Science for the Youngest

SCIENCE ON STAGE 2017 DEBRECEN
THE EUROPEAN NETWORK FOR SCIENCE TEACHERS

Colin Olchowski | Humboldt Public School | Humboldt, Saskatchewan | Canada

Project Experience

Enhancing Student Learning

The project approach allows for incorporation of multiple learning outcomes as well as interdisciplinary teaching. Students have the opportunity to practice observation, questioning, predicting, investigating, creating, recording, analyzing and communicating results.

Project approach helps students take ownership in their learning by collaborating with other students. The focus was on working with students in a childcare setting (3, 4 and 5 year olds), and making unlikely links to our own school-age classes.

Kinesthetic Learning

Student learning is enhanced when given the opportunity and tools to guide their learning.

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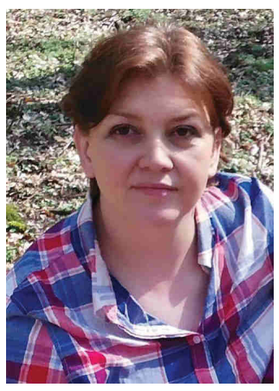
Pierwsze Polsko - Angielskie Niepubliczne Przedszkole z Oddziałem Żłobkowym "Akademia Małych Odkrywców„

Rogoźno - Poland

Emilia Khan
Teacher in Kindergarten



Little Explorers – Kids discover the world of science

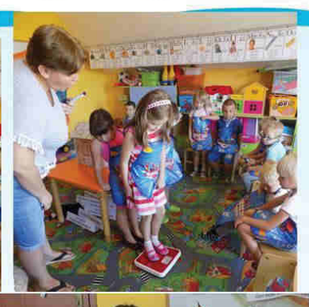
Little Explorers with air experiments at University of Adam Mickiewicz in Poznań

Little Explorers doing experiments in kindergarten

How much does the air weighs?

HANIA

OUR KINDERGARTEN IN POLAND



HANIA

Is there the oxygen in the air?

KAMILKA

Is it possible to compress (pressurize) the air?

GABRYŚ

Is it possible to remove the coin from the water keeping dry hand?

BARTUŚ

100% Great!

An interesting experiment attracts children's attention!

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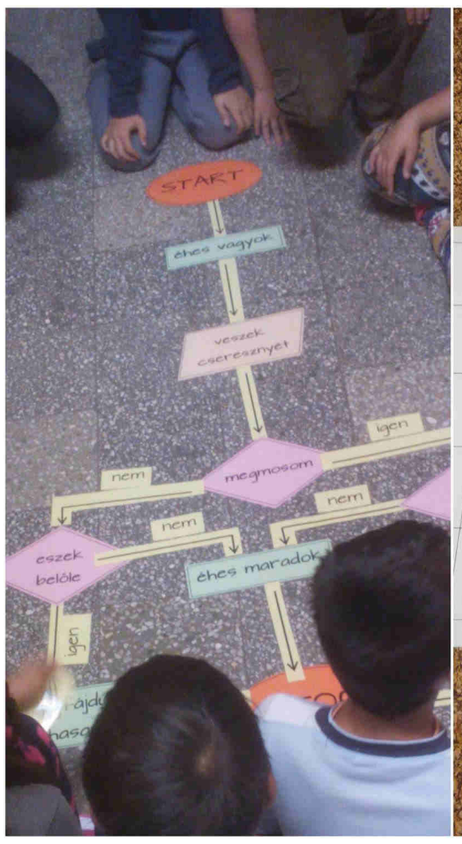
Éva Andrea Kőteleki| ISZE - Association of IT Teachers | Budapest | Hungary

The Name of the Game: CODE

How I do IT in class?

Coding is a complex task: with the knowledge of the **problem** itself students **plan** and **create** a robot and its programme in order to solve the task.
During the working process there are countless opportunities to apply cooperative **teamwork** not to mention the possibility of acquiring programming knowledge within a **playful** study environment.
My project is about
coding for junior primary students.
The ultimate goal is to develop children's IT-skills especially algorithmic thinking.



Coding is fun with BeeBot, LightBot, KODU, Scratch, Minecraft, LEGO Mindstorms & micro:bit!
The basis of the game is creative **competition**, which is strongly **motivating** for children.

100% CODE!

Robotprogramming itself is the innovation that makes coding attractive for today's kids.
In the meantime this form of studying allows them to put creativity and differentiation in focus.

