

## EXTRACURRICULAR ACTIVITIES OF SCIENCE

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**ABSTRACT:** THE DESCRIPTION OF THE WORK I HAVE PRESENTED THEIR EXPERIENCE IN THE ORGANIZATION OF EXTRACURRICULAR ACTIVITIES WITH STUDENTS IN SCIENCE-ASTRONOMY, ECOLOGY, ART, THE FORMS AND METHODS, RESULTS AND SOME GOOD PRACTICES IN TEACHING ASTRONOMY. PARTICIPATION IN JOINT PROJECTS WITH RESEARCH ORGANIZATIONS.

**KEY WORDS:** PROJECT ACTIVITIES, PROMOTION OF ASTRONOMY, ONLINE RESOURCES IN ASTRONOMY, SCIENCE EDUCATION

### INTRODUCTION

**MUNICIPAL** educational center village Baikal, Bulgaria is situated on the beautiful Danube riverbank, 50 km far from Pleven. In 2008 the school was closed due to demographic reasons and converted into a Municipal center for extracurricular activities. He inherited the rich history and traditions of education in the village of Baikal with over 150 years of history. The school taught generations of families and teachers as teachers Gunova families, Petrov and others.

**THERE** are ecology club „Danube”, painting school „Rainbow”, groups for authentic folklore „Kalushari”, astronomy club, which have a lot of awards. The center has already implemented a strategy for their work connected with the childrens education.

**THE** ecology club has been active for 12 yrs. The film "Kids and birds" has been created by the students from the ecology club "Danube". They are script-writers, actors and operators. We all live with the problems and pain of our favorite river Danube. The students take part in the activities connected with protecting of the wet zones and their inhabitants-birds which live and nest near the river. We are organizing "The European days of birds-the 2nd and the 3rd of October, the international day of river Danube. The children make feeding-troughs for the winter, they clean the riverbank. They take part in many festivals and win lots of prizes. In this way populize their knowledges about that how to clean and save our wonderful friends. The purpose of the film is to appeal for protecting the wet zones and the basins of the rivers as extremely important for the life of the birds and to make the children more responsible for the ecological problems of nature and the river Danube. I and my colleague from the center and Ministry of education and science in Bulgaria organized every year Astro party, it included lection session from university lecturers, workshop and observation sessions. In Astro party participants are physics and astronomy theaters and students from all country. We are members of the national folklore asociacion Sofia, Astronomy asociacion Sofia and European asociacion for astronomy education/EAAE/ and GTTP - Galileo Teachers Training Program.

**ONE** of the contemporary problems of the education in subjects of natural sciences in the secondary education is the decreased interest for the training in them and particularly in physics and astronomy. In many countries there is a drop of the orientation of the pupils towards the science and the technique – the problem of Science and Technology (S&T). The pupils find it difficult to apply the mastered knowledge in an applied context.

**AT** present, there are no available sufficiently extracurricular activities that should meet these needs of the Bulgarian school. The reasons are varied, but they mainly consist in the lack of material base, exchange of experience and good practices and motivation.


**THE** Municipal Center for extracurricular activities and studies according to interests, village of Baykal is an educational unit at Municipality of Dolna Mitropolia, Bulgaria It is managed by a director appointed by the Mayor of the Municipality. I Organize workshops to introduce teachers to the projects and models.


**IT** organizes and carries out its activity in conformity with the following purposes and priorities:


- work with pupils at the age of 10 to 14/18 years from all 8 municipal schools with regard to the scientific education;
- professional orientation of the pupils in the field of natural sciences.


**IN** my capacity of a Director of the Center and sciences teacher - physics and astronomy, chemistry, ecology, i organize and carry out the various activities on a school, regional, national and international level.


## ASTRO PARTY


 **ASTRO PARTY** Baykal is traditionally held since 2005 at the beautiful bank of the river of Danube at the village of Baykal, Dolna Mitropolia Municipality, Pleven district, under the patronage of the Minister of education and science and the mayor of Dolna Mitropolia Municipality – Mrs Polya Tsonovska.

 **THE PROGRAM** includes activities with students and teachers, who provoke love to both sciences physics and astronomy. The event is included for a sixth time in the National calendar for extracurricular activities of the Ministry of education and science for the academic 2013/2014.

 **ORGANIZERS:** Ministry of education and science, National children's palace, Regional education inspectorate Pleven, Dolna Mitropolia Municipality and astro club at the Municipal center of extracurricular activities and pursuits of interests – village of Baykal.

