



## **Hungary-Croatia**

### IPA Cross-border Co-operation Programme

Bjelovar-Bilogora participates as an associate partner in a project funded by the IPA Cross-border Programme HU-HR. Lead partner in the project titled "Natural sciences know no borders," the University of Kaposvár while the first Croatian partner in this project is Petar Preradović Secondary Grammar School, Virovitica. The overall project value is € 124,370.75, approved funds from the Instrument for Pre-accession EU assistance amount to € 105,714.82. Estimated project duration is 12 months and the project was launched on 1st September 2011. and will continue up to 31st August 2012. Secondary school Bartol Kašić participates in this cross-border project as Bjelovar- bilogora County 's associate project partner . Approved funds for the BBC amount to € 9,900.00.

The main activities of the project are The Joint Experience Workshop in Kaposvár and The Spring school of physics in Virovitica. This project seeks to popularize mathematics and physics in Hungary and Croatia.

Activities:

I. Preliminary Meeting in Kaposvár on 19th November 2011. - Presentation of the workshops and taking responsibility.

The meeting was attended by members of project teams from the University of Kaposvár and Petar Preradović Secondary Grammar School Virovitica, as well as project manager on behalf of project partner Bjelovar-bilogora County, Head the Administrative Department for European Integrations and International Cooperation Iva Vatrov with project team members of Secondary School Bartol Kašić Grubišno Polje.

II. From 1st to 2nd December 2011. competition in mathematics and The Joint Experience Workshop were held in Kaposvár

- 1st December 2011. - Math competition took place

Second and third grades ' students of the Petar Preradović Secondary Grammar School Virovitica competed with tenth and eleventh grades ' students of Secondary school Mihaly Tancsis from Kaposvár

University of Kaposvár prepared competition' s tasks (bilingual materials) and our associate project partner Secondary school Bartol Kašić has coordinated and also participated in the translation of tasks.

• 2<sup>nd</sup> December 2011. - 12 Experience Workshops took place (duration of each workshop - 90 minutes) as follows:

1. Assemble-it! Zometool quasicrystal workshop to the honour of Daniel Shechtman, the 2011 chemistry Nobel prize laureate
2. Squids and rays: giantile workshop
3. Mathematics, arts and geogebra
4. Poliuniverse workshop
5. Give a hungarian invention as a gift! Hungarian masters, followers and inventions – quiz contest
6. Welcome to the loop: the ultimate möbius experience at the Kaposvár University!
7. The Vasarely playhouse: look and combine!
8. Competitions via World Wide Web: space visualization and symmetry recognition
9. Geometrical games
10. The logical experience
11. The Gondos-playhouse of puzzles
12. Brain-rackers

At 8: 30 a.m. began the opening ceremony of the Experience Workshop. All attendees were welcomed by many distinguished guests.

The **Experience Workshop** is opened by **Mihály Hepp** President of the Croatian Minority Self-Government, **Dr. László Balogh** Dean of The Faculty of Economic Science, Kaposvár University, **Dr. Eleonóra Stettner** (Kaposvár University), head of Department of Mathematics and Physics, the professional leader of the Cross-Border Science Project, **Ivana Bešir** the headmaster of the Petar Preradović Secondary Grammar School (Virovitica, Croatia) and **Ildikó Szabó** (ANK-Pécs, Hungary) maths-physics teacher and the professional leader of the Experience Workshop.

After words of welcome, at 8:45 a.m. began the presentation of famous American mathematician and artist Robert Fathauer called : **Puzzles and Art Based on Tessellations and Fractals.**

Our colleagues from Grubišno Polje performed at the Experience Workshop with eleven students and four teachers. They participated in the following workshops:

- Six of our students participated in the workshop “The gondos-playhouse of puzzles“ by **Gábor Gondos** Hungarian librarian and game designer (Croatian translation)
- Two students participated in the workshop “ Competitions via world wide web: space visualization and symmetry recognition“ (in English, Hungarian translation) by **Mateja Budin**, head of [Mathema Institute Ljubljana](#) (in English, Hungarian translation)
- Three students participated in the workshop “Vasarely Theatre: Watch the Combine!” by **Slavik Jablan** mathematician at The Mathematical Institute, Belgrade, the founder and the editor of the electronic journal Visual Mathematics (in English, Hungarian translation)

The Experience Workshop was followed by all project team members.

- 11.55-12.20 : The experience flash: 2 minutes long workshop presentations

- Mirela Horvat, Secondary school Bartol Kašić student presented the workshop “Vasarely Theatre: Watch the Combine!” by **Slavik Jablan**
- Goals of these workshops was to exchange good practices in the study of natural sciences in cross-border area of Hungary and Croatia, as well as the popularization of mathematics at the target area. They have been fully accomplished.

The total number of participants in this two-day activity in Kaposvár amounted to 300.

Travel and residence in Kaposvar were evaluated as very successful by students and the project team.

Here are some of the impressions of Secondary School Bartol Kašić students:

Marin Cavić: In our workshop we were supposed to visit the International Space Visualization Olympiad website , which we did. We also received a variety of geometric shapes such as triangle, equilateral triangle, etc., and we suppose to merge them in some other forms. It was interesting to try something new and see the geometry in a new light.

Ena Komar: Our workshops are based on logical conclusions led by a professor from Slovenia. The lecture was in English. The main task was to make some molecular structures in 3D from different geometric shapes. Afterwards, we visited the website International Space Visualization Olympiad where we separated the mantle of a body which had to be re-compiled in a short time. This was new and interesting experience!

Una Stamenić: At the beginning of the workshop, Mr. Gondos told us all about his hobby and great passion-puzzles. He uses mostly puzzle that is based on the triangle. Puzzles were in different colors and different shape. Our task was to put together 6 different puzzles, one of which had only one possible solution. Our headmaster has visited us and tried to help us in putting together puzzles. Time has passed very quickly and this workshop was a wonderful experience.

Mirela Horvat: I participated in the workshop : “The Vasarely Playhouse: Look and combine!” by Slavik Jablan. I met students from Hungary and Virovitica. We learned how to combine the cube and the hypercube of transparencies, we put together the puzzles in the form of nodes, using fractals to get interesting patterns. Each participant received a souvenir for a mouse pad designed by Mr. Jablan. There was also award for the fastest and most skilled, and I myself managed to win a prize,so Mr.Jablan elected me to present a workshop on the final presentation. It was a new and interesting experience!



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