Teaching notes

- Learners may need to experiment with more than one piece of foil for the first challenge. Once they have made a boat shape it is sometimes difficult to flatten the foil out and start again!

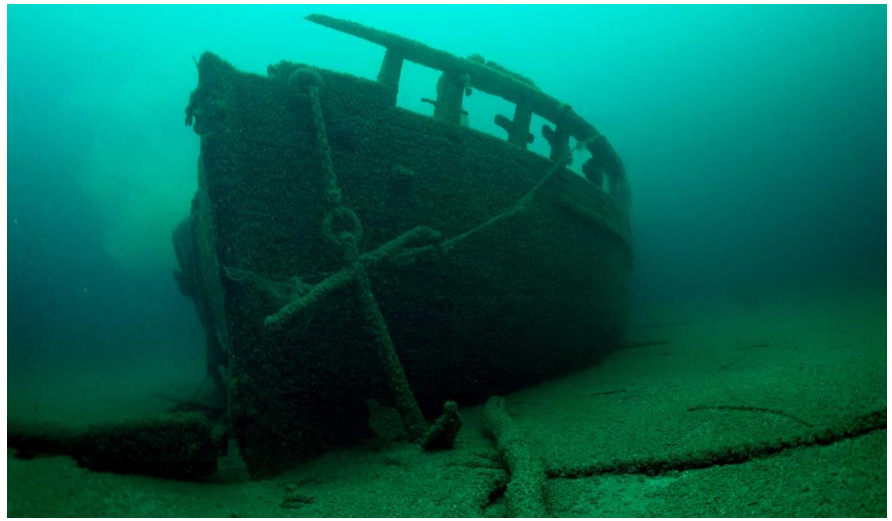
- Adjust the foil width you give learners based on the size of trays you have for water

- Be prepared for spills!! A great challenge for outdoors

- Discuss the types of items learners could use to test the boats – coins, marble, plastic weights and cubes are great for this, as long as everyone can use the same items.

STEM Challenge Project

Foil boats



Learning Intentions

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

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

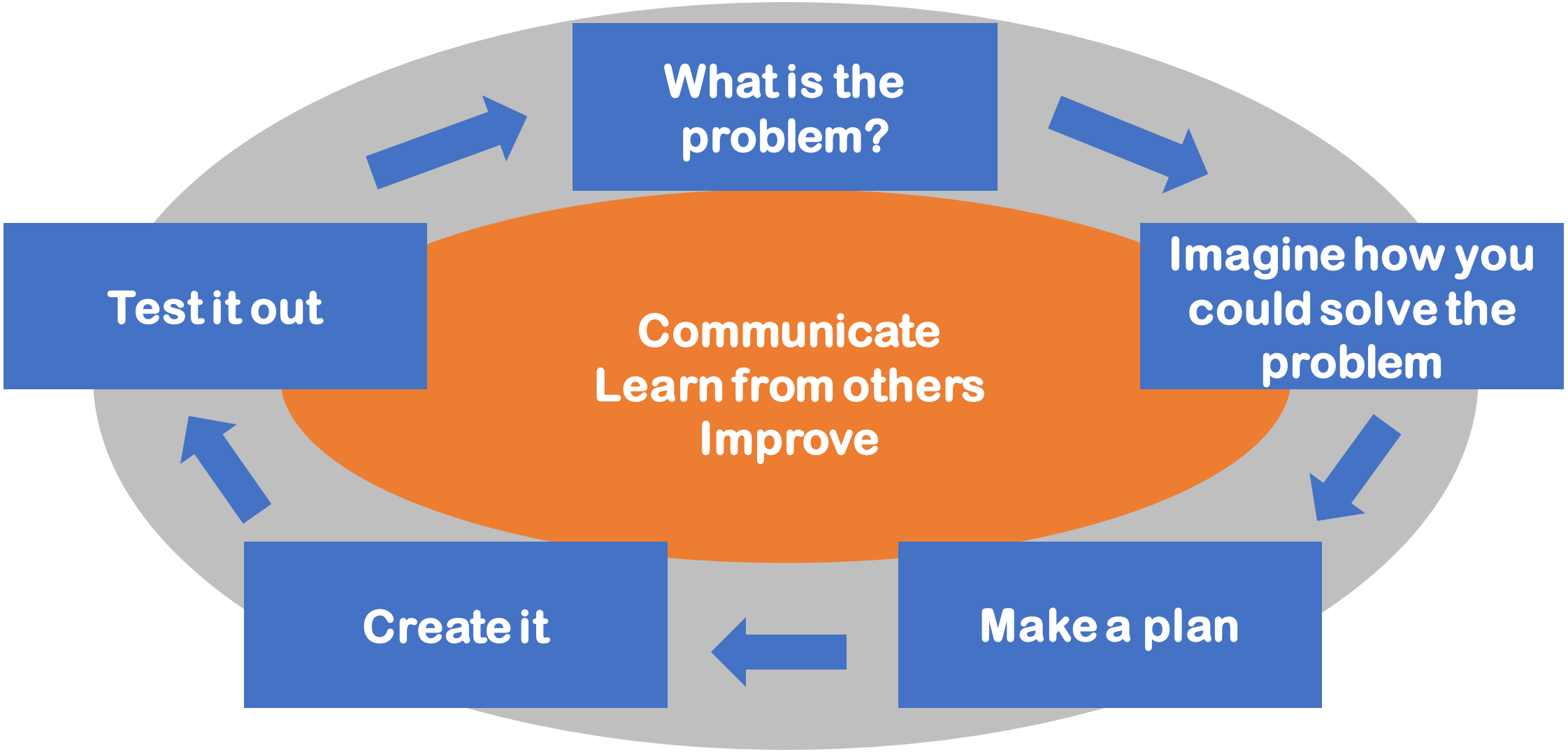
What are your success criteria for this project?

