



Student's favourite newspaper

December 2017

Monthly edition related to the eTwinning project "THE MONTHLY STEM"

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### Newton's Christmas

(Escola Pedro Eanes Lobato - Portugal - Lidiane Ribeiro 9ºD)



Isaac Newton was born on January 4, 1643 at Woolsthorpe Manor, although it was recorded on Christmas Day, 25 December 1642. His father was a prosperous farmer who was also named Isaac Newton and died three months before his birth. His mother, Hannah Ayscough Newton, went on to manage the family's rural property. The financial situation was stable, and the farm guaranteed a good income. At only three years old, Newton was taken to the home of his maternal grandmother, Margery Ayscough, where he was raised, since his mother had remarried. Isaac did not like his stepfather and argued with his mother for marrying him. From the age of twelve to seventeen, Isaac was a

### Christmas tree fire

(Junior High School of Thermi)



According to the National Fire Brigade, every year in the United States, hundreds of fires are manifested by causes related to Christmas trees.

A short circuit occurs when a wire comes in contact with a cable and the circuit is energized. In well-maintained circuits, this will trigger the fuse and switch off the circuit. This condition does not generate heat for the ignition of materials. However, it is likely that the circuit is not safe. If this happens, the current can continue to pass through the wires causing them to overheat significantly. This kind of situation can cause ignition around fire-causing materials.

<https://www.youtube.com/watch?v=xr6b9b8FYKk>

### The fluffy slime Christmas

(Junior High School of Monte Sant'Angelo-Italy) (7th grade class A)

Hi guys, today we're showing you how to create the Christmas fluffy slime. We need:

- vinyl glue
- shaving foam
- boric acid
- water
- green dye
- red beads
- green glitter
- body cream
- bowl
- plastic spoon.

Pour the vinyl glue, body cream, shaving foam and dye in a bowl. After mixing well add little by little the boric acid.



student at The King's School in Grantham. Isaac was removed from school in October 1659 to live in Woolsthorpe-by-Colsterworth, where his mother, now a widow for the second time, tried to make him a farmer, but he hated working in agriculture. The King's School principal, Henry Stokes, persuaded his mother to send him back to school so he could complete his education. Newton studied Latin, Greek, Hebrew, and the Bible. Newton's interest in mathematics began in 1663 at the age of 20 when he bought a book of astrology and could not understand the mathematics used in it.

## Magic-crystal / snowflakes

(Nerea, Patricia, Daniel A. and Álvaro - CEIP Jose Maria de la Fuente - SPAIN)

Materials:

To do this project we need the following materials:

- Three pipe cleaners
- One glass container (it must support boiling water)
- Water (500 ml)
- Borax powder (6 or more tablespoons)
- String (25 cm)
- One pencil
- One scissors



Instructions:

- 1 With the scissors, cut a pipe cleaner into three equal sections.



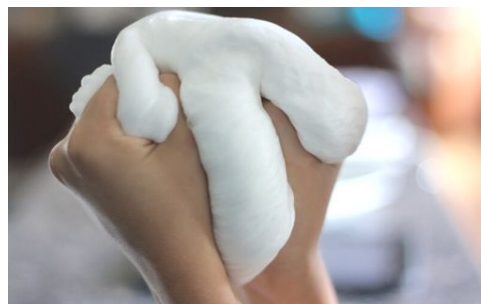
## Snow Slime

(Maria Ángela López and Alejandra Ocaña - CEIP Jose María de la Fuente - Spain)

- White glue.
- shaving foam.
- Paint.
- Bowl.
- Spoon.
- contact lens liquid.

HOW WE MAKE THIS SLIME ?

1. You should put the glue in the bowl .
2. Little by little you should add the contact lens liquid and the shaving foam.
3. Mix this mixture and then you should repeat this proces, add shaving foam and contact lens liquid until it comes out.



## Fake Snow

(Miranda, Emma, Blanca and Irene - CEIP Jose María de la Fuente - Spain)

To make fake snow we need: diapers and a bottle of water.

To make fake snow you have to open one diaper and take the dust of the cotton, and then you have to put the dust in a bowl. Next you should pour the water in the bowl with the dust and wait for 20 seconds. Finally, the artificial snow is formed.



## Plastic bag trees

(A3 Class - Junior High School of Xanthi-Greece )

Single-use plastic bags represent a huge threat to the environment. This threat is

We note the mixture becomes elastic and rubbery.



