

Penguin challenge

- Help! A penguin is stuck at the top of the snowy mountain
- It is too rocky to slide down on her tummy and she needs to get down to her family
- Design and build a slide and sledge to get the penguin down safely

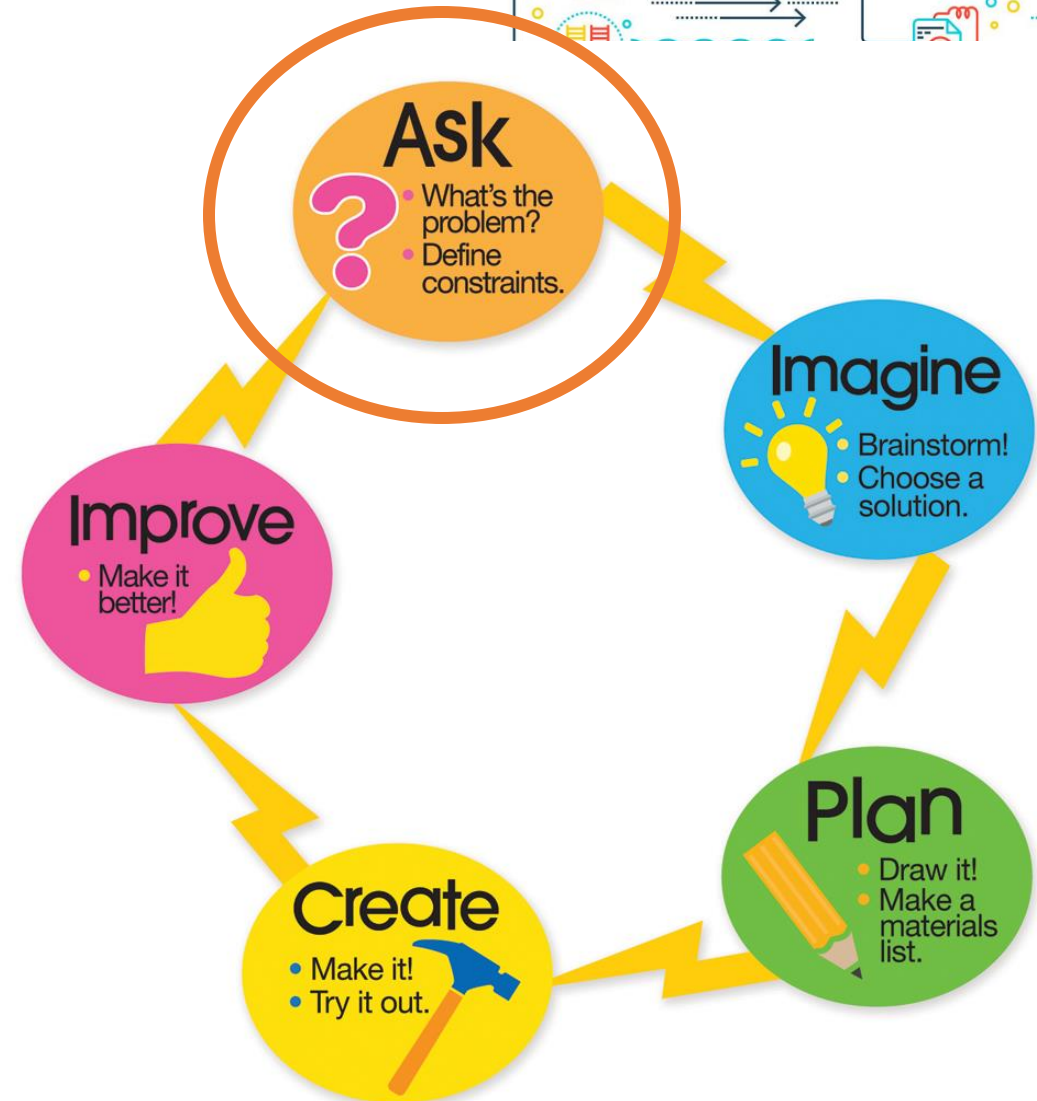


STEM Challenge - Ask

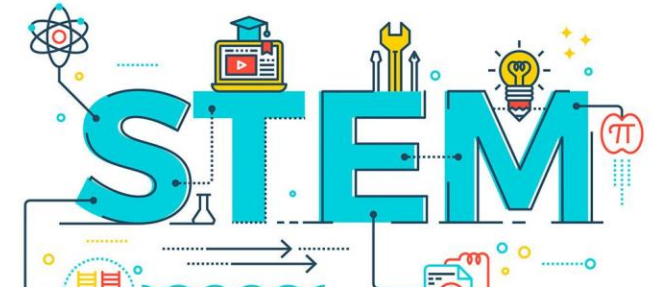


