

# WATER IN NATURE



## 1<sup>st</sup> teaching period

### 1<sup>st</sup> Activity

Time: 8'

Type of activity: class discussion based on visual input

Class organization: whole class – pair work – whole class

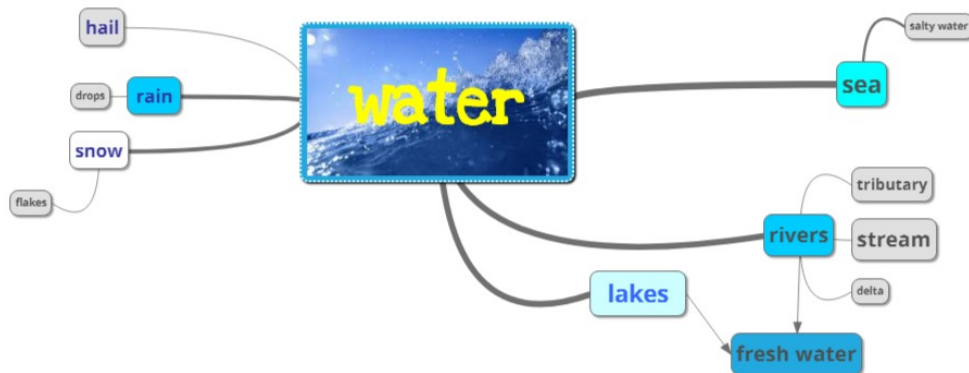


Actions/Tasks: as a first trigger, the teacher shows two pictures of the Earth as it is seen from space (Earth from space NASA.gov or sciencephoto.com earth from space) and invites students to think which colours dominate the photo and what they represent. The teacher elicits the meaning of the blue as well as the white colour. Then the teacher invites students to describe in which forms we find water on Earth and where.

The students are given two minutes to discuss with their partners and note down any words associated with the word **water**. In the meantime the teacher creates a mind map on the whiteboard using the word **water** as its central node. A very simple free tool (as long as you keep your mind map public) is "[mindmup](https://app.mindmup.com/)". One member from each pair reports to the class the words they have come up with and the teacher inserts them into the mind map encouraging students to think of associations among the words, which are also displayed in the mind map.

The following image represents one stage of the final map:

(<https://app.mindmup.com/map/free/2020/06/add23640a96411ea9460efbc41182473>)



When this process finishes the students give an answer to a general multiple choice question about the water cycle (if there is a beginning, an ending, both or none in the water cycle) so that the students' prior knowledge will be activated the integration of the old with the new knowledge will be facilitated and their interest in the topic will be aroused.

### 2<sup>nd</sup> Activity

Time: 15'

Type of activity: video activity that involves note taking and discussion

Class organization: individual, pair and plenary session

Actions/Tasks: students are asked to watch an educational video of about 3 minutes (<https://www.youtube.com/watch?v=ncORPosDrjl&feature=youtu.be>) which is an animated presentation of the "water cycle", and answer the questions that the teacher has inserted in the video by using "Edpuzzle" (<https://edpuzzle.com/media/5edf94b5dcb11e3ebb8dc4d2>).

One of the reasons why the particular video was selected is because, as it is addressed to children, it will be appealing to the students and its language is kept simple allowing the children to focus on the new terms that are related to the water cycle (such as *precipitation*, *evaporation*, condensation etc). After each question, the teacher asks one of the students to give an oral answer and the rest of the class can take notes. At the end of the video, the students are given two minutes to discuss the questions in pairs and form complete written answers. In this activity, the students use audiovisual material in order to take notes, to compare their notes with each other and decide which facts to use in order to form full answers. A short plenary session follows, so that all the students recapitulate the concepts from the video.

After that, the students are asked to note down in the handout and the new words they heard on the video and are related to the water cycle, after being informed that they are going to be used to make a glossary in the following activity.

