

**The plan of educational classes conducted
in the group of 6-year-olds
in the presence of the participants of the Erasmus + Short term joint staff
training on 3rd of December 2019
“4 Elements – STEAM in elementary education”**

Topic: “I I research, experience and experiment”

Teachers: Teresa Brejner, Wioletta Kuś Trzmiel, Agnieszka G. a mum of one of the pupils – a chemistry teacher

General objectives:

- Developing logical thinking and the ability to make conclusions based on experiments carried out during the lesson
- Introducing STEAM method in practice
- Familiarizing children with chemistry as a scientific discipline

Specific objectives. Child:

- Carries out experiments according to instructions
- Makes conclusions after the experiment's result is visible
- Feels happy and satisfied after completing the tasks (observations and experiments)
- Understands the need to wait patiently for the experiments' result

Methods of work:

- the verbal method (discussion, instruction)
- an observation, an experiment, a display
- the method of managing a child's own activity, active methods

Forms of activity:

- exploratory
- musical
- motion

Teaching aids: paper tablecloths, aprons, small heating pads, plastic papers, test tubes, dishes, tealights, an electric candle, plastic cups, tissues, a dropper, Q – Tips, toothpicks, food coloring (4 colours), potato flour, oil, baking soda, a detergent, vinegar. Pipettes, markers.

The course of the classes:

Lead-in

1. Welcoming the participants of the classes, active listening method of Batti Strauss "All are here"
2. Informing children about the lesson's purpose
4. **Experiment 1 "Volcano"**
The teacher pours 2 cm of vinegar and 1 spoon of baking soda into a vessel.
Description: The foam consists of carbon dioxide's bubbles which were created as a chemical reaction of acid and calcium carbohydrate
5. **Experiment 2 "Chemical egg"**
Each child receives a dish with baking soda and oil inside. In the centre of a table there are containers with food colorings mixed with vinegar. Children place coloured vinegar using pipettes into the dishes and observe the chemical reaction.
Description: Drops of coloured vinegar fall on the bottom of the dish, on the surface of baking soda. The chemical reaction of acid and alkali enables coloured drops to go up.
6. **Experiment 3 "Dousing the candle"**
The teacher puts 2 spoons of baking soda into a tall test vessel. Next, she pours $\frac{1}{2}$ cup of vinegar. She covers the top of the vessel to make sure the gas doesn't escape. Then, she fires candles and switch on the electric candle. The teacher releases the gas out of the vessel. Children observe what is happening.
Description: The gas is colourless carbon dioxide which doesn't sustain burning. Flames disappear. Electric candle still works. The same process happens when a human blows candles with air from lungs, full of carbon dioxide.
7. **Experiment 4 "Wandering pepper"**
Children get plates with water sprinkled with pepper. Children put fingers into the water. Then, they put a little of detergent on their fingers and repeat the action. The pepper "escapes".
Description: Pepper's specks change their position as a result of surface tension's decrease.
8. **Experiment 5 "Heating pads"**
Children receive heating pads. They are silicon bags with a special substance and a metal ring inside. The pads are of a room temperature. Children are asked to press a metal ring
Description: Heating pads get stiff and hot. This is a exothermic reaction.

9. **Experiment 6 “Colors separation”**

Children receive markers and tissues. Each child has to draw a horizontal line on the edge of the tissue. Children put tissues on the cups filled with water and vinegar. The edges need to touch the liquid.

Description: The mixture of water and acid makes the colours separate.

10. **Experiment 7 “Snow”**

Children mix potato flour and water. Their task is to make three snowballs to shape a snowman . Unfortunately, the balls loose their shape just after forming. The mixture of water and flour is called non-Newtonian liquid. When left alone it takes the shape of the dish. When we use force, it goes solid.

11. Summing up the lesson – children express their opinions about the experiments.

12. Boogie-woogie dance.

13. Awarding children with medals “Young scientist”







