Teaching notes

- Learners may have previously made a simple putting green – this next challenge is a crazy/adventure golf game. They need to reflect on their prior learning.
- First level – use marble as a ball. Rather than making a hole for the marble to drop into, they must make a cylinder-shaped catcher for the ball to be putted into
- Second level – make their own golf ball. Rather than making a hole for the ball to drop into, they must make cylinder-shaped catchers for the ball to be putted into. Extra challenge could be added by adding a design rule such as building one actual hole which must be raised up as in the Putting green STEM Challenge. Or learners could come up with their own design rules e.g. features that must be included (choose one from slalom, slope, bridge, tunnel etc.)
- 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 all the listed materials.

STEM Challenge Project

Adventure golf

Learning Intentions

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

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

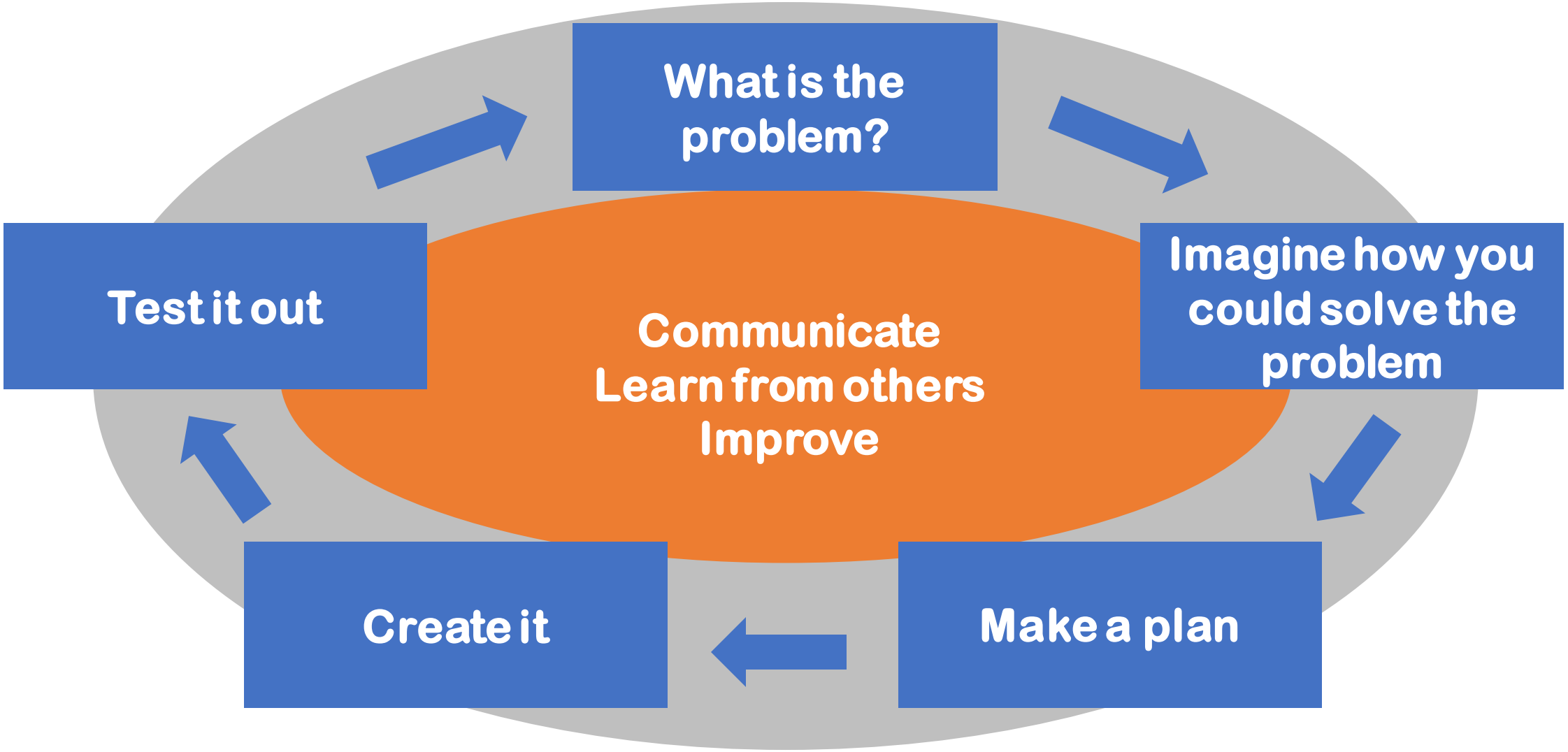
What are your success criteria for this project?

