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WATER THE SOURCE OF LIFE

Trainer's Booklet



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BIOLEARN-BSB142
ECO-CONSCIOUS MINDS TO STOP POLLUTION
IN THE VALUABLE WETLANDS OF BLACK SEA BASIN

WATER

THE SOURCE OF LIFE

Trainer's Booklet

Target Audience: 8-14 years old

District Government of Enez

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Contents

ABOUT THE PROJECT	6
ABOUT THE BOOKLET	9
WATER: THE SOURCE OF LIFE	10
What Is Water?	11
Water Resources and Amount	15
Water Footprint	17
How Do We Protect Our Water?	19
ACTIVITIES	22
Activity 1. Importance of Water	23
Activity 2. Let's Use Our Water Carefully	27
NOTES	30
REFERENCES	32

About The Project

BIOLEARN (Eco-Conscious Minds to Stop Pollution in the Valuable Wetlands of Black Sea Basin - BSB142), which was initiated on 01.01.2020 within the scope of the first call for proposals of “Joint Operational Programme Black Sea Basin 2014-2020” where the Directorate for EU Affairs is the national authority, is led by District Government of Enez.

Representatives of the following partners are as follows:

1. District Government of Enez-Turkey
2. Division Directorate of Edirne under First Regional Directorate under General Directorate of Nature Protection and Nature Parks of Ministry of Agriculture and Forestry - Turkey
3. Foundation Caucasus Environment - Georgia
4. Agricola NGO - Ukraine
5. Green Balkans / Stara Zagora NGO - Bulgaria
6. Management Body of Evros Delta and Samothraki Protected Areas - Greece

The overall objective of the project is to provide information, experience transfer and capacity building training between partners and develop a common environmental protection and education approach, methodology and organizing campaigns that will raise awareness in the society to reduce pollution in important wetlands in the Black Sea Basin.

The main activities to be carried out within the scope of the 26-month project are as follows:

1. Establishment of a total of 4 environmental protection and training centres, one of which is on the shores of Gala Lake, and providing environmental protection training to visitors and especially to students. By providing equipment for the other 6 existing centres, there will be a network of 10 activity and training centres.
2. Workshops to be held in Bulgaria and Greece, focusing on discussions about examples of

successful training and awareness-raising campaigns for the protection of wetlands, sharing experiences and preparing the materials to be used in training which will be applied in all centres. Capacity building training for trainers.

3. Organizing massive and synchronized cleaning campaigns to reduce pollution in wetlands.
4. Award-winning photo contest and exhibition focused on wetland protection.
5. Organizing a wetland pollution-based painting contest and exhibition in primary and secondary schools.

Outputs of the Project:

1. “Stop Pollution” and “Save Nature” environmental education and activity centres, one of which is mobile, will be established in 5 countries and will sustainably carry out training and awareness-raising activities.
2. A report will be prepared on the nature and rate of pollutants in 5 wetlands in the Black Sea Basin.
3. A guide with examples of good practices consisting of training and campaigns focused on protecting wetlands will be prepared.
4. A wetland protection training set consisting of 12 sections will be prepared especially for students. Training sets will also be shared on the internet.
5. After 10 people from 2 each partner country received trainer’s training, they will train 25 people in each region (totally 125 people) and the sustainability of training activities will be ensured in the established centres.
6. A painting competition on environmental protection will be held in at least 15 primary and secondary schools and paintings selected by the jury will be exhibited.
7. Pictures taken in 5 regions with the participation of professional photographers will be exhibited. With the mobile ‘Stop Pollution’ vehicle, the exhibition will travel to 5 countries.
8. An environmental cleaning campaign will be held simultaneously with the participation of 1500 people in 5 regions.
9. With the international conference to be held in Georgia, the outputs of the project and future action plans will be shared with the public.

For more information, you can visit the project website: www.bio-learn.org





About The Booklet


This training booklet is a part of the training set prepared under the “BIOLEARN-BSB142 / Eco-Conscious Minds to Stop Pollution in the Valuable Wetlands of Black Sea Basin” project. The booklet is prepared to attract the attention of the countries in the Black Sea basin to the importance of wetlands, to prevent pollution in wetlands and to develop ecological literacy of the participants accordingly.


This training material targets groups age 8-14 and consists of two parts which are the educator booklet and participant booklet. The trainer booklet has detailed activity application instructions, necessary information on the subject, assessment questions and recommendations to enrich the activity.


Application Notes


 Before starting the activity, it is recommended to view the entire booklet and to get ready for the topic by using the information in the booklet.

 At the beginning of the activity, necessary materials and worksheets should be distributed to the participants.

 When activities are applied, it is important to undertake a facilitator/guide role and to ensure the active participation of the participants.

 The activities in this booklet are planned to be completed in a short time. All of these activities can be applied consecutively or one or two of the activities can be applied in desired order depending on the development stages and interest levels of the participants.

 Presenting the activities with a natural narrative rather than reading the information text in the instructions and keeping the interest of the participants with questions and answers would present positive benefits.

 The activity instructions can be followed exactly or adapted based on participants' ages, development stages and interest levels without diverging from the activity purposes.



Water The Source Of Life


The majority of all plants
and animals on the
planet including humans
consist of water.

What Is Water?

How well do you know the water which we drink liters of it, wash our hands, clean our clothes and form a significant part of our body even though we don't see it?

Water (with H_2O chemical formula) is a colorless, odorless and tasteless chemical that covers more than 70% of our planet. Its structure contains two hydrogen atoms (H) and one oxygen atom (O). It is indispensable for all living beings on Earth. It has fluid property. It exists in 3 different states on Earth: solid, liquid and gas. Under $0^{\circ}C$ temperatures, the water freezes to solidify and forms ice. Above $100^{\circ}C$ temperature, the water boils to turn gas form and transforms into water vapor.



 Water has different forms on Earth.

Due to its structure, water has more than 40 unique characteristics. For example, contrary to most liquids, the volume of water increases and it expands when it freezes and turns into a solid form. This is why pipes crack on cold winter days. When water freezes, unlike other liquids, the density decreases which makes it lighter. In this way, the ice masses go up in the water. The ice masses have a protective effect and prevent the lower levels of the water from freezing. It keeps the water in lower depths at 4°C as in the liquid state. This characteristic of water is an important feature for the survival of un-

Fish, dolphins, corals and millions of creatures live in the ecosystems created by water like oceans and seas.



Did You Know?

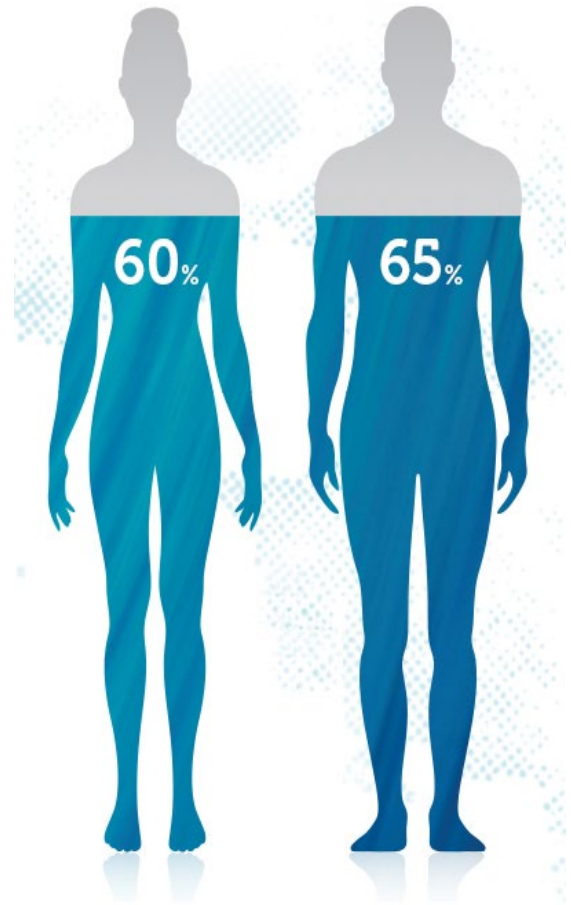
On cold winter days, seas and oceans freeze rarely compared to easier freezing of lakes, rivers and streams. This is because their water is salty. Salt decreases the melting temperature of the water. While freshwater freezes at 0°C , saltwater freezes at -2°C on average.


