Co-funded by the
Erasmus+ Programme
of the European Union

INTELLECTUAL OUTPUT 03

SCIENTIFIC CREATIVITY

4 Creativities Project
№2019-1-BG01-KA201-062354

INTRODUCTION

The aim of FCREATIVITIES project is to improve the teachers' abilities to generate a creative education, leading to the creation of students who are able to think, analyze and solve daily problems. We ***will develop new scientific skills*** and competencies through the incorporation of new proposals, spaces, methodologies, and resources that will increase the students' ability, creativity and the skills for innovation. These activities will be used ***with 10 to 12 years old students,*** promoting their motivation and creativity.

With the **scientific creativity** promotion we will improve the thinking capacity of our students and the ability to go from basic notions to more complex ones; they will learn to resolve problems in a real situation; they will practice the construction of their own learning; they will train their **deductive capacity** and this will take them to create strategies and solutions of their own and they will get better with their physical environment and their appreciation from different spaces, shapes, parts and the group in general. Scientific creativity will take place inside the classroom through scientific experiments workshops.

Scientific activity will be **boosted through observation, manipulation and research.** That will lead students to discover their immediate environment. Experimental and research activities will offer students the opportunity for learning in an independent and significant way.

Title of the activity

Building blocks of substances

Description and application in everyday life

In this lesson, students will be introduced to the building blocks of substances.
The smallest particles that determine the properties of a substance are called its building blocks.Molecules are a kind of building blocks.They are composed of several interconnected atoms.
The type and location of building blocks determines the state of substances and their properties.
The practical application of substances is determined by their properties.

One of the methods for teaching students is by modeling the studied objects.

PAGE * MERGEFORMAT 2

This project has been funded with support from the European Commission. This publication [communication] reflects the views only of the author, and the Commission cannot be held responsible for any use which may be made of the information contained therein.

By making models of the building blocks of substances: molecules and atoms, students will demonstrate their knowledge of molecules and atoms and the relationship between particles and the properties of substances.
Based on the properties of substances, students will predict their practical application in real life.

Aims

1.By making models, students will show their knowledge of building blocks and the properties of substances.
2.To predict the properties of substances and their practical application depending on the type of building particles and the connections between them.
3.To conduct research and summarize the most important information;
4.To justify their opinion with data and analysis;
5.Students express and defend their point of view;
6.Work in a team to resolve a case;
7.Speak in front of an audience.

Steps we must follow

The task is as follows:
Making models of building blocks of substances and showing the relationship with the state(liquid, solid and gaseous condition) and the properties of the substances.
Preliminary preparation is required, which includes:
1.Construction of an image of the object: (through a diagram, drawing and other symbols)
2.Choosing suitable materials for the model.(at home)
Then follows:
3. Making the model following the blueprint. Here you can be an artist.
4. To find out if the model is successful, answer the following questions:
Did they like our idea? Did you learn anything new from the model? Did they like our idea? Did you learn anything new from the model? Is it well done and presented?
What is applied in everyday life?

Materials (if needed)

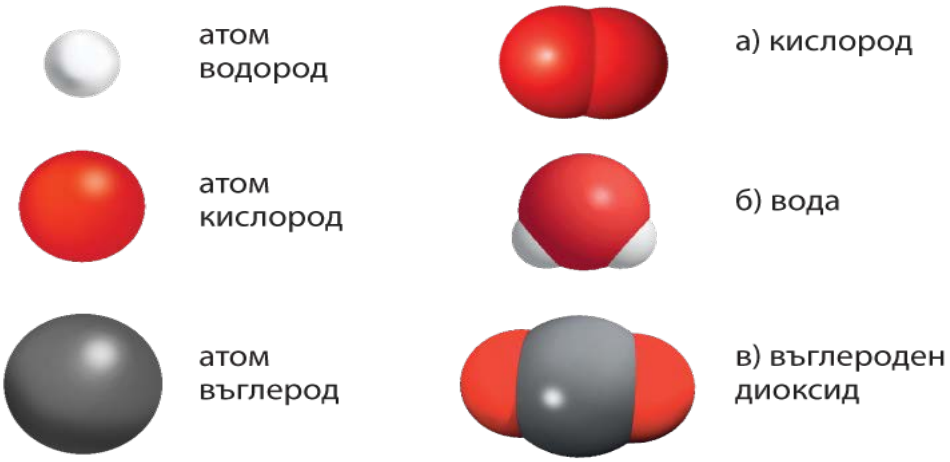
This project has been funded with support from the European Commission. This publication [communication] reflects the views only of the author, and the Commission cannot be held responsible for any use which may be made of the information contained therein.

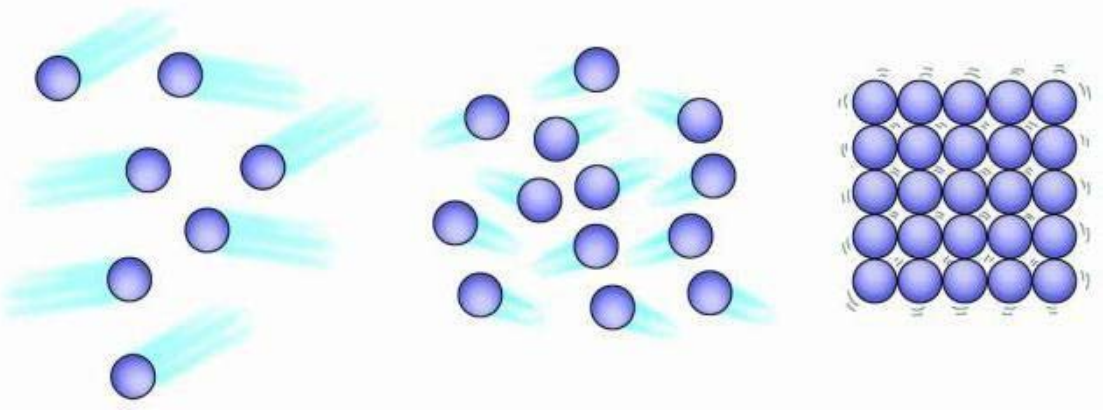
The materials that can be used to create the model are:
polymer clay, paper,buttons, plasticine, lentil seeds, matches, plastic, nylon, textile, rubber, styrofoam, sponge, cardboard and others.
You will need scissors, glue, needles, threads and other tools of your choice to assemble the model.

Tips

If you have any recommendations for the teachers, please share them here. Please include any measures that must be taken to carry out the experiment safely!

1. The teacher could set the modeling for homework and the presentation should be at school.
2.The students can also work independently.
3.The activity is recommended for students aged 11-12.
4. When using materials and tools (such as scissors, needles, etc.)
to observe the measures for safe work.





Molecules of gas, liquid and solid

PAGE * MERGEFORMAT 2

This project has been funded with support from the European Commission. This publication [communication] reflects the views only of the author, and the Commission cannot be held responsible for any use which may be made of the information contained therein.

Co-funded by the Erasmus+ Programme of the European Union

Worksheet
Making a model
"Building blocks of substances"

Preliminary preparation:
I collected information about:
1. The building blocks of substances: atoms and molecules.
2. The properties of substances depending on the type and forces of attraction between the building particles.
3. Practical application of substances.
I used the following sources:
1. Tips for making a successful model by the teacher.
2. Schemes, drawings of the object on the Internet, popular science literature, etc.
3. Information on materials that are suitable for making the model.

Objects on which models can be made	**Materials for making the model**	**Practical application of the model** **"Building particles of substances"**
Molecules, atoms		

CONCLUSIONS:
1. What are the building blocks of substances?
Answer
_____
2. What do the properties of substances depend on?
Answer
_____
3. What determines the application of substances in practice?
Answer
_____

Test your skills by placing ✓ in the appropriate place in the table.

I can now			
to study information from various sources			
to use the most important of the collected information and draw conclusions			

PAGE MERGEFORMAT 2

This project has been funded with support from the European Commission. This publication [communication] reflects the views only of the author, and the Commission cannot be held responsible for any use which may be made of the information contained therein.

to model atoms and molecules as building blocks of substances and to explain the properties of substances with models.			
to predict the properties and practical application of substances depending on the type of their constituent particles.			

This project has been funded with support from the European Commission. This publication [communication] reflects the views only of the author, and the Commission cannot be held responsible for any use which may be made of the information contained therein.