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STEM Discovery Campaign 2020

“Atelier for STE(A)M Competition”

-Template for the description of the  
activity-

## Annex 2.



## "The colours of Science"

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### Title of the lesson plan

Walking on a rainbow

## Description of the lesson plan

This lesson plan is the collaboration between schools from Greece, Italy, Estonia and Portugal that worked together in the **etwinning project 'EU weather broadcast for curious detectives'**.

Students aged between 6 and 8 years old, met on the etwinning platform and exchanged their talents in Science, Art and Writing, studying meteorological phenomena.

In March and April, the schools of Greece and Portugal were in distance learning. In Italy, some students were at school, but some others followed the lessons at home because they were in self-quarantine. We all agreed that this was a cloudy period for our classes.

But... at the end of a storm, there is often a rainbow and so we decided to walk on rainbow and cultivate our creativity, sharing good teaching practice between teacher and a strong eagerness to learn between students.

We divided our scenario in two periods, each approximately of 50-55 minutes.

In the first period, students were divided in two groups: scientists and artists that then traded places in the second period.

In each group, students were able to watch videos of experiments or have a tutorial on an Art and Craft they could make about rainbow. Then they had the time and the possibility to realize them: each student was able to work alone, interacting with other students in the group for sharing ideas and support.

At the end scientists were invited to explain to artists what they did and viceversa.

The video tutorials we used to start the activities were suggested in turns by students of other countries involved in the etwinning project and this helped to increase students' interest and motivation.

At the end of each lesson, we collected photos of students' works and shared them with the mates who were in distance learning and with all the other partners schools.

Watching videos of the experience produced by different schools, helped all students to reflect on the way they worked comparing with other mates.

All the experience were shared with students' parents using Google classroom; parents showed interest in these activities, collaborated with teachers and helped their children to carry on the Steam experiences, above all if they were in distance learning.

A lot of parents gave us evidence of the fact that these activities contributed to keep pupils motivated in their learning path.

## Learning Objectives, Skills, and competencies

What are the main objectives of this lesson plan?

*Write here the skills the learner will develop and demonstrate during this activity (e.g., communicative skills, computational thinking, problem solving, etc).*

- Develop a positive attitude and enhance interest toward STEAM subjects and appreciate their practical applications in life
- Develop problem solving skills
- Nurture creativity
- Develop collaboration abilities
- Develop communication abilities, both using the native language both in English as L2
- Develop patience and persistence when solving problems
- Develop curiosity and use inductive and deductive reasoning when solving problems
- Develop abstract, logical and critical thinking and the ability to reflect critically upon their work and the work of others
- Appreciate the international dimension of Steam subjects

### ICT Tools and Resources

What ICT tools, resources or other technologies will be required?

Choose the tool(s) and explain how you will use it.

Youtube or Vimeo for watching videos  
Smartboard with a web connection  
Video maker tool (for example iMovie, InShot,...) and photos collage editors (for example PicCollage, Pixiz, BeFunky,...) for reporting students' experiences  
Genially and Canva for presentations  
Google classroom and Class Dojo for creating digital classrooms  
Google Meet and Webex for online lessons

### Learning space

Where will the learning take place e.g. school classroom, local library, outdoors, in an online space?

School classroom or/and online space (we used Google classroom and Google Meet in Italy; Google classroom, Class Dojo and Webex in Greece)

### Scenario description

note: assuming a double period (i.e 2 x 45 minutes)

Activity	Detail	Duration
<i>Activity number and name</i>	<i>Description of the activity</i>	<i>minutes</i>
<b>Activity 1</b> a. WARM UP	<p>Ask your students if they know what a rainbow is and if they ever saw a rainbow.</p> <p>Ask them if they are ready to make a rainbow in their class.</p> <p>Divide students in 2 group: scientists and artists.</p> <p>Explain that they are going to build a rainbow using Science and Art.</p> <p>Explain that each of them will have the possibility to realize his/her own rainbow but they will have the possibility to collaborate, share opinions and ask or give help to their mates.</p> <p>They will be able to repeat the experience more than once, if they want and, at the end of the lesson, they will have to explain what they did the the students of the other group.</p> <p>Explain that there will be a second lesson, where scientists and artists will trade their places.</p> <p>Let them work in different part of the classroom (or in two different classrooms) giving to each group the material they need to realize their experience.</p> <p>If you are working on distance learning, create two different online-rooms: one for scientists and one for artists.</p> <p>If you have some students at home and some on distance learning, we suggest to put all the students in distance learning in the same group (scientists or artists) and create an online-room for them, or let them interact with the correspondent group in the classroom through a video call (they will need the support of a teacher for managing this)</p>	10