derwater life even in the coldest regions. At the same time, water is a good solvent. Various natural materials can dissolve in water and become smaller particles. Additionally, even though the water looks colorless, it starts to be seen in blue when larger masses like seas and lakes are gathered. In contrast to various liquids, the water has some “sticky” features. Water molecules try hard to constantly be together; therefore, water drops are formed. This structure of water helps the plants to be straight and to easily transfer the water from the roots to the leaves. Additionally, it enables some insects to walk on the water without submerging in it. Due to numerous features like these, water is an essential part of our planet.

The majority of all plants and animals on the planet including humans consist of water. Whether it is the fish living deep in the oceans or ants living in the middle of the desert, all living beings have water in them. Therefore, they need to continue drinking water in order to survive. Water undertakes a role in stimulating the body functions and enables the vital functions to work without any problems. For example, mammals discard water from their body through sweating and balance their body temperatures. Saliva mostly consists of water. Other than these, the absorption of the food we consume, transferring the oxygen to our blood

and discarding the waste material with urine are only possible with the existence of water. In addition to the functions of the water in bodies of living beings, it provides a habitat for various living beings. Fish, dolphins, corals and millions of creatures live in the ecosystems created by water like oceans and seas. For example, the Black Sea hosts more than 180 different fish species. Similarly, the wetland offers a suitable habitat to numerous living beings from fish to birds, reptiles and mammals.

Humans also benefit from the advantages of water. Most of the humans on Earth live near water bodies such as sea, river, ocean and lake. Again, the most crowded cities around the world are closely located around seas and oceans. Water provides humans an environment where they can find food. For many people, aquatic animals are the fundamental food sources. Humans also



 Approximately 65% of the human body consists of water. This percentage reaches up to 95% for a fetus.



World Water Day

The protection of the limited freshwater resources on our planet and using the water in sustainable ways play an important role. To raise awareness and increase social awareness on this subject, on 22 March every year is celebrated as World Water Day since 1993.

Did You Know?

