

From chocolate to the ocean

Lesson 1: From chocolate to the ocean · Teacher guide

with Dr Pendo Maro

Overview

Learners start with something they love – chocolate – and follow its journey across the world to their shop. Along the way they discover what that journey leaves behind, why it matters for the ocean, and what they can do about it at home.

Learners	Upper primary, ages 10–12 (adaptations for 8–9 and 12+ at the end of this guide)
Time	50 minutes, plus a 5-minute follow-up the next week
Links to the SDGs	SDG 14 Life below water; also SDG 13 Climate action and SDG 12 Responsible consumption
Preparation time	About 15 minutes, plus printing
Background	Developed from classroom sessions in Brussels schools (2025)

By the end of the lesson, learners will be able to:

- describe how an everyday product travels to us and what the journey leaves behind
- link waste, air pollution, climate change and the ocean
- explain why this matters for sea life and coral reefs
- sort packaging into the right bins
- choose one small action to try at home

Our approach: learners at the centre. They talk more than you do: they ask the questions, work things out in groups and decide what to do. Facts, not fear: clear figures, no blame, and every problem is followed by something that helps.

Preparation

A few days before

- ☐ Ask learners to bring in one piece of clean, empty packaging from home (a chocolate wrapper, a bottle, a can, a yoghurt pot, a crisp packet, a cardboard box).
- ☐ Check your local or school recycling rules. The slides use the Brussels system (blue, yellow, orange and white bags); change the labels if yours differ.

On the day

- ☐ Watch the video before the lesson: youtube.com/watch?v=X0EdDFE_Zv4 (“Marine litter”, an animation by Ocean Campus – Surfrider Foundation Europe, under two minutes).
- ☐ Open the slides (14 slides) and have a world map ready, on the wall or on screen.
- ☐ Print the “Chocolate journey” cards (page 8): one page per group of 3–4 learners. Cut along the dotted lines, shuffle each set and keep it together with a paper clip.

- Print the “My home challenge” sheets (page 9): one per learner. There are two on each page; cut the page in half.
- Set out four bins, boxes or bags, labelled to match your recycling rules, and put the packaging learners brought in on a table. Add a picture of a banana peel for food waste.

The lesson at a glance

Time	Stage	Slides	Learners...
0–4 min	1. Hook: who likes chocolate?	1–2	guess where chocolate comes from and how it gets here
4–9 min	2. Video	3	watch and write one question each
9–17 min	3. Our questions	4	share their questions and answer each other
17–25 min	4. The chocolate journey	5	put the cards in order in groups and spot what the journey leaves behind
25–32 min	5. Why it matters	6–10	explain three figures in their own words
32–42 min	6. Let's sort!	11	sort real packaging into the right bins and explain why
42–50 min	7. My home challenge	12–13	choose one action to try at home
Next week, 5 min	Follow-up	–	report back on their challenge

Step by step

1. Hook: who likes chocolate? 0–4 min · slides 1–2

Aim: to spark curiosity and connect the lesson to the learners' own lives.

1. Show slide 2 and ask: “*Who likes chocolate? Where does it come from? How does it get here?*”
2. Take a show of hands, then let learners guess. Point to the cocoa beans in the photo.
3. Show the world map. Let them guess the countries and the transport (plane, lorry, ship) before you give the answer.
4. Answer: cocoa grows mostly in Côte d'Ivoire and Ghana and travels mainly by ship, often to the port of Antwerp in Belgium. Outside Belgium, use your nearest big port.
5. Finish with a question you will come back to at stage 5: “*And the chocolate wrapper – where does it go?*” Do not answer it yet.

2. Video 4–9 min · slide 3

Aim: to give learners a shared starting point and get them asking questions.

1. Give the task before you press play: “*While you watch, write down one question.*”
2. Check the task: “*How many questions do you write?*” (One.)
3. Play the video. If it is short, play it twice: once to watch, once to write.

3. Our questions 9–17 min · slide 4

Aim: to let learners' own questions drive the lesson.

1. Collect the questions and write them on the board in three columns: Chocolate, Waste, The ocean (as on slide 4).
2. Don't answer straight away. Turn each question back to the class: *"What do you think? Who can answer that?"*
3. Use concept-check questions to steer them, for example: *"Does cocoa grow in Belgium?"* (No.) *"Does a bottle thrown into the sea disappear in a year?"* (No, it breaks into tiny pieces.)
4. Keep any questions about harm to animals or corals for stage 5. The answer sheet at the end of this guide gives short answers to the questions learners usually ask.

4. The chocolate journey 17–25 min · slide 5

Aim: to see the whole journey of a product and what it leaves behind.

1. Put learners into groups of 3–4.
2. Set the task before handing anything out: *"In your group, put the cards in order, from the cocoa tree to your mouth."*
3. Check understanding: *"How many cards will you get?"* (Eight.) *"Do you work alone or together?"* (Together.)
4. Hand out one shuffled set of cards per group. Give them about 4 minutes.
5. Check the order with the class using the answer key below.
6. Ask the second question on the slide: *"What does this journey leave behind?"* Expected answers: waste, packaging, smoke and fumes from lorries and ships.

Answer key (for you only): 1 Cocoa grows on trees → 2 The beans are picked and dried → 3 A lorry takes the beans to the port → 4 A big ship carries them to Europe → 5 A factory turns the beans into chocolate → 6 The chocolate is wrapped → 7 A lorry delivers it to the shop → 8 We eat it... and the wrapper? Younger learners: use cards 1, 4, 5, 6 and 8 only.

Make the link: making and transporting our things creates waste and gases that warm the planet. The ocean receives both our waste and much of that extra heat.

5. Why it matters 25–32 min · slides 6–10

Aim: to understand why this journey matters for sea life, without frightening learners.

1. Show slide 6 and give learners 10 seconds to look at the photo. Ask: *"What can you see? Where is the sea?"*
2. Show the three figures on slides 7, 8 and 9, one at a time. For each one, ask the question on the slide and let learners answer in their own words before you move on (see "The three figures" below).
3. Show slide 10 to bring the topic closer to home: most litter on Belgian beaches is plastic, but every piece we sort or pick up stays out of the sea.
4. End on a positive note: *"So what can we do? Let's find out."*

Make the link (corals): fumes from ships and lorries contain gases that warm the air. The ocean warms up, corals lose their colour (bleaching) and can die. Local pollution weakens them even more.

6. Let's sort! 32–42 min · slide 11

Aim: to practise something concrete that helps, straight away.

1. Point to the four bins and the packaging on the table.
2. Set the task: *"In your group, take two or three items each and put them in the right bin. Be ready to say why."*
3. Check understanding: *"Do you just put it in a bin, or do you also explain why?"* (We explain why.)
4. Let the groups sort. Only step in if they disagree; ask the class to decide first.
5. Watch for the tricky items: a chocolate wrapper with foil or plastic goes in blue (paper-only goes in yellow); a banana peel goes in orange; a yoghurt pot goes in blue in Brussels.

7. My home challenge 42–50 min · slides 12–13

Aim: to end with a choice each learner can act on.

1. Say: *"We don't have to give up chocolate. We can make choices."*
2. Show slide 12 and hand out the "My home challenge" sheets.
3. Set the task: *"Tick one action you will try this week. Just one."* Then: *"How many actions do you tick?"* (One.)
4. Learners tick their action and write their name. They take the sheet home to show their family.
5. Show slide 13 to close and announce the next lesson: What is happening in the ocean?

Follow-up next week · 5 min

Aim: to keep the challenge alive and celebrate small actions.

1. At the start of the next lesson, ask: *"What did you try? What did your family say?"*
2. Take three or four answers. Praise every attempt, even small ones; the point is that they tried.

The three figures (slides 7–9)

These are the figures learners see on slides 7, 8 and 9. Each slide asks one question; the answer is given below. Show one figure at a time.

Figure	What it means	Question on the slide → answer	Source
11 million tonnes	The amount of plastic that enters the ocean every year, worldwide.	"Does this plastic ever go away?" → No, it breaks into tiny pieces (microplastics).	Pew & SYSTEMIQ, 2020
914 species	The number of sea animal species known to swallow plastic or get tangled in it.	"Is an animal that eats plastic healthy?" → No.	Kühn & van Franeker, 2020
84% of reefs	The share of the world's coral reefs hit by water warm enough to bleach them between 2023 and 2025. Not all of them actually bleached.	"Is plastic the only problem for corals?" → No, heat is too.	NOAA & ICRI, 2025

Slide 10, closer to home: about three out of four items of litter found on Belgian beaches were plastic in the OSPAR beach surveys (2002–2005). These are the most recent published figures for

Belgium that we have found; outside Belgium, use figures from your own coast if you have them.

Concept-check questions

Use these quick questions to check that learners have understood, not just heard. The answers are short: yes, no or a word or two.

To check that learners understand...	Ask	Answer
chocolate comes from far away	"Does cocoa grow in Belgium?"	No
it mostly travels by ship	"Does chocolate come by plane or by ship?"	Mostly by ship
transport pollutes	"Do ships and lorries use fuel? What comes out of them?"	Yes; smoke and gases
plastic doesn't go away	"Does a bottle in the sea disappear in a year?"	No, it breaks into tiny pieces
pollution harms animals	"Can a turtle mistake a plastic bag for a jellyfish?"	Yes
corals suffer from heat	"Is plastic the only problem for corals?"	No, heat is too
the ocean is hit twice	"Does the ocean only receive our rubbish?"	No, heat too
we can act	"Do we have to stop eating chocolate?"	No; we can choose and sort

Answers to learners' questions

Real questions from learners aged 11–12 in Brussels, with short answers you can give in one or two sentences.

Learners ask...	You can say...
Does rubbish affect the climate?	Yes. Making, transporting and burning rubbish releases gases that warm the planet. Plastic is made from oil.
Do ships pollute a lot? How?	They burn fuel, which gives off smoke and gases. They can also leak oil and make a lot of noise underwater. Shipping produces about 3% of the world's CO ₂ (IMO, 2020).
What happens to rubbish in the sea? How long does it take to disappear?	Plastic never really disappears: it breaks into smaller and smaller pieces called microplastics. A bottle can take hundreds of years to break down.
Is the "garbage patch" real? Where is it?	Yes, in the Pacific Ocean between California and Hawaii. It isn't a solid island: it's more like a soup of tiny pieces of plastic.
How much rubbish ends up in the sea each year?	About 11 million tonnes of plastic a year (Pew & SYSTEMIQ, 2020). Without action, this could almost triple by 2040.
Does plastic kill sea animals? How?	Yes. Some animals get tangled in it; others swallow it. A turtle can mistake a plastic bag for a jellyfish.

Learners ask...	You can say...
Why are corals affected?	Mainly because of heat: when the water is too warm, corals turn white and can die. The ocean also absorbs CO ₂ , which makes the water more acidic. Pollution weakens them further.
Does picking up rubbish on the beach really help?	Yes: every piece picked up won't break into microplastics. But the best thing of all is to make less rubbish in the first place.
Is there something we can actually do?	Yes: sort your rubbish properly, use a refillable water bottle, avoid unnecessary packaging, and tell others what you have learnt.

Figures checked on 8 October 2026. Full sources are listed under References.

Adapting the lesson

For	Change
Younger learners (8–9)	Skip slides 7 and 8: big numbers mean little at this age. On slide 9, show the two photos and say: "The water is too warm, so the coral gets ill."
Younger learners (8–9)	Use five cards instead of eight: the tree, the ship, the factory, the wrapping, and "We eat it...".
Younger learners (8–9)	Pause the video to explain the key moments. For the home challenge, let them draw their action on the back of the sheet.
Older learners (12+)	Add one figure: shipping produces about 3% of the world's CO ₂ (IMO, 2020).
Older learners (12+)	Ask learners to trace the chocolate's route on the map themselves.
Older learners (12+)	Add a five-minute debate: "Should plastic packaging be banned?"

Variation: use bananas, mangoes or pineapples instead of chocolate. Most of them also travel by ship.

Going further: Dr Pendo Maro offers classroom visits and teacher training on bringing sustainability and the SDGs into the classroom, and supports school projects. Contact: pendo@drpendomaro.com

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The chocolate journey: cards to print and cut out

Print one page per group of 3–4 learners. Cut along the dotted lines and shuffle. The cards are deliberately not numbered: learners work out the order.

A factory turns the beans into chocolate	Cocoa grows on trees, mostly in Côte d'Ivoire and Ghana
We eat it... and the wrapper? Where does it go?	A big ship carries them across the ocean to Europe
The chocolate is wrapped	The beans are picked and dried in the sun
A lorry delivers the chocolate to the shop	A lorry takes the beans to the port

My home challenge: sheets to print

Print enough pages for one sheet per learner (two sheets per page) and cut each page in half. Younger learners can draw their action on the back.

My home challenge

Name: _____

This week I will try ONE of these (tick one):

- ☐ I help sort the packaging at home with my family
- ☐ I bring a refillable water bottle to school
- ☐ I find out where three fruits in my kitchen come from
- ☐ I choose to eat fruit that is in season or grown locally
- ☐ I tell my family or a friend what I learnt about the ocean

What I did, and what my family said:

My home challenge

Name: _____

This week I will try ONE of these (tick one):

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- ☐ I find out where three fruits in my kitchen come from
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What I did, and what my family said:

