**WORLD'S LARGEST LESSON**

*"Water pollution has reduced the availability of potable drinking water and has further endangered many aquatic lives. It is necessary that strict measures be taken and enforced to ensure better sustainability of aquatic lives and the ecosystem as a whole."*

**Collins Abalu**
Teacher, Ladela Secondary School, Abuja, Nigeria

# Clean Water for All

## Subject

Science, Geography

## Learning Outcome

By the end of the lesson, the students should be able to:

- Define water pollution
- State or outline some of the causes of water pollution
- Describe the global inequality of access to clean water

## Preparation

- Prepare two cups of water (one dirty and one clean), ideally so that you can see the water clearly.
- Project or print out pictures of polluted and clean bodies of water (appendix 1).
- Print out the causes of water pollution worksheet (appendix 2).
- Project or print out the map (appendix 3).
- Ensure students have access to a world map.

Total Time:

**60** mins

Age Range:

**8-14** year olds

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World's Largest Lesson is a collaborative education project to support the announcement of the United Nations Global Goals for Sustainable Development. The project is living proof of the importance of Global Goal 17 "Partnerships for the Goals" and would not have been possible without the help of all of our partners working with us and with each other.

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Lesson plans created in collaboration with Think Global www.think-global.org.uk. Promoting learning for a just and sustainable world.

THE GLOBAL GOALS For Sustainable Development    WORLD'S LARGEST LESSON

## Learning Activity

**5** mins

Fill two cups with water (one cup with clean water and the other cup with dirty or muddy water).

Think, Pair, Share: Ask students if they notice any differences between the two cups. If so, what are these differences? If they had to choose between the two cups, which one do they think would be safe for drinking and which one would be unsafe? Why? What would be the possible effect of drinking from one of the cups?

*Before answering any of these questions out loud, give students a minute to think about the questions silently. Next, have students pair up with a partner and compare their thoughts and observations. Finally, have students share their answers with the class.*

## Differentiation and Alternatives

Instead of doing the 'Think, Pair, Share' activity, have students record their answers and observations in their science journal or on a piece of paper. Save the journals or papers for the end of the lesson so students can reflect on what they learnt and see if any of their answers would change.

## Learning Activity

**10** mins

Explain and/or display a definition of water pollution e.g. "**Water Pollution** is when any source of water (streams, lakes, oceans) is mixed with substances harmful to living things." You should explain that you can't always see water pollution.

Show images of clean bodies of water and polluted bodies of water (appendix 1). Ask students to compare and contrast the pictures, what words would they use to describe them? Have students decide which picture they think are polluted water and which are clean water.

## Differentiation and Alternatives

Students could also come up with questions about the images of polluted water.

## Learning Activity

**15** mins

Hand out *appendix 2* and ask students to read through the causes of water pollution. In pairs, discuss which they think would be the biggest cause of water pollution. Students then rank the causes from biggest to smallest cause of water pollution (either by cutting out and sorting or by writing on the sheet or in their journals).

The idea is for students to think about the various causes and to be ready to explain their choices rather than have a correct answer. Ask some students to share their ideas with the class.

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## Learning Activity

**25** mins

Worldwide there are many people who don't have access to clean water. There are a number of reasons for this, water pollution is just one reason.

Hand out or display the World Map showing access to clean water worldwide. (appendix 3)

Explain that the map shows where in the world people have easy access to clean water.

Ask students to answer the following questions, they may need to have a standard world map (appendix 4) showing country names to help them:

- Where is their country? Where is it on the clean water map? (appendix 3)

- Where are the countries with good access to clean water? Use continent names and compass directions in your answer.

- Where are the countries with less access to clean water? Use continent names and compass directions in your answer.

- How equal is access to clean water around the world? Is it the same for everyone?

## Learning Activity

**5** mins

Have students write down a question that comes to mind when looking at the clean water map. See if their peers can help answer their question or use them for homework research or as the basis of future lessons on this topic.