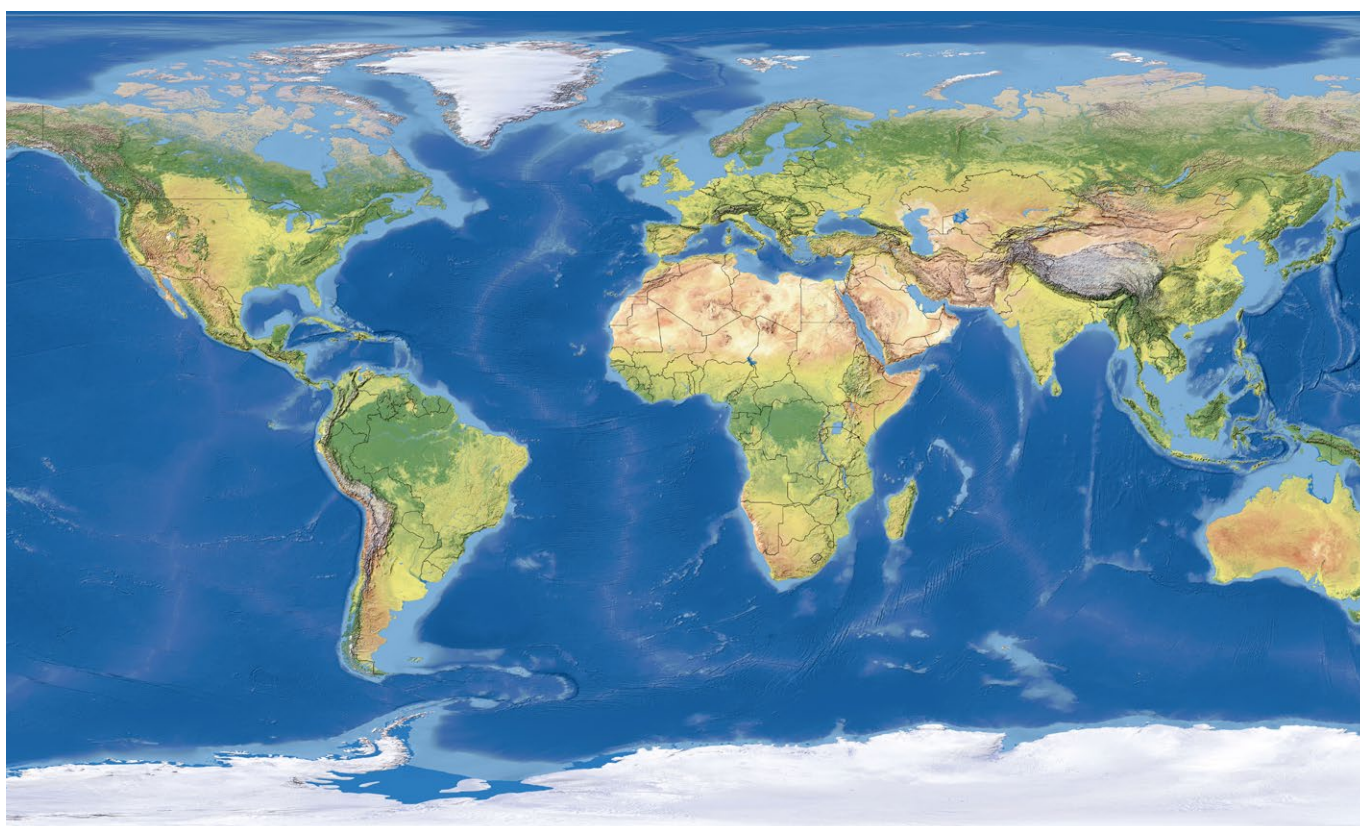
Approximately 4 liters of ocean water contain approximately 1 glass of salt. Of course, this amount depends on the ocean. For example, the Atlantic Ocean has a saltier structure than the Pacific Ocean.

benefit from water for entertainment. They visit seashores, lakes and rivers to swim, have a holiday and rest.

Water Resources and Amount

Water is the most important liquid on Earth. It has always existed since the first days of the formation of our planet until today. This way, it enabled millions of living beings to emerge. Water which has such importance is abundant on our planet.

Approximately $\frac{3}{4}$ of the Earth's surface is covered with water. Water mostly exists in oceans, rivers and lakes and at the same time, stored as the huge number of glaciers and groundwater. But you must not



be misguided with the abundance of water! 97% of all the water on our planet is in the oceans and seas in salty water form. Only the remaining 3% is freshwater. Lakes, rivers and streams are the main freshwater sources. But interestingly, most of the freshwater sources are hidden away from sight! The majority of the freshwater is frozen in glaciers. Therefore, the amount of freshwater that can be used by humans is extremely limited and only 1% of the entire freshwater is usable.