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Daniela Georgieva |5th Primary School „Hristo Botev“| Kyustendil | Bulgaria

Scientific experiments for children

Scientific experiments are simple and clever way to familiarize children with some basic physical and chemical laws that can explain and show clearly why things are happening around.

Experiments are performed in the classroom, where we are having together fun and at the same time learning new things. The proposed experiments do not require special conditions and training and are quick, easy, intriguing and useful in everyday life of the kids and their families.

100% Great!

Conclusion: The project includes scientific experiments conducted in class and tailored to the early age of children

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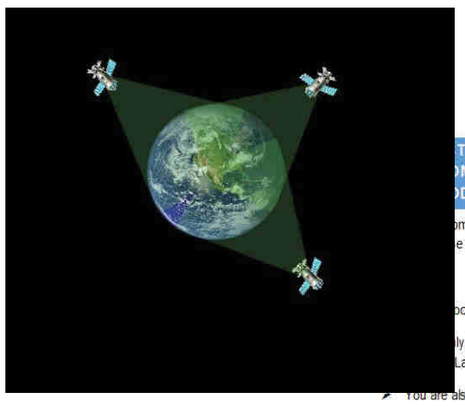
Ioana Stoica | Tudor Vianu National High School of Computer Science | Bucharest | Romania

Modern methods of introducing basic Physics concepts: The coordinates and the GPS

- The purpose of this project is to point out an interactive method to introduce basic physics concepts to younger students.
- I emphasized the way one can use modern methods such as GPS tracking, educational software and geographic maps, in order to lure students into developing experimental skills.
- During the teaching-learning-assessing process, I focused upon finding out about and understanding typical mathematical concepts, terminology and calculations procedures, using educational computer software



WORK SHEET

TION YOU WILL BE GIVEN SOME INFORMATION ABOUT HOW FAR
M THREE CITIES AND YOUR GOAL IS TO FIND YOUR LOCATION.
DEL HOW GPS SATELLITES LOCATE A POSITION.

mania handout and the clues below to locate the city that fits the criteria in the clues (the e any map and locations).

cated 2154 Km from Bucharest.

ly knew how far you were from Bucharest, at which points on the map could you be Label these points on the map.

➢ You are also located 1879 Km from Iasi.

b. If you only knew how far you were from Bucharest and Iasi, at which points on the map could you be located? Label these points on the map.

➢ You are also located 2464 Km from Brasov.

c. Write down the name of the city you have located.

d. The GPS uses information from four satellites. What extra information does using this many satellites provide?

WE KNOW THAT A GPS SATELLITE ORBITS 20 200 KM ABOVE THE SURFACE OF EARTH.

Suppose a GPS satellite is over Bucharest, Romania. We will calculate the time for the signal sent from the satellite to a GPS receiver in Cluj.

- To calculate this, measure the distance from Bucharest to Cluj: _____cm.
- Use the scale and record the number of kilometers from Bucharest to Cluj: _____Km.
- Using Pythagoras' Theorem calculate the distance the signal travels.
- Knowing the speed of the signal, 3.00 x the transit time for the signal to reach the

The structure of the lessons will consist of modules, each representing an important activity, which the teacher can assemble at his/her own will or skip altogether:

1. **2D student-made animations will be used.**
2. **Educational game software**: reading maps and making use of adequate units, the students will find on the maps certain given locations, acting similar to the working of the GPS.
3. **A hands-on activity**: this activity will involve arbitrary measuring units in order to find a number of "treasures". The class will be split into teams. Each team will receive a working sheet with specific details.
4. **Assessment**

Studying physics in such an interdisciplinary and interactive way, using educational software and practical activities could be at the same time funny but nonetheless rigorous!

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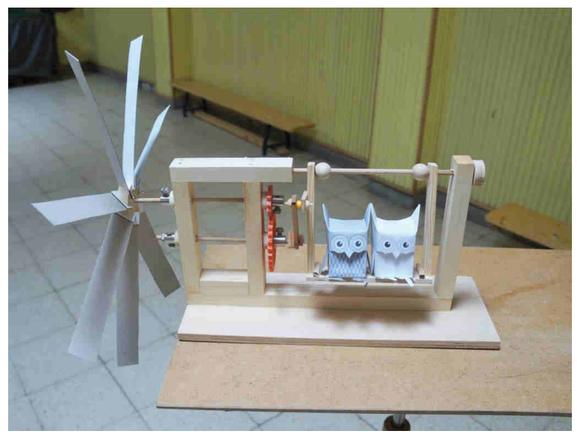
School: Székesfehérvári Vasvári Pál Általános Iskola |City: Székesfehérvár |Country: Hungary

ARNS

Adventures in the Realm of Natural Sciences

The ARNS is an integrated playful competition for students in the seventh grade. Students compete in teams by participating in the trials. The team is considered as a family during the competition. The family symbolizes the togetherness, where everything has to be done for the Child's success.