- Design and build a **slide and sledge** to get the penguin down safely.
- The top of the slide must be on the top of your desk
- The bottom of the slide must be on the floor – you can Sellotape it to the floor if you wish

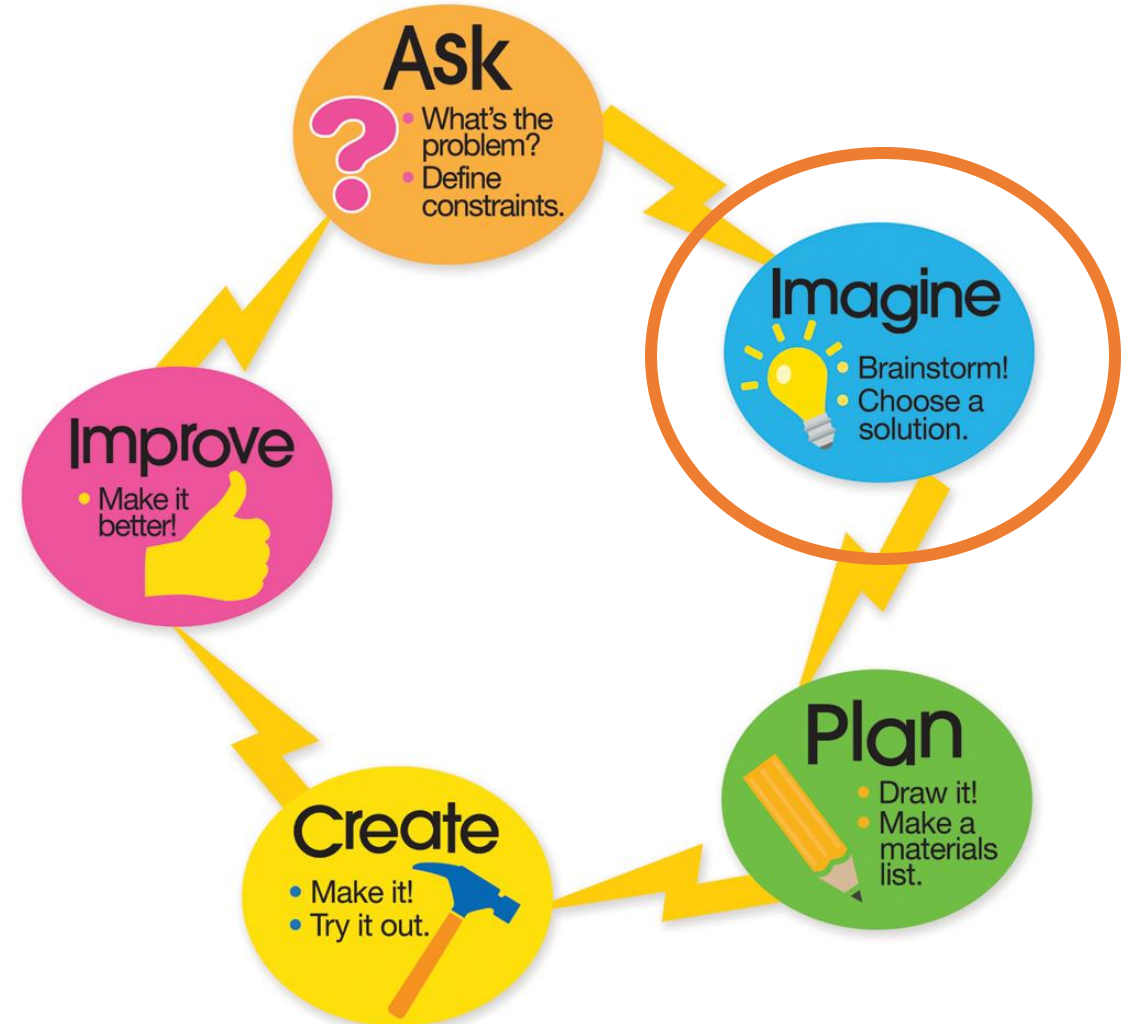
- **Materials:**
 - **A4 paper – max 6 pieces**
 - **Sellotape**



