OCEAN SUSTAINABILITY: WHAT DOES IT REALLY MEAN?

Teacher resources - Lesson plan

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LESSON: OCEAN SUSTAINABILITY: WHAT DOES IT REALLY MEAN?

This lesson is suitable for learners aged 12+ in Science, who are studying ecosystems and habitats, humans and the environment, reproduction, and sustainability.

In this 45-60 minute lesson, learners explore what sustainability means in the context of sustainable oceans and fishing. They use real data to find out the journey of a fishing boat, then they work together to find out more about how fishers use the concept of Maximum Sustainable Yield (MSY) to ensure they only take from the ocean what can be replenished.

Learning objectives

- Learners reflect on what 'sustainable' means to them and come up with their own responses or a definition
- Learners build their knowledge of what sustainability means, through focusing on sustainable fishing
- Learners play a game in groups to build their understanding of sustainability in practice

Key terms

Sustainability
Ocean sustainability
Maximum Sustainable Yield
Economic, environmental, social

You will need

- Set of Sustainability Photos on screen or printed (PowerPoint) (optional) https://www.msc.org/docs/default-source/default-document-library/education-page/ppt-sustainability-photos.pptx?sfvrsn=aa4cee62_2
- Internet access for learners to complete an online exercise
- Access to the Shorthand story - https://dad-fishes-for-the-future.msc.org/ – How my dad fishes for the future
- Go Fish - https://www.msc.org/docs/default-source/default-document-library/education-page/msc-go-fish.pdf?sfvrsn=cd19fbdf_22 game – printed and prepared for groups of 4-6 learners to work together (it's a good idea to read this beforehand)

Starter (5-15 mins)

- Start by asking learners what they think of when they hear the term "sustainable".

  What does it mean to them?

  Where do they hear it?

  Do they think it has significance for their lives?

  Do they do anything they feel is sustainable?

  Is "sustainable" only about the environment or about other aspects of our lives?

- You could ask learners these questions in groups and get them to create a mind-map or list of what "sustainable" means to them, or if there's time use the set of Sustainability Photos and ask learners to identify which one(s) they think show them an aspect of sustainability and why.
- Encourage questioning of this term; some learners may say they hear it associated with particular products or adverts, or may feel they hear it a lot but don't understand what is meant by it, or that they don't understand how sustainable principles can be applied.
- Encourage learners to reflect on the interconnections between people and the environment, and to make the link between the three pillars of sustainability – economic, environmental and social.

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- You may want to refer to some of the following or your own resources to stimulate discussion:

  www.un.org/sustainabledevelopment/

  www.bbc.com/future/tags/sustainability

  www.nationalgeographic.org/topics/sustainability/

Main activity (35-40 mins)

Explain to learners that they are going to explore what sustainability means in practice by looking in more depth at sustainable fishing.

Ask them:

How can fishermen look after the environment as they fish? Is that possible?

Learners then work through part three of the Shorthand – How my dad fishes for the future - https://dad-fishes-for-the-future.msc.org/, including completing exercise 3. The Shorthand story includes a short video clip explaining maximum sustainable yield. Ask them:

What have you learnt about how fishers can look after the environment?
What is Maximum Sustainable Yield and how do fishers use it?

Next, learners work in groups to play Go Fish, a game that explores how MSY works. Follow the instructions on the sheets to run the game. The game includes a sheet with an explanation of MSY.

If you are short on time, just run the first few rounds of the game, miss out the scenarios, and go straight on to the Maximum Sustainable Yield Challenge.

Plenary (2-5 mins)

Finish up by asking learners what they think about the science behind MSY.

Does it make sense as an idea?
What are the advantages of this approach?
Can you think of any drawbacks of it, for fishers, for the environment or for us as consumers?

Extension or homework idea
If you have more time, learners could imagine they have to explain sustainable fishing to a friend or family member who has asked what the little blue MSC eco-label means, and write an explanation of Maximum Sustainable Yield, outlining some of the advantages and any potential drawbacks of it.

They might mention:

- MSY means fishers can calculate how much fish they can catch without compromising fish stocks in the future
- Calculating MSY for one fish species ignores all the other negative impacts that fishing can have on the environment, e.g. bycatch
- MSY calculations allow governments to set quotas for fishers
- Using MSY means that we as consumers can continue to rely on wild caught fish as a source of protein, and that fishers can keep working
- Using MSY calculations may mean that fishers always want to catch the most fish they can, which might be more (or less) than they did before
- If the information that scientists and fishers get about what's going on in the ocean is poor, then their calculations may be inaccurate
- Gathering information may cost a lot of money, meaning that only fishers in richer countries can access the data, or that fish becomes more expensive

You may want to draw on the information in this blog:

blog.msc.org/blog/2016/05/25/sustainable-fishing-really-mean/ (an explanation of the science behind MSY)

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