If you have time, refer students back to their answers at the beginning of the lesson. What do they think would be the effect of drinking dirty water? Ask students to outline what measures or actions they believe could be taken in order to control or prevent water pollution where they live.

### Take Action for the Global Goals

As an educator you have the power to channel students' positive energies and help them believe that they are not helpless, that change is possible, and that they can drive it.

The Design for Change "I Can" School Challenge invites children to take action, make change for themselves and share it with children across the world.

Visit **www.dfcworld.com** to get started.

To download a Design for Change lesson pack or a simple advice pack for young people to take action themselves **visit www.globalgoals.org/ worldslargestlesson**

DESIGN *for* CHANGE

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WORLD'S LARGEST LESSON

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# CAUSES OF WATER POLLUTION

| | | |
|---|---|---|
| Dropping litter that then gets washed into streams and rivers. | Chemicals and waste from farms washing into streams and rivers. | Storage of harmful chemicals underground, sometimes leaking into the water supply. |
| Chemicals from mining washing into streams and rivers. | Hot water from industry being dumped into streams and rivers. | Plastic bags that have been dropped, ending up in the ocean. |
| Soil being washed into streams and rivers after heavy rains. | Harmful particles in the air mixing with rain. These particles come from cars, planes and burning fossil fuels for electricity. | Chemicals from cleaning and washing at home leaking out of pipes into the ground and from there into streams. |
| Coloured dyes from making clothes washing into streams and rivers. | Sewage from toilets not cleaned and treated, so it mixes with clean water supplies. | Animals sharing water with humans. Their waste products mix with the water. |
| Oil spills from ships in the ocean. | Rubbish being dumped into lakes or oceans. | Fat from cooking that is washed down sinks. |

