

# SDG 14 Future of the Ocean

## MM6: Problem to Pitch Marine Plastic Waste



### Micro Module 6: Problem to Pitch Marine Plastic Waste

#### Implementation

#### Lesson 4: Defining the Problem 2

**Subjects: Design, Technology, Maths, Environment, Science, Sustainability**

#### Lesson Title and Summary: Defining the Problem 2

In this lesson, students will begin to understand how to define a problem. Students are asked to begin to identify the aspects of the problem of Marine Plastic Waste at a local and global level.

Learners will identify and research key aspects of Marine Plastic Waste and link to the targets 14.1 and 14.2 of SDG 14 Life Below Water. Learners will have the opportunity to connect and develop awareness of their local context and any concerns with Marine Plastic Waste.

**Vocabulary: Assumptions; (Biases, Judgement) Analyse, Conflicts, Define, Identify, Problem**

#### In this lesson, the learner will:

- understand the importance of getting to the source of a problem
- become more accustomed to SDG 14
- develop an understanding of the connection of local and global issues
- develop an understanding of the complexity of wicked problems in their location
- develop critical thinking about problem solving

#### Materials

- Worksheet: Problem Tree
- Teachers' Guide: Problem Tree
- Supporting resource: P2P Define
- Flipped Classroom Task: Problem search (for a shorter class only)
- Pens, pencils
- Paper
- Local Newspapers / internet access



# MM6: Problem to Pitch Marine Plastic Waste

## L4: Defining the Problem 2



### Activity Instructions

#### Activity 1 - Finding and defining your local problem, issue or concern (25 mins)

1. As a class, watch the video: 'Define' (4:34 min) introducing stage 2 of the Design Thinking method.
2. Organise students into groups of 2 or 4.
3. In their groups ask them to look at the SDG 14.1 and 14.2 targets and indicators for SDG 14 and begin to think about the potential impact their solution might need to address.
4. Ask learners to search online versions of local newspapers for local news, problems, issues, and concerns about Marine Plastic Waste.
5. Ask learners to feedback by putting summaries of what they have found on the board.
6. As a class, begin to think about your local areas problem of Marine Plastic Waste.

#### Activity 2 – Using a Problem Tree – (25 mins)

1. As a class, watch the Defining the Problem video - see Media Box.
2. Ask learners to look at the Worksheet Using a Problem Tree - learners can do this in groups or as a whole class.
3. Using the information found in activity 1 write the main problem locally with Marine Plastic Waste on the problem tree's trunk.
3. As a group, discuss the causes of this problem and write them underneath the problem, like the roots of the tree.
4. Discuss the effects or consequences of this problem and write them above the problem. These become the “branches” of the tree.
5. For each cause, ask what causes it.
6. For each effect, ask what the consequences are.
7. Continue this process until no further causes and effects are mentioned.

NB: You may not have all the answers at this point, so make notes of any assumptions, questions, conflicts, or gaps in knowledge.

### REFLECTIVE EXERCISE: 3-2-1

- Three things they feel they have learnt from the tasks
- Two things they found most interesting and would like to explore more
- One – their opinion they have about the tasks

Use Post-its or a mentimeter survey - [www.mentimeter.com](http://www.mentimeter.com) - to gather reflections

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## L4: Defining the Problem 2



### EXTENSION / REDUCTION ACTIVITIES

**Reduction:** For a shorter class, ask learners to complete the Flipped Classroom Task: the local search on marine plastic waste using the internet / newspapers and watch the video: Defining the Problem at home in preparation for the next class.

**Extension:** For a longer class, ask learners to read Support Sheet: P2P Define and Discuss. Then watch the Video: 'What is a Problem Statement' and begin to try to develop a problem statement. The problem statement can be completed at home and discussed at the beginning of the next class.

Learners can begin to research the local organisations and stakeholders involved in the problem of Marine Plastic waste and make connections with them. They maybe able to collaborate when they come to develop their service, product or service in response to the local problem of Marine Plastic Waste.

### MEDIA BOX: (materials, online video links, extra resources, case studies etc)

- Video: (4:34min) Define <https://www.youtube.com/watch?v=TNAdanuvwtc>
- Video: 'Defining the Problem' (1:25min) <https://www.youtube.com/watch?v=2rJRVv-NOaA>
- Video: 'What is a Problem Statement' (2:54min) [https://www.youtube.com/watch?v=ezyxp\\_yt4kDA](https://www.youtube.com/watch?v=ezyxp_yt4kDA)
- Sustaining Development SDG 14 <https://sustainingdevelopment.com/sdg14-indicators/>
- Linked learning: Media Communication 1-4 micro-modules support the development of the 4Cs skills – Creativity, Communication, Critical Thinking and Collaboration. Use these to support learners making a video; presentation, poster or podcast / undertaking interviews

### Local Trip / Expertise / Additional Work and Assessments

Stakeholder Mapping worksheet supports students to focus on their local place, its issues, and its audience. This can be linked into the issue of Marine Plastic Waste.