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

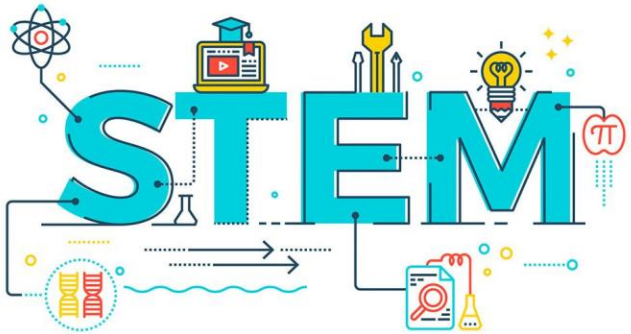
- How can you get better at this? Write down some strategies for yourself.

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

The Engineering Design Process



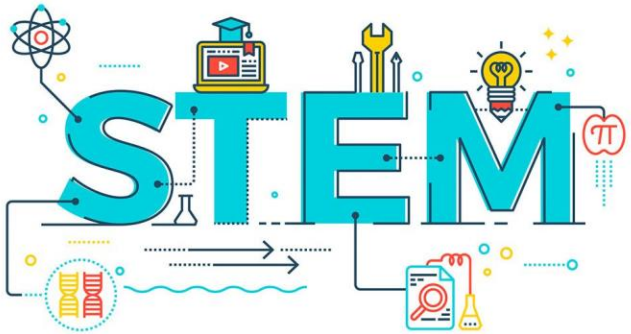
Adventure golf



- What is **adventure golf**?
- What **features** could an adventure golf course have?
- What **could go wrong** when playing with the adventure golf game? How could you **solve** these problems?
- **What else** will you need to design and build to play with your adventure golf game?


VOLCANO FALLS

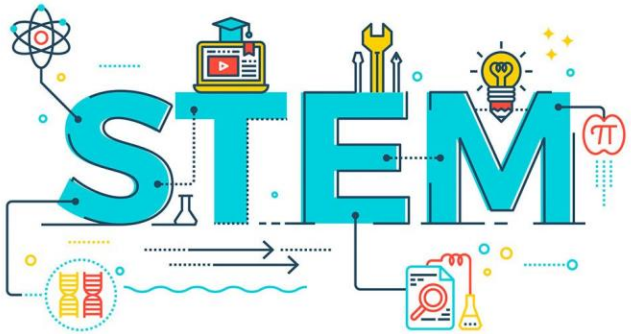
Design and build First level



- **Design** a mini adventure golf game with one hole
- You will make a cylinder shaped catcher instead of an actual hole
- Design a putter

- **Build a model** of the game
- Use card as a **base**
- Materials:
  - **A4 Card x 1**
  - **Smaller piece of card x 1**
  - **Paper x 1**
  - **Straws x 2**
  - **Marble for golf ball**
  - **Sellotape**

Design and build Second level



- **Design** a mini adventure golf game with two holes
- You will make cylinder shaped catchers instead of actual holes
- You will make a putter and a ball

- **Build a model** of the game
- Use card as a **base**
- Materials:
  - **A4 Card x 1**
  - **Smaller piece of card x 1**
  - **Paper x 2**
  - **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?

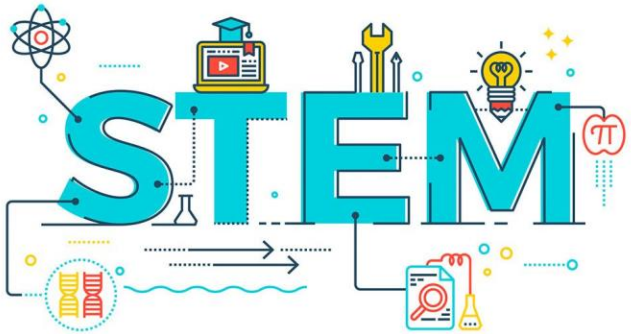
- Can you think of another similar STEM challenge you could set yourself to try at home?

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?

STEM design - extra activity



- Design a **golf trolley** to carry everything a golfer might need when walking around the golf course

- Golf clubs
- Golf balls
- Tees
- Drink
- Snacks
- Umbrella