CreatIT Newsletter

Implementing CREATive Strategies Into Science Teaching

Issue #4 June 2015

Junior Science Cafè and Modern Physics

Is it possible to teach Modern Physics through Inquiry-based methods? Yes! Let's do a Junior Science Café! A science cafe is a meeting where experts meet the public in an informal setting. In CREAT-IT Junior Science Cafe students, prompted by their curiosity for a specific scientific topic, organize a science café for their community.

A CREAT-IT workshop took place in November 2014 as part of the cycle of teacher trainings "Inquiry-Based Modern Physics": a program of collaboration between **FormaScienza**, the **National Institute of Nuclear Physics** and the **University of Rome La Sapienza**. After the workshop teachers implemented the practice in their classes, guiding their students to organize a Junior Science Café on modern physics.

Students of the Papareschi High School, 16 y.o., chose to explore quantum teleportation. Under the guidance of their teachers Irene Cannata and Diana Lorenzini, in 7 meetings during curricular school-time, they have searched on the Internet two scientists for answering their questions. They chose a physicist, professor Fabio Sciarrino, of The University of Rome La Sapienza, and a philosopher, Dr Angelo Cei of the University of Roma Tre. The students have invited them as speakers in their science cafe entitled "*Does really the teleportation exist?!*".

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CREAT-IT project presented in Belgrade at the Conference dedicated to the new technologies in education

The Conference 'New Technologies in Education' was held in Belgrade, on 27 and 28 February 2015. The Conference gathered and gave support to the teaching and non-teaching members of staff in schools and universities in Serbia and in the region, in the process of the modernization of the education and in the better exploitation of possibilities new technologies and innovative approaches could offer.

Center for the Promotion of Science participated in the event and presented international cooperation projects that are dealing with the innovative and creative models of the formal and informal education. Among the presented projects was CREAT-IT, as one of the best possible examples of the new pedagogical tendencies shared via online services and professional networks.

Lunar Mission One teams up with CREAT-IT

Lunar Mission One, the ambitious and pioneering lunar mission, has announced its collaboration with CREAT-IT. Together they will deliver an exciting programme of public engagement in space science in the run up to, and during, World Space Week in October 2015, of which Lunar Mission One is a headline sponsor.

The public engagement programme will consist of two principal initiatives, each with a Lunar Mission One theme: a global young filmmaker and artist competition, which will invite young people to submit short videos or artwork; and "Skylight", a Global Science Opera based on creative science learning and cross border cooperation in 31 countries.

The Skylight project will work with students to create a science opera based on the theme of Cosmic Light. It will be performed on the 3rd of October 2015, opening World Space Week's international programme.

For more information about Lunar Mission One please go to: www.lunarmissionone.com

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European Network for Opera and Dance Education - RESEO (Belgium)

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"Learning Science through Theater"

Greek pupils staged their plays and learned science in a creative way

Best overall presentation: 3rd High School of Petroupoli

"Learning Science through Theater" was successfully completed in a brilliant weekend on 2-3 May 2015 where students presented their performances. For this project, high school pupils (aged 11-17) were invited to dramatize science concepts and knowledge stemming from the school curriculum.

The project was aimed at schools of Attica. Pupils dramatized what they learned in class, through a flexible script called "Parallel Worlds", which included five units/acts concerning the fields of Biology, Astronomy and Physics. Pupils were organized in work groups (scriptwriters, actors, musicians, dancers, video producers, set and costume designers) that were offered professional support. At least one teacher per school was responsible for organizing the activities. Teachers had the opportunity to make these activities part of the curriculum of the respective lessons (Physics, Astronomy, Music, biology, Art) as projects or introduce them to the school societies (drama, music etc.).

The program involved about 500 students from 16 schools of Attica, both public and private. The schools that participated were the following:

- High School of Marathonas
- High School of Pikermi
- 3rd High School of Petroupoli
- 2nd Protypo Experimental High School of Athens
- 50th High School
- 1st Secondary School of Nea Makri
- 1st High School of Nea Makri
- 2nd High School of Gerakas
- Ekpaideftiria Giannopoulou
- Zanneio Model Experimental High School of Piraeus
- Protypo Experimental Evangeliki High School of Smyrni
- Protypo Experimental Secondary School of Anavryta
- 1st High School of Aghios Dimitrios
- 1st High School of Aghia Varvara
- Italian School of Athens
- Protypo Experimental Varvakeios Secondary School

After all pupils staged, a panel of professionals (academics, science teachers, students, directors, actors, musicians) judged their performances. They were evaluated on five criteria: remake / adaptation scenario, direction, soundtrack, stage sets and costumes and choreography. All schools received the prize of creativity CREAT-IT. The winners based on the results, are the following schools:

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- Best overall presentation: 3rd High School of Petroupoli
- Best remake/adaptation scenario: Zanneio Protypo Experimental High School of Piraeus
- Best direction: 2nd High School of Gerakas
- Best soundtrack: Protypo Experimental Evangeliki High School of Smyrni
- Best stage sets and costumes: Protypo Experimental Secondary School of Anavryta
- Best choreography: Ekpaideftiria Giannopoulou

Besides, the judges considered it was necessary to award the following schools with some special distinctions:

- Distinction for Participation in Production of Original Musical Content: High School of Marathonas
- Distinction for Original Versification: Italian School of Athens
- Distinction for Original Stage Sets: High School of Marathonas
- Distinction for Digital Storytelling: Model Experimental Varvakeios Secondary School
- Distinction for Painting Backdrops: 2nd High School of Gerakas
- Distinction for Original Choreography: Zanneio Model Experimental High School of Piraeus
- Distinction for Stage Performance: High School of Pikermi
- Distinction for Qualitative Approach of Scientific Content: 2nd Model Experimental High School of Athens
- Distinction for Qualitative Approach of Scenario: 1st High School of Aghios Dimitrios
- Distinction for Performance of Directorial Instruction: 1st High School of Aghia Varvara
- Distinction for Live Performance of Acoustic Instruments: 2nd High School of Gerakas
- Distinction for Performance of Scientific Concepts through Embodied Learning: 50th High School, 1st Secondary School of Nea Makri, 1st High School of Nea Makri
- Distinction for Precision in Scientific Approach: Model Experimental Evangeliki High School of Smyrni

Pupils chosen based on their performance will give another performance for the CREAT-IT Summer School in June 2015 in Athens and for the International Conference of the CREAT-IT European project in October 2015 for conference participants as well as the public.

Project organizers

- **Science View** (Greek Association of Science Journalists, Science Writers and Science communicators)
- **Faculty of Philosophy, Pedagogy and Psychology** of the National and Kapodistrian University of Athens.

The project is based on the pedagogical framework developed by the EU project CREAT-IT which supported the activity and was under the auspices of the Greek Ministry of Culture, Education and Religious Affairs.

Junior Science Cafè and Modern Physics

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The event took place on the 28th May 2015, in Rome, and involved their schoolmates, parents and the local community in a debate about quantum mechanics, teleportation, wave function, qu-bit, entanglement, uncertainty principle and epistemology.

The junior science café and the formal science teaching

Irene Cannata, Teacher

Science, a topic of great interest in films and festivals, at school, in formal teaching, seems to lose its charm. The *junior science cafe* is one possible way to offer a hint about and a window on the world of science. I have taken part in 2010 in a Junior Science Cafe entitled *Black holes, towards infinity and beyond* and in 2015 for *Does really the teleportation exist?!* Both topics betray the influence of the media: the former echoes a very popular animation movie the latter leans towards science fiction.

Science teaching in school has some essential components: *contents, skills to be passed to students, final evaluation, language, context.* CREAT-IT Junior Science Cafe (JSC) offers a new approach to such components.

Curiosity, which is often undervalued in school, in JSC is used to choose the theme, i.e. the *content*, of the activity. Students chose teleportation because they thought it could combine technology, biology and physics – through this activity they realized the distance between Star Trek and the practice of science and they learnt what a wave function and the uncertainty principle are.

We wish to develop many skills but often we only offer lessons and a few visits to the lab. Students' digital expertise, acquired outside the school, is often not properly acknowledged and we often neglect to focus on what the students already *know*. In JSC a fixed content is substituted by dynamic research and both scientific and cross skills are acquired bottom-up, by searching on the Internet to choose the experts, by interacting with researchers and the public, but also by selecting the location for the event.

Communication became essential – within the group and between the group and the outside world- so that *language* was communicating again and not confined to repeat a stilted script.

In everyday teaching *contexts* where science is born and lives are often ignored and the work is almost always individual. In JSC context is essential: both because work is done in the community, and because students enter in meaningful contact with people and places where research is done.

Finally, the *evaluation* refers to the individual contributions, which become essential for the success of the whole group's activity.

The opinion of the students

Caterina Capasso "It was interesting and funny to organize our science café."

Morena Natalizi "I enjoyed the visit to the laboratory of physics and the idea of the entangled particles: It seems to me a metaphor of love! I would like to study more physics in my future!"

The opinion of the parents

The father of Caterina comments: "It was a surprise to know that the teleportation really exists and that the first experiment was led in Rome, near to my home. Moreover, I have discovered my daughter under new light: she was very professional. I'm proud of her!"

The opinion of the researchers

Angelo Cei, philosopher "It's very interesting to compare my ideas with my colleague physicists and to discuss these ideas with students of high schools."