Link to SDG 4 Supporting skills <https://www.codesres.ie/sdg-4-supporting-resources> Sign up SDG 4 Web quest lesson plan, Interview skills

Learners can link into their local FLAG region to find out about local initiatives or contact BIM to ask about initiatives in their area <https://bim.ie/fisheries/advisory-services/fisheries-local-action-groups-flags/>



## MM6: L4SR PROBLEM SOLVING

### Problem Solving

#### First Step in problem-solving - Understand the Problem:

While it may seem obvious, identifying the problem is not always as simple as it sounds. The biggest issue can be identifying the wrong source of a problem. This could mean your attempts to solve it are inefficient or even useless. Remember: Once the correct source of the problem has been identified, you need to fully define it before it can be solved effectively.

#### Things to think about:



- What do I know already about the problem? – Make a list.
- Can a picture or diagram help you? Try to visually draw or map the problem.
- Who's telling me about this problem? What is their perspective?
- What do I need to find out?
- Do I need to speak with anyone else about this problem?
- Try rewriting the problem in your own words?
- What do you think the problem is?

#### Step Two: Brainstorm

In this phase, you will need to think, talk, sketch, doodle, contemplate, or journal, in order to start allowing ideas to formulate. Then, set aside some daydreaming time and get started. Think big and let all the ideas you have hit the page without editing them.



#### Step Three: Research: How are you going to turn the idea into a reality?



Brainstorming, researching, and refining your problem go hand in hand. You will be going back and forth between the three until you come up with a plan. Once you brainstorm some great ideas for your business, you will need to research to learn more about the problem, product, or service. In turn, that leads to more brainstorming and refining your problem.

**In the next phase you will think of how to turn your idea into a reality. Start to make a make a list of any questions or concerns that come to mind. Its never too early!**

- What materials do you need?
- What will it cost?
- Can you build it yourself or will you need help?
- If you will need to collaborate on this piece, decide who that will be and make plans to work together?

## MM6: 4TG PROBLEM TREE

14 LIFE BELOW WATER



What is the purpose of a problem tree?

The 3 most important points of a problem tree are:

- It allows us to break down the problem, the causes and its effects, improving its analysis.
- There is a better understanding of the problem by breaking it into causes and consequences.
- Facilitates the realisation of other important components of a project in its planning stage, e.g. stakeholder analysis, risk analysis and objectives.

When introducing the exercise and worksheet: Using a Problem Tree, it might be helpful to discuss an example on the board so that students are clear on what is meant by problem, impact, cause, and effect.

Remind them that there can, and usually will be, more than one impact, cause, solution, and effect. Show them how the effect of a solution might bring up a new problem to solve and take through this process.

Step-by-Step:

- Analyse the situation: What is happening, why is it happening and what is triggering it. Collect data that will allow you to understand the problem situation, this will help
- Identify the main problems of the situation you have analysed: Use brainstorming, defining by consensus what the main problem is.
- Determine the effects and causes of the main problem: You already have the trunk of the tree, now identify the causes (roots) and the effects or consequences (leaves or branches). Again, it is better if this is done as a team, seeking to reach a consensus. If in step 2 you elaborated the Vester matrix, you will already have this step quite clear.
- Draw the tree: Simple. We will see how in the example below.

Example:

Problem = People need to access a local walking trail in the evening after work and it gets dark early in the winter.

Impact = No one uses the trail in the evenings in the winter the space is wasted.

Cause = (1) It gets dark early as there's no natural light. (2) People don't feel safe using the trail in the dark. They can't see where they are going and might trip and fall. It's dull and boring in the dark.