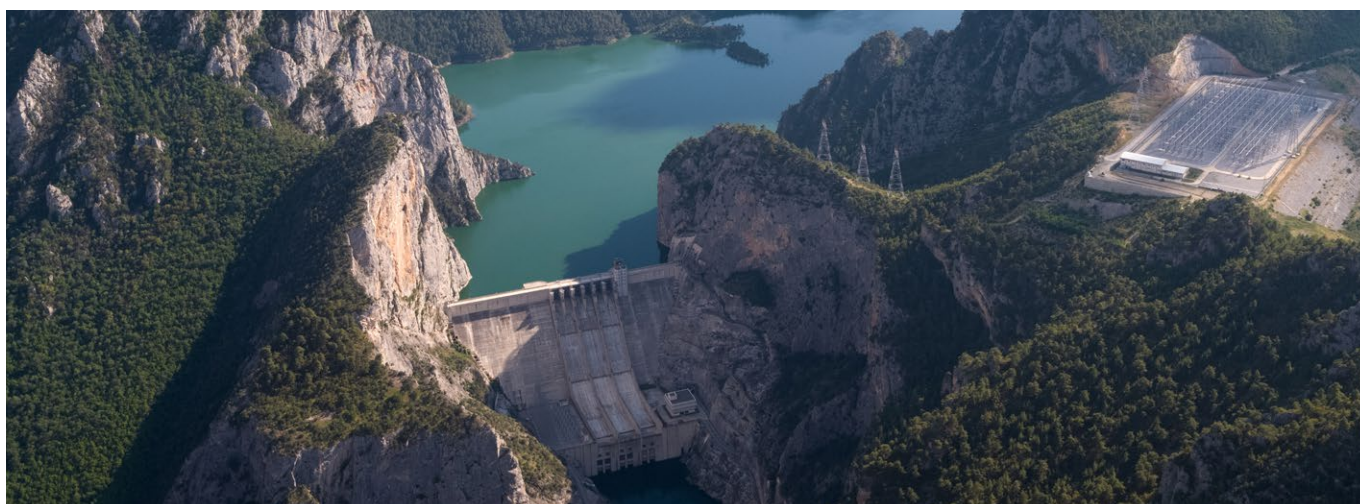


To understand the amount of water we consume as a result of all our activities, we use the term “water footprint.”

Water Footprint

Just like all living beings on our planet, water plays an important role in the life of a modern human. Numerous human activities such as food production, clothes that we wear as well as vital needs such as drinking and cleaning are possible with the existence of water.

The water used by humans is mostly obtained from surface waters such as lakes and rivers. The underground water is used in regions with less surface water amounts. Water that is provided to settlement areas with pipes is used in various fields. A huge amount of water is used in social activities such as agricultural production, animal husbandry, industrial production, electricity generation and waste removal. Additionally, water is consumed as drinking water and cleaning in individual activities. The wastewater that is the result of all these activities is either released back to nature



without any intervention or by refining in water treatment plants.

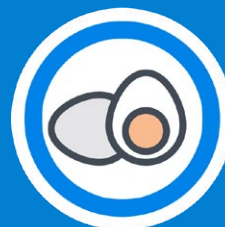
In short, whether we use the water individually and directly or indirectly due to electricity, food material and clothing production, we cause a large amount of water to be used in our lives. At various points, we are losing this water by irrecoverably polluting the water. To understand the amount of water we consume as a result of all these activities, we use the term **water footprint**. We use water for different purposes to sustain our daily lives. In addition to that, there are water sources that we do not use directly but that are used by the products we consume. We can learn the amount of



Did you know?

You can see the amount of water used for some foods and products that we consume in our daily lives.

For 1 kg vegetable	322 liters of water
For 1 kg fruit	962 liters of water
For 1 kg milk	1020 liters of water
For 1 kg egg	3265 liters of water
For 1 kg chicken meat	4325 liters of water
For 1 kg beef	15415 liters of water
For 1 cotton t-shirt	2700 liters of water
For 1 jeans	7600 liters of water





water consumed in all these processes with water footprint measurement.

How Do We Protect Our Water?

Although water forms a large part of our planet, our usable freshwater amount is extremely low. Water, which we have in such a limited amount, can be irrecoverably polluted. When the dependence of all living beings in the world is considered on water, conserving the water is significant.



There are very important steps that we can take individually to protect our water. These simple yet effective steps enable us to make great changes. The first one of these steps is reducing our water consumption. Turning off the taps we do not use, fixing the broken taps, taking shorter showers and using toilet systems with water efficiency are some of the effective methods to use water.



Using less water is not enough, it is also important not to pollute the water. Not using harmful chemical cleaners at home, not pouring oil in the sink, not using chemical fertilizers in our garden for plants and correct removal of oil, gas and similar materials prevent the water from pollution. In addition to all these, avoiding animal-based products that use a lot of water for production, choosing clothing products that are produced with less water consumption will help to protect our water.

Black Sea

The Black Sea is one of the largest inland seas supplied with numerous rivers including Danube, Dnieper and Dniester. Although its size and the amount of water are large, some of the properties make the Black Sea a challenging place for life.

Above everything else, the Black Sea is poor in terms of oxygen. Moreover, it shows a property called meromictic. This means, water masses at different depths do not get mixed up; therefore, some parts of the depth do not contain any oxygen. Additionally, this property increases the temperature difference between the surface and bottom. Therefore, life almost does not exist under 200 meters in the Black Sea.



 *Danube River*

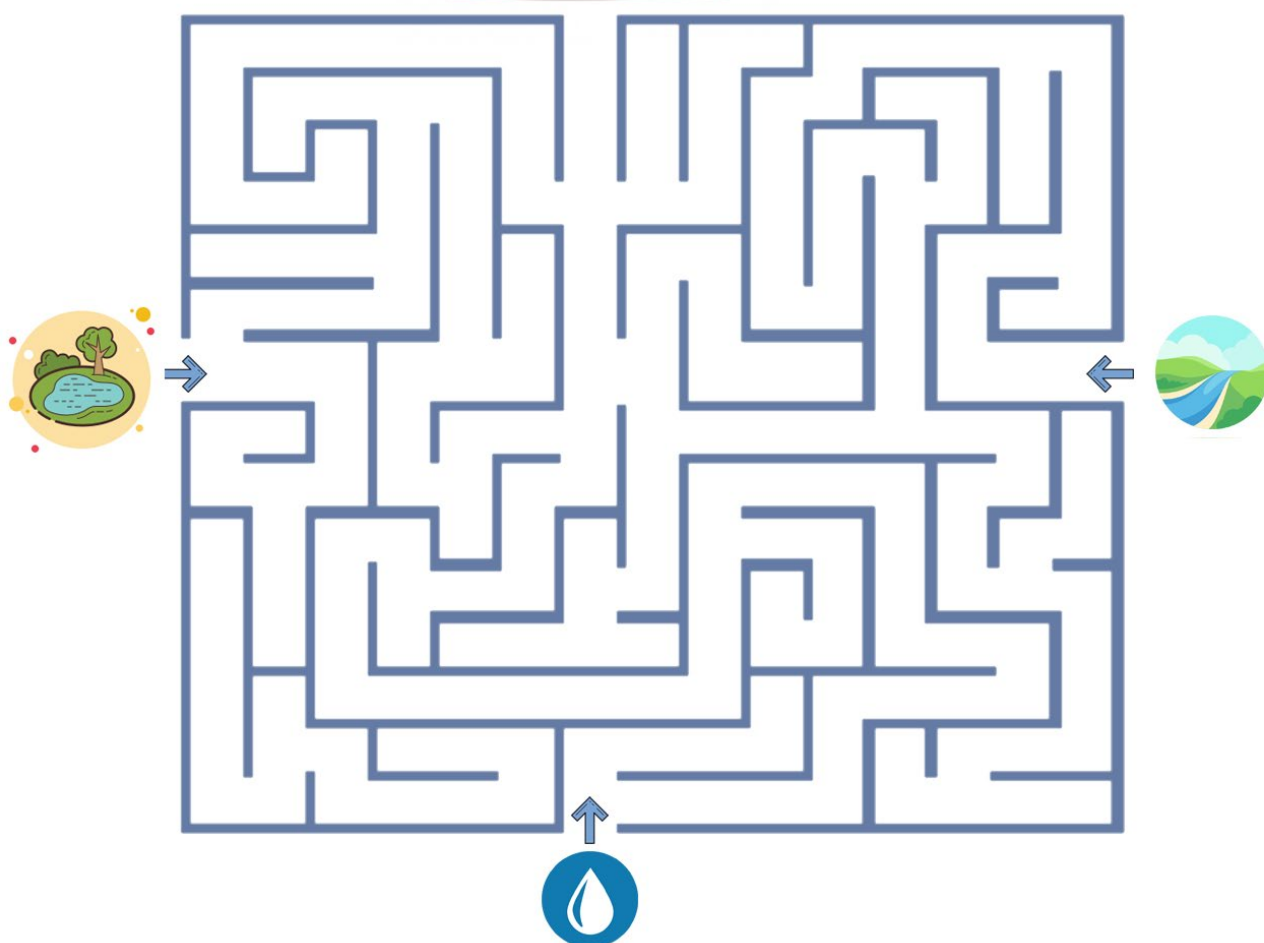


 *Dnieper River*



 *Satellite image of the Black Sea*

Which sources supply water to this house? Let's bring the water home.





Activities



Importance of Water



Objective

To realize the importance of water everywhere and for everyone.



Duration

30 min.



Method

Question-answer



Learning Outcomes

✎ S/he will realize the importance of water.

✎ S/he will discuss the benefits provided by water.



Materials

Water in Different Languages Worksheet, Importance of Water Notes, scissors, pencil



Target Audience

8-14 years old



Preparation

✎ Before this activity, you can listen to how the word “water” is pronounced in different languages from the “Google Translate” service.

✎ Cut and prepare the Importance of Water Notes before the activity.

Application

1. Start the activity by making the following explanations to the children.

There are approximately 200 countries in the world. The language, culture, food choice and geography of each country can be different from each other. But there is a very important thing that is vital for everyone and has common value, and that thing is water.

2. Pronounce the word “water” in your language. Then, ask children which other languages can they pronounce the word “water”.
3. Give the Water in Different Languages Worksheet and ask them to find the word water in other languages by using the table.

Answer Key: Turkish: Su, Greek: νερό (neró), Ukrainian: вода (voda), English: Water ('wôðər), Bulgarian: вода (voda), Georgian: წყალი (tska-li)

4. Check if any of the children did all of the matchings correctly. If you want, you can use the “Google Translate” service to make the children listen to the pronunciation of the word water in different languages and ask for the children to imitate the pronunciation.
5. Then, ask the children to randomly draw the papers you prepared by cutting the Importance of Water Notes. Make sure that every child reads the notes out loud and discusses their ideas about the subject.



Assessment Questions

You can ask the following questions to the children during or at the end of the activity.

- ▶ Why is water important?
- ▶ What would happen if there was no water?
- ▶ Did you know that water has so many benefits?
- ▶ What would happen if all of the water froze rather than the top part? How would living beings in the water be affected?
- ▶ Do you have a fun memory that you experienced in a water area such as a sea, lake or river?

Extensions

- ▶ You can tell a story about water and ask for the children to complete the story.
- ▶ You can mention that 22 March is World Water Day and you can recommend the children to celebrate that day at home and school.

WATER IN DIFFERENT LANGUAGES WORKSHEET

Guess how the word “water” is written in different languages and match the words with correct languages.

Turkish

წყალი (tska-li)

Greek

вода (voda)

Ukrainian

Water (‘wôdər)

English

вода (voda)


Bulgarian


νερό (neró)


Georgian


Su

Importance Of Water Notes


 The majority of our body consists of water.


 It helps to regulate body temperature.


 It helps you to survive and be healthy.


 It enables us to meet our daily needs such as cooking, cleaning and bathing.


 It is necessary for the animals to live and grow.


 It is necessary for the plants to live and grow.


 It is home to millions of living beings.


 It is used in the production of our things such as clothes, paper and furniture.


 Food that we eat such as meats and vegetables have water in their structure.


 We need water to rest, have fun and do sports.

 We need to drink 2-3 liters of water per day for our health.

 When water freezes, the density decreases which makes it lighter. This way, the ice masses go up in the water. The ice masses have a protective effect and prevent the lower levels of the water from freezing.

 The sticky structure of water helps the plants to be straight and to easily transfer the water from the roots to the leaves.

 The structure of the water enables some insects to walk on the water without submerging in it.

 For many people, aquatic creatures are the fundamental and livelihood food sources.

Let's Use Our Water Carefully



Objective

To realize that the freshwater sources in the world are limited and to look for ways to use water carefully.



Learning Outcomes

- ✎ S/he will perceive that the water sources are limited.
- ✎ S/he will discuss the ways to use water carefully.
- ✎ S/he will realize the effects of daily life preferences on water consumption.



Target Audience

8-14 years old



Duration

40 min.



Method

Question-answer, discussion



Materials

3 pieces of the 1-litre glass jar (or transparent bottles of the same size), water, a tablespoon

Application

1. Come to the activity area with a 1-litre glass jar filled with water.
2. Ask the children about water sources around the world. Seas, oceans, lakes, rivers, groundwaters, wetlands, glaciers...
3. Then, ask the children whether we can use all of this water on Earth and make the following explanation.

Water exists in various places on our planet. In seas, oceans, lakes, rivers, glaciers, groundwaters, wetlands. But we can't use most of this water. Because 97% of the water is salty and 2% is frozen in the glaciers. There is only 1% of the freshwater that we can use.

4. Then, attract the children's attention to the bottle you are holding to explain the subject better. Tell them that all of this water is representing the entire water resources around the world. Take 20mL (8 tablespoons) of water from the bottle and place it in a separate jar. Tell them that this water represents the glaciers. If you have the necessary equip-

ment, you can put it in the freezer to freeze the water. Then, take 10mL (4 tablespoons) of water from the main jar, place it into another jar in the same size and tell them that the water here represents the freshwater we can use. Bring the three jars side by side and compare them with each other. Draw attention to how limited and scarce our usable water is.

5. Then, ask the children about their daily activities that they use the most water.
6. Ask them to open the Water Use Worksheet. Ask them whether the behaviors here have a positive or negative effect on the conservation of water. Ask them to mark positive behaviors with “+” and negative behaviors with “-”.
7. Ask them what else they can do to conserve water and which of the learned behaviors they will apply. Encourage them to share this information with their family and friends.

Assessment Questions

You can ask the following questions to the children during or at the end of the activity.

- ▶ Is it possible to live without water?
- ▶ What are the benefits of water?
- ▶ Is it possible to decrease water consumption or to use it more carefully?
- ▶ Think about your daily activities: drinking water, eating, having a bath, etc. If you could only use 4 liters of water per day, would it be enough? How would you use this water?
- ▶ What would you recommend your family be conscious of water use?

Extensions

- ▶ You can watch videos about water or water use. You can ask the children to note the important words and events in the video.
- ▶ You can visit the water distribution center in your region to show where the water running from the tap comes from.

WATER USE WORKSHEET

	Leaving the tap open when brushing our teeth.
	Taking a shower in a shorter time.
	Making the water run slow without opening the tap fully.
	Using the toilet as a bin and flushing frequently.
	Washing the fruits and vegetables in a cup with water instead of running water.
	Washing the car with a bucket and sponge instead of a hose.
	Watering the garden when necessary and during early hours in the morning or at night to reduce evaporation.
	Pouring the cooking oil in the sink.
	Washing the dishes by hand and under running water.
	Fixing leaking taps.
	Starting the dishwasher and washing machine when they are full.
	Collecting rainwater and watering the garden with this water.
	Rinsing the dishes before placing them in the dishwasher.
	Using tap covers that enable water saving.
	Playing with hose and sprinklers for fun.
	Purchasing clothes we do not need.
	Turning off the shower tap when we are soaping in the shower.
	Consuming coffee.
	Wiping the balcony with a wet cloth rather than washing it with water.
	Collecting the running water in a cup until the water is heated and using the collected water.

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