

LITTLE

METEOROLOGISTS





- **Short Description:** The Work Plan (Project) “Small Meteorologists” was an educational intervention designed and implemented so as the kids could come in contact with phenomena of science observing in their everyday life and the essence of experiential approach scientific discovery method for processes such as prediction, hypothesis, test, experiment, participant observation, conclusion, and especially communication and discussion. The infants were contacted both experimental and experiential, phenomena directly related to weather changes such as static electricity, evaporation and condensation.
- **Vocabulary:** weather changes, static electricity, evaporation, condensation, rain, lightning, clouds.
- **Target audience:** Students infants and first grades in primary school.
- **Student Age:** 5 to 7 years old.
- **Environment:** 1st Allday Kindergarten of Portaria Magnisias. - April to June 2013.
- **Period:**  
Before the observation / experiment - Total 4 hours  
Experiment - 3 Experiments total duration of 90 minutes  
After observation / experiment – Total 7 hours

## Import sector and preliminary phase



- Technical requirements:** - Ability to connect to the internet;
  - Install Adobe Flash Player and Java 2 to perform simulations.
  - Projector for Power Point Presentation

•**Background author:** 1st Allday Kindergarten of Portaria Magnisias.

### •**Learning Objectives**

1. To come into contact, via an experimental approach to the physical phenomena of static electricity, the evaporation and condensation.
2. Observe and experience the above natural phenomena
3. To combine all natural phenomena experienced and observed in order to understand the mechanism of climatic changes and in particular the phenomenon of rain.
4. Get involved with the scientific, discovery process and promotion through interactive and scientifically structured communication.

•**Guidance for preparation :** <http://phet.colorado.edu/el/simulation/balloons>  
[http://www.youtube.com/watch?v=CXFCW\\_AHFck](http://www.youtube.com/watch?v=CXFCW_AHFck)

**Before observation / experiment - 1st Teaching phase:**  
Activities elicitation questions - CHALLENGE OF INTEREST

The opportunity was given when infants observed for the first time a phenomenon that had not noticed another time. It was an intense sand rain left a strong imprint on two consecutive days. The questions and discussions of infants for the phenomenon was constant and that was the reason for the systematic design and implementation effort activities related to the weather changes and conditions.



## **EXPLORING IDEAS**

### **Questions such as:**

- «How mud get into clouds?...
- «How sand goes up?...
- «How kept there?...
- «How traveled so far and travel from Sahara to Greece?...

### **Answers of infants:**

- "Someone threw very high the sand, the cloud opened and kept it."
- "When the wind blows the sand raises the clouds, mixed with water and then the clouds, as wind blows brings them above us".
- "The cloud has mouth opens it gets the sand brings above us opens his mouth and pouring water with mud".





## Before observation / experiment – 2<sup>nd</sup> Teaching phase:

### Active investigation - DESIGN AND GUIDANCE OF RESEARCH

Asking infants certain question for:  
"How do you think created the rain;"

There were no concrete answers that would indicate that they had some alternative ideas and the only response I received was:

"The sun, when is hot, it opens a hole and gets the water ..."



I tried to show them what is actually happening and created the clouds and additionally lead them along to understand the phenomenon of evaporation. During conversation I lead them to recall in their memory an almost daily experience and observation. That's why I asked them if they have seen any time how water boils when cooked spaghetti.

**Before observation / experiment – 2<sup>nd</sup> Teaching phase:**  
Active investigation - DESIGN AND GUIDANCE OF RESEARCH

Then I asked them to tell me what would happen if at the moment when the water is boiling I put my hand over the pot without touching it of course....

The responses of infants were to some extent anticipated while additionally reflecting a sense of fear. Some indicative answers were as follows:

"The hand will burn and it will become red"

"It becomes too much hot"

"The steam will rise up and will burn the skin"

"A blister will rise will jump and will burn your hand"

"The hand will be burnt will be red and then you will have trouble"



## Observation / Experiment - 3rd Teaching phase: CREATION - COLLECTED DATA FROM OBSERVATION

In the area of kindergarten is a cooker which the hotplate I used to apply a pot. In the pot I placed a quantity of water and raise the temperature of the outbreak. After certain time the water started to boil and then carefully invited all infants put their hand just above the pot and speak about their feelings and observation spontaneously.

Some of their opinions were the follows:

"Heated up and my hand and it sweated"

"Burn a little but my hand sweated"

"Heated up and my hand was getting soft"

"It burned me a little, my hand does not flush and it moistened»

"Water came in my hand"

For better consolidation of the phenomenon, I continued to boil water in the pot, and letting some of the water evaporates. When these happened I placed a transparent lid in the pot and then I called the infants to observe the phenomenon driving parallel to find that the water was no longer on the basis of pot but instead plenty of drops were in the lid.





# After Observation / Experiment-5th Teaching phase: FEEDBACK - PRESENTATION OF INTERPRETATION

Trying to capture the perceptions of infant's experiences about the phenomenon they observed, invite them to express that particular experiences by drawing what they made most impression.



## **Before observation / experiment – 2<sup>nd</sup> Teaching phase:**

### **Active investigation - DESIGN AND GUIDANCE OF RESEARCH**

In the discussion that followed, in my attempt to convey the experiment in real dimensions, I tried to correlate the evaporation with rain also with lightning and thunder. I did not want to leave unexploited this event and took the opportunity to talk about the lightning and thunder, trying to analyze in parallel, the concept of static electricity.





## Observation / Experiment - 3rd Teaching phase: CREATION - COLLECTED DATA FROM OBSERVATION

I got a balloon and when I inflated it I rubbed upon my shirt. Then I approached one's infant hair which, when electrified, rose up towards where the balloon where.

"This is magic Mrs." I heard from all



As a final application of the experiment showed to infants that when threw a plastic straw in the window this will be dropped.

Then I rubbed the straw in my shirt and then i threw it in the window and it was stuck to the glass until the next day.

The hole next hour I left the children alone to experiment by their own.

# Observation / Experiment - 3rd Teaching phase:

## CREATION - COLLECTED DATA FROM OBSERVATION

Connection to the site <http://phet.colorado.edu/el/> and more specifically to the simulation of static electricity located at <http://phet.colorado.edu/el/simulation/balloons>

I left the infants alone to run the simulation and construct their own learning.





## After Observation / Experiment-5th Teaching phase: FEEDBACK - PRESENTATION OF INTERPRETATION

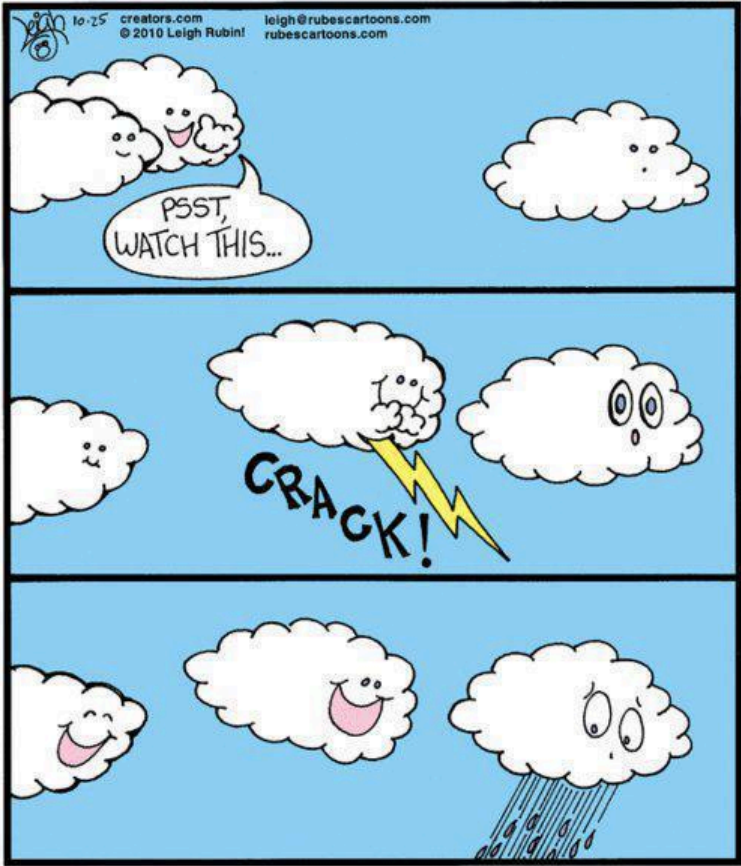
Trying to capture the perceptions of infant's experiences about the phenomenon they observed, invite them to express that particular experiences by drawing what they made most impression.



# Observation / Experiment - 4th Teaching phase:

## DISCUSSION - APPROACH OTHER POSSIBLE INTERPRETATIONS

Discussion on the “circle” about the phenomena of lightning - thunder - rain. Trying to connect to experiments with natural phenomena of weather.





**Observation / Experiment - 4th Teaching phase:**  
DISCUSSION - APPROACH OTHER POSSIBLE INTERPRETATIONS

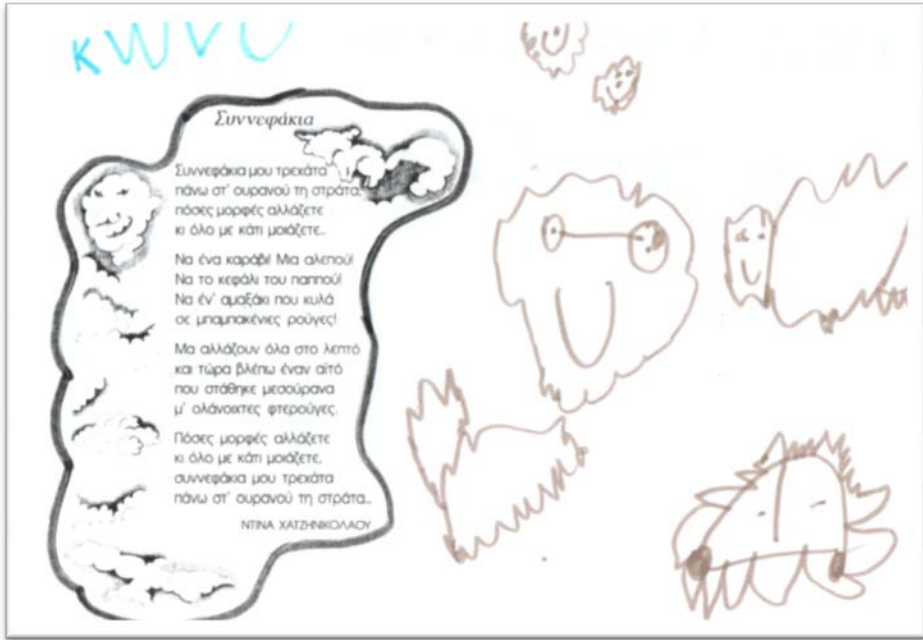
Having discussed the phenomena I showed to infants relevant photographs to weather storms and lightning. Then I been connected and watched a video tour on the site [http://www.youtube.com/watch?v=CXFCW\\_AHFck](http://www.youtube.com/watch?v=CXFCW_AHFck) showing 8 minutes of video clippings on storms.



# Observation / Experiment - 4th Teaching phase:

## DISCUSSION - APPROACH OTHER POSSIBLE INTERPRETATIONS

While talking about the weather we worked in parallel on worksheets with poems about weather like “Wind’s play” and “Clouds”. In these sheets, infants impressed painting about concepts which their impressions and representations, little by little structured, for the weather.





## Observation / Experiment - 4th Teaching phase:

### DISCUSSION - APPROACH OTHER POSSIBLE INTERPRETATIONS

I split infants into two equal groups and hang onto their shirt blue and red paper balls. Posing different cloud's loads (blue and red balls) the infants moving in space expelling or chasing the clouds that represent the different or same load. When two different loads (infants) was meeting, hugging each other by the sound of thunder and simultaneously with a watering can, which one of the clouds kept, simulated the rain which began to fall.



**After Observation / Experiment-5th Teaching phase:**  
**FEEDBACK - PRESENTATION OF INTERPRETATION**

Trying to capture the perceptions of infant's experiences about the phenomenon they observed, invite them to express that particular experiences by drawing what they made most impression.