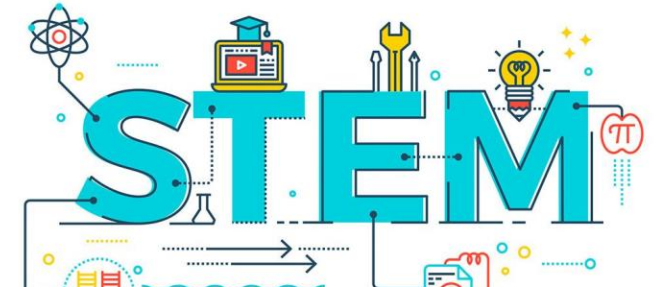
STEM Challenge - Imagine



- What ideas do you have for building the slide and sledge?
- What do you already know about slides and sledges that might help you?
- What could go wrong when you are building and testing?



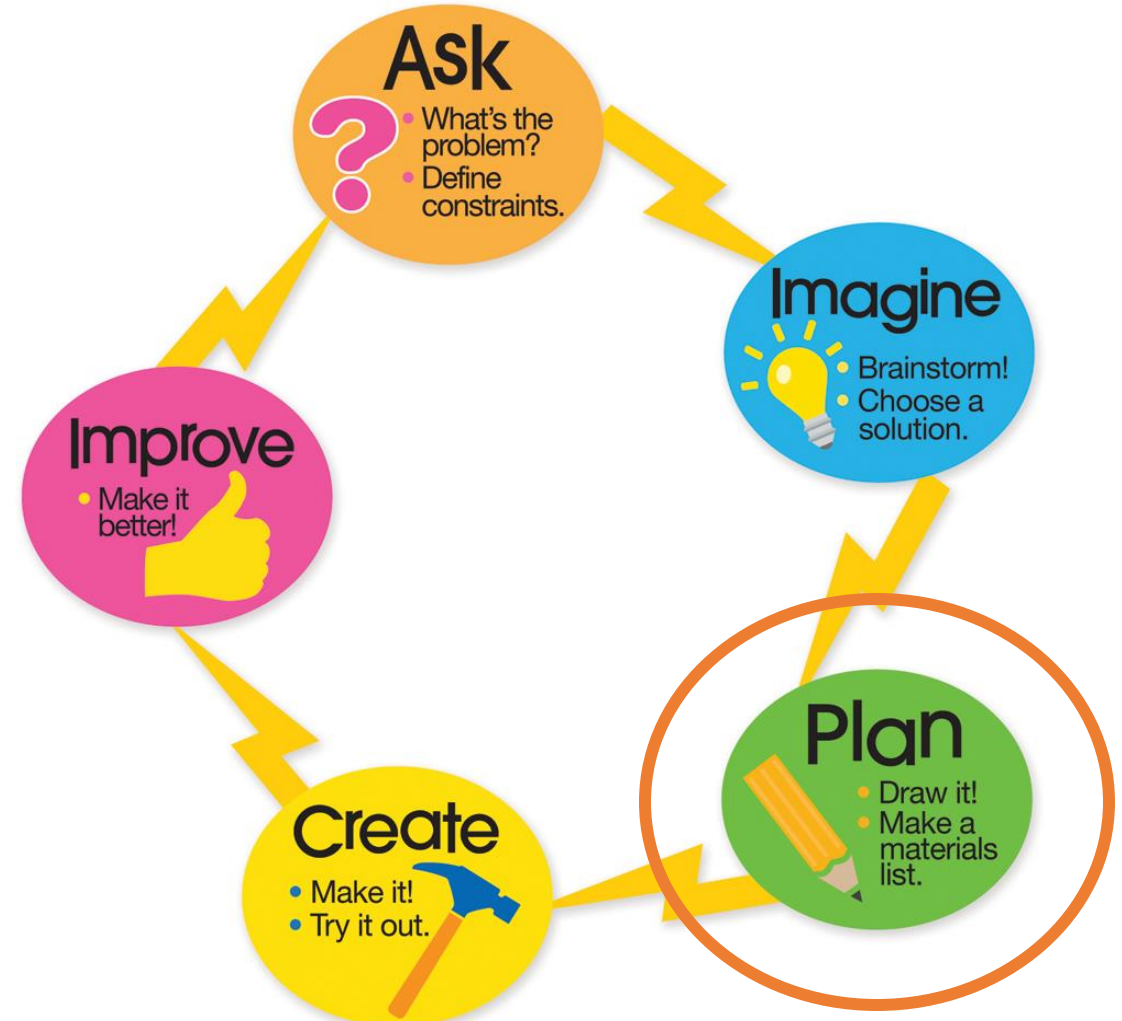
STEM Challenge - Plan



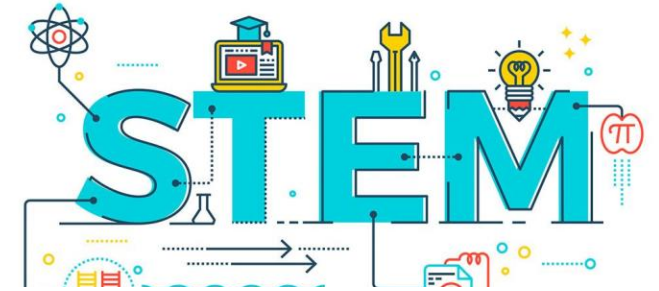
- Design and build a **slide and sledge** to get the penguin down safely.
- The top of the slide must be on the top of your desk
- The bottom of the slide must be on the floor – you can Sellotape it to the floor if you wish