### 3<sup>rd</sup> Activity

Time: 10'

Type of activity: creating a glossary with the key terms

Class organization: video projection, individual work and whole class

Actions/Tasks: The students watch another video (<https://www.youtube.com/watch?v=9pqh6tIEOhs&feature=youtu.be>) which lasts 2'. The content of the video is similar to that of the previous one, but apart from listening to its content, the students can read the important content as the information is also written and

in that way the students get information from different modes (in the first video the students listen and watch the animation). After watching the second video, they add more words to their notes and confirm the ones that they have already noted down. Subsequently, the students can, in turns, come to the whiteboard to add some words to the “Quizlet” app, and provide definitions for them, selecting from the suggested ones or finding them in an online dictionary. When they have given the definition they can add a picture to the definition, which will help as a visual stimulus to help them memorise the words. In this way they will create a glossary similar to [this](#) one: [https://quizlet.com/\\_8fr55h?x=1jqt&i=15er9s](https://quizlet.com/_8fr55h?x=1jqt&i=15er9s). Throughout the lessons of the scenario, more words that will be encountered are going to be added to the glossary, which be there if the students want to refer to it in the future. In addition the app gives the opportunity to the students to revise the vocabulary, using different features of the app. For example, they can use the “learn” feature which asks them the meaning of the words alternating between multiple choice and direct questions. They can also use the spell or test functions or even play games, such as “match” or “gravity” or even play “[quizlet live](#)” by using their mobile phones. Another option is to use the function “flashcards” of the [H5p](#) tools.

The following words should definitely appear in the glossary in this stage of the lesson: evaporation – precipitation – condensation – transpiration – sublimation – collection – ground runoff – groundwater – accumulation – sun heating – hydrological cycle – rain – snow – hail, but the students will probably add some more words.

#### **4<sup>th</sup> Activity**

Time: 8’

Type of activity: filling in a worksheet and speaking

Class organization: individual and a short plenary session

Actions/Tasks:

Students are asked to complete a *Worksheet 2* using the right terms on a picture taken from their handbook <http://ebooks.edu.gr/modules/ebook/show.php/DSGYM-A102/148/1058,3812/> and write down two or three phrases describing the water cycle. Worksheet 2 contains 3 different versions of the activity in case the teacher wants to differentiate the activity for students of different linguistic abilities in the L2, alternating the amount of help that he or she provides. In the first version the students are not given any help, in the second they are given a set of questions and in the third version the words are given in mixed up order.

#### **5<sup>th</sup> Activity (Homework)**

Time: 4’ for the instructions, about 60’ asynchronous work in groups

Type of activity: artistic work in groups

Class organization: Group work

Actions/Tasks: The teacher explains to the students that they have to cooperate in order to make an artistic creation in the form of art that they prefer, inspired by the water cycle. She tells them that the first thing they should do is to read the project instructions (*Worksheet 3*) and then write their name in the google document that she has created next to the project they like ([https://docs.google.com/spreadsheets/d/1\\_tl\\_-rm52zo9stzCRR1lwDu4-8UEkmyn1ualyXiYpSk/edit#gid=0](https://docs.google.com/spreadsheets/d/1_tl_-rm52zo9stzCRR1lwDu4-8UEkmyn1ualyXiYpSk/edit#gid=0)). Each group that will be formed should consist of four to six students. In that way, the students will do a project that they prefer, or might have a talent for it, and they will consolidate the new knowledge in a pleasant and meaningful for them way. Only in case some students have not written their names in the spreadsheet in

the predefined deadline (one day) they will be placed by the teacher to a group according to her own criteria that might include their perception of their inclinations, the good cooperation with the other members of the group and their level of English. Apart from writing their names to the specific worksheet within a specified time limit, the students have to assume specific roles when doing the project to make sure that everybody in the group has put the same or almost the same amount of effort in the final product (for example, if they choose to do the choreography it should be clear who the choreographer is, who the dancers are, who will shoot the video clip, who will process it if necessary, who will upload it to “Tik tok” etc). At the end apart from the final artistic outcome, which will be due in a week, the groups have to submit a report, specifying their roles, and commenting on how their cooperation went.

