# FEEDBACK from LESSONS's TEST PERIOD IN STE(A)M CLASSROOM




With children 5 - 6 and 6 - 7 years old

From kindergarten Edelweiss - Velingrad, Bulgaria

3rd Transnational project partner meeting in Kochani, North Macedonia

# THE LESSONS AND ACTIVITIES PRESENTED ARE RELATED TO THE IMPLEMENTATION OF A PROJECT

**"Establishing of STE(A)M classroom concept in pre-school education", 2020-1-HR01-KA201-077710, "STE(A)M kids"**

With the support of the Erasmus+ Programme of the European Union

AGENCY FOR MOBILITY AND EU PROGRAMMES




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# What did we do after the short training events? September – October 2021

✓ **INTERNAL TRAINING EVENT in topics:**

✧ STE(A)M classroom concept and treatment with project's equipment;

✧ STE(A)M concept in pre-school education set with the new technologies and Innovations related to the future overall development of the children;

✧ e-Twinning opportunities;

✓ **we fulfilled total of nine TEST LESSONS in STE(A)M classroom with two age groups (5-6 and 6-7 years old);**

✓ **We Set a vision, made short-time action plan with tasks, deadlines and we worked hard, had fun and met challenges ☺**

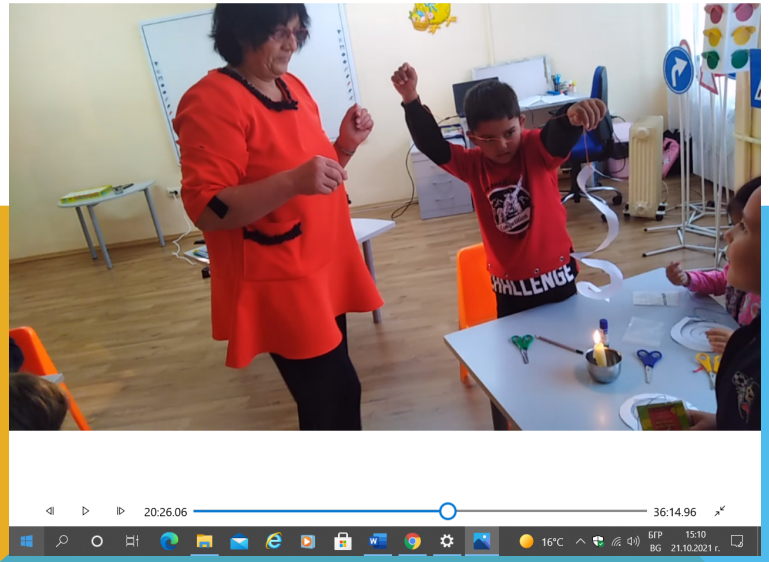
# Lesson: “What is energy?” (EEPE)

Age group – 6-7 years, Conducted by: V. Kalendarova






[More photos here](https://drive.google.com/drive/folders/1r2E1e6d07R9rm-HUJoKk5aD2Yvam3Vj8?usp=sharing)






# "WHAT IS ENERGY?" (EEPE)

***Difficulties and / or challenges during the lesson:***

- The volume of the lesson is large, as it includes experiments, individual work in the environment and a video about the types of energy plus a game to reinforce the new concepts.
- The experiment with the paper "snake" takes more time, because it is dangerous for the candle to be unattended.
- Heating the water from the bulb and reading the change with a thermometer from all children also takes time.

***Recommendations for change / changes in the course of the lesson and justification of the need for their introduction:***

- The lesson can be divided into two parts: - "What is energy?" And "Types of energy"
- The individual work with the paper "snake" should be at the end of the first lesson, and the game "Energy Discoverers" should be at the end of the second lesson.
- This will give an additional opportunity for more individual experimental activity of children and consolidation of new concepts.

# Lesson: In the magical world of the rainbow (Refraction of Light, Color mixing), (Science)

Age group - 5 years, Conducted by: V. Kalendarova



More photos here https://drive.google.com/drive/folders/1EYPNdugevVnA6sI_WcOTpTZQIDvG0xtz?usp=sharing












# IN THE MAGICAL WORLD OF THE RAINBOW (REFRACTION OF LIGHT, COLOR MIXING), (SCIENCE)

***Difficulties and / or challenges during the lesson:***

- The experiment with the machine for mixing the colors and the individual work with the paints are very interesting for the children and they were satisfied with the end result. They mixed the colors twice - once as an experiment and then repeated it on the drawing, which extended the duration of the lesson.

***Recommendations for change / changes in the course of the lesson and justification of the need for their introduction:***

- In general, the lesson is more suitable for the Art working group, such as consolidation of conducted experiments with the optics machine and clarification of concepts such as light, rays, refraction.

- In order to shorten the time, it will be more appropriate to apply it to the drawing as soon as they receive the new color.

# *Lesson: "Magnetism" (Science)*

The lesson was conducted by: Elena Divizieva

*Age group of the children with whom the lesson was conducted:*
4-group, 6-7 years old

More photos here
https://drive.google.com/drive/folders/143qjGOZbO6vcA5K3A0r52IcasQAqyyp4?usp=sharing











# "MAGNETISM" (SCIENCE)

***Difficulties and / or challenges during the lesson:***

Magnetism as objects is present in the life of children/ at home and in kindergarten. Based on past experience and knowledge gained in previous lessons I did not encounter difficulties. The lesson went smoothly in an interesting experimental creative environment. new concepts /force, magnetism, attraction, repulsion, compass and globe/.

***Recommendations for change / changes in the course of the lesson and justification of the need for their introduction:*** If the lesson is conducted with children from group 5-6 years old, more in-depth preparation on the topic is needed to acquire knowledge and get acquainted with new concepts of magnetism such as "Magnetic force", "attraction", "repulsion", "compass".

# Lesson: “Insulation” (EEPE)

The lesson was conducted by: Elena Divizieva

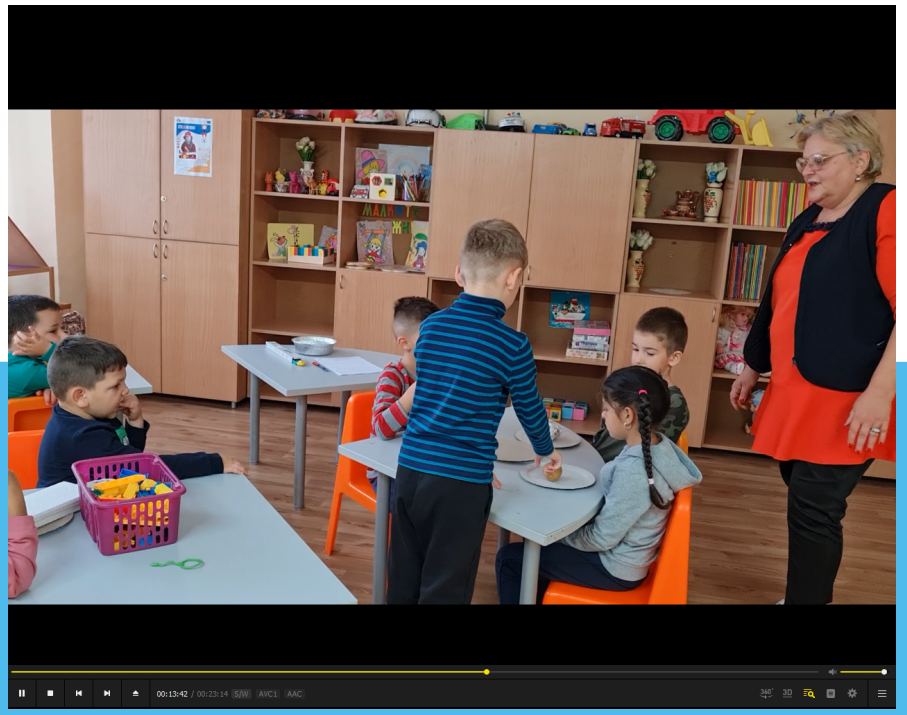
*Age group of the children with whom the lesson was conducted:*

4 groups – 6-7 years old

More photos here

https://drive.google.com/drive/folders/1XTaOdUkhpDjERAF1W6ETXTrRPFI2TrI5?usp=sharing





# “INSULATION” (EEPE)

***Difficulties and / or challenges during the lesson:***

- The topic "Insulation" is more distant for children 6 years of age as terminology / thermal insulation materials; types such as: mineral, synthetic, plant /. ,movies.

- It is difficult to deal with reading degrees and their knowledge of the thermometer.

- Suitable experiment: "Potato insulator" / insulation materials-foil and household paper; 3 potatoes / This experiment tests to see what materials keep the potatoes warm for the longest time. First, holes are drilled in the potatoes so that the thermometer can fit inside the middle. Then heat 3 potatoes in the microwave for 10 to 15 seconds. We take out the potatoes and wrap 2 of them in one of the insulation materials, recording the time and temperature of the potatoes when we finish packing. We leave the third potato uncovered. In this way the children understand the difference in insulation according to the type of insulation material.

# “INSULATION” (EEPE)

***Recommendations for change / changes in the course of the lesson and justification of the need for their introduction:***

-I think that the experiments should be divided into two consecutive lessons, because the teacher conducting the lesson is one, and from safety measures / Nr: the hotplates with water pots that boil are dangerous for children and I placed them away from tables with other utensils.

-I conducted the experiment with 6 glasses and ice with the children, but I think that for their age it is more appropriate to do it with a maximum of 4 glasses, otherwise they get confused.

-If the different houses with insulation are built, the lesson will be much longer in time. It lasted without the construction for 36 minutes.

-I suggest that "Isolation" be held in two lessons.

# Lesson: Hydropower (RES)

The lesson was conducted by Magdalena Burova

*Age group of the children with whom the lesson was conducted:*

III - th preparatory group (5-6 years old)



More photos here

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# HYDROPOWER (RES)

***Difficulties and / or challenges during the lesson:***

- The lesson went according to plan and in the planned duration.

The experiments, the talk and the demonstration of the model were dosed correctly, there is no need to add or replace the experiments.

***Recommendations for change / changes in the course of the lesson and justification of the need for their introduction:***

- The structure of the lesson and the terminology included in it are not suitable for this age group. The lesson should be conducted in a more elementary way in order to be understood and mastered by the children.

# Lesson: Solar panel (RES)

The lesson was conducted by: Magdalena Burova

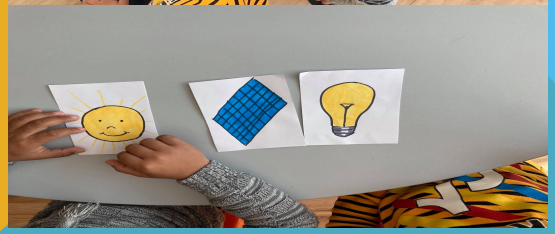
*Age group of the children with whom the lesson was conducted:*

IV preparatory group (6-7 years old)

More photos here

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# SOLAR PANEL (RES)

***Difficulties and/ or challenges during the lesson:***

- The lesson went according to plan and in the planned duration.

The experiments, the talk and the demonstration of the model were dosed correctly, there is no need to add or replace the experiments.

***Recommendations for change/ changes in the course of the lesson and justification of the need for their introduction:***

- The structure of the lesson and the terminology included in it are suitable for this age group.

# Lesson: Electricity/ Electrizitet (Science)

The lesson was conducted by Marina Grancharova

*Age group of the children with whom the lesson was conducted:* IV preparatory group (6-7 years old)



More photos here

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# ELECTRICITY/ ELECTRIZITET (SCIENCE)

***Difficulties and/ or challenges during the lesson:***

- The lesson went according to plan and in the planned duration.

The experiments, the talk and the demonstration of the Van de Graf were dosed correctly, there is no need to add or replace the experiments.

***Recommendations for change/ changes in the course of the lesson and justification of the need for their introduction:***

- The structure of the lesson and the terminology included in it are suitable for this age group.

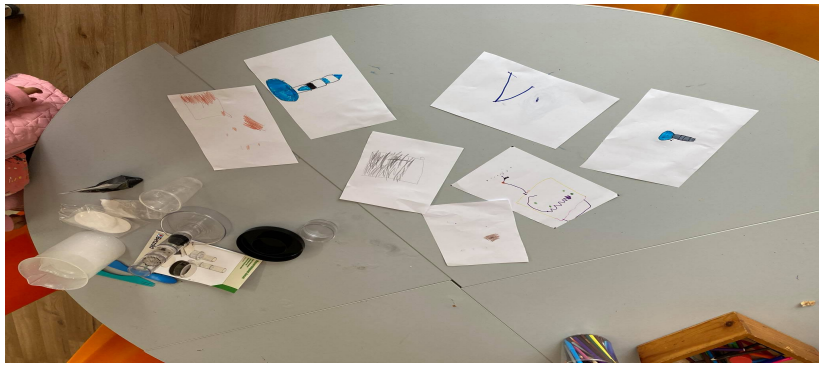
# Lesson: Water and Water Purification (EEPE)

The lesson was conducted by: Marina Grancharova

***Age group of the children with whom the lesson was conducted:***

III preparatory group (5-6 years old)

More photos here https://drive.google.com/drive/folders/1aCYHV2EDftEJH_2AMyzfrd3uQjSLH1-D?usp=sharing







# WATER AND WATER PURIFICATION (EEPE)

***Difficulties and/ or challenges during the lesson:***

- The lesson went according to plan and in the planned duration.

The experiments, the talk and the demonstration of the equipment were dosed correctly, there is no need to add or replace the experiments.

***Recommendations for change/ changes in the course of the lesson and justification of the need for their introduction:***

- The structure of the lesson and the terminology included in it are suitable for this age group.

# OUR VISION FOR GRADUAL INTRODUCTION OF TOPICS IN A STE(A)M CLASSROOM IN PRE-SCHOOL EDUCATION INTO 4 MODULES:

1. STE(A)M IN DAILY LIFE AND CHILDREN'S PLAY
2. ENERGY AND ENERGY SOURCES
3. ELECTRICITY AND THERMAL ENERGY FROM RENEWABLE ENERGY SOURCES (RES)
4. ENERGY EFFICIENCY AND PROTECTION the ENVIRONMENT (EEPE)

STE(A)M KIDS

- Magnetism (Science)
- Color mixing (Science)
- Pendulum, gravity, force, motion, swing (Art)
- Electricity (Science)

# STE(A)M IN DAILY LIFE AND CHILDREN'S PLAY

STE(A)M KIDS

- Energy (EEPE)
- Types of energy sources (EEPE)

"SUN" - Solar panel (Art)

"WATER" - Water and Water Purification (EEPE)

- Physical state, ice painting (Art)

"AIR" - Carousel (Art)

- Traction, movement (Art)

# ENERGY AND ENERGY SOURCES

STE(A)M KIDS

- Solar energy - model of a solar panel (RES)
- Hydropower (RES)
- Wind power plant (RES)
- Solar thermal energy (RES)

# ELECTRICITY AND THERMAL ENERGY FROM RENEWABLE ENERGY SOURCES (RES)

STE(A)M KIDS

- Energy saving and energy efficiency (EEPE)
- Insulation (EEPE)
- Ecosystem and ecology (EEPE)
- Climate change, Global warming (Science)

# ENENERGY EFFICIENCY AND PROTECTION THE ENVIRONMENT (EEPE)

# IDEA FOR DEVELOPMENTS RELATED TO THE FULL EQUIPMENT SET

## 1. Water and Water Purification (EEPE), 6-7 years old

Plan:
https://docs.google.com/document/d/1Bb9rQqvN4MIbZWbKDzdEOe0ZFDEAjNpO/edit?usp=sharing&ouid=102301794825602518168&rtpof=true&sd=true

## 2. Optics (Science), 6-7 years old

Plan:
https://docs.google.com/document/d/11BzFJJtma1yN5PlOz4DLnEYcnsGIJSpd/edit?usp=sharing&ouid=102301794825602518168&rtpof=true&sd=true

More photos
https://drive.google.com/drive/folders/1sXr8M0FGjaBFMdoHb67H4jj4W55gd8Sf?usp=sharing







# THANK YOU!

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