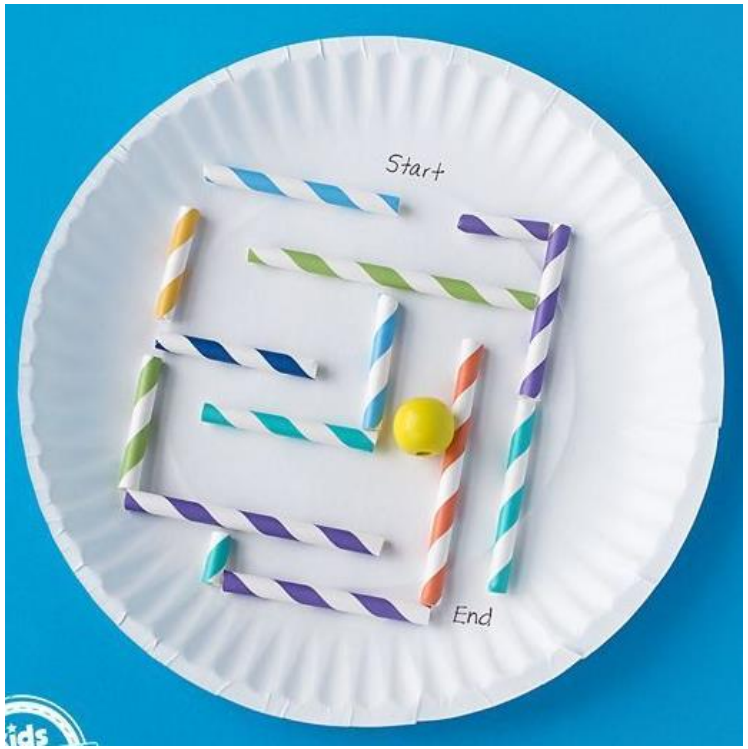
STEM Challenge Project

Marble maze challenge



Learning Intentions

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

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

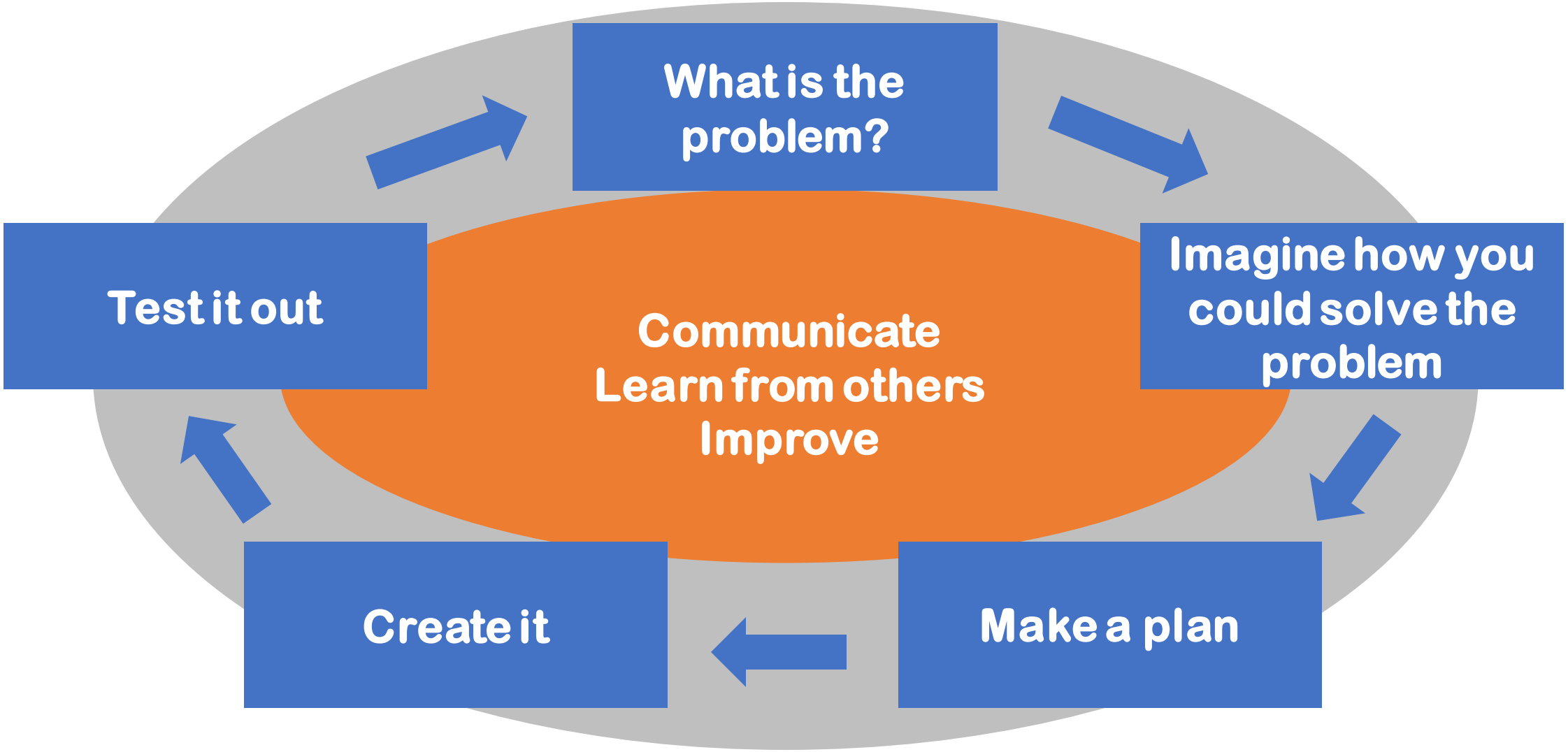
What are your success criteria for this project?