- **Materials:**

- **A4 paper – max 6 pieces**
- **Sellotape**



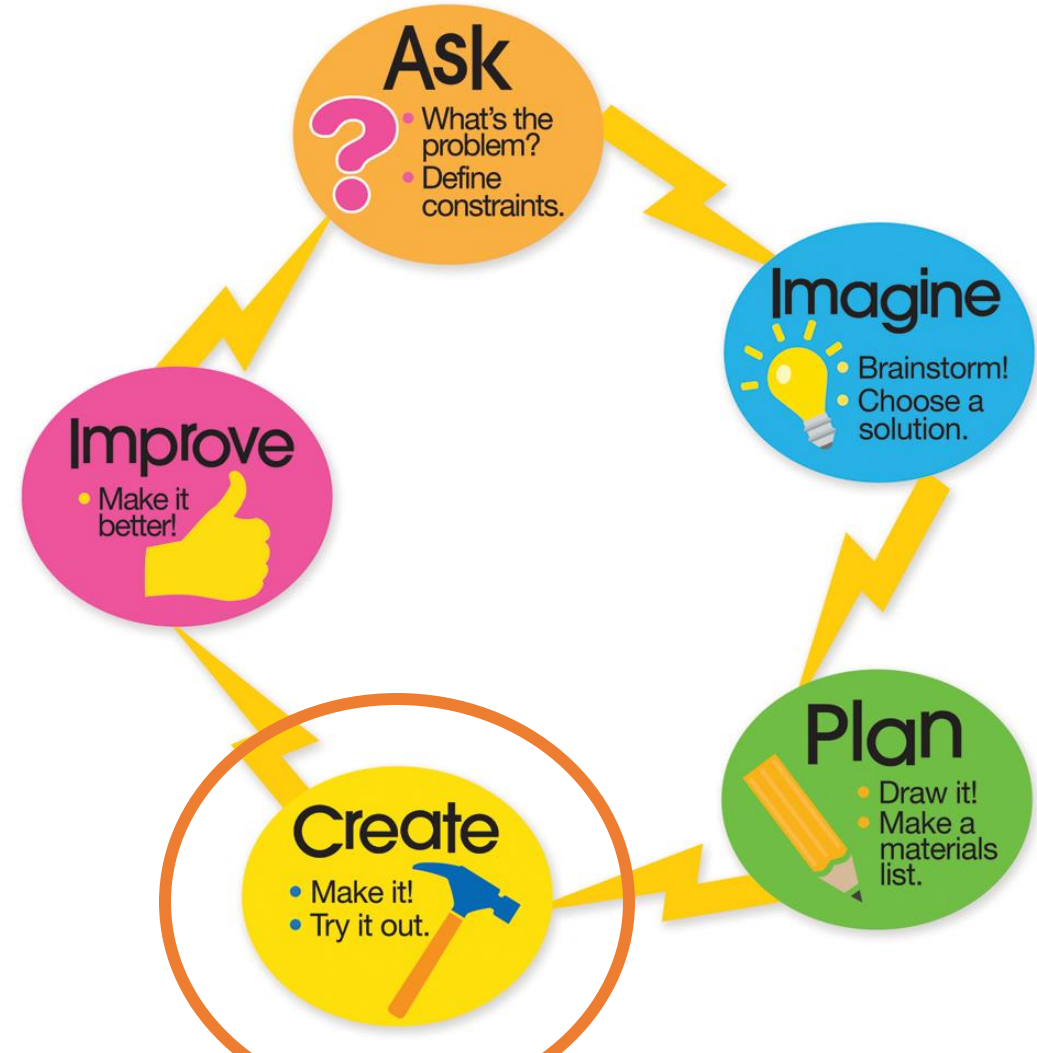
STEM Challenge – Create 20 mins



- Design and build a **slide and sledge** to get the penguin down safely.
- The top of the slide must be on the top of your desk
- The bottom of the slide must be on the floor – you can Sellotape it to the floor if you wish

