



*"Tell me and I forget..
Teach me and I remember.
Involve me and I learn."
Benjamin Franklin*

Scenario

Title: There is no life without water

1. Content knowledge:

- students can name forms of water that occur in nature
- students can name features of water as liquid
- students can tell the water cycle in nature
- students can name physical processes during change in physical state of water
- students can explain the role of water in nature and human life
- students can justify why life without water is not possible
- students can justify the rational use of water
- students can do and analyze an experiment based on instructions
- students can provide conclusions based on experiments and observations

2. Methodology:

- work in pairs,
- work in groups
- show
- experiments
- conversation/ talk
- brainstorm
- modern technologies

3. Technology:

- the Internet,
- smartphones,
- applications (Kahoot and Plickers)
- laptop computers,
- interactive board.

4. Time:

- 2 lessons- 90 minutes.

5. Target group:

- 12-13 - year-old students, primary school.

6. Resources needed:

- <https://kahoot.com>
- <https://plickers.com>
- <http://slideplayer.pl>
- <http://www.riddlesandanswers.com>
- <http://www.evonyzone.com/>
- <http://youtube.com>
- the globe
- a one- metre-long strip of paper, scissors
- materials for experiments (Group 1: ice cubes, a glass, a saucer; Group 2: a glass of water, a plate (for soup), a bowl, a spatula, a paperclip; Group 3: 6 glasses of water (half empty), a teaspoon, salt, sugar, vitamin C, flour, oil, sand; Group 4: fresh cucumber, 2 radishes, 2 glasses, a spoon, salt, a knife)
- measuring cylinder
- worksheets

7. Aims to be accomplished:

- critical thinking,
- collaborating,
- technology literacy,
- social skills,
- leadership,
- flexibility.

8. Evaluation:

- using Plickers application to evaluate students' knowledge acquired on the lesson (the most important facts about water).

<https://plickers.com>

9. Didactic sequence:

- a) Riddle about water.** The Biology teacher reads a riddle about water: “I can help you clean your shirt, I can fall and not get hurt. Look for me to beat the heat, I can run

without my feet” The solution: water. (source: <http://www.riddlesandanswers.com>). Students try to guess the answer, which is also the subject of the lesson.

Next, the Math teacher checks students' knowledge about water using the Kahoot application. Students take out their mobile phones and take part in the game (pairwork). They answer 7 questions that were earlier prepared by the Biology and Math teachers. Later, the correct answers and quiz results are discussed. (appendix 1)

•**b) Show and talk.** The Biology teacher shows the globe, The students observe it and have to answer why the Earth is called ”the blue planet”. The teacher writes down on the board different forms of water that occur naturally in nature. Then, the students decide whether the names belong to freshwater or saltwater. Next, they analyze the pie chart (appendix 2)

•**c) Groupwork.** Students are divided into four groups of five students. Each group is given a one- metre-long strip of paper. Their task is to cut the paper to demonstrate how much water is fit for human consumption. It is shown on the second pie chart (Appendix 2) on the whiteboard. Students draw conclusions: there is very little water that can be used by people (only 0,7% from water resources on the Earth).

•Then each group is provided with written instructions for an experiment they need to conduct (Appendix 3):

Group 1: Does water exist in three physical states?

Group 2: We study features of water

Group 3: Is water good solvent?

Group 4: How can saltwater influence average living organisms (vegetables)?

•**d) Presentation.** The leader from each group presents the experiment results and discusses the work of the whole group.

•**e) Tap water experiment:** When the students work on their experiments, the Biology teacher turns off the tap and puts a measuring cylinder under it to catch the water drops. After a quarter, one of the students reads out the amount of water in the measuring cylinder. The teacher puts the number down on the board.

•**f) Summarising handouts.** The Biology teachers gives a worksheet for students (Appendix 4). It contains activities about water: physical states and features of water. They make students draw conclusions from the conducted experiments.

•**g) Film.** The Biology teacher plays the film about water cycle in nature (source: Youtube.com) and students label the picture with the names from the table (Appendix 4, exercise 7)

•**h) Math.** The Math teacher gives the task. Students are supposed to count the percentage of water in their bodies. Later, they count how much water people waste after 1 hour, 1 day and 1 week, taking into account the tap water experiment. Finally, they draw conclusions and present their ideas to save water.

•**i) Summary: online quiz.** The English teacher give students the Plickers cards (questions previously created by the Biology teacher) to sum up the lesson and do self-evaluation <https://plickers.com> (Appendix 5)

•**j) Homework.** The students are given a task to prepare a poster titled “There is no life without water”.

Adapting lesson to students with special needs:

•students with special needs can do the activities with online applications (kahoot.com and plickers.com) using their mobile phones or Plickers cards. They can work together in pairs to make it possible for them to participate actively.

•students with special needs can take part in experiments, because it is a group work and they can prepare an easier part of the task

•students with special needs do not have to count the percentage of water in their bodies or they can use a calculator/ ask the teacher for help

10. Conclusions:

•students had an opportunity to take part in a different kind of a lesson. Everybody was involved from the very beginning because of group work, experiments and modern technologies

•students could work in a team they wanted to, so they did their tasks with pleasure

•students enjoyed this lesson because they had no time for boredom or any distractors

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