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Countries in which less than 50% of the population uses improved drinking water sources are all located in sub-Saharan Africa and Oceania
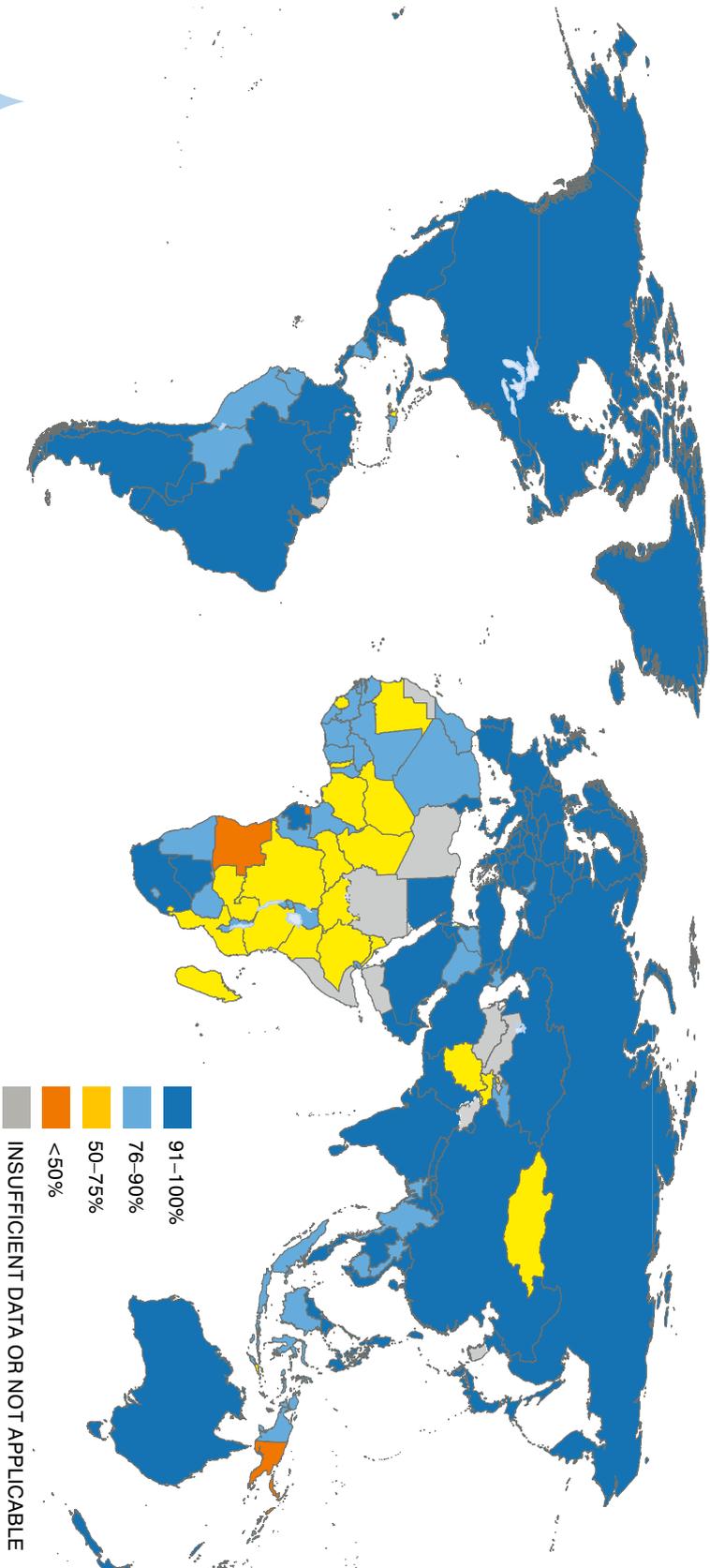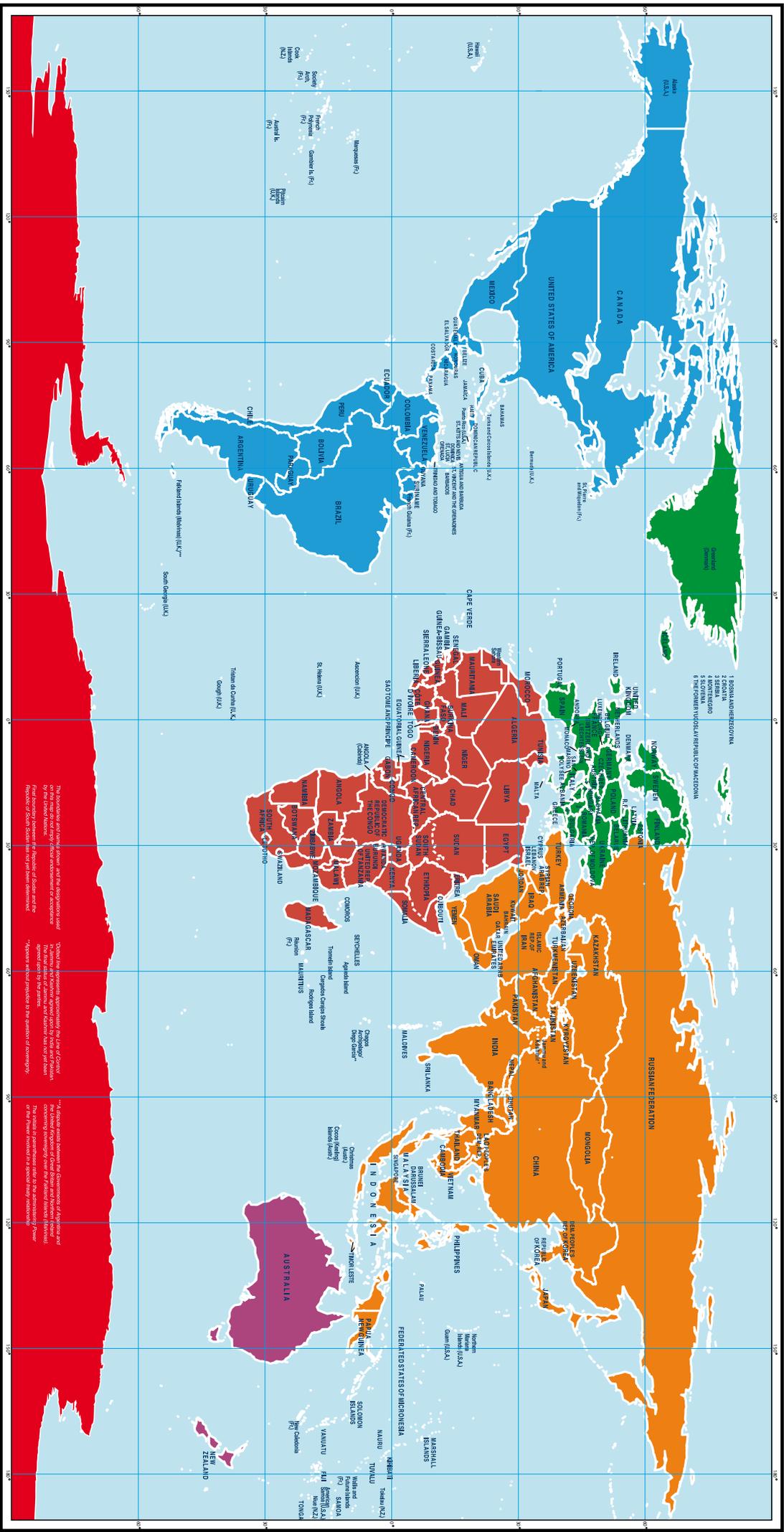
Proportion of the population using improved drinking water sources in 2015

