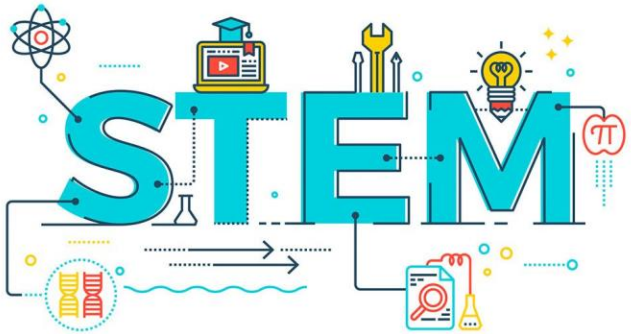
Teaching notes

- Some children will have experienced playing crazy/adventure golf but be clear that this is a simple putting green – there is a separate STEM challenge which is a crazy golf game.
- First level – use marble as a ball. Rather than making a hole for the marble to drop into, they must make a U-shaped catcher for the ball to be putted into
- Second level – make their own golf ball. They must raise their putting green up (e.g. using pillars) and make a hole for the ball to drop through and into a catcher.
- Both levels will need to consider constructing sides/barriers so the ball doesn't roll away
- Materials – it is possible to make both designs out of card and paper if you don't have straws and paper plates.

STEM Challenge Project

Putting green

STEM brain warm-up



- Which **features** might you find on a **putting green**?

Learning Intentions

- To build up our **skills**:
  - Teamwork
  - Communication
  - Creativity
  - Critical Thinking
  - Resilience

- To use the **engineering design process** to solve a problem

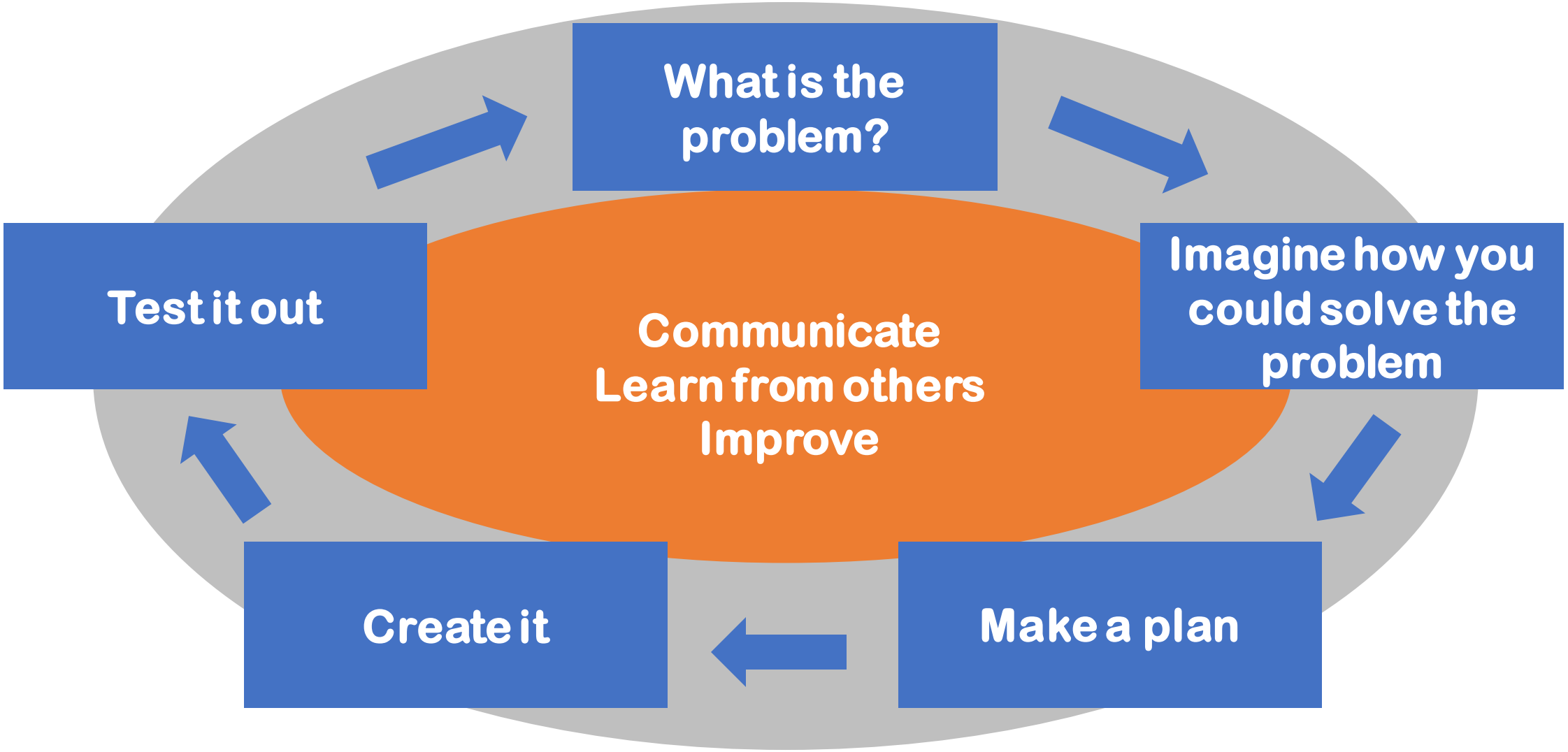
What are your success criteria for this project?