- **Materials:**

- **A4 paper – max 6 pieces**
- **Sellotape**

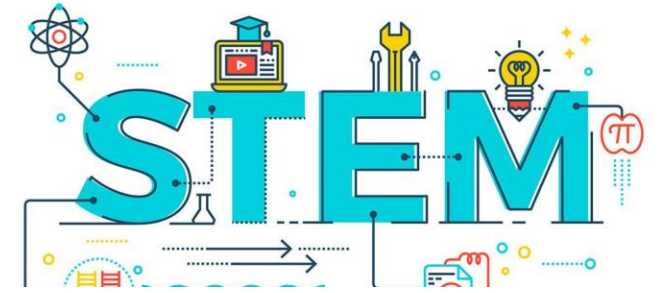




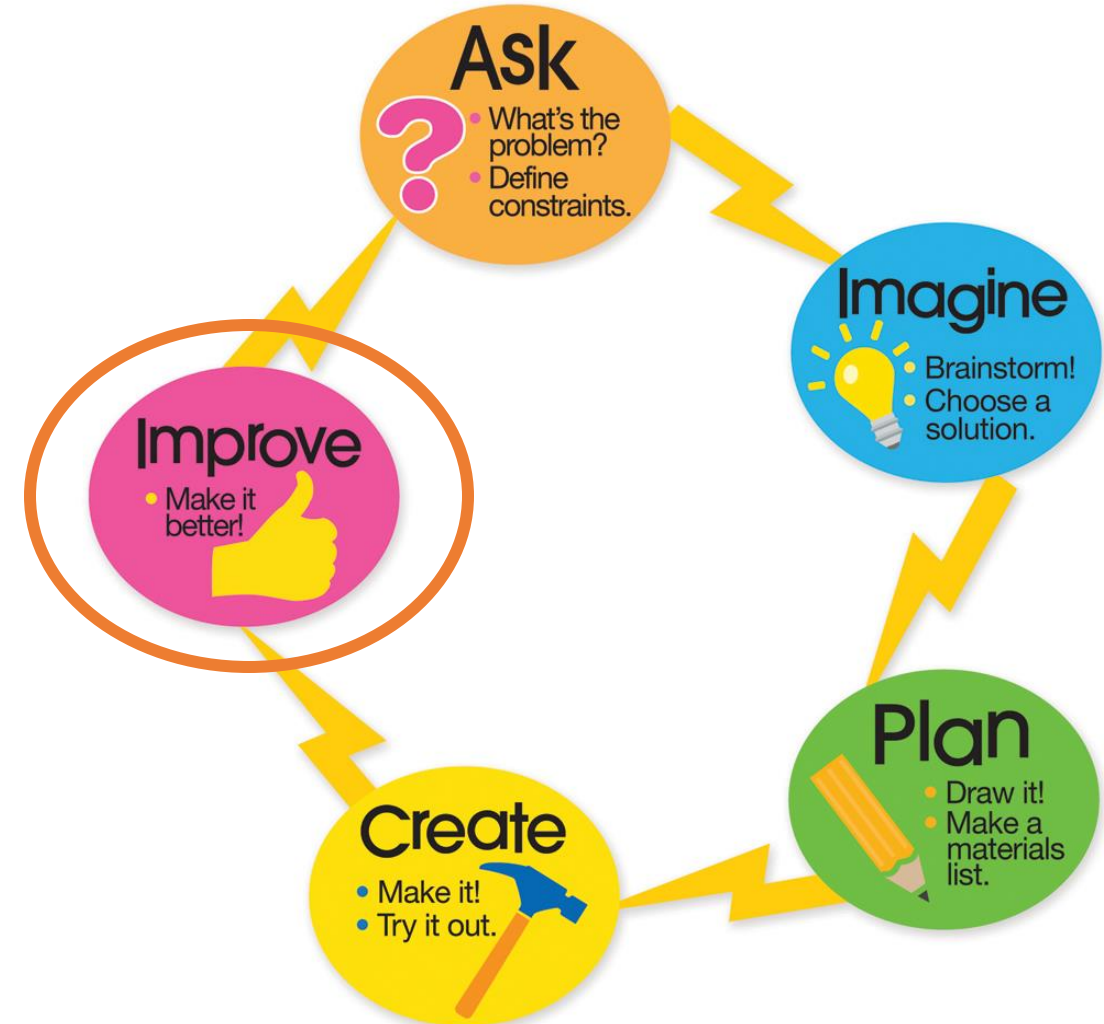
What can you learn from others?

- Look at other people's work
- How did other people tackle the STEM challenge?
- Which ideas did you see that were successful?
- What did you see that hadn't worked, or that you wouldn't use? It's good to learn from mistakes!
- **Give high quality, positive feedback**

STEM Challenge



- What is **good** about your design?
- How could you **improve** it?
- What would you **need** to improve it?



What did you learn today?



- What did you **learn** about building today?
- What did you do **well** in STEM today?
- What could you have **improved** about your work in STEM today?

