**ERASMUS + activity form**

**The title of the action: Experiments with light and shadow.**

**A brief description of the action:**  In this activity children will understand how the light travels, they will make tests with flashlight to see how the shadows will change and what kind of materials the light will penetrate or not. They will make shadow theater and play a game with shadows.

**Through the activities of the release time (date, time):** 03.11, 2017

**Grop**: Naerulinnud **The age of the children**: 4-5a.

**The teachers**: Meeli Lugus, Hege Mardiste

**Objectives**:

A child will learn how shadows are made.

A child will learn how the shadows will change depending the source of light and distance.

The child can make experiences to understand how some materials let the light trough and some not.

**Tools**: A flashlight, a projector, a carrier, a white flax, dolls for shadow theater, a magnifying glass, a pencil, a piece of silly Putty, varying in shape and pattern on the drinking cups, a mirror, a toy.

**The action of the gear:** Show the children a picture of where people are on top of the shadows. What is in the picture? How the shadows occur? Show a picture of the two in the natural landscape, where the one is the sun up high and the other is the Sun already setting. Kids will find the differences between the pictures up. I have come with a flashlight, what do you think, what we do with it today, offer? () Because we are the light and the shadows of the images looked so now what do we do some tests by using a flashlight. Turn the lights off and the lights on the space remains the only flashlight. Everybody will examine the source of light that the flashlight makes.

Tests:

What happens if you put your hand in front of the flashlight?

In the light path by making hand shadow can be extended or shortened?

Also, have you noticed how the moving of the Sun during the day? Let's do this now in a flashlight, pen and using Silly Putty virtually. We confirm the pen by using the Putty on the floor of the stand. With a flashlight, imitating the movement of the Sun, children can see how the pen shadow becomes.

When is the shadow of the tallest?

When is the shadow of the most shorter?

What do you think, does the light make a shadow behind every object or can it go through some objects without leaving a shadow? First, they will but drinking cups with different patterns in front of the flashlight, then mirror and magnifying lens.

Whether the light passing through the lens?

Does the light pass through both of the drinking cups the same way?

What happens if a light hits the mirror? (Takes back the reflection).

What shape will give the lens to the light? (Flexes the light).

Because the topic is shadows, we will play a game with them. They have to show flashlight on to each other and then step on each other’s shadows to win the game.

Lastly, children can play shadow theater all together. They will move the objects in front of the light source and will understand more about the light and how shadows are made.

**The sources of the**:

"This book makes you a scientist". A translation into the language, and the Estonian Olvet Triin publishing company Argo, 2017. "This Book Thinks You ´ re (a) Scientist" 2016, Thames Hudson Ltd &, London. P. 42-43.

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