

# Scripts

## OLD TREE AND DROP WATER CHATTING

Hello! Good Morning!

Hi! Good Morning! How are you?

Oh! No so well

Why? What's up?

I'm tired, I have many years here

Oh! I'm sorry

What's your name?

My name's Drop

What's your surname?

My surname's Water

Ah! You are "Drop Water"?

Oh! Yes, What's your name?

My name's "Old Tree", what's your address?

My address is all the environments on earth, What about yours?

My address is near the lake, I have lived here all the time.

Do you have many friends?

Yes, I have three good friends: one is called "Wind", another is called "Sun" and the third is named "Gravity".

What's your job?

Ha ha ha, my job is easy, with the help of my friend the wind, I move the water from the surface of the earth to the atmosphere and return it in a continuous process driven by the energy of the sun and my other friend gravity. The people called it WATER CYCLE".

Hey, hey, no so fast, please, can you explain this to me differently?.

OK, OK, this is the process: solar energy heats the surface of the Earth and the water of oceans, lakes or rivers turns us into water vapour and brings us up to the atmosphere. This process is called "EVAPORATION".

Oh! Interesting! But, for now, I have seen that your family has other forms, right?

Oh! Yes, when billions of us are strongly chained, we form solid masses called "ICE", "SNOW", and HAIL. Then, our friend Sun melts us, we turn into liquid form and we run off and travel to the oceans, lakes, rivers, and other water systems. By the way, even you also participate in ours processes.

Really! How?

You participate by extracting ourselves from the soil and sending us into the atmosphere in

form of steam. A processes called “TRANSPIRATION”

Oh! How wonderful is to know it!

I have a question, I see that there are seasons when you bathe me many times, can you explain how do you do it?

When we are in the form of vapour, our friend the wind transport us from one place to another, therefore we lost heat, we join together and form the clouds. This process is called “CONDENSATION”.

OK, but you did not explain to me how to take a shower.

You’re right, when I’m in the clouds and I’m very hot, my friend the wind blows to refresh me, then I associate with others friends and I rush to the earth in liquid form, and flow back to the oceans, lakes, rivers and other aquifers systems. This process is called “PRECIPITATION”

Ok, What benefit does to the environments all the work you do?

Well, with the help of my friends I repeat the trip again, you call me “THE WATER CYCLE” for this reason. I help to distribute nutrients for sustenance life on earth and also contribute to regulate the temperature in all environments.

Thank you, you have been very kind, we expect to have further opportunities to interview you.. I would love to see you soon.

Goodbye, take care.

## DROPLET

Hello! Good morning! I am Mr. Reporter and today we are interviewing a character that we all know. She's vital for human life. She makes a spectacular travel and today we will tell all about it, she is: a drop of water.

How are you?

I'm all right.

What's your name?

My name is H<sub>2</sub>O

It seems to me a robot's name, like Star Wars.

You could say that, it has a certain relation, as we embark on a journey through the oceans, atmosphere and continents.

Do you do this adventure alone?

No, on Earth there is a large amount of water, three quarters, in seas, rivers, lakes and even under the earth. There is always the same amount, although in constant movement. There are a lot of droplets in there!

What do you enjoy the most about this travel?

I am always changing physical state (solid, liquid, gaseous, melting) and place.

How does it all start?

The Sun is the engine of this great ship, which we could call "Water Cycle". It sends all its energy to oceans, seas, rivers and lakes and the heat that it releases is so powerful that it transforms us into steam. This first stage is called EVAPORATION.

We could consider this as the launch of the ship. The next stage would be to travel through the atmosphere, can you explain it?

Once we have reached the atmosphere in the form of water vapour, we cool and condense again forming small drops of water, then we join and we form the clouds.

How could we name this new stage?

It's called CONDENSATION

And this gives way to.....

PRECIPITATION which is the last stage.

Continuing with the simile of the ship, would it be like when the capsule separates and falls to the Earth?

Yes, exactly. When the clouds are very heavy, we fall by our own weight. If the atmosphere is warm, we will fall like raindrops, but if it is cold we will do it in a solid state, in the form of snow or hail.

Does this rain fall equally to the continents?

No, I often visit jungles and mountains, but others like deserts ... well I barely visit them.

Related with water cycle, does some phenomenon occur in the jungle and mountains areas?

Well, in the jungles, especially because of the large number of trees, the rainwater is returned to the atmosphere in the form of water vapour. This is called Transpiration.

What about the mountains?

The snows of the great summits melt and pass to the liquid state. This is called MELTING.

Do we say that the cycle is closed with the rain?

Yes, the rain falls on seas, summits, continents in which it continues its movement. One part is filtered through the soil, another part flows through rivers and lakes until it reaches the oceans again.