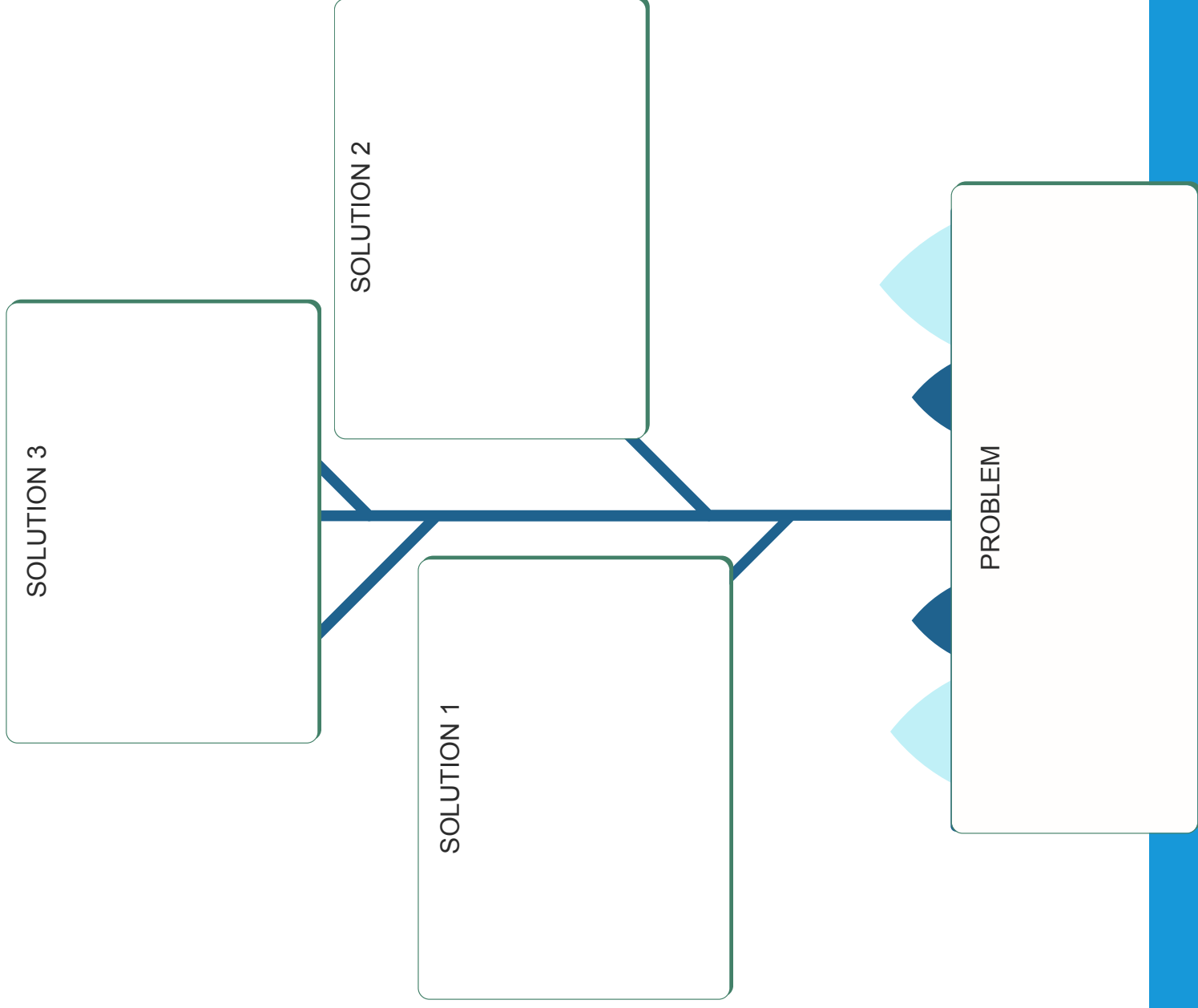
Solution 1 = We install lights.

Effect of solution 1: We can't just install any lights, we have to align to policy SDG 7 / carbon emissions.

# MM6: L4WS PROBLEM SOLVING TREE

Find out different ways to solve a problem.  
Pick the best one.

I choose solution number \_\_\_\_\_  
because \_\_\_\_\_





Watch: 'What is a problem statement ''

[https://www.youtube.com/watch?v=ezip\\_yt4kDA](https://www.youtube.com/watch?v=ezip_yt4kDA)

**In your own words write:**

1. Write the meaning of a PROBLEM STATEMENT.
2. Give a definition of PROBLEM STATEMENT.
3. Write an explanation of what a PROBLEM STATEMENT is.

**Your Answers:**

1.

2.

3.

**Try to construct a problem statement for the local problem of Marine Plastic Waste:**

**Local search: Using the internet or local newspapers and newsletters, make a list of local organisations or stakeholders that are undertaking local initiatives dealing with Marine Plastic Waste - you can also do a county wide search:**

