

# Science for the Youngest

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Agustín Vivas Moreno | University of Extremadura. Badajoz-Cáceres (Spain)

## Laboratory Mice

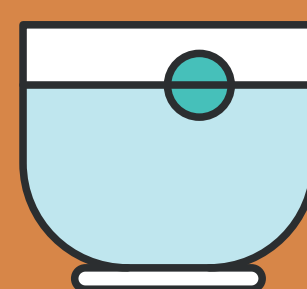
During 2016, primary education students from all over Extremadura (Spain), have participated in the project of scientific dissemination "Ratones de laboratorio (Lab Rats)". This is an initiative with a novel methodology, from which children have learned science through the radio. After the scientific workshop students of the participating schools had have to develop a radio program. This Radio programs created for this initiative that also has seen several awards in recognition of the work done by the centers.



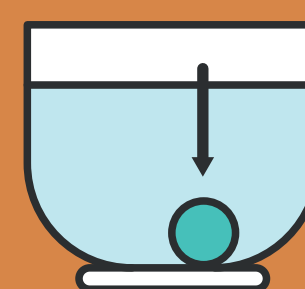
### TALLER DE AGUADAS (DENSITY)

Concept must be clear before starting the activity.

**Density:** When an object is immersed in water, it can float or sink depending on its density: If the density of the objects is less than the density of water, the object will float, but if the density of the object is greater than the density of water, the object sinks.



Ball's Density < Water's density



Ball's Density > Water's density

### KEY CONCEPTS



- Density is a characteristic property of a substance, each liquid has its own density.
- The density of a liquid determines whether it will float or sink into the other liquid.
- A liquid will float if it is less dense than the liquid in which it is placed.
- A liquid will sink if it is denser than the liquid in which it is placed.



Radio programs are available on this link:  
[www.ratoneslaboratorio.es/programas-radio](http://www.ratoneslaboratorio.es/programas-radio)





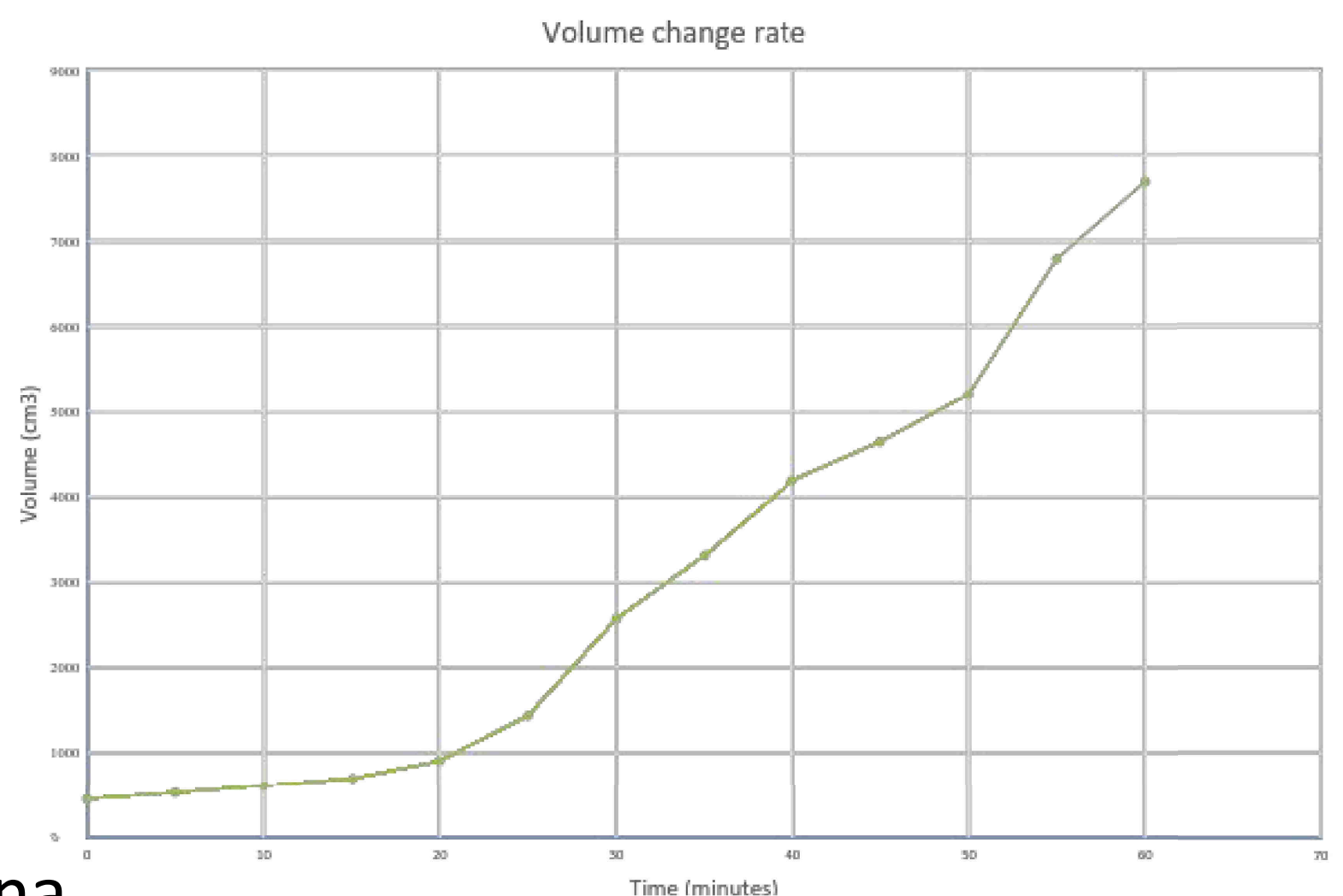
Lázár Katalin – Asztalos-Derecichei Eszter - SYM-BIO Group  
Tóth Árpád Gimnázium | Debrecen | Hungary

