

Lesson Plan 1

Target Audience

Vet Trainers

Goal (50-60 words)

The goal of this lesson plan is to get learners acquainted with key facts and information regarding plastic waste's prevalence and reflect on their own use, and role they play in the lifecycle of plastic.

Objectives (1-3 Objectives)

- Identify the main types of plastic waste and the risks they pose to both the environment and human health.
- Explain how plastic waste contributes to environmental pollution and the accumulation of toxic substances in ecosystems.

Optional Theoretical Background (200-400 words)

State of Plastic

Plastic, first engineered in 1907, have taken over all aspects of modern life, and we are using more plastic than ever before. Plastic in its nature is strong, flexible and durable. Although plastic has been useful in many industries, its durability can also be a negative. Plastic will exist for 20 generations after us; it never truly breaks down every single piece of plastic ever created still exists in the earth in one shape or form. A single plastic bottle can last for 450 years in the marine environment and 12 million tons of plastic enter the ocean every year. Production for plastic is enormous; 400 million tons of plastic are produced annually, 29 million of them in the EU alone.

Types of Plastics:

Single Use Plastics: Plastics designed to be used once and then discarded (e.g., food packaging, cups, plastic bags)

Micro plastics: *Primary Microplastics:* tiny particles designed for commercial use (eg., cosmetics, textiles, fishing nets) & *Secondary Microplastics:* a result of the breakdown of larger plastic items

Environmental Risks

Of all plastic waste, only 9% is recycled with the rest ending up in landfills, burned or enters rivers and through to the oceans. Plastic accounts for 80% of marine litter, often ingested or entangling marine animals, with fatal consequences. 100,000 marine animals and turtles and 1 million seabirds die from plastic pollution each year. The **Great Pacific Garbage Patch**, a kind of 'soup' of plastic fragments in the North Pacific, collects plastic debris that flows to the ocean through rivers. It is not the only one but it is the biggest; twice the size of France and predicted to double in size in 10 years without intervention. Even with intervention, it would take 67 ships a year to clean up less than 1% of the plastics already there.

Health Risks

Micro plastics are now everywhere and although ongoing research is still needed to explore its impact, preliminary findings are concerning. Plastic ingested by oceanic animals ends up in humans; micro plastics have now been found in human blood and can pass through to unborn children through the placenta. Research has also indicated health risks related to plastic such as reproductive issues and cancer.

Lesson Plan Details

Lesson Plan title	Risks and impact of plastic waste on humans and the environment
21st Century Skills	● Collaboration ● Communication ● Creativity ● Critical Thinking

Duration	Activity 1: 20 minutes Activity 2: 60-80 minutes Scenario 1: 5 minutes
Classroom setting	● In groups (Activity 1 & 2) ● In pairs (Scenario 1) ● Everyone (Activity 1)
Required material/resources	Activity 1: ● Flipchart, pens/markers ● Electronically ○ Screen/Projector & laptop access ○ A board created and shared on https://miro.com/ Activity 2 ● Smart phones with internet access ● Instagram or TikTok app ● Laptops with internet access for additional research ● Pens/markers ● Screen/Projector and laptop access Scenario 1 ● Laptops OR pieces of paper and pens
Prerequisites	N/A
Final Assessment (if applicable)	Multiple Choice: How long can a single plastic bottle last in the marine environment? A. 50 years B. 100 years C. 450 years D. 1,000 years (Correct Answer: C. 450 years) What percentage of plastic waste is recycled globally? A. 15% B. 9% C. 50% D. 70% (Correct Answer: B. 9%) Open Ended:

	1. What are some consequences of the high durability of plastic on the environment? 2. What would be a good place to start when thinking about the reduction of plastic waste ending up in oceans?
Additional resources	Activity 2 Resources: Plastics: ● Science History Institute. (2024, September 25). The history and future of plastics. https://www.sciencehistory.org/education/classroom-activities/role-playing-games/case-of-plastics/history-and-future-of-plastics/ ● Science Museum. (2024, September 25). The age of plastic: From Parkesine to pollution. https://www.sciencemuseum.org.uk/objects-and-stories/chemistry/age-plastic-parkesine-pollution ● Factora. (2024). How plastic is made [Video]. YouTube. https://www.youtube.com/watch?v=Y7e2yHxZl3A ● European Environment Agency. (2024, September 25). Plastics: In-depth. https://www.eea.europa.eu/en/topics/in-depth/plastics?activeTab=07e50b68-8bf2-4641-ba6b-eda1afd544be <u>Rivers & Oceans:</u> ● The Ocean Cleanup. (2021, May 12). A tale of 3 rivers: Intercontinental river research collaboration. https://theoceancleanup.com/updates/a-tale-of-3-rivers-intercontinental-river-research-collaboration/ ● Business Insider. (2023, May 1). Most ocean plastic flows from rivers. Can giant trash barriers stop it? World Wide Waste [Video]. YouTube. https://www.youtube.com/watch?v=L8pEdHzQcik ● National Geographic Society. (2024, September 25). Great Pacific Garbage Patch. https://education.nationalgeographic.org/resource/great-pacific-garbage-patch/ <u>Wildlife & Human Health:</u> ● Brut America. (2022). The hidden dangers of plastics pollution for marine animals [Video]. YouTube. https://www.youtube.com/watch?v=HGxBRTV3ejo ● Greenpeace. (2024, September 25). Plastic pollution's devastating impact on wildlife. https://www.greenpeace.org/aotearoa/story/plastic-pollutions-devastating-impact-on-wildlife/#:~:text=Discarded%20fishing%20nets%2C%20plastic%20ropes,a%20slow%20and%20painful%20death ● United Nations Development Programme. (2024, September 25). Microplastics and human health: How much do they harm us? https://www.undp.org/kosovo/blog/microplastics-human-health-