- 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



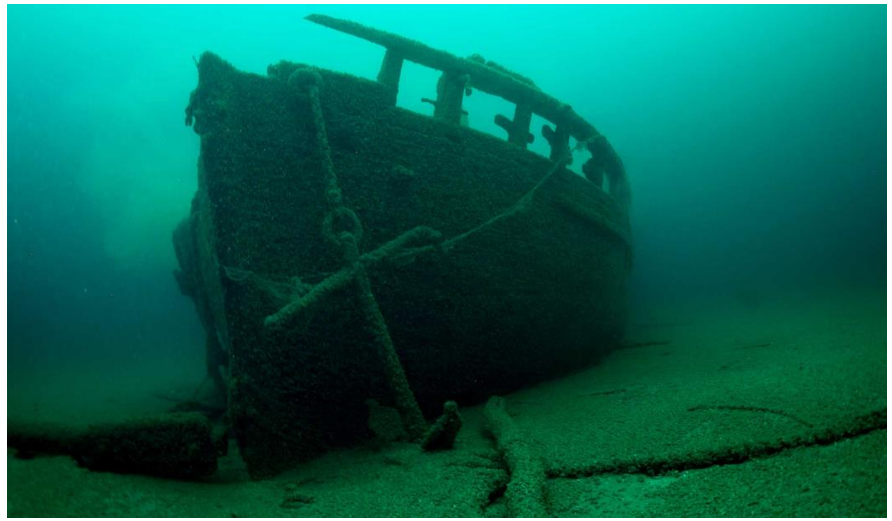
STEM Challenge

- Design and build a **foil boat** which can float and carry as much weight as possible **without being shipwrecked**!

- You will only be given:
  - **25cm width foil**
- No sellotape!
- You may use scissors
- No flags, sails etc
- What can you use to test your boat?
- Test your boat and try to improve it
- Try different shapes and sizes

STEM Challenge Project

Better boats



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?

- How did your group tackle the STEM challenge?
- Which ideas did you have that were successful?
- What didn’t work?
- What would you change about your design to improve it?
  - How could you make the boat carry more weight?
  - What different materials could you use?

STEM Challenge

- Design and build an **even better boat** which can float and carry as much weight as possible **without being shipwrecked**!

- You will be given:
  - **25cm width foil – 1 piece**
  - **Plastic tub scraps – max 1**
  - **Lollypop sticks – max 5**
  - **Straws – max 5**
  - **Plastic bags – max 1**
  - **Sellotape**
- No flags, sails etc
- Test your boat and try to improve it

What can you learn from others?

- **Learning loop**
- 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

- What is good about your design?

- What could you improve about your design?
  - How could you make the boat carry more weight?
  - What different materials could you use?
  - How would you change your design if you did this challenge again?

- How could you change the STEM challenge next time?

Self-assessment

- Did you meet the Success Criteria you set yourself?

Yes – I was successful

Almost – I need some help

Not yet – I need to keep working on this

Instructions

- Write or draw instructions so someone else could build your design
- Number each step
- You could draw labelled pictures to show how to build your design