## Helpers of the Food Industry

### The Indispensable and Invisible Workers of the Food Industry

A complex, microscopic and experimental investigation makes the invisible visible.

Science is present in our daily life in all walks of life. Being an active participant in the experiment, anyone can experience the connection between science and practice.



Understanding the phenomena experienced in everyday life (grandma bakes cakes, grandpa makes wine) and relating them to school curriculum can be the foundation of the complex scientific approach.



Carbon dioxide: from  
microbial to global level



**TÁG** Természettudományos labor  
Öveges labor és szellemi műhely



## Journey to The Centre of the Earth

### From Jules Verne to our Classroom

Students take a trip into the centre of Planet Earth, along with the book's characters, investigating Earth's characteristics and particularities and then build models of their own investigations, using low cost and raw materials, which they share with peers.

Autonomous investigation plays an important role along the project, as students are asked to fulfil a number of different tasks, covering subjects from Arts, ICT, Language, to Maths and Science, so they can learn and discuss their findings to their peers.

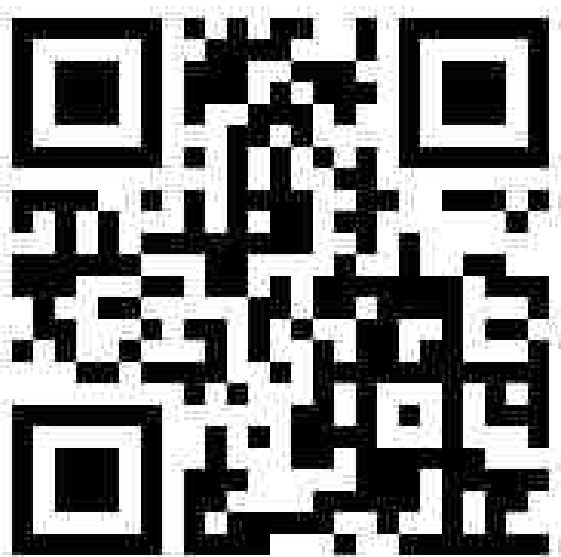


Would you like a Lesson Plan?

Check the QR Code

Contact us: [proflilianamcfernandes@gmail.com](mailto:proflilianamcfernandes@gmail.com)

[ana.costa@nuclio.net](mailto:ana.costa@nuclio.net)



**This project helps Students acknowledge different features of Planet Earth in a fun and engaging way: that's Inquiry!**



Dragotto Lucia    Furinghetti Maria Grazia IC San Teodoro    Genova  
Contact : [luciadragotto@gmail.com](mailto:luciadragotto@gmail.com) - [mariagraziafuringhetti@alice.it](mailto:mariagraziafuringhetti@alice.it)

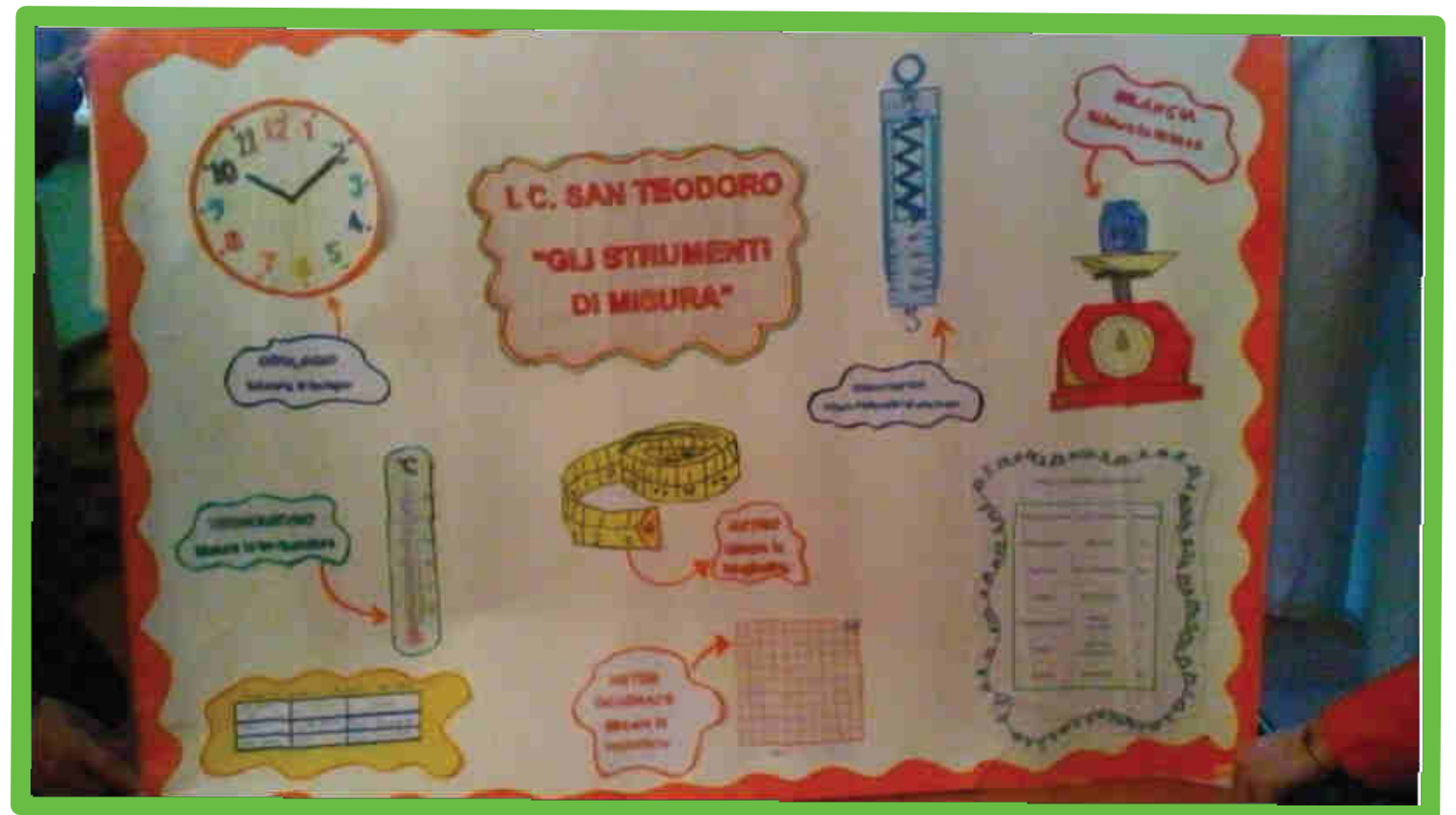
Italy

## Physics and our Senses: from Practice to Theory

We want to propose an experience that starts with “doing”.

With this experience we want to bring the pupils to understand an abstract physical phenomenon through a concrete experience.

Thanks to this experience, pupils should be able to understand that concepts can be abstracted from the experience and a mental model created by themselves and others to explain the observed phenomenon without resorting to directly testing it.



This is only an example  
on how to structure your lesson.



Conclusion: “Give people facts and you feed their minds for an hour;  
awaken their curiosity and they feed their own minds for a lifetime” Ian Russel



## The Boat Full of Holes

### Not acquiring knowledge - but generating knowledge

Many students believe that a boat full of holes in the hull will take in water and end up sinking.

This conviction can be challenged using only:

- a bowl of water
- a pack of margarine
- a knife
- a pin



The boat full of holes conflicts with the students' expectations and provokes a wonder followed by an immediately urge to seek a logical explanation for the phenomenon.



- That is not possible. We are being cheated

First reaction

The first hypotheses

- The holes are made from each side of the bottom, so no holes go all the way through the bottom but just appears to do so
- A piece of transparent material is placed into the margarine so the light can pass through, but water cannot

- The boat does not take in water because the holes in the bottom are small
- The boat will not take in water because the holes are evenly distributed across the bottom of the boat
- Because the boat is made of margarine, it does not take in water, although the bottom is full of holes
- Because there is no load on the boat, it does not take in water

Hypotheses



# Mapping Connections

Concept maps or mind maps can be used in flexible ways as part of planning, throughout learning, or as a summary to reflect understanding in a unit or project.

[illegible]

Worms

What do worms eat?

- apple
- garbage
- leaves
- compost
- human waste

dig

- eat
- look

Do worms have eyes?

- no eyes

do worms have eyes?

- no

look

- eyes
- Pointy
- round babies
- length

where

- hot
- cold

gardens

- leaves
- compost

# Visual Learning

Conclusion: Concept and mind maps help students summarize ideas and give them meaning by drawing personal connections.



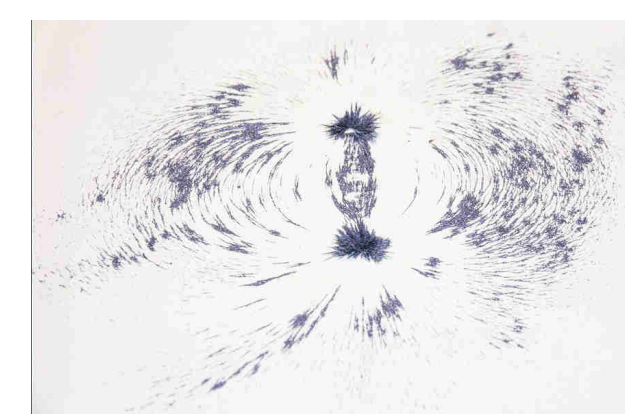
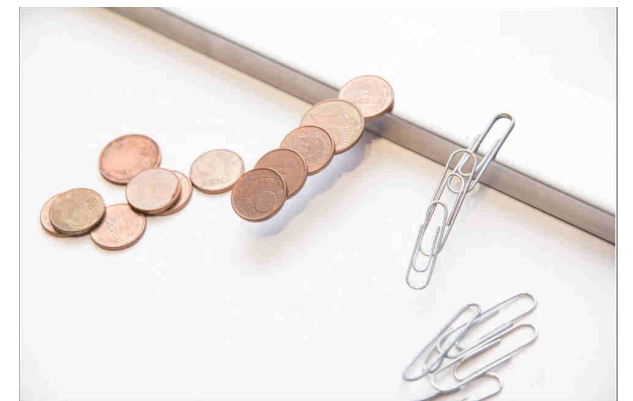
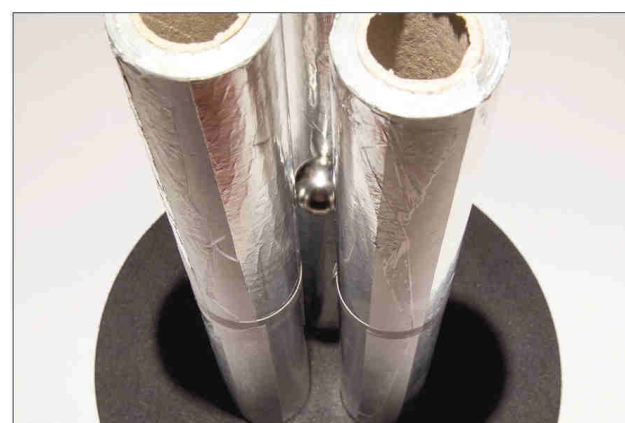
Nagore Lekerika Moreno | CPEIP Ramón Sainz de Varanda | Zaragoza | Spain

## Magnetism in Our Daily Life

### How Do Magnets Work? What Metals Are Attracted by Magnets?

This project was originated from a group of students' curiosity about magnets. At our school, the teachers teach through the scientific method from infants all the way to year 6.

Our students' curiosity leads them to investigate about phenomena that may not be addressed in class otherwise. Our main goal is to form students to use critical thinking and problem solving skills.



While conducting the experiment, we realized only **nickel, cobalt** and **iron** were attracted by magnets. We also made replicas of the Earth's magnetic field. Magnets form geometrical figures on water. It is possible to create beautiful pieces of art with magnets. Our understanding of magnets after doing this experiment has increased considerably. We do not think about magnets just as some pieces in a game or refrigerator magnets anymore. Now, we see their true potential and the great uses they can be applied to in our lives.

Curiosity leads us to everything we want to achieve.



Sanita Sabanska | Zemgale Region Human Resource and Competences Development centre (ZRKAC), Jelgava | Latvia

## Magnets and Static Electricity

ZRKAC organizes various activities for pre-school children and school students to educate them in science and technology area:



- + open days
- + competitions
- + Science workshops
- + Classes for talented students



During these activities using experiments and demonstrations science studies are made easy and comprehensible and dispels the fear of difficulties to understand technical phenomena.



One of the themes is Magnetism where children are introduced to physical phenomena - magnetism and static electricity, phenomena that they cannot explain yet.



Through experiments and a variety of fun tasks children get experience that encourages exploration and discovery, develops creativity and allows to see science application in real world situations.



Teresa Pastor | Escola Ciutat d'Alba | Sant Cugat del Vallès (BCN) | Catalonia (Spain)

## Working together !

### Involving scientist parents in the school science week

**WHAT:** The goal of our activity is to create a **joint project** between **teachers** and **scientist parents** to introduce the methods of science in a primary school.

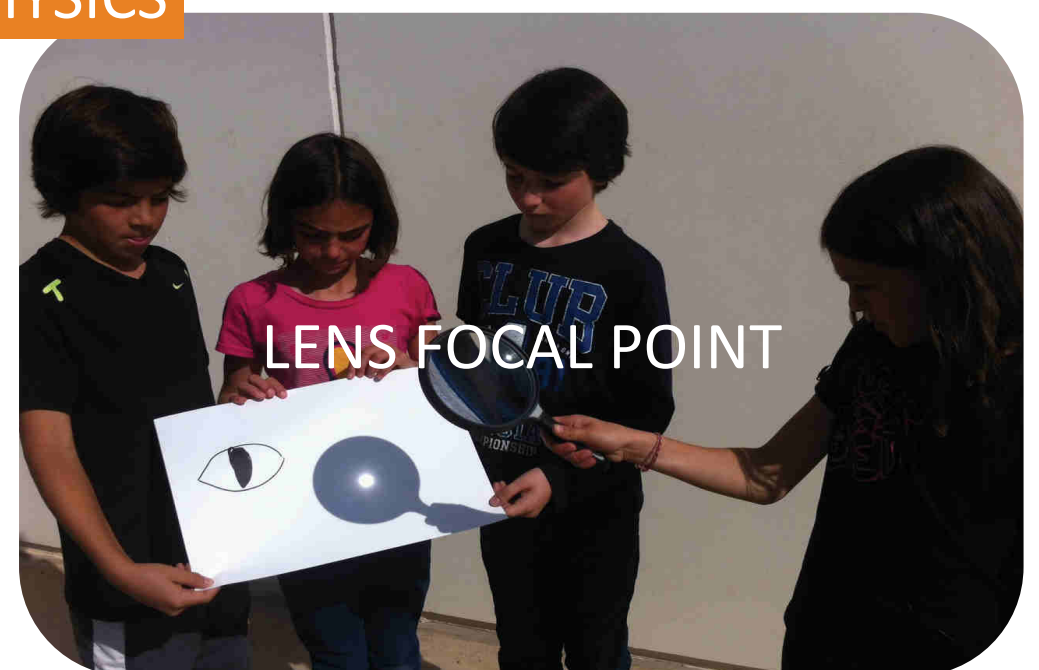
**WHY:** Today, education is conceived in a more transversal way. The **involvement of scientist parents brings new insight** to the educational community and the learning process of students.

**WHO:** **Scientist parents bring ideas and methods** that are **adapted by teachers** to fit in the curriculum of students. Parents conduct specific workshops at the end of the science week.

**WHEN & WHERE:** The workshops are performed **during school hours** ⇒ they are fully integrated in the science week at school.

**HOW:** Tackling a **same topic** under **3 different angles**

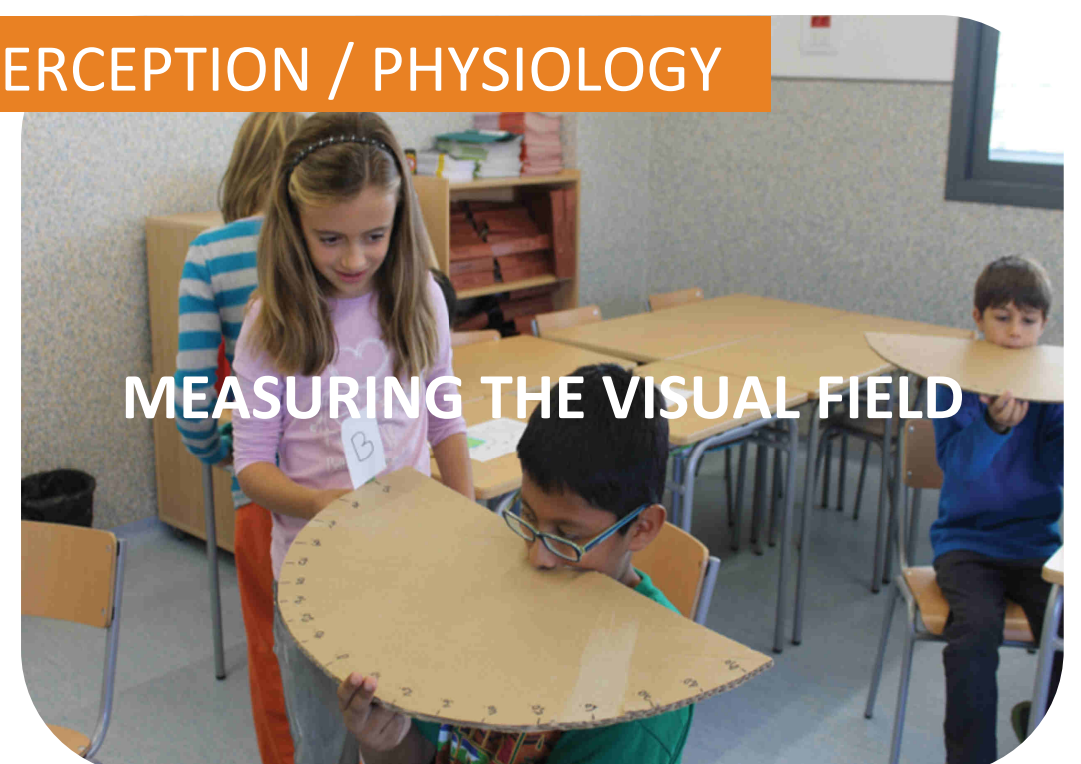
#### 1 PHYSICS



#### 2 BIOLOGY



#### 3 PERCEPTION / PHYSIOLOGY



### THEMATIC WEEKS CONDUCTED TO DATE



“The involvement of scientist parents in the science week in a primary school is **successful and gratifying for parents, teachers & students.**”



Mariynka Hristova, Tsanka Nencheva, Ivanka Toteva  
„Radost “ Kindergarten | Sevlievo | Bulgaria

## Bio-garden in the Group "Sun"

**The aim** of the project is the children to learn about the stages involved when growing organic vegetables and to obtain knowledge of their friends and pests. They learn also about the microscope and use it to observe through it things which cannot be seen by the naked eye.

The children observe and learn, that in order for a plant to develop it should be sown from a seed in soil / earth and manure /, it must be watered with clean water and needs sunlight. Growing plants, the children learned about seeds and obtained skills to observe and care for vegetables.

The children come to the conclusion, that to be healthy - you need to produce organic vegetables free of toxins or poisonous substances.



100%  
Great!

**Conclusion:** The result is an increase of the environmental awareness in children, in particular - growing organic vegetables by introducing to them the use and purpose of Microscopes.



Alla Zihanzhynova and Tetiana Zihanzhynova | Primary School | Mariupol | Ukraine

## Physics for little experts

There are lots of different interactive exhibits and equipment at the play lots in our kindergarten. Kids are able to become acquainted with various physics phenomena: mechanic, electrical, magnetic, sound optical etc. They can play and learn at the same time.



The child as a real researcher is able not only take part at the experiment but also make his first steps as future investigator.



So started with early age ( from X to Y) our kids can do simple hands-on experiments when they find themselves in the playing field of sensible experience or in our park of Science Entertainments. Without paying attention little children learn basic principals of a very complicated subject Physics and using our teaching methods we hope to bring up our future Newtons and Lomonosovs.



Maryna Korniienko / Kharkiv gymnasium № 55 / Ranok Publishing House / Kharkiv / Ukraine

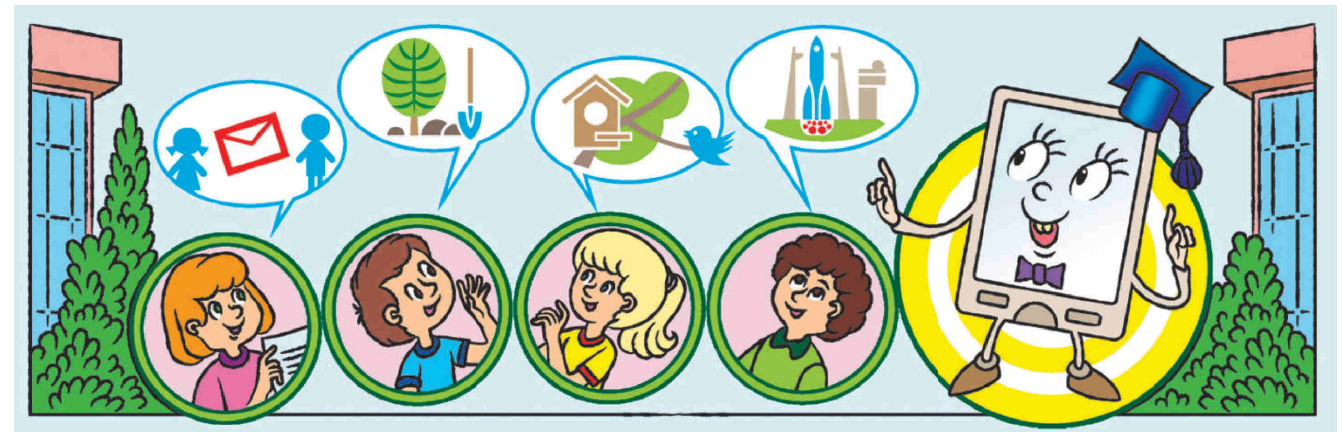
## Using Computer Technologies in Primary School Projects

The foreground job for the modern educational system consists in forming a creative free-thinking personality able to make a choice, capable of solving extraordinary intellectual and moral problems.

The project method facilitates a child's personality development, forms necessary intellectual skills, involves children into cognitive activity culture in a natural way.

A project is a coordinated activity of a group of people aimed at reaching certain goals within a set time limit.

The content of the projects is directed toward the formation and development of essential skills of pupils, especially IT-competence, and toward studying skills.



### Creating an educational project «Ukraine's immediate neighbours: a virtual trip».



Ukraine borders on different countries. Studying the subject "Ia u sviti" ("Me in the World"), you have already got to know Ukraine's immediate neighbours. You can learn more about them by joining your efforts and creating your own project of a virtual trip to any of those countries.

Working on the project you will:

- recollect safety rules of working on the computer and the Internet; search for material on the Internet;
- process the material you found with appropriate programs;
- prepare a presentation and defend your project.



Tell me, and I will forget;  
Show it to me, and I will remember;  
Let me do it, and I will understand.  
*A Chinese proverb*