**Source:** Progress on Sanitation and Drinking Water 2015. World Health Organisation

91–100%

76–90%

50–75%

<50%

INSUFFICIENT DATA OR NOT APPLICABLE

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1 BOSNIA AND HERZEGOVINA
2 CROATIA
3 SERBIA
4 MONTENEGRO
5 SLOVENIA
6 THE FORMER YUGOSLAV REPUBLIC OF MACEDONIA

The boundaries and names shown and the designations used on this map do not imply official endorsement or acceptance by the United Nations.

Final boundary between the Republic of Sudan and the Republic of South Sudan has not yet been determined.

*Dotted line represents approximately the Line of Control in Jammu and Kashmir agreed upon by India and Pakistan. The final status of Jammu and Kashmir has not yet been agreed upon by the parties.

**Azad without prejudice to the question of sovereignty.

*** A dispute exists between the Governments of Argentina and the United Kingdom of Great Britain and Northern Ireland concerning sovereignty over the Falkland Islands (Malvinas).

The italics in parentheses refer to the administering Power or the Power involved in a special treaty relationship.

## FURTHER RESOURCES:

- Water pollution information: http://eschooltoday.com/pollution/water-pollution/what-is-water-pollution.html
- Water pollution information for children: http://www.water-pollution.org.uk/
- Water pollution video: https://www.youtube.com/watch?v=lgLIMaZAJj0
- Creek Freaks "Can You See Pollution?" activity: https://www.youtube.com/watch?v=MLKsifjwPG4
- Water games and activities:
  - For students: http://water.epa.gov/learn/kids/drinkingwater/kids_4-8.cfm
  - For teachers: http://water.epa.gov/learn/kids/drinkingwater/teachers_4-8.cfm
- Water filtration animation and experiment: http://www.epa.gov/safewater/kids/flash/flash_filtration.html
  - Experiment video: https://www.youtube.com/watch?v=OMZpzcItQkc
- Removing chlorine from water experiment:
  http://www.education.com/science-fair/article/water-purification-filtration/

Water pollution websites for additional research:

- http://eschooltoday.com/pollution/water-pollution/what-is-water-pollution.html
- http://www.water-pollution.org.uk/