- I would like to get better at
  - teamwork
  - communication
  - creativity
  - critical thinking
  - resilience

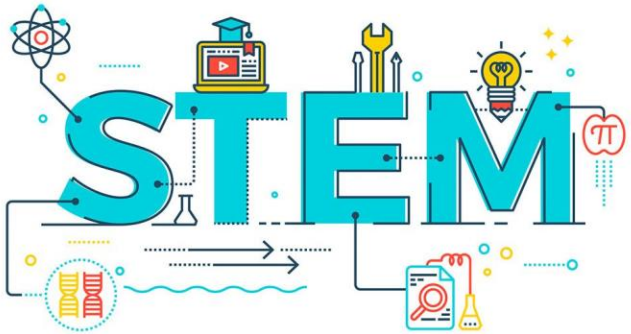
- How can you get better at this? Write down some strategies for yourself.

- As you progress through the project, you will decide if you have been successful at developing this skill.

The Engineering Design Process

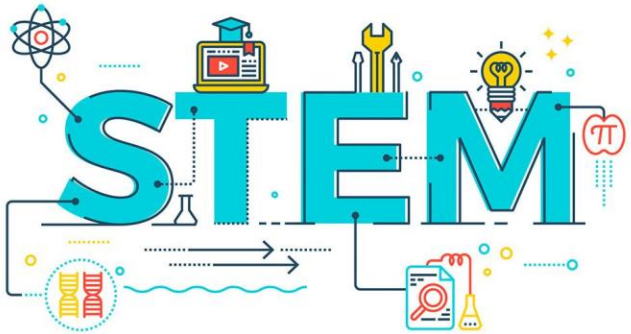


Putting green



- What is a **putting green**?
- Which **parts** would a model putting green need to have?
- What **could go wrong** when playing with the putting green? How could you **solve** these problems?
- **What else** will you need to design and build to play with your putting green?

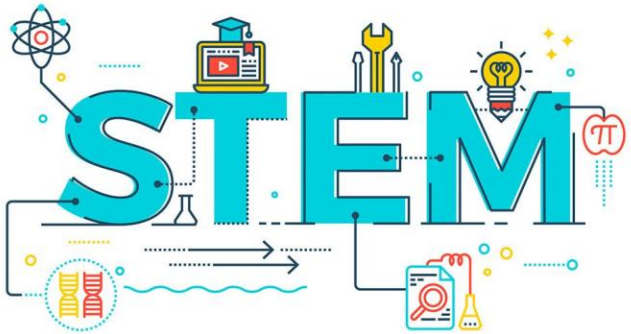
Design and build First level



- **Design** a putting green with a U shaped catcher instead of a hole, a putter and a ball (marble)

- **Build a model** of the putting green
- Use card as a **base**
- Materials:
  - **Card x 1**
  - **Paper x 1**
  - **Paper plate x 1**
  - **Straws x 2**
  - **Marble for golf ball**
  - **Sellotape**

Design and build Second level



- **Design** a simple putting green with one hole, a putter and a ball
- Use one sheet of card as a base. Raise the paper plate up and create a hole for the ball to drop through. Make a catcher under the hole to catch the ball.

- **Build a model** of the putting green
- Materials:
  - **Card x 1**
  - **Paper x 2**
  - **Paper plate x 1**
  - **Straws x 2**
  - **Sellotape**

Evaluation

- On a pink post-it, write down what you are Tickled Pink about – what is good about your design?
- On a green post-it, write down what is Green For Growth – what needs to be improved about your design?

- Or you could use pink and green highlighters to draw straight on to your design!

What can you learn from others?

- **Learning loop** – look at other people's work.
- How did other groups 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?
- **Feed back to your group**

Evaluation

- Discuss how your team approached the STEM challenges in this project
  - What did you learn?
  - Which skills did you develop?

- How could you improve your designs?

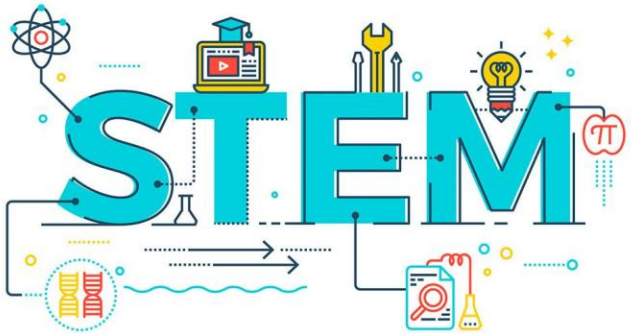
- Can you think of another similar STEM challenge you could set yourself to try at home?

Self-assessment at end of project

- We have been developing our skills by doing STEM challenges:
  - Collaboration
  - Communication
  - Critical thinking
  - Creativity
  - Resilience

- Have you followed your strategies?
- Have you been successful in developing your chosen skill?
- Have you developed other skills during this project?

Golf course – extra activity



- Design a **golf course** with at least 3 holes with **arrows** to show where golfers have to walk

- Label **upward slopes** and **downward slopes**

- What other **features** or **obstacles** would it have?