	how-much-do-they-harm-us#:~:text=Different%20chemicals%20can%20leach%20from,decreased%20reproductive%20health%2C%20and%20cancer • https://r.flo.minderoo.org/Systematic-Evidence-Map/Plastic Health Map
References	European Environment Agency. (2021). Plastics, the circular economy and Europe's environment. https://www.eea.europa.eu/publications/plastics-the-circular-economy-and-europes-environment National Geographic. (2021). Plastic pollution facts and information. https://www.nationalgeographic.com/environment/article/plastic-pollution OECD (2022), Global Plastics Outlook: Economic Drivers, Environmental Impacts and Policy Options, OECD Publishing, Paris, https://doi.org/10.1787/de747aef-en. Organisation for Economic Co-operation and Development. (2022, February 22). Plastic pollution is growing relentlessly as waste management and recycling fall short. https://www.oecd.org/en/about/news/press-releases/2022/02/plastic-pollution-is-growing-relentlessly-as-waste-management-and-recycling-fall-short.html Surfers Against Sewage. (2024, September 25). Plastic pollution facts & figures. https://www.sas.org.uk/plastic-pollution/plastic-pollution-facts-figures/ The Guardian. (2023). Microplastics found in human blood for the first time. https://www.theguardian.com/environment/2023/mar/24/microplastics-found-in-human-blood-for-the-first-time The Ocean Cleanup. (2024, September 25). Ocean plastic pollution explained. https://theoceancleanup.com/ocean-plastic-pollution-explained/ United Nations Environment Programme. (2024, September 25). Beat plastic pollution. https://www.unep.org/interactives/beat-plastic-pollution/ U.S. Environmental Protection Agency. (2024, September 25). Impacts of plastic pollution. https://www.epa.gov/plastics/impacts-plastic-pollution World Wildlife Fund. (2022). Plastic pollution and its effects on the environment. https://www.wwf.org.au/get-involved/plastic-pollution

Lesson Plan for Activities & Scenarios #1 (include 1-3 activities & 1-2 scenarios)

Activity 1: Life IS Plastic

Overview: This activity aims to position learners in understanding and appreciating the magnitude and presence of plastic locally and globally.

Duration: 20 minutes

Instructions:

1. Invite learners to think about an average day in their life, from the moment they wake up to the moment they go to bed. The focus is to try to write down all plastic items they come in contact with on a day to day basis.
2. Invite learners to take turns shouting out all the plastic items they use whilst you write them down on the flipchart.
3. Alternatively, if utilizing online tools, create a board on a brainstorm platform, such as MIRO, and invite participants to add the items on there.
4. As the facilitator, attempt to categorize the different items of plastic in categories that make sense. For example, if learners share that they use facewash, toothbrush and plastic floss this could go to a category titled “grooming/personal care”.
5. Continue the exercise until every participant has shared at least 2-3 items. Encourage participation by calling out and encouraging everyone to share.

Debriefing:

Once everyone has shared, invite learners to examine the board with all the items. Guide the conversation using the following prompts:

In groups of 3-4:

- How did you feel completing this activity? Did you expect the results? Was anything surprising?
- How do the categories of plastic items reflect your daily routines or habits? Do any categories stand out in terms of excessive plastic use?
- Consider the lifecycle of all the plastic items. When you are finished with the use, where do they end up?

Share out in a large group.

Activity 2: Fact Sheet- Video Style

Overview: This activity is an inquiry based learning opportunity for learners to deepen their knowledge of plastic waste using digital media tools. You will support learners in creating a short 10-30 second video clip (Reel/TikTok) that helps inform the public about plastic waste and raise awareness about the related environmental risks.