And therefore, does this adventure begin again?

Sure, this adventure has no end, it begins again and again.

Thank you for explaining this great journey in which we can understand that water is the essence of life.

Thank you.

Have a nice day!

You too! Good morning!

## WATER CYCLE DESALINATION

Hello I'm Xavi, and today we let's talk about desalination, that's why we have an expert, Mister Francisco. Hello mister Francisco. How are you?

Hello, I'm fine thanks.

**Why are not we adhered to the water cycle?**

In recent years, we have been able to observe that the rains in Spain and also in different areas of land, are increasingly scarce. For this reason, we have the desalination plants that can compensate for the lack of fresh water in the world

**What is the desalination?**

The water desalination processes separate dissolved salts and other minerals from water, salt water is desalinated to produce water suitable for human consumption.

**Why desalination is so important?**

Most of the modern interest in desalination is focussed on the cost-effectiveness. Given the high costs of freshwater importation and reclamation, desalinating seawater is an increasingly attractive option for water-stressed areas.

**How much desalinated water is produced, and how many people is involved?**

In June of 2015, 18426 desalination plants operated worldwide, producing 86,8 million cubic meters per day, providing water 300 million people, currently approximately 1% of the world's population is dependent on desalinate water.

**What is the method?**

The traditional process used in these operations is vacuum distillation, essentially boiling it to leave impurities behind.

**Are there different ways to desalinate the water salt?**

Yes, there are several methods. The main process uses membranes to desalt saline water is called, Reverse Osmosis although there are others as, the Vapour Compression Distillation, Freezing, Electro-dialysis and solar evaporation.

**What place does Spain hold in this matter?**

Spain was the first European country to install a distillation plant in 1964, on the Lanzarote Island.

In 2008, more than 700 plants were operating in Spain

Actually Spain is the fifth country in the world, producing 1, 45 million cubic metres per day.

**Thanks Mister Francisco it has been a pleasure meeting you**

Ok the pleasure was all mine.

## ONCE UPON A TIME

Once upon a time two classmates...

In the first English course they had to do a team work.

They usually didn't agree:

In my opinion...

I prefer this one to that one

But this time....

A day..., say to.....

You have a son. You can think something to explain him

OK. But, how can we explain that?

We can explain to him the water cycle!

Sure, but how to explain it?

And... starts with a story:

Pepito and his mother are at home

Pepito, are you seeing the drops of water in the windows?

Who put them here?

They alone

The hot air of the house touches the window. Then, they become drops.

In the nature it happens the same.

And she starts to explain the water cycle.

On Earth there is a lot of water. The Sun heats it and turns into steam (EVAPORATION)

The vapour goes up to the atmosphere and form clouds. When a cold wind comes, the vapour, the same as in the windows, it becomes drops... (CONDENSATION).

Many droplets gather and, as they weigh, fall (PRECIPITATION).

Then we have rain, snow, hail...

When it reaches the ground, the liquid water flows through rivers, streams..

And reaches oceans, seas, lakes...

And start over and over again.

The water changes state but the amount of water remains always the same.

Pepito says:

It's fun!

Yes. But there is a big problem!

There are places on Earth where we waste water.

On the other hand isn't possible to live because there is not water.

We must find ways to preserve water to drink, cook, wash...

All remedies cost a lot of money.

Pepito thinks a little and says:

Mom, I want to help:

When I brush my teeth I will not leave the tap always open.

I'll have shower in five minutes.

I'll try to not change so frequently my clothes.

We have to save water!

## WATER CYCLE INTERVIEW.

### Introduction. **Gisela Puig:**

Hello, good morning everyone! We are in the public school "Aprendre junts". I am a high school teacher Gisela Puig and today I'm pleased to have Mr. Smith as my guest.

Mr. Smith is the President of the Higher Institute of Hydrology of Oxford and has been kindly invited to travel to BCN to share his knowledge about the water cycle with us.

**Gisela Puig:** Good morning Mr. Smith, thank you very much for your presence at our school. We know that you are a really busy man. It's a pleasure to meet you, how are you?

**Jack Smith:** I'm fine, thank you Ms. Puig. I am really happy to be here with you. It is always a pleasure to collaborate with teaching. I am glad to be able to bring my knowledge to all the students of today, future researchers of tomorrow.

**G.P.:** I agree with you. If you will allow me, my students and I have some questions that we would like to ask you. I formulated them, on behalf of the whole class.

**J.S.:** As not, of course, go ahead Mrs. Puig!

**G.P.:** What is the importance of water for living beings on the planet?

**J.S.:** Life depends on two really important factors, so that without them, there would be no life, there can be no life without **water** or **sun**.

**G.P.:** Why?

**J.S.:** Because the surface of the planet is 70% water and all living organisms, too. That includes all the animals and plants on our planet and, of course, us humans.

**G.P.:** Why do you say that life on earth also depends on the sun and not just water? Would we exist without the sun?

**J.S.:** No. The sun produces light and heat, it is the driving force of Earth weather. Without the sun, photosynthesis would not occur, the plants, the first inhabitants of the Earth, could not exist. Without the sun, the water, could not follow its cycle. Without the sun, the water of the oceans would not head, clouds would not form and there would be no rain, so necessary for harvest and reservoirs, for example.

**G.P.:** We are totally dependent on water and sun to live...

**J.S.:** Yes. Absolutely! We need water for bathing, having a shower, cooking, watering plants, cleaning the house, washing clothes, the car, for our animals...But above all to drinking, to hydrating. Both the sun and water are absolutely necessary and essential for life to follow. In fact, they are responsible for creating life on Earth.

**G.P.:** Where and when did life on Earth begin?

**J.S.:** Life began 3,500 billion years ago, as a result of a complex sequence of chemical reactions that happened spontaneously in the Earth's atmosphere and oceans. In the 1950s, two scientists carried out a laboratory experiment that showed that certain life molecules (amino acids) could be formed spontaneously, by recreating the "early" Earth conditions in the laboratory. It is assumed that in the course of time, these molecules interacted with each other and eventually gave rise to the first forms of life that emerged at sea.

**G.P.:** So, we are 70% water and we come from the water, but also from the sun ... It is fascinating! Without sun, water would not heat and could not make its cycle. Could you explain briefly the process of the water cycle?

**J.S.:** Of course! Well...First, the sun heats the salt water of the oceans, the warm water turns into vapour, that is called, **evaporation**. In the next reaction, the vapour turns into clouds. That is called **condensation**. The clouds get big and heavy. Then it rain, hail or snow. This is the precipitation. The **precipitation** goes back into oceans, seas, rivers, lakes, creeks, streams, underground aquifers... That is called **collection**. There are several natural reservoirs of the Earth where fresh water is stored, in the form of frozen water: polar ice caps and glaciers. And it begins again indefinitely... The water cycle, has no start or end!

**G.P.:** You, as an expert, would you say that are we making good use of water, Mr. Smith?

**J.S.:** Well, in my opinion, we should be more aware of the importance of water as a natural resource of the Earth and not waste it. The amount of water has stayed the same over millions of years, however the form or state of water is constantly changing, and we already know that the hydrological resources of the planet are not infinite.

**G.P.:** True; Mr. Smith. Now, to finish this interview, can you give us some tips to not waste water?

**J.S.:** Yes, of course! I recommend we reduce the time we keep open the tap. In other words that is: Don't leave the tap running while brushing your teeth. Only run your washing machine and dishwasher when they're full. Have a 5 minutes shower. If you must water your plants, do it in the early morning or evening

when it's cooler...

Trying to re-use water is really important!

**G.P.:** I completely agree with you, Mr. Smith. It's been a real pleasure talking to you. We know that he is a very busy person and we do not want to steal any more time.

My students and I thank you for sharing your time with us. It was very interesting chat, Mr. Smith! Thank you very much and see you soon!

**J.S.:** Thank you! I am happy to have met you and spend this time with you! You are very kind! Bye!

## OPRAH'S TV SHOW

**Good night everybody! This is Oprah's the TV Show**

**Let's introduce our guest: she's a scientific that studies the water cycle in the Greenland Island! She's Zoe Fernández.**

-Good night, Zoe!

- **Good night Oprah!**

-How are you, Zoe?

- **Everything is great, thanks Oprah**

- Why is so important the water cycle process in Greenland?

- **Well, the Greenland Island has an extensive land of one millions and seven kilometres, and the ice covers an eighty hundred percent (80%) of the island's surface.**

- What does it happen in it?

- **Oprah, what happens in there is very important, because this eighty hundred percent (80%) is essential for the water cycle of the planet in order to levelling the Earth's temperature. And in that moment, we have a problem!**

-What is the problem, Zoe?

-**The ice Greenland's surface and other glaciers, is beginning fast melting.**

-Why?

-**The water cycle is changing there. Melting in Greenland has implications for sea life, fisheries, and coastal communities worldwide, by contributing to global sea-level rise and adding freshwater to ocean ecosystems.**

-Wow! This is a problem for all human beings!

-**Not only for people but also for all living things. But we have a solution!**

- Ok, What solution?

-**I'm going to explain to you, Oprah: in order to collect the lost water we made up a laser Machine whereby the vapour and the mist from the atmosphere fall down in surface.**

- Thanks Zoe, It was a really interesting conversation? Have you some advice for our viewers?

- **Yes I advise them so we love the earth and protect it. Thanks Oprah**