



★ **Name of the project:**

Magic of Light

★ **Subjects covered from STEAM areas:**

Science, Technology, Art, and Mathematics

★ **Target group (age range and size of the group)**

14-18, whole class

★ **Duration of the activity:**

- two workshops
- two evaluation workshops in the school (one for evaluating learning objectives and one for evaluating and summarizing results and each phase of the process)

Each activity lasts 90 minutes. Preparation for each activity lasts 60 minutes.

★ **Keywords:** light, colors, dispersion (decomposition) of light, adding colors, mixing colors, subtraction of colors, Newtonian wheel

★ **Key sentence describing context of the activity, followed by short description (200 words):**

This project is designed to encourage students to understand the phenomenon of color. Observing the decomposition and composition of light, students understand the complex nature of light, and what basic colors are needed to generate white light. Through the process of inquiry students get answers to the following questions: Why is grass green; What substances are used for coloring and how do they color; How is a rainbow formed?

★ **Description of the activity environment, including the list of materials and tools needed:**

Formal activities are performed in classrooms at the school where students actively observe the phenomena of decomposition and arrangement of light. Evaluation activities were also conducted in the school.

It's necessary to have:

- A computer with internet access
- Cardboard
- Collage paper
- Glue
- Pencils
- Compass
- Ruler

TEMPLATE for the TEACHERS



- Scissors
- Colored foils
- Three light bulbs in red, green, and blue
- Two prisms
- Whiteboard

★ Step by step, detailed description of the activity, including teaching and learning strategies.

- Students observe the decomposition of light through a prism.
- They try to change the conditions of the experiment by observing what is happening.
- Using prism students decompose white light from the color spectrum.
- With the help of slits, they decompose one color and observe what happens when it passes through another prism.
- After talking about the nature of light and the concept of color, students will construct a Newtonian wheel with six basic colors and a Newtonian wheel with three colors: red, blue, and green.
- This activity takes place mostly in art class. With the help of a piece of plastic foil in red, green, and blue, they decide for themselves which colors are created by mixing. Students observe the mixing of colors by forming shadows on the surface of the whiteboard with the help of three light bulbs in red, green, and blue.
- Students give suggestions for further research on the topic.
- In the evaluation class, Newton's wheel rotates at different speeds, confirming the complex nature of light. They explain the color of the objects around them.

★ Learning objectives/competencies:

This workshop describes how to explore the nature of light through practical activities. The described activities can be used to connect physics and art. Workshops could be realized in regular school classes as a project.

The domain-specific objectives are:

- Understanding the complex nature of white light
- Explanation of the phenomenon of light dispersion
- Understanding the concept of color
- Adding and subtracting colors

★ Evaluation/Assessment guidelines

Evaluation is done through informal feedback from students and through formal assessment by the teacher.

TEMPLATE for the TEACHERS



★ **Lessons learned: Light dispersion. The concept of color.**

★ **Additional Information/Links:**

★ **Contact person: Jasmina Radusin
jacaradusin@gmail.com**