Fabio Sciarrino, physicist "It was a pleasure to be contacted by the students. It was impressive how they sought us reading our scientific curriculum. When we write it we should pay attention also to the social community not only to the scientific one!"

Denmark's "Opera in the Middle" begins Write a Science Opera activities

An interview with Pernille Elimar the leader of "Children and Youngsters" department at the Danish opera house "Opera in the Middle"

What is your role at Opera in the Middle?
I lead the "Children and Youngsters" department.

How did you hear about the Write a Science Opera (WASO) teaching method and the CREAT-IT summer school in 2014?
I heard about it through the European Network for Opera and Dance Education (RESEO).

Why is it interesting for you to explore whether WASO activities may be relevant in Denmark?
I believe that children have very different work processes that work for each one of them. I've had experience with working with children in theatre productions in which I have seen the creativity and "thinking out of the box" that they are able to reach when presented with the right tools. Furthermore, I find it interesting, as an artist, to work with our skills and tools in a different setting than the theater setting. It's very fulfilling to see that these tools can be used for looking at/working with science in different ways.
In many ways, I find science and opera are common in that they are often put on a pedestal, as something difficult to understand and scary to approach, but in this way of working with children, you take both science and opera down from the pedestal and make them natural, fun and hopefully not scary to approach in the future.

Could you tell me about some specific plans to implement WASO in your country?
We are working towards 3-week WASO courses for schools in Denmark. Besides that, I have developed WAS'OP (pronounced "Whas'up"? short for WASO-Presentation), which is a 1-week workshop in which we use the same pedagogical method as in WASO, but the students use them to do a "living presentation" of a science topic which they have worked on beforehand. They make use of the music-dramatic tools to present their topic in a new, more creative way. We have just received funding for our first WAS'OP in the autumn of 2015, and we expect to do 2-3 more also this autumn, all as pilot projects to prepare for an application for more consistent national funding.
Besides this, we are participating in the "SkyLight – a Global Science Opera" project as the Danish representatives.

CREAT-IT Summer School

Introducing the Creative Science Classroom, Athens, Greece, 12/07 - 17/07 2015

The CREAT-IT Summer School in Athens, Greece will be a meeting point for science educators, scientists, artists, art educators, and policy-makers wishing to learn creative strategies in today's science teaching. Summer School participants will experience three distinct but inter-related Case Studies which together provide a large picture of the promising possibilities in the field of creative science teaching. The Case Studies, Science Theatre (ST), Write a Science Opera (WASO) and Junior Science Café (JSC), will be experienced during hands-on and on-stage work. In addition, in-depth analysis of creativity in science education will take place, as well as the creation of new, original scenarios as part of a growing online network.
This year's scientific exploration will be dedicated to the theme of Cosmic Light, to coincide with the International Year of Light 2015.
More info: http://creatit.ea.gr/en.

Science and Art

A series of workshops concerning the Creative Science

On Friday, May 29, the fourth workshop of the Greek Educational Community on implementation project CREAT-IT, was organized with great success. Teachers wishing to develop practices and exchange experiences on the influence of the practices implementing performing arts in the teaching practice attended lectures and using the digital platform of CREAT-IT project, they created educational scenarios based on the experience of implementing their practice in real classroom environment. The workshop dealt with technical details on using the platform, recording and highlighting ideas that have already been developed or incorporating new ones. The aim of the workshop was to encourage teachers to write down their experiences and ideas documenting them through inquiry based learning model.

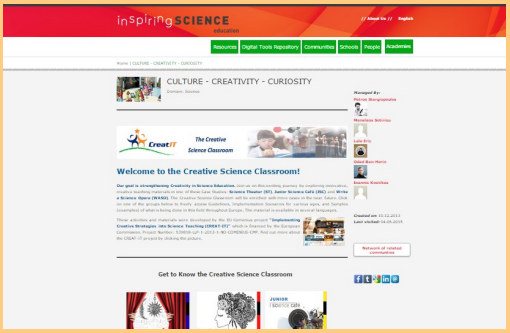
SkyLight on European Physical Society newsletter

The European Physical Society (EPS), on the occasion of the International Year of Light 2015, wrote an article about SkyLight in their e-NEWSLETTER.
EPS is a non-profit organization whose members include 42 National Physical Societies in Europe, individuals from all fields of physics, and European research institutions and its purpose is to promote physics and physicists in Europe. You can read the article here.

CREAT-IT project in a nutshell

Creativity with a capital "C", the kind which changes the way we see or understand the world, never occurs on its own, but rather as part of an encouraging system: Culture, Creativity and Curiosity create a capacity to innovate. They introduce young Europeans to guidance by the experienced, but encourage unfettered novelty. It is precisely the enrichment of the creative elements in Science Education within a wealth of existing European knowledge, which is the cornerstone of the CREAT-IT project. CREAT-IT aims to develop