 **PARTNERS:** Union of the astronomers in Bulgaria, Sofia university faculty of physics, Institute of astronomy at Bulgarian Academy of sciences, Institute of electronics at Bulgarian Academy of sciences, Astronomy association – Sofia.

 **INTERNATIONAL PARTNERS:** IAU - International astronomy union, EAEE - European association for astronomy education, GTTP - Galileo Teachers Training Program, UNAWA - UNIVERSE AWARENESS.

 **THE PARTICIPANTS ARE:** physics and astronomy teachers from the municipal schools on the territory of Dolna Mitropolia municipality and across the country, Republic of Romania and Republic of Turkey, ranked students in regional, national and international astronomy Olympics and such that are about to touch the most beautiful and ancient science – the astronomy.

 **GOALS:**

- to popularize and spread among the students the knowledge and achievements of the astronomy
- to create and develop the interest to the amateur astronomy, observation and astronomy activities
- to acquire skills for practical application of the physical knowledge in explaining unknown phenomena, carrying out and planning of tests and experiments

**MAIN** topic of Astro party Baykal 2014 – “The universe in our school”. Was organized a special GTTP workshop for the teachers and “Galileo teacher” certificate awarding by the Galileo ambassador for Bulgaria – Ivo Jokin.

#### GUESTS OF THE EVENT WERE:

1. Mrs. Polyva Tsonovska – Mayor of Dolna Mitropolia Municipality;
2. Mrs. Albena Toteva - head of Regional education inspectorate Pleven;
3. Mrs. Katya Trifonova- senior Expert in the Regional education inspectorate Pleven;
4. Mrs. Eva Ivanova - senior Expert in Education departament in Dolna Mitropolia Municipality;
5. Professor Costin Boldea и Alina Boldea from the university in Craiova, Romania and the PhD students from the university in Craiova;
6. Mr Arif Bayirli, national coordinator UNAWWE, Istanbul, Turkey

#### GUEST LECTURERS:

1. Assist prof. Ph.D Oleg Yordanov - Institute of electronics at Bulgarian Academy of sciences, chief editor of World of physics magazine and a member of the board of directors of the Union of physicists in Bulgaria;
2. chief assistant Ph.D Eva Bojurova - Sofia university, department of Methods of the physics education;
3. senior lecturer Ceca Tzolova, professional High School in Computer systems and technologies Pravets, associated to the Technical University, Sofia, member of EAAE;
4. Mrs. Boryana Boncheva - Astronomy association Sofia, chief editor of Telescope newspaper and Adromeda magazine;
5. Mr. Georgi Latev- Ph.D students at the Institute of astronomy at the Bulgarian Academy of sciences

#### IMPLEMENTATION OF PROJECT ACTIVITIES:

**THE** program began with a fascinating lecture Eva Bojurova to genius scientist and astronomer Galileo Galilei in connection with the 450th anniversary of his birth. After the coffee break began Workshop for telescopes. Each school received a telescope of Galileo-Galileoscope and teachers and students together in Galilee enacted as put together unit.

**THE** roundtable "Teachers for Teachers" in the conference room of the Municipal Center traditionally exchanged best practices and presented useful and interesting projects in which teachers can participate. Ivo Jokin present Strategic plan IAU 2010-2020, GTTP, EAAE, GO Lab, and Mrs. Ceca Tzolova- SCIENTIX. Were presented and other projects IAU, Task Force 2 “Astronomy for children and schools”.

**THE** program continued on the terrace of the port complex " Under the stars of Baikal" , where he opened an exhibition " 35 years of flight Georgi Ivanov " and " Sunrise and Sunset " by Dr. Daniel Negrov.

**EACH** participant received a special autographed photo of our first astronaut. The evening continued with the presentation of the program " Celestia " astronomy by Prof. Dr. Oleg Yordanov, presentation " Heaven for Everyone" by George Latev , astronomy activities in Craiova and GTTP and UNAWWE Turkey from guests.

**OBSERVATIONAL** program was carried out by Astronomy association and colleagues from Romania. Despite the cloudy weather, the participants were able to observe the Moon and Mars for a while, and the constellation Ursa Major. Ivo Jokin demonstrates how to use a CCD camera with Galileoscopes, visual drawings Moon - "Draw the Moon" and "Shoot the Moon"- shooting with a digital camera, CCD and mobile phone.

## THE PROJECT MOONBOUNCE

**DRAWINGS** by students from astroclub at Municipal Center for extracurricular activities in Baikal village and Mathematics High school "Geo Milev" Pleven were sent to radio telescope to the Moon and then again returned to Earth.

**THE** project is called MoonBounce and implemented by astronomical Daniela De Paolis and a team of amateurs from Dwingeloo radio telescope in Holland. They have created a way to send images to the moon and back, as the project included schools from all over the world. The campaign was launched in April 2012 as to 15 pictures to be sent to the website of the co-organizers Galileo Teacher Training Program/GTTP/- <http://www.site.galileoteachers.org>. and 25 had stage of online voting to select the pictures to be sent to the Moon.

**IN** April, students from "Young Astronomers" at Pleven headed Natasha Minkova working on the project success of Ministry of Education for extracurricular activities were a training camp at the base of the City center and had the opportunity to participate in this unique project.

**THE** theme of the project was linked to gold plates, fired by spacecraft Voyager 1 and Voyager 2 in 1977.

**IN** the studio of painting, the students recreated in paintings the highlights in the records of the plates - the flora and fauna of planet Earth view of the Earth from space, the visible constellations and of course space - Rhodope Mountains Observatory Rozhen and folk singer Valya Balkanska whose voice "fly" into space aboard Voyadzher.

**THE** result of the vote were selected 16 paintings from around the world, and 2 of them are students Denitza Ivova Demetrios Stantcheva / Lily of Nikolaeva Pleven and 4 students from Baykal - Desislava Hristova, Lilia Ankova, Marian Georgiev and Polyva Petrova. Were sent to the Moon drawings Desislava Hristova "Observatory Rozhen" and "Cosmic voice Valya Balkanska" Lilia Ankova.

**A** submission to the Moon and other drawings. More information about the project can be found on <http://www.opticks.info/blog/>, and these paintings can be seen on <http://www.site.galileoteachers.org> / announcements.

## USING SALSAJ FROM EU-HOU PROJECT AND ACTIVITIES FROM NATIONAL SCHOOL OBSERVATORY/NSO/

**FOR** two school years, Municipal Center for extracurricular activities organized and conducted several training camps designed by the Ministry of Education and Science for extracurricular activities financed by the EU. These camps attended by students of astronomy clubs run by teachers of physics and astronomy. The camps were held to a program agreed with the teachers. Put your educational and rehabilitative goals to create interest in the use of Internet-based resources and projects in astronomy. Organize preliminary meetings of teachers who met with various options of projects EU HOU and NSO.

IN 2011, I participated in a training course in astronomy at Comenius program 1.1, individual mobility program Lifelong Learning, Center for Human Resources Development - EU-HOU: Hands-On Universe, Europe. Bringing frontline interactive astronomy in the classroom - University Pierre and Marie Curie, Sorbonne, Paris.

THE program of the training course was very well structured and included the following forms and methods of work: lectures as power point and video presentations, practical sessions organized through individual and group work / 4 or 5 people / observation sessions and the use of ICT tutoring in the computer room. Classes are led by qualified teachers and lecturers: University Pierre and Marie Curie (UPMC, FR), Institute of Astrophysics of Paris, University of Glamorgan / Faulkes Telescope Project, Paris Observatory, LERMA, NUCLIO Portugal, the Association of astronomers in France.

I was very impressed and decided to give this experience to other teachers and students. I adapted activities and turned some of them in their work. Very interesting and motivating was measuring the size of the craters on the moon with the program Salsa J and specialized software LTI of NSO, and Hunters asteroids.

I used group work - students divided into groups of 3 students in the computer room. Preliminary training consisted of familiarization with astronomical facts of textbooks, encyclopedias, and presentations. Part of the results presented national Astro party, which held every year with students and teachers from around the country, SCIENTIX conference in Brussels in 2011 and the European Science on Stage festival in Słubice - Frankfurt / Oder in this year conducted by my workshop.

#### CONCLUSIONS:

- Organisation and putting into practice of activities related to science through interactive means and methods increase the interest of teachers and pupils – they feel committed to science;
- The exchange of good practices and ideas, teaching aids and technologies give the opportunity for introduction and use of more efficient methods and forms of work at the classroom as well as outside of it;
- The communication with scientists: „The scientists at the classroom” and through science organisation help for the choice of occupation related to science.

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## APPLICATIONS TO THE TEXT:

