The ocean starts here

Follow the current to discover your connection to the ocean... and the fate of litter

Imagine you are in a city on a rainy day far from the ocean and you see rainwater falling into a street drain. Where will it go and where will it end up?
In this activity, we encourage students to take this imaginary journey – but not too imaginary – to understand the invisible connections that link all of us to the oceans and the long-range consequences of our daily activities.
Show your pupils a single-use plastic object (a small bottle, a cup, a snack packaging) and ask them: "How far can this object travel if I throw it away?" *(The answers may include a few kilometres, hundreds of kilometres, etc.)*
Then show this TED Ed video about the fate of plastic litter:
https://www.youtube.com/watch?v=_6xlNyWPpB8

Further development

- Show students a physical map of their region that includes rivers.
- Ask them to study the map and locate their town and a nearby stream or river.
- Have students trace the course of the local stream and determine whether it flows into a lake or directly to the sea, and eventually to the ocean.
- Take the class outside to observe a nearby storm drain (for example, in the schoolyard).

Ask students to imagine the journey of a piece of litter as it enters the storm drain and travels through the water system. (*They will be able to tell the route of the litter from their town to the ocean*).

- Back in the classroom ask your pupils to make a picture about the fate of plastic litter.
- Organize an art contest in which pupils design a **stencil**—a reusable cut-out design used to spray or paint images and messages onto surfaces. The stencils will be used to decorate storm drains in the schoolyard with pictures or short messages encouraging people not to dump litter and to protect the environment.
- **Optional extension:** Contact your local authority (town council) to propose a public awareness campaign. With their permission, students' stencils could be used to decorate storm drains across the city, helping to raise environmental awareness among residents.

Image: public street in *Figueroa da Foz Municipality, Portugal*

The back up

Title: The ocean starts here

Subtitle: Follow the current to discover your connection to the ocean... and the fate of litter

Topic: This activity aims to raise students' awareness of the fact that everything that ends up in road drains (rubbish, other types of pollution), even in inland areas, will reach the ocean via waterways and will eventually be redistributed everywhere by ocean currents.

Age range of pupils: 6-12 years

- **Time needed to complete activity**: 50 minutes + another 2 hours if you want to decorate a storm drain

Pupil learning outcomes: Pupils can:
- read a physical map, identify streams and follow their flow (to a lake or the sea);
- imagine the journey of a piece of rubbish (a plastic object, a cigarette butt) that enters a street drain carried by rainwater;
- understand that, carried by water, all forms of pollution have a global impact;
- be aware of one's influence – positive or negative – on the local and global environment.

Context: This activity can be used in geography or environmental education lessons to understand the connections between individual behaviour and global pollution problems (from plastic and other materials) through the circulation of continental and marine waters.

Following up the activity: Teachers can use the activity to address the topics of the water cycle, the connections between continental water and ocean water and ocean currents.

Underlying principles:

- Except for endorheic areas (without outlet to the sea or ocean), almost every region of the world is crossed by waterways that connect it directly or indirectly to the ocean.
- A drainage basin collects surface water from a given area and is separated from other drainage basins by a watershed.
- A hydrogeological basin is the underground portion of a drainage basin that collects groundwater.
- The two types of basins do not overlap exactly but are connected to each other.
- In both cases, continental waters flow into the ocean as part of the global water cycle.

Thinking skill development:
Through this activity, students will deepen their understanding of the geographical characteristics of their region, gaining awareness of the connections between continental and ocean waters as part of the global water cycle (construction). Understanding the wide-range impact of local pollution (e.g., plastic waste in an inland region) can raise a cognitive conflict that can be solved by reasoning about the new information acquired (metacognition), while discovering the links to the real problem of marine pollution involves bridging capacity.

Resource list:

- video TED Ed on the fate of plastic litter: https://www.youtube.com/watch?v=_6xlNyWPpB8
- a physical map of your region with rivers, to be projected overhead or on an interactive whiteboard
- access to a storm drain next to the school (e.g., in the schoolyard)
- paper and coloured pencils/felt-tip pens
- for the stencil: a cardboard or plastic sheet and a cutter (the last one to be used by the teacher)

Useful links: this activity can be completed with the use of other Earthlearningideas, such as:
From rain to spring: water from the ground, (https://www.earthlearningidea.com/PDF/54_Groundwater.pdf),
Lost at sea – the amazing journeys of rubber ducks around the world https://www.earthlearningidea.com/PDF/340_Friendly_floatees.pdf),
Atmosphere and ocean in a tank: High flow, low flow? (https://www.earthlearningidea.com/PDF/Atmosphere_ocean_tank.pdf)

Source: Giulia Realdon, University of Camerino, UNICAMearth group, Italy.