- 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.

- At the end you will decide if you have been successful.

The Engineering Design Process



Marble maze challenge

- Design and build a **marble maze** on a paper plate
- The **start** and **finish** points must be labelled clearly

- You will be given the following materials:
  - **1 paper plate**
  - **Straws – max 6**
  - **Marble in a pot**
  - **Sellotape**

- Test your marble maze and try to improve it

Marble maze challenge

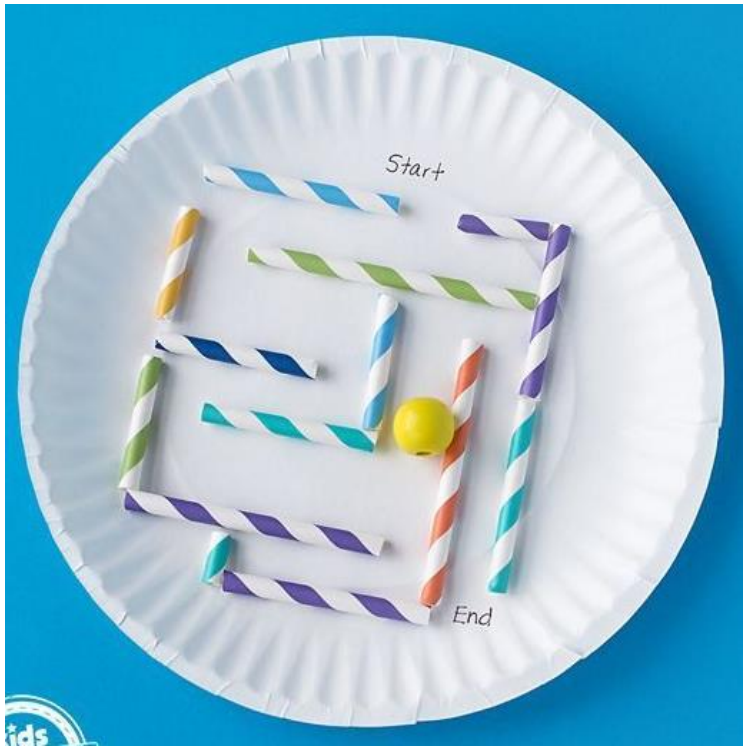
- What are the problems with this task?
- What can you predict being difficult?
- Imagine how you could solve each problem.

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?

STEM Challenge Project

Marble maze challenge



Part 2

Learning Intentions

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

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

What did you learn last lesson?

- Think about the marble mazes you saw last lesson.
- What did you learn about creating a marble maze?
- Which ideas did you see that were successful?
- What did you see that hadn’t worked, or that you wouldn’t use?

Double decker marble maze challenge

- Design and build a **double decker marble maze** using 2 paper plates
- The **start** point must be on the **top plate**, the **finish** point must be on the **bottom plate**.
- The marble must travel through a **short maze**, drop through a **hole** into a **catching device** on the **bottom plate**, and travel through another **short maze** to reach the **finish** point.

- You will be given the following materials:
  - **2 paper plates**
  - **Straws – max 8**
  - **A4 card x 1**
  - **Marble in a pot (you cannot use the pot)**
  - **Sellotape**

- Test your marble maze and try to improve it

Double decker marble maze challenge

- What are the problems with this task?
- What can you predict being difficult?
- Imagine how you could solve each problem.

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?

Evaluation

- Discuss how your team approached the STEM challenge today
  - What did you learn today?
  - Which skills did you develop?

- How could you improve your design?

- 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:
  - Teamwork
  - Communication
  - Critical thinking
  - Creativity
  - Resilience

- Update your previous self-assessment sheet.
  - Tick the boxes to show how you feel about each skill.
  - Circle the skills you feel you have developed during these STEM challenges.