As far as the project is concerned, the first group has to watch the following video (<https://www.youtube.com/watch?v=KM-59ljA4Bs&feature=youtu.be>) and make their own *choreography* for the song. The students should record themselves dancing and post the video on the “Tik Tok” app, making it public so that the teacher and their classmates can see it. The second group, is going to create a *comic* inspired by the water cycle (eg. The adventures of a water-drop). They can create their comic manually, if they are good at drawing or they can use a digital tool. One of the tools that they can use is “Make beliefs comix” (<https://www.makebeliefscomix.com/>), where they can create an account, save their comic and then go back to it and edit it. In this way, by creating a shared account they can distantly cooperate to create their comic or work together, if they can meet with each other, and just save their comic to their computer or print it, without even having to create an account. Another easy to use comic generating app is pixton (<https://www.pixton.com/gr/>). However, they might choose to use moovly (<https://www.moovly.com/>) to create their own cartoon video. The third group has to create a *board game*. They have to think of how the board will look like and come up with a set of rules and questions. The game should of course be inspired by the water cycle and the group can actually create the board, the pawns, the cards and whatever else is needed so that the game will be functional. If they find this too difficult they can adapt an already existing game (eg monopoly, Pictionary or Taboo) so that its central theme will be the water cycle. The fourth group, who may consist of students who are good photographers, can use a digital camera (even mobile phones nowadays have very good digital cameras) to take *pictures representing the stages of the water cycle*. The pictures can be printed and displayed in the classroom or in the school dashboard, or they can be used to create a digital flipbook (suggested tools: fliphtml5 (<https://fliphtml5.com/learning-center/>), anyflip (<http://anyflip.com/>)). Similarly, the students of the fifth group, who will probably be very good at drawing, are going to create their own works of art in order to prepare their own *art exhibition*. It is also possible, if there is a need for distance learning to digitalise their works of art by scanning them and using them to make a power point or their own flipbook. The sixth group of students, who would probably be better at creative writing, are going to write their own *poem or short story* based on the water cycle. The members of this group can easily cooperate by using a google document. Finally, the seventh group of students, will cooperate to create a *song*. They can write both the music and the lyrics, and if they play a musical instrument, they can also perform the song and record it. They can upload it in a social media such as Tik tok as well.

All of the groups will have one week to ten days to complete the project (depending on the hours of Geography per week in the curriculum and the abilities of the students – some groups may demand further clarifications or guidance by the teacher) and they will present them to their classmates during the 4<sup>th</sup> teaching period.

By letting the students choose what they want to create, multiple intelligences are promoted and of course the students acquire various forms of new literacies (visual, information, digital etc). The real outcome that will be produced will give the students a sense of accomplishment and will serve as a motivation to work harder.

## **2<sup>nd</sup> teaching period (in the schools computer lab)**

### **1<sup>st</sup> Activity**

Time: 5'

Type of activity: expressing ideas and speaking

Class organization: whole class

Actions/Tasks: students are asked to name uses of the water and where is the water coming from for each use. By this way they by recall their knowledge of the word and activate the relevant schemata, which will help them link the existing knowledge with the new knowledge.

Terms as: household, drinking, agriculture, industry, electricity, fun or recreation, as well as sea, river well, are expected to be mentioned among others. If any new terms come up, they could be added to the [quizlet glossary](#).

### **2<sup>nd</sup> Activity**

Time: 18'

Type of activity: web browsing, note taking, developing ideas and speaking

Class organization: in pairs per computer followed by a short plenary session

Actions/Tasks: the students are asked to visit the website of the European Union Environment Agency <https://www.eea.europa.eu/signals/signals-2018-content-list/articles/water-use-in-europe-2014> as well as the website of the Water Encyclopaedia <http://www.waterencyclopedia.com/Tw-Z/Uses-of-Water.html>, to find out possible water uses. The students are invited to compare the information from the websites and to write down categories of possible water uses by enriching the ideas they expressed at the beginning of the teaching period. As the texts are authentic quite challenging the tasks are kept simple, and therefore the students are required to just scan the text and find some information. The students are encouraged to use their L2 speaking skills to express their ideas.

### **3<sup>rd</sup> Activity**

Time: 20'

Type of activity: problem solving and presenting results

Class organization: groupwork

Actions/Tasks: Every two pairs of students who sit in neighbouring computers in the computer lab join together to form groups of four (in the example there are seven role cards for a class of twenty-six to twenty-eight students, but adjustments can be made for smaller groups of students). The teacher has prepared seven ID cards which are supposed to belong to people living in different places of different European countries and having different jobs. The questions asked to all of the groups are the same. First, the students have to locate where they are supposed to live. The teacher acts as a coordinator and facilitator leading the groups of students to discover knowledge on their own. In order to find their homes, the

students visit the padlet the teacher has created (<https://padlet.com/mepr4/tdfiopik7imelum>) and use the search engine it contains to place a pin on it. At this stage, they can ask the teacher for clarifications about how to find the places they live in, about their jobs, or solve any technical problems that may occur with the use of the padlet. After they have pinned their avatar's residence the groups guided by the questions on worksheet 3 have to explain where they usually use water, if they use water for their work, if they have problems finding water, if there are enough water supplies in their region, if they think they are using water properly, if they are satisfied with the quality of the water they are using, if they think there is a limit in the amount of water they can use and finally to make suggestions on how to save water. Then, they write their texts in the padlet and if time permits, the groups present their findings to the whole class.

#### **4<sup>th</sup> Activity – Homework**

Time: 1-2' for the instructions

Type of activity: watching a short film and thinking of some questions

Class organization: It is a flipped classroom activity, in which the students watch the film individually, try to understand it (they just have to understand what is happening in the film), and keep notes, helped by some questions posed by the teacher.

Actions/Tasks: The teacher has created a safe tube link (<https://safeYouTube.net/w/YaoM>) of the short film "My water diary" by Jane Campion, found in youtube ([https://www.youtube.com/watch?v=G7Kk\\_mkUUN8](https://www.youtube.com/watch?v=G7Kk_mkUUN8)) to avoid advertisement and possible inappropriate content and to keep the students away from distractions. The film is part of a project, which is called 8 and is coordinated by Marc Oberon. In this project each of the eight international filmmakers that are taking part has made a short film dealing with a serious global issue posing a threat to our planet today. This collaborative cinematic project was supported by the UN Development Programme. In order to help the students understand some parts of the film better the teacher has uploaded some words in the Quizlet glossary (mostly related to the water cycle).

The teacher explains what the students have to do and gives the students a handout with some questions that demand of the students to understand the situations and to empathise with the protagonist, realizing how serious an issue the shortage of clean water could be. These are the questions that the students have to answer.

- What is the problem that they are facing?
- What happened to the horses? How do we know it?
- How are the people's dreams related to the water cycle?
- What happened to Sam's father?
- What do the kids decide to do?
- What would you have done if you were there?

#### **3<sup>rd</sup> teaching period (in the school's science lab)**

##### **1<sup>st</sup> Activity**

Time: 10'

Type of activity: class discussion (on a film and a chart)

Class organization: whole class

Actions/Tasks: The teacher asks the students the questions she has already asked them to prepare concerning the film they watched for homework. The students would have probably understood that the inhabitants of the area the story is set in are experiencing an extended drought (maybe due to the climate change as the adults of the film say) that has serious consequences, leading people and animals to death. When they have discussed the questions, the teacher asks them where they think this place is and which places of the world are more possible to have droughts. Then she asks them if they think that we have or we will have similar problems in any European countries and there are any countries that are in bigger danger of experiencing such problems.

When the students have expressed their opinions the teacher presents the chart of water stress from the website of the European Union Environment Agency <https://www.eea.europa.eu/data-and-maps/figures/water-stress-in-europe-2000-and-2030>, and asks students what they think the terms “water stress”, “water scarcity”, and “water crisis” mean. The teacher can also relate the chart with the answers students gave in the previous teaching period about sufficient or non-sufficient water supplies in some regions. Additionally, they can discuss the water crisis over the information presented on <https://www.wri.org/blog/2019/08/17-countries-home-one-quarter-world-population-face-extremely-high-water-stress>. Finally, the teacher asks the students for possible solutions and the students are expected to come up with ideas such as saving water, cleaning polluted water and desalination.

## **2<sup>nd</sup> Activity**

Time: 30’

Type of activity: jigsaw reading activity and experiment

Class organization: groupwork

Actions/Tasks:

The teacher tells the students to look at a fun science experiment taken from: <https://kids.nationalgeographic.com/explore/books/how-things-work/water-wonders/>, which shows how you can turn dirty water clean. Of course, she warns the students that the water will not be 100% clean and that it is not drinkable. She explains that the first part, where the general instructions are given is correct, but the boxes that say “Step...” (the number has been erased by the teacher) have been mixed up. Each pair of students will be randomly given one step of the process. There are ten steps so depending on the number of students some students will be the assistants that will be responsible and to help the other pairs find their correct place, keeping the noise level low. The pupils can stand up, read their text to the other pairs and find out which steps come before which. When they decide about the correct order, the pairs form a line with the help of the assistants. Then, the first pair will approach the teacher, give her the card that they have but stay close to the teacher to help her in the particular phase of the experiment. If the students have guessed the order correctly, the experiment will be successful, if they haven’t they won’t be able to see the results of the experiment. However, in this unlikely case, the teacher will be there to help the students indicating that something else has to be done before, or that something does not sound right, guiding the students to make adjustments that will help them accomplish the experiment. In this way the students take responsibility for their own learning and by engage in authentic meaningful activities both in English and in Geography/Science, they acquire the skill of sequencing things and they see with their own eyes the results of a process that may be useful for their lives.

### **3<sup>rd</sup> Activity – homework**

Time: 3' (for the instructions)

Type of activity: writing a letter to the Ministry of Environment

Class organization: individual (homework)

Actions/Tasks: The teacher hands out the instructions to the students (Worksheet 6) and explains that they have to watch a video (<https://www.youtube.com/watch?v=bfr82RB72U8>) and read some information ([https://www.usgs.gov/special-topic/water-science-school/science/desalination?qt-science\\_center\\_objects=0#qt-science\\_center\\_objects](https://www.usgs.gov/special-topic/water-science-school/science/desalination?qt-science_center_objects=0#qt-science_center_objects)). about desalination. After they have understood the information, they are asked to choose a person from the role-play (not necessarily the one they represented before) and pretending they are him or her to write a letter to the Ministry of Environment of the country they live in asking them to invest money to build huge desalination plants to provide freshwater for their country. With this activity, apart from practicing writing formal letters, the students learn that they have to be active citizens and that as citizens, they have certain rights and they should be able to demand that their opinion be heard by the authorities.

### **4<sup>th</sup> Activity – homework 2**

Time: (2' for the instructions)

Type of activity: creating a poster

Class organization: individual work

Actions/Tasks: In this second homework task (Worksheet 6) the students have to create a poster in order to take part in a contest which is supposed to be organized by an international environmental organization and aims at making the European citizens aware of the fact that freshwater is not as abundant in nature as we may think and urge them to take action so that the current generation and the future one will not face serious problems in the future.

The students can draw their poster, or they can use whatever digital tool they want to make it. The teacher, however suggests "[Piktochart](#)" a very easy to use programme and acknowledging that some students may not have experience in using tools to create digital posters she has provided them with [instructions](#) and a [tutorial](#) so that they will be able to create their poster easily. The teacher also reminds the students to consult [the glossary](#) they have created if they are not sure about the meaning of a word they need to use. The posters can be displayed on the school's website and printed in A3 paper to be exhibited on the school walls.



#### **4<sup>th</sup> teaching period**




Time: 45'

Type of activity: project presentations

Class organization: whole class

Actions/Tasks: In this teaching period (which will roughly take place a week to ten days after the first teaching period) each one of the different groups that have worked on the project should present their work to the other groups and the teacher and receive feedback. The teacher tells the students that the order in which they will present will be random (she can use the *wheel of names*) (<https://wheelofnames.com/>) and that after every presentation the students of the other groups will have two minutes to discuss and agree on two sentences of positive feedback to give to the group that has just presented.

After the end of this teaching period the teacher can measure the appeal that this scenario had to the students and gather important information that will help her to make improvements to the scenario.

			
I liked the lessons			
I liked the activity .....			
I didn't like the activity....			
A thing that I learned is ...			
In the future I will....			

#### **Further development / expansion**

The teacher may want to deal with other important aspects concerning water. First of all, he or she can deal with water pollution. A way of doing that is to organise a webquest, in which the students search to find information about important rivers of Europe (where their source and estuary are, which is their length and volume of water, which countries do they pass through, how are their waters used by humans etc). After that they search the web to see the level of pollutions in these rivers are, what are the consequences of their pollution and if there have been successful or unsuccessful efforts to clean them. Alternative they could study on case, that of the river Danube, for example, or of a local river using materials that the teacher has prepared for them.

Another direction that the scenario could follow is to deal with wastewater management. The UN website provides important information about this issue <https://www.unwater.org/water-facts/quality-and-wastewater/>, and there is an interesting chart where the students could locate the position of their country concerning the percentage of the wastewater safely treated (<https://sdg6data.org/indicator/6.3.1>) . The students can study it, locate the position of their country and other European countries and suggest possible uses of wastewater and then have a debate on whether we should reuse wastewater or not.

Finally, the students, prompted by the following picture (taken from the chemistry book of the second grade of the Greek junior High School) <http://ebooks.edu.gr/new/classcoursespdf.php?classcode=DSGYM-B> could make suggestions on how to save water and probably organize a campaign that would address their classmates, parents or even the local community. The students can exhibit the artistic creations (photographs, drawings, songs, choreographies etc) in the school. They could also invite experts to talk on the issues they have dealt with and prepare brochures and leaflets by using programmes such as “Canva” or “Pictochart” urging the members of the community to save water.