<p><b>Activity 1</b> b. MAIN ACTIVITIES</p>	<p><b>Group of scientists: Growing a rainbow experiment</b></p> <p>Show your students <a href="#">this video tutorial</a>: Ask them: why does it happens? Is it a magic? Have a brainstorming, collecting all their hypothesis. Then summarize them and have a discussion to verify them and give an explanation of the phenomenon. Invite them to choose the material and realize the same experiment. Invite them to focus on the different steps they have to follow to realize the experience: it will help them to explain the experiment to the artists mates.</p> <p><b>Group of artists: Let bloom a rainbow</b></p> <p>Show your students <a href="#">this video tutorial</a> (created by the Italian school) inspired by Wassily Kandinsky's color study "Squares with Concentric Circles". This particular lesson brings Art and Maths together through a project that will let pupils study circles and the concept of concentric circles in a fun way. At the end they will be able to create a wonderful collaborative Art piece. According to their age and abilities you can give your students the printed template or ask them to draw seven circles of different radius. Ask them to choose their favorite painting technique and invite them to realize their own rainbow flowers. At the end collect all their flowers and realize a collaborative rainbow flowered tree or meadow. Invite them to focus on the different steps they have to follow to realize the experience: it will help them to explain the method to the artists mates.</p>	25
<p><b>Activity 1</b> c. WRAP UP</p>	<p>Help students reflect on the things they learned in this lesson. Let your students work in pairs: each students' group will consist of an artist and a scientist: let them share their experience and show each other their products. If you are working on distance learning, maybe it will be easier to work in the big group: each member of each small group (scientists and artists) will have the possibility to explain a different step of the experience with the support of the teacher.</p>	10-20
<p><b>Activity 2</b></p>	<p>This activity requires to be prepared the day before: fill some different size of bowls with water and left them to freeze overnight. If you are in distance learning, ask each of your students to do it.</p>	
<p><b>Activity 2</b> a. WARM UP</p>	<p>Divide students in 2 group: scientists and artists. Students that were artists in the first activity will be scientists in this second one and viceversa. Explain that they are going to have new experiences playing with rainbow colours.</p>	5

<p><b>Activity 2</b></p> <p>b. MAIN ACTIVITIES</p>	<p><b>Group of scientists: Colored iceberg</b></p> <p>Show your students <a href="#">this presentation</a> about the form of the water: it has been realized by the school of Chios in Greece.</p> <p>Focus the attention on the melting of ice and on how salt effect it.</p> <p>How does the salt work on ice? Have a brainstorming and collect their hypothesis.</p> <p>Then propose students to realize the experiments: the scientists can also divide in two groups and each of the two group will realize a different experiment.</p> <p>Invite your students to observe carefully how the food coloring effects the ice with or without salt: this will help them to answer to the initial questions.</p> <p>At the end have a discussion to verify their initial assumptions and give an explanation of the phenomenon.</p> <p>Invite pupils to focus on the different steps they have to follow to realize the experience: it will help them to explain the experiment to the artists mates.</p> <p><b>Group of artists: Eating a rainbow</b></p> <p>Let your students make their own food rainbows and learn the health benefits of each color group.</p> <p>Start listening to <a href="#">this song</a>: it will help to introduce the topic.</p> <p>Ask your students their eating habits:</p> <p>Do you like fruit? And vegetables? How often do you eat fruit and vegetable? What kind of fruit and vegetable do you know? Can you name a different fruit or vegetable for each rainbow color? Why fruit and vegetables have different colors? Collect their answers and at the end show <a href="#">this short presentation</a> (made by the Italian school) to explain the differences between the different colored fruit and veggies.</p> <p>Then propose to your students to build their healthy rainbow.</p> <p>If you are at school you can have a collaborative activity building a rainbow thanks to the contribution of all students; if you are in distance learning each student will be able to build its own rainbow.</p> <p>There are several ways you can gather pictures of fruits and vegetables in the colors of the rainbow. You can use real fruit and vegetables or you can use images from the web: suggest to your students some website where they'll be able to find picture under creative common (Freepik, Pixabay, Wikicommon...).</p> <p>You could also find pictures in magazines or newspaper or give them pictures to be colored or ask them to draw pictures by themselves</p> <p>You can decide whether you will provide the images for your students or have them find and cut them out themselves.</p> <p>Then ask them to arrange the fruit and vegetables in order to create a rainbow; for younger students yo can give a draft of the rainbow arch where they will be able to glue the different kind of fruit and vegetables.</p> <p>Alternatively, you can ask your students to create their own healthy plate: this is a really enjoyable activity above all in distance learning, because at home pupil can more easily collect their favorite fruit and vegetable.</p>	<p>30-35</p>
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<p><b>Activity 2</b></p> <p>c. WRAP UP</p>	<p>Help students reflect on the things they learned in this lesson.</p> <p>Let your students work in pairs: each students' group will consist of an artist and a scientist: let them share their experience and show each other their products.</p> <p>If you are working on distance learning, maybe it will be easier to work in the big group: each member of each small group (scientists and artists) will have the possibility to explain a different step of the experience with the support of the teacher.</p>	
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**Assessment**

*How will students be assessed on their learning? Max 10 sentences*

The cooperative Jigsaw technique is used during the wrap up of both the activities. This technique allows each student to deepen a part of a topic and then share what they have learned in their group, within which, after listening to all the members, a conclusive synthesis is made. With the Jigsaw method each pupil must actively participate in order for his group to be successful. To this end, each student must carry out his or her task and contribute to the achievement of the cooperative goal.

During this activity pupils carry out the learning task required in the proposed activities, bringing into play and using the acquired skills,. thus allowing to evaluate their achievement of objectives

**Annex**

- The “Make a rainbow” experiment

The [activity](#) of the Italian team

The experiment of an Italian students that was at home in self-quarantine



[The experiments](#) of the school of Chios in Greece

The Estonian [experiment](#)

- **The experiment of colored iceberg:**

[The presentation](#) of Chios- Greece

[The experiment](#) of Italian scientists

[The experience](#) of Pireus - Greece

[The experiment](#) of Estonian Team

- **Let bloom a rainbow**

[Italian activity](#)

The activity of Chios - Greece





The activity of Pireaus - Greece



- **Eating a rainbow**

Italian [healthy rainbow](#) activity

[Greek activities](#) in distance learning