Duration: 60-80 minutes

Instructions:

1. Activity Overview

- Goal: Create a series of engaging and informative short videos that inform the general public about plastics waste.
- Overview: Learners will be split into groups. Each group will create a short 10-30 second video on Instagram OR TikTok about a specific topic relating to plastic waste. All videos should be connected as if watching them in parts. Groups will then present all videos as a big group and reflect.

2. Groups and Topics

- a. Split learners into groups of 3 or 4. Ensure that at least one person per group has Instagram or TikTok and/or has a basic knowledge of using a camera app.
- b. Assign or invite participants to select a topic from the list below:
 - i. *The lifecycle of plastic*: From production to disposal.
 - ii. *Plastic production today*: Key facts and figures.
 - iii. *Impact* of plastic waste on wildlife and human health.
 - iv. *Rivers as plastic highways*: How rivers transport plastic to oceans.
 - v. *The Great Pacific Garbage Patch*: What is it, and why does it matter?

3. Research and Development

- a. In their groups, learners should research their assigned topic utilizing the resources shared in this lesson plan as well as other reliable internet sources.
- b. Groups will then develop a storyboard outlining the key points and visuals they plan to use in their video. A structure should be set with a linear sequence of content and visuals.
- c. Groups should also write up a script for reference.
- d. A representative from each group will meet with the representatives from the groups before and after theirs to ensure the videos transition smoothly and align with the overall flow.

4. Video Creation

- a. Groups will then create their Reels/TikToks within their group using smartphones
- b. Encourage active problem solving; if a group needs some help with their videos, you should remind them of the available resources on the internet.

- c. You can also share some good examples of Reels/TikToks for reference.
- 5. Groups will send all videos to facilitator who will compile them in order.
- 6. Presentations & Reflection**
 - a. You will then present all videos in order to the group.

Debriefing

Engage learners in a reflection exercise using the following prompts:

- What did you learn about plastic waste from this activity? What sticks out to you?
- What challenges do you foresee in reducing or eliminating plastic use from your daily life?
- What role do you think personal responsibility plays in reducing plastic waste compared to systemic or industry-level changes?

Tip for facilitators:

Spend time before the activity going through the resources and materials and make a fact sheet for yourself covering all topics. This will help you to better be able to assist groups if they require any assistance regarding research and content for their videos.

Scenario 1: Beach Café

Instructions:

- Step 1: Present the scenario and choices to learners.
- Step 2: Ask learners to get into pairs and analyse the choices available to them. For each choice ask learners to consider a) Why is this the best option and b) Why this is not the best option. Invite them to select a choice.
- Step 3: Each pair should share out their choice and reasoning in a big group.
- Step 4: Analyse feedback as a large group.

Scenario:

You are a VET trainee training in hospitality and restaurant management. You are currently employed at a beachside café/restaurant where your main duties include preparing takeaway coffees and snacks for beachgoers. The café uses substantial amounts of single use plastic including straws, cups and food packaging. You also notice that beachgoers do not recycle the items from the café and the plastic frequently ends up both in the trash but also on the beach. You want to do something about this but

you are unsure where to begin.

Choices:

1. Advocate and implement a recycling initiative: Propose to the local government to place recycling bins and recycling signs near the café and the beach to better encourage customers to properly dispose of their plastic waste. Additionally, you can put up signs in and near the café encouraging customers to recycle their waste.
2. Plastic Alternatives: Propose to your manager/owner that a discount be implemented for customers who bring their own cups and/or containers. Suggest that the owner replace plastic items with more eco-friendly solutions like biodegradable and/or compostable cups.
3. Environmental Organization: Locate and invite a local environmental organization to host a beach clean-up event. Ask the café owner if they would be willing to sponsor the event as a commitment to sustainability.

Feedback:

1. Feedback for Choice 1: Good choice. This approach can help reduce the amount of plastic waste that ends up on the beach. However, while recycling is important, it's worth noting that only about 9% of plastics are actually recycled. Additionally, this choice doesn't address the root cause of the waste: the continued use of single-use plastics. It would be beneficial to also focus on reducing plastic usage at the source.
2. Feedback for Choice 2: Excellent choice. This option addresses the shortcomings of Choice 1 by focusing on reducing the use of single-use plastics. Offering discounts to customers who bring their own containers not only cuts down on waste but also promotes a culture of sustainability. This can inspire others to adopt eco-friendly practices, creating a ripple effect among beachgoers and the wider community.
3. Feedback for Choice 3: Good choice. Organizing a beach clean-up demonstrates the café's commitment to sustainability while also benefiting the local environment. This community-driven initiative can raise awareness of plastic pollution and foster a sense of shared responsibility. However, it would be even more impactful if combined with efforts to reduce plastic use within the café itself.