This happens because inside the vinyl glue there are many, repeated and identical chains of molecules, that slide on each other, and the addition of boric acid (cross linker) binds them together, decreasing the tryckle of the molecules.



The mix becomes less sticky and more rubbery, it is the relaxing fluffly slime.



Once finished we decorate with glitter and red beads and...  
NOW IT'S CHRISTMAS!

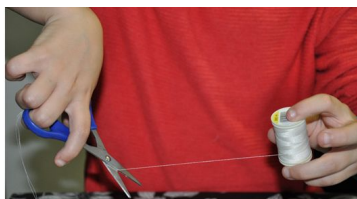
- Twist together the three sections of pipe cleaner at their centers to form a six-pointed star.



- Compare the size of your snowflake to the width of the opening on the container. The shape needs to fit easily into the container without any squeezing. It can't even be a close fit due to likely crystal growth in the container as well as on the pipe cleaner. If the pipe cleaner can't easily fit, shorten each section as needed.



- Cut a 25 cm length of string.



- Tie one end of the string to the center of the pipe cleaner snowflake. Lay the pencil across the opening of the container and lower the pipe cleaners into the container. The snowflake can be close to but should not touch the bottom of the container.



not only related to the sheer volume of them ending up in landfill, but also to the resources needed to produce, transport and (occasionally) recycle them, and the emissions resulting from these processes.

Most of us have seen the devastating and heart wrenching images of birds being terminally entangled by plastic bags. Of wildlife being overrun and littered with our garbage. Of the deaths of animals due to plastic bag ingestion.



To make matters worse, most bag are not recycled because it costs more to recycle a bag than to produce a new one. Bags end up in landfills, oceans, seas, and lakes. They end up strangling animals, filling our sewer systems, and blowing throughout the environment.



Unlike items that naturally biodegrade, plastic bags are made from polyethylene: a thermoplastic made from oil. Plastic bags photodegrade... meaning that over time the plastic breaks down into smaller, more toxic petro-polymers. These contaminants poison our soil and water and then enter our food chain. Sadly Greece holds the record for plastic bag use. In 2016, the average was 400 plastic bags per person, when the European average is about 190. A new campaign begins January 1st in Greece which aims to reduce plastic bag usage to about 40 bags per person by 2025.

## MERRY CHRISTMAS AND HAPPY NEW YEAR!

### Crystal flakes

(Junior High School of Monte Sant'Angelo-Italy)  
(7th grade class C)

Hello everyone and welcome to this new experiment of 2nd C, today we will make snowflakes with boric acid.

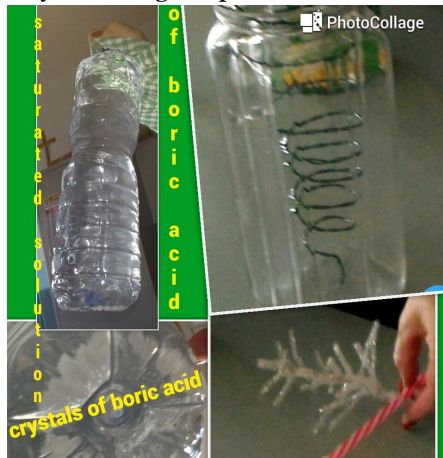
Required material:

- ★ pipe cleaners
- ★ wire
- ★ scissors
- ★ green spray paint
- ★ boric acid
- ★ hot water.

We build Christmas-themed structures by cutting and shaping shiny white pipe cleaners and green painted wire.



We pour the saturated solution (maximum concentration of solute in the solvent at that temperature) of boric acid, very hot in a glass pitcher.



- 6 Tie the other end of the string to the pencil so the snowflake hangs freely in the container. When you have your string tied and set, lift the pencil and the snowflake out of the container and set it aside.



- 7 Make sure your crystal-growing container is safe for boiling water! Bring a pot of water to a boil and fill the container with it.



- 8 Add 3 tablespoons of borax powder for each cup (237 ml) of water in the container. Stir the solution carefully since it's hot and get all the borax to dissolve. If there are no borax pieces on the bottom of the container, add another tablespoon and stir. Keep adding and stirring borax until none will dissolve into the water anymore. It's OK if some borax settles to the bottom of the container.



So we decided to make two "Greek consumer trees".



One for 2016 with 400 bags . . . .



and one for 2025 with only 40 bags.

We suspend in the solution the snowflake and Christmas trees of different shapes and wait about three hours.... and CHRISTMAS MAGIC is here! Both the bow and the trees are covered with crystals of "snow" (it looks like snow, but it is crystallized boric acid).



This happens because cold water cannot contain the same amount of boric acid that contains hot water... and so the in exceeding boric acid lays either on the bottom or, as in this case, on the snowflake and saplings.





9 Lower the snowflake into the hot, supersaturated solution and let it sit, undisturbed overnight. Moving or bumping the container while the crystals are growing is not a good idea so put it in a warm, out-of-the-way place. The next day, carefully lift the pencil and check out the crystals! Untie or cut the string from the pencil and you've got yourself a beautiful and sparkly holiday decoration!



10 You can do different shapes and repeat this process.

### [DNA Christmas tree](#)

(C5 Class - A. Tachtazti, A. Rizou, D. Stergiou, G. Bakirtzi, V. Papoutsis, N. Symeonidou – Elina Petridou Junior High School of Xanthi-Greece )



The difference is astounding!!!

**PLASTIC BAG?  
NO, THANK YOU!!!!**

### [Senior students teaching younger students about electric circuits - Let's light a Play Doh Christmas tree](#)

(Teachers: C5 Class students - A. Tachtazti, A. Rizou, A. Konstandaros, D. Stergiou, G. Bakirtzi, V. Papoutsis, N. Symeonidou - Junior High School of Xanthi-Greece )

Electricity and circuits were part of our class curriculum earlier this year. Therefore it was a nice idea to test our knowledge, by teaching younger students this subject.



We brainstormed for ideas to find ways to make it simple enough for them. We also decided to make an analogy for



Thank you for reading the article. We can't wait to show you another amazing experiment!

***HAPPY HOLIDAYS!***

### [Learning about simple distillation](#)

( 1 ACT ITCS " G. Zappa " - Saronno )



Last Friday we saw how to build and use a distiller.

To separate a homogeneous mixture we use distillation. If the solution is composed of a soluble solid in a liquid we use simple distillation. If the solution is



The construction is comprised of:

- (a) Two pieces of iron wire, 65cm long
- (b) Plasticine
- (c) Pieces of colored plastic straws, 2,5cm long
- (d) A wooden skewer



The iron wire is perpendicularly folded back and forth in 4cm intervals (representing the phosphate group and the deoxyribose monosaccharide), so that 4 cm long branches are created.

The 4 cm branches are then bent so that a hook is created. One of the pieces of wire is shaped so that the hook bend is horizontal and for the other piece of wire, the hook bend is vertical.

This way, the hooks can securely fit into each other and lock.

After the pieces of wire are locked together, they are bent so as to create a helical shape and then the plastic straw pieces are applied on the branches. The color of the straw pieces represents the nitrogenous bases.

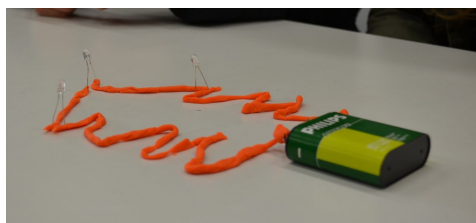
electron movement inside the wire, using an extra large straw for the wire and small pieces of straw for the electrons.



After a brief theory introduction, each one of us mentored a team in the school lab.

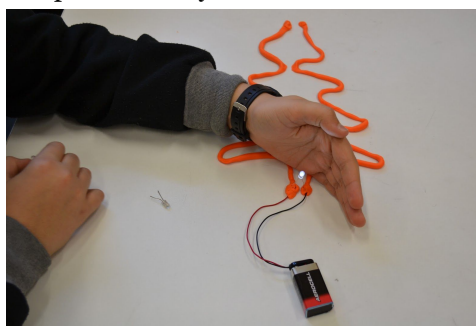


All teams had to make a circuit using a battery, a led and Play Doh for wire, add more leds and see what happens. Overall it was fun but also very inspiring to be the teacher!

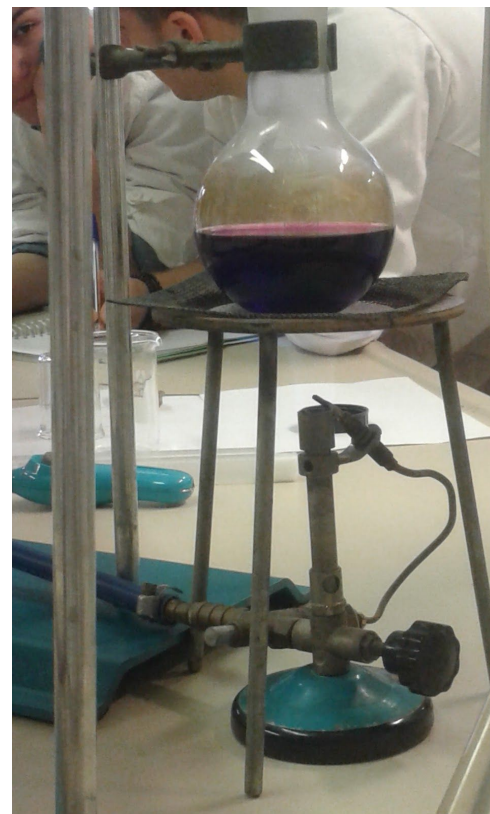


( Students: A3 Class - Junior High School of Xanthi-Greece )

For the last lesson before the Christmas break, senior students and our teachers had two surprises for us. Firstly, teachers were only watching and all the teaching was performed by students!!



composed of two liquids which can be mixed, we use fractional distillation.



After preparing the equipment. we put some stones together with the solution inside the round-bottomed flask so that the boiling could be less turbulent.

We switched on the Bunsen burner and connected a pipe to the tab so as to cool down the refrigerating pipe.

We could observe the following reactions: the liquid evaporates, the vapor rises and comes to the refrigerating pipe. This way vapor condenses and comes back to the liquid state into a becher placed at the edge of the refrigerating pipe.

Through this process we obtained the separation of a soluble solid and a liquid.

Yellow represents cytosine, orange represents guanine, pink represents adenine, blue represents thymine and they have been placed so as cytosine is matched to guanine and adenine is matched to thymine.

The structure is supported using plasticine as the footing and a wooden skewer as a pillar.



We learned about electric current and how conductive materials allow it to flow freely, while insulating materials make it slow down or stop.

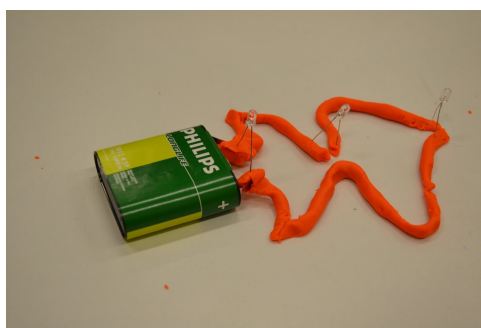
Secondly, the most unique activity was to create circuits with Play Doh and light a led.



Who knew Play Doh is a conductive material!!!



It was fun to have mentors in our teams, allowing us to be creative.



In the end all teams managed to create a Christmas Tree and light it!!  
Merry Christmas to all!!



During the distillation two changes of state occur: boiling in the round-bottomed flask and condensation in the Liebig condenser, in which the cooling water circulates in the opposite direction of the vapors. This allows a more effective cooling action.

Once separated, the two parts are defined distillate and residue.

The distillate is the substance with the lowest boiling point and is collected in a becher.

The residue is the substance with the highest boiling point and remains inside the round-bottomed flask.

## Christmas STEM ideas from Corfu eTwinning team

(3rd Junior High School of Kerkyra)

During Christmas time students created Christmas trees, ornaments and diaries combined engineering and art. For their constructions, they combined different materials such as plastics caps, yarn, cardboard, sheet of paper, cinnamon, wood and even materials that were already used to emphasize the value of recycling! At the same time, through their creations, they used their knowledge in mathematics (stereometry, geometry and symmetry), physical (solid balance) and chemistry (material quality).

### Christmas Ornament project

Supplies needed:

- Yarn (in color you like)
- A needle

You draw a polygon or a circle and then you make with yarn and needle the ornament!!



## 3D Christmas tree

Supplies needed:

- Sheet of hard paper
- Scissor
- Pencil
- Ruler
- Ornaments

The result you can see in photo.



Pupils have the opportunity to explore symmetry!

## Reindeer toothpaste

(Izaro Anza, Naroa Ereñozaga, Maialen Fernandez, Maider Goikoetxea and Naia Gomez - Larramendi Ikastola- Basque Country)

Material:

- %10 hydrogen peroxide
- Dish soap (green colour)
- Food colouring (green and red)
- Yeast



Steps:

- Add %10 hydrogen peroxide to a flask.
- Add a few drops of dish soap to the flask.
- Add hot water to a beaker of yeast and mix it.
- Pour the yeast into the flask.

In our case, it doesn't work. What a pity!

Here you can see [our video](#) and [here](#) you can see what it must have occurred.







