

AN UNDERWATER FIELD TRIP

LESSON PLAN (60-75mins)

This lesson plan assumes a class of 50 students divided in groups of 5. However, this activity can also be done individually, as a parent-child activity for example.

What you'll need:

Facilitators: 1 per 10 students (recommended)

Activity materials:

Activity posters: 1 per group of 5 students

Animal cards: 1 animal per group of 5 students

Fast fact cards: 1 plastic issue per group of 5 students

Pledge poster: 1 for the class

Pledges: 1 pledge per student

Film poster: 1 for the class (optional)

Colored markers, pens, and pencils: 1 set per group of 5 students

Table numbers: 1 paper card with table number per group of 5 students

Post-its or blank index cards: 1 set per group of 5 students

Blank sheets of paper: 1 sheet per student

Tape: 1 roll per group of 5 students

Film screening materials:

VR headsets and headphones:

- A minimum of 5 headsets and headphones (for one group of students that will rotate through the activity and the screening) up to as many headsets as you have students (students will all start with the screening and then move on to the activity).
- For the purpose of this lesson plan we will assume that we have 12 headsets and headphones available (2 of them are backups), and a total of 50 students.
- Two options of headsets:
 - o Phone-based headset (Samsung Gear, Merge, or similar): download the YouTube app and make sure you have a reliable Wi-Fi connection. Please find the YouTube link on our webpage: www.grandpasreef.com
 - o Self-contained headsets (Oculus Go or similar): please contact us for a downloadable link to the film for offline viewing

Swivel chairs or standard chairs: equal to the number of headsets you have for students to sit while watching the VR film

Setup (5 mins):

Divide students into groups of 5. Push tables close together so that groups are sitting together. If there are no tables available, make sure students are sitting in a circle and materials are

placed in the center, on the floor. If possible, the pledge poster and the film poster should be hung on the wall. Place the table numbers on each table, or on the floor in the middle of a student group. Place post-its, colored markers, pens, and pencils in the middle of the table, or on the floor where students will sit. Prepare the materials that will be handed out for the design activity. Prepare VR headsets for screening.

Introduction (5 mins):

Explain that today we're going to be learning about the ocean and its species, what things are threatening them, and then we're going to come up with our ideas of how we can help protect the ocean. We're also going to be watching a virtual reality film. Ask: "do you know what a virtual reality film is?" Explain/get everyone excited.

Intro to design challenge (5 mins):

Materials: Activity Poster

Description: Introduce the design challenge to the entire class before they split into groups. Set expectations for the day.

Introduce the design challenge and explain to students what they can expect from the activity. Say that today we will be learning about the ocean and how we can protect it. Ask some warm-up questions like: "Do you guys like the ocean?" "Who goes swimming here?" "What is conservation?". If anyone says yes, you can use this opportunity to ask one of the students about their favorite animals, or if they've seen coral. Start to define some of these terms out loud.

Terms you can probe and define together:

- Turtle
- Sharks
- Reef
- Coral
- Plastic
- Pollution
- Conservation
- Biodiversity

Say that today we're going to be doing two things:

1. An activity, where we'll be coming up with some ideas for how to protect our oceans.
2. We'll be watching a film that a group of National Geographic explorers made. Ask if someone can remember what a virtual reality film is.

Explain that each group is going to have a poster that they will be filling out throughout the hour. Facilitators should start to place one *activity poster* on each table or on the floor for each group.

VR film screening (10 mins):

Materials: 12 VR headsets and 12 headphones with their AUX cable. Swivel chairs are ideal if you have them, otherwise the students can sit on normal chairs or stand at the back of a chair and hold its back for support.

Description: The film is 4 minutes long and requires a VR headset + a pair of headphones per student.

Introduce the film: it was shot in the Philippines on a marine protected area and you will go diving underwater and meet some beautiful marine species.

Give students instructions: you can look all around (up and down and behind you), make sure not to move too fast or too far (if standing) or you'll run into other people, don't touch any buttons, etc. If you feel dizzy raise your hand and we'll help you remove the headset. When you see the credits, the movie is done so you can raise your hand.

Give one *headset* and one pair of *headphones* to each student, aid the students in putting on the headsets and headphones, and start the film (the way this is done will depend on the headsets you are using).

At the end of the film, ask quickly to the group what they liked most about the film, and what they learned from it. Then, the kids will proceed with the design challenge.

Design Challenge: Learn (10 mins)

Materials: fast facts cards, animal cards, activity poster

Description: The purpose of this phase is to introduce and define their design problem. Each student group will learn about one plastics-related issue that affects the ocean through a marine animal. Each group of students should have a different animal assigned to them, and each animal will have a specific plastic issue associated with it.

Explain to each group that the first thing they're going to do is learn about an ocean animal. Hand out 1 *animal card* per group. These are the possible animals with their corresponding issue:

Each animal will have one of these problems:

- Sea turtle: plastic bags
- Whale shark: single-use plastic
- Corals: fishing nets
- Fusilier fish: microplastics

Ask some light questions such as: “Do you guys know this animal? Have you ever seen one in the ocean? Where do they live?” Then have students read out loud (to each other) the back of the animal card. After they’re done with the reading, ask them: “What is hurting the [animal name]?”

Now, hand out the corresponding *fast fact card* and ask them to read it to each other.

Once they’re done, have students fill out Section 1 of the *Activity Poster* together:

- Challenge question: (the question on their fast fact card)
- What is the issue your team is solving?
- Why is it important to solve it?
- What animal species are you helping out? (circle)

Design Challenge: Brainstorm (10 mins)

Materials: post-its, pens, colored markers, activity poster

Tell the students that now that we know what issue we’re solving, we’re going to be thinking about our own ideas to solve it. The students should already have post-its, pens and colored markers available on their table. They will try to come up with as many ideas as possible to solve the issue they outlined.

Explain that today they will not actually be building out their idea, they’re just going to be thinking through a proposal for a solution. For example, if my idea was to build a giant broom that cleaned the bottom of the ocean, I would not be building the giant broom today, I would be sketching out what it looks like, explain how it works and how it solves the plastics problem I learned about.

Now, give them 5 minutes to use the post-its and individually come up with as many ideas as possible. Emphasize that all ideas are valid, none are crazy, and tell them to think as big or small as they want. This exercise is individual. Give them a 1-minute warning before their time is up.

If students are struggling to come up with ideas, help them decide a category of possible solutions to help them constrain their ideas (they are in Section 2 of the poster):

- A proposal physical piece of art (painting, sculpture, or performance) to raise awareness about the issue (specify where, draw what it would look like)
- A proposal object/device or a modification to an existing object/device that could solve the problem
- An event or campaign (specify where, what it would look like)
- A proposal piece of media (a video, a film, a game)

When the time is up, check in with them: do they need more time? Give them an extra 30 seconds to wrap up ideas.

Now, tell them to stop and each read ideas to each other, tell them to pick 1 or 2 ideas that will be their final idea as a group. Facilitate the conversation by reminding the students to go back to their original question (on the poster) and make sure their solution solves the problem.

Once kids have agreed on 1-2 ideas to combine into a final one, prompt them to fill out Section 2 of the *activity poster*. Make sure they pick which type of solution they have decided on.

Design Challenge: Create (10 mins)

Materials: Activity poster, pens, color markers, or pencils, blank paper, tape

Description: Pick 1 idea or 2 ideas combined per group. Each group sketches their idea on Section 3 of the activity poster (or blank paper if they need extra space).

Tell students that now is the time to finalize the proposal for their idea, it doesn't have to be perfect, it just has to be something they came up with together. Guide them to sketch their idea on Section 3 of the *activity poster* (or blank paper if they need extra space).

Depending on what kind of idea it is (artwork, event, piece of media) the sketches should be in different formats. The facilitator should guide the kids to sketch in the appropriate format.

These are suggested formats for each type of solution:

- Artwork: students should collaborate to have one consolidated sketch of the artwork. If the artwork is composed of multiple parts, students should each sketch one of the parts.
- Event: sketches of what the event would look like (with stick figures) + text annotations
- Object/device: a sketch of what the device looks like and what it does. Students can have one designated drawer and decide together what the device looks like.
- A piece of media/video: students can put together a vignette of 3-4 different moments in the story that would be in the video (with stick figures is fine). As a facilitator, help the students identify the 3-4 moments they should sketch.

At the end of sketching, they should tape their ideas on the poster in the appropriate areas.

Then, guide the students to answer the remaining questions on the poster:

- What things need to be in place in order for their idea to happen?
- What are some next steps they would need to take to turn their idea into reality?

Closing + Pledge (5-20 mins)

Materials: Activity poster, pledges, pledge poster, tape

Description: Groups present their idea to the class. Students take a pledge together to reduce their plastic impact. They put one on the wall of their classroom and bring one home. The amount of time this takes will depend on the number of groups in your class.

Ask each group of students to come up and share the idea they came up with. Ask them to walk everyone through the poster/drawings and their answers.

Wrap up the day: say that today we all learned about different ways the ocean is affected by plastic. One of the easiest ways to help the ocean is to take a *pledge* to reduce our plastic impact. Let's all end by taking a pledge to reduce one or more plastic uses. Hand out a pledge to each student and ask them to fill it out. Ask them to take turns to tape it to the *pledge poster* on the wall.

Thank everyone for the awesome work. Clean up.

Survey

To share feedback and help us improve the activity: <https://forms.gle/5aMTZuFxrGEEntJq8>