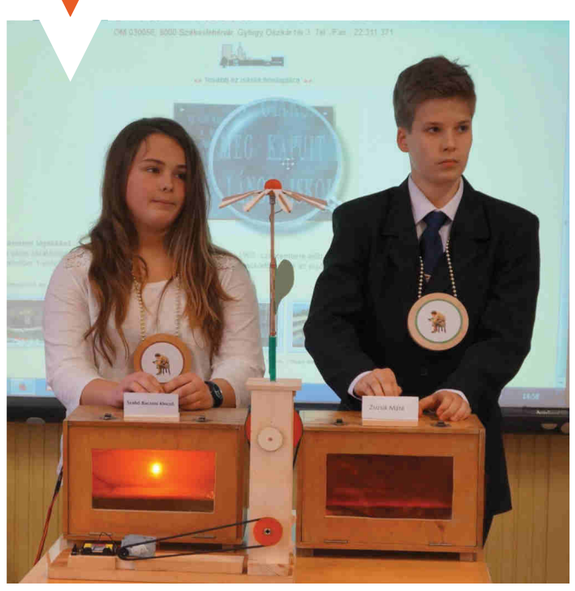
The members of the team: the **Child** who has to solve mos t of the problems, the **Patrons** who are passive helpers and do as if they would be the parents - they would like the Child to become mature in the natural sciences, - and the **Master** who is the Child's smartest helper.

The competition has three phases. The **internet, experiment** and the **final** phase.

Trials of the final phase:

Who wants to be a point millionaire in chemistry?

STOP Me! - Knowledge test from biology subject.



Remain on your feet, in natural scientific subjects!

National gallop! - with a homemade walking structure.

Concerned subjects: mathematics, physics, biology, geography, chemistry, informatics and technics. The competition requires theoretical and practical knowledge.

István Tóth

„I would be glad if the students would get to like the scientific subjects. The playfulness is very important on the competition.
Look at the pictures, please! ”

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Patricia Jansen | Basisschool de Driesprong | Chaam | The Netherlands

The Driesprong Laboratory

Solve the plastic problem

Plastics are cheap and are used very often. Unfortunately plastic is often thrown away, this pollutes the environment and causes that earth's natural resources to become depleted.

In this project children in primary education learn about the plastic problem and use inquiry-based science education to find solutions to the plastic problem.

The children also start to research bio based plastics made of starch in our self-made school lab and discover what kind of food contains a lot starch.
During their research they use a worksheet containing a 'research circle' which visualizes the steps to be taken towards completing their assignment.

In the next step children get to design there plastic. And last but not least children produce their own self-designed plastic with starch, glycerin, vinegar, water and pigments by heating this mixture on a hot plate.

Doing = best way of learning

Give primary school children a possibility to do research and let them develop a critical attitude.
Children find surprising solutions!

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PhDr. Jitka Soukupová | Grammar school | Stříbro | Czech Republic

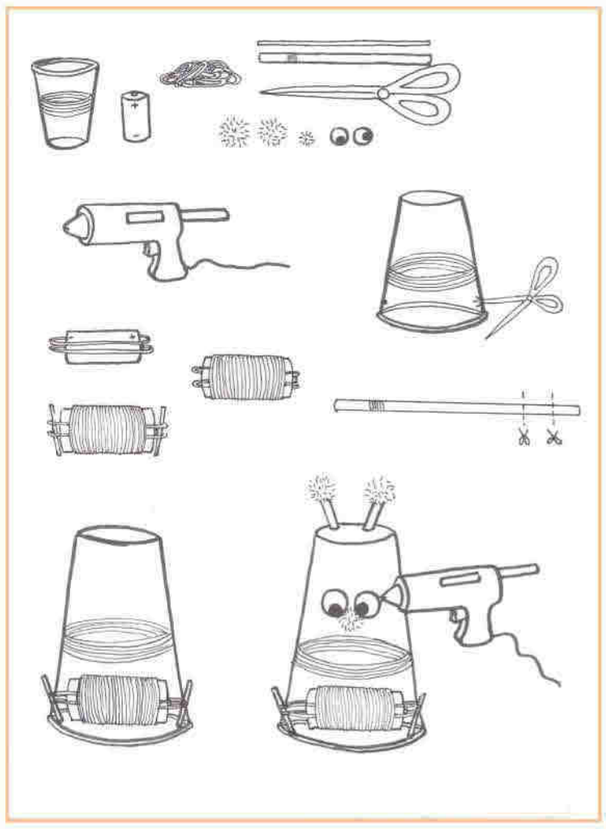
Physical tale in a cup

Fairy tale with physical experiments using cups and glasses

Project “Physical tale in cup” tries to achieve these following goals:

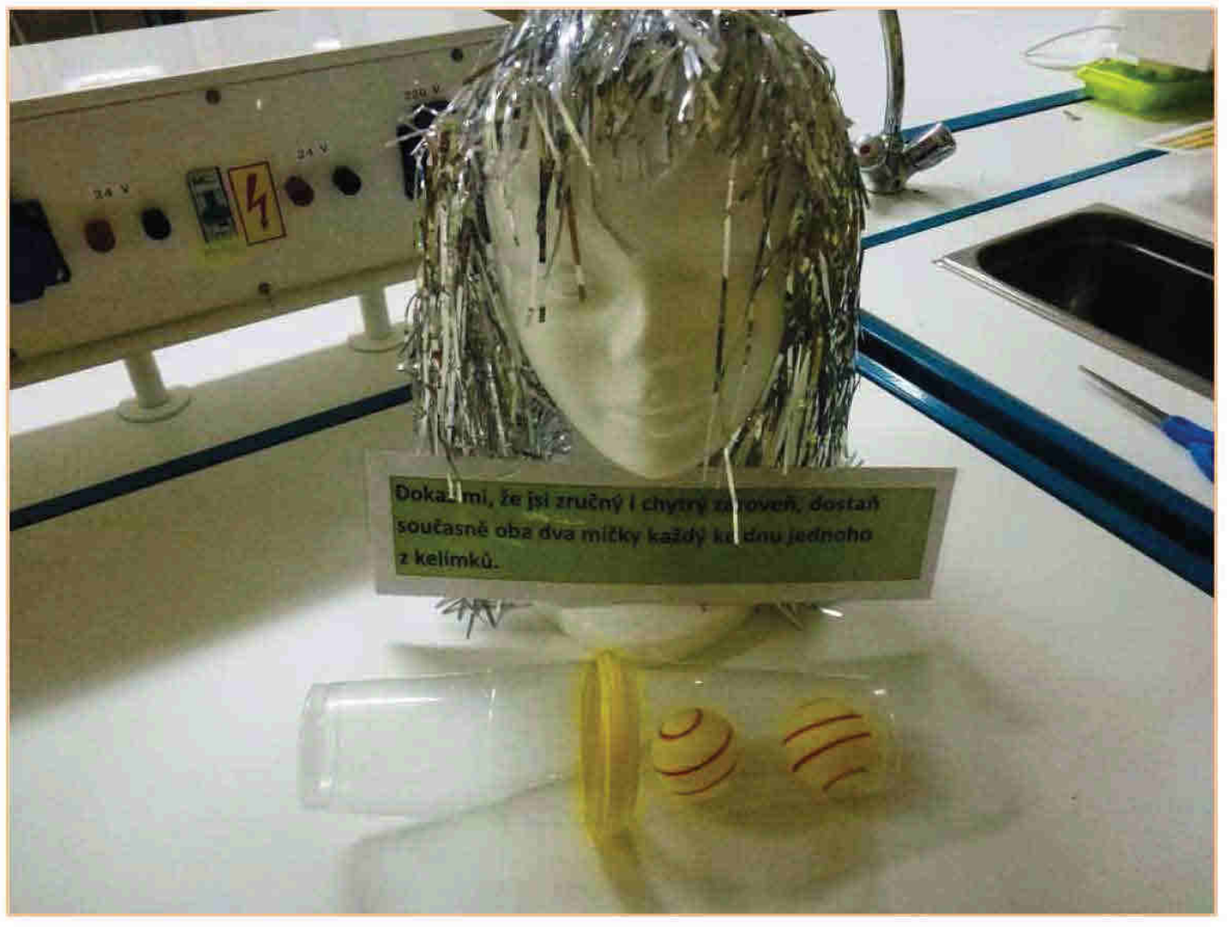
1. to increase children's interest in physics

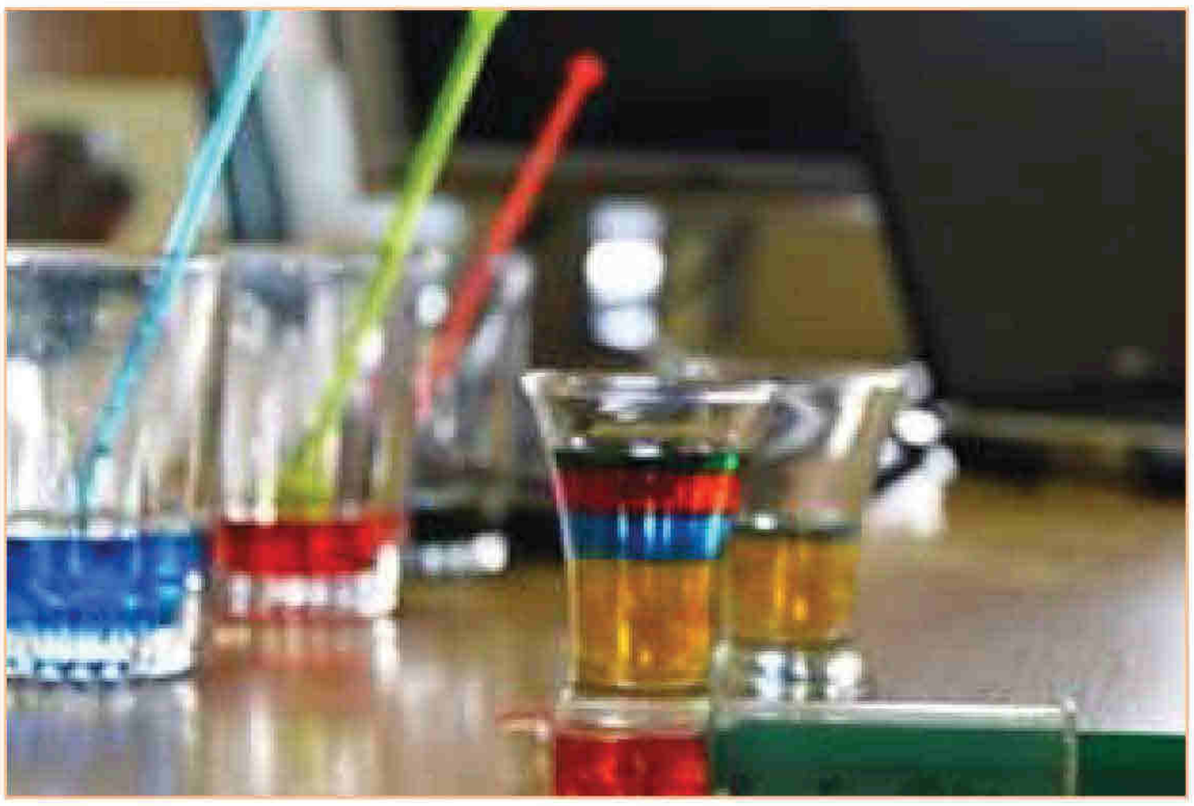
2. to present new and fun possibilities of using cups in diverse disciplines of physics and chemistry for children in kindergartens and elementary schools while making physical experiments from simple tools



3. to show possibilities of using common house tools, such as a cup, while demonstrating various physical and chemical effects and phenomena for children

4. to create a database of interesting and simple physical and chemical experiments using cups so they can be used by children and teachers at kindergartens and elementary schools, in science centers, and science clubs as well for a clear, fast, and financially not demanding demonstration.





The silver-haired princess wants to drink special colored champagne for her wedding.

Can you help us to prepare a glass of champagne for the princess?

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50 pupils at age of six, Taipalsaari, Finland

Kirsi Rehunen with Saimaanharjun yhtenäiskoulu esikoulu, Vehkataipaleen esikoulu and Liljan esikoulu

Project of Technology

Days of technology with the items of pupils and days of old technology

Observingdiary/ questions of pupils.

Bridges from technology to metals and magnets, from mine to chemistry.

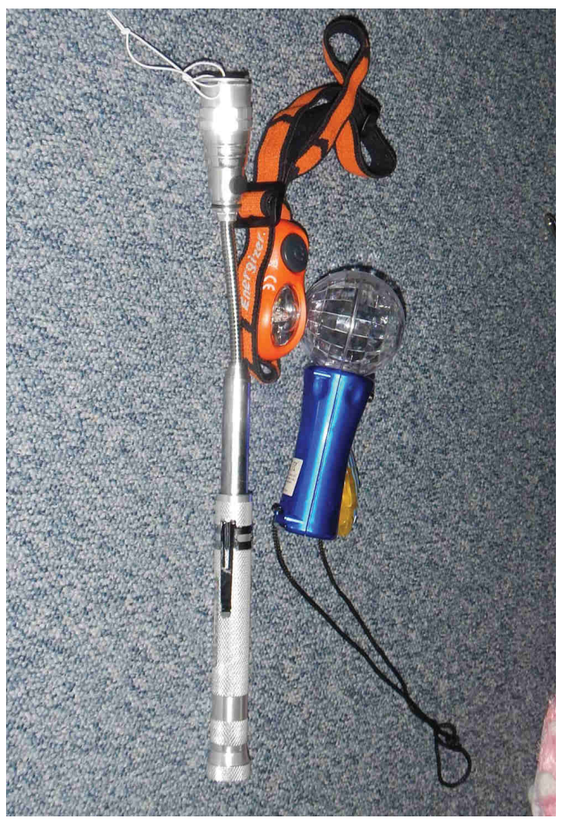
Building own operating crank machines, making facemasks, building spaceships, making movies.

grouping technology of chemistry robots

Co-operation with the museum of Technology
Trip to the Nordcalk mine

Knowledge from mines and miners of Hungary

Building an own museum: Visitors are allowed to make questions and the pupils are experts who will answer. (Connection to entpreneurership.) Afterwards making skalemodels of the museum of technology



Questions of own items of technology:
WHO is the user? Who does not use this?
WHO benefits most of this?
WHAT is it for?
WHAT do you do with it?

WHY do you use it?
WHERE you can use it?
CAN you use it somewhere else?
WHEN you can use it?

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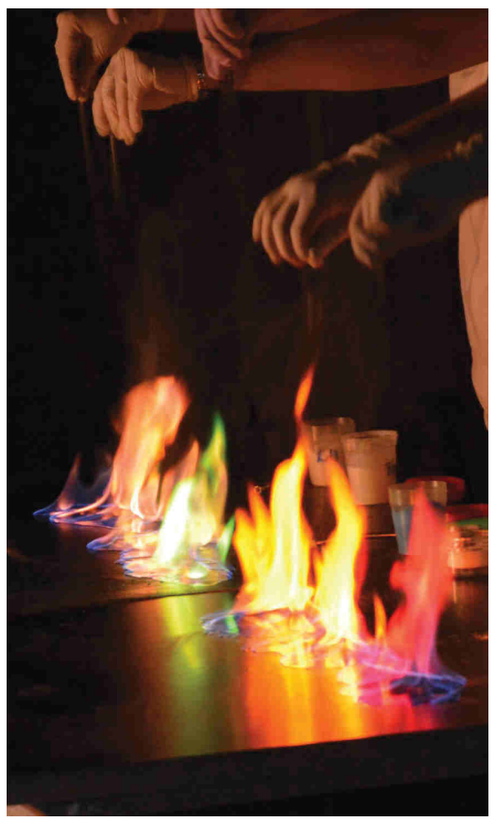
Dr. Gábor Koncz; Dr. Katalin Jámbrik; Zsuzsanna Tóth-Gál
Bessenyei György Secondary Grammar School| Kisvárda | Hungary

Play to learn – *Magic Castle*

Magic Castle is an experimental based nature science project, which based on fairy tales. The aim is to make the practical and experience based learning more popular, and to improve the communication, creativity, expression, scientific and social skills. All the experimental development is carried out by teachers and students together, based on the method of inquiry based learning. Children can learn how to use traditional household materials to make simple experiments. All generation can find activity in our fabulous workshops.



The most important for us to provide the unlimited joy and happiness for the students on the lectures, regarding to the Bible said: “A merry heart doeth good like a medicine: but a broken spirit drieth the bones”.

Fairy tales are amazingly attractive to small people, because they could see the world how it really is, the land of unlimited opportunity. This is our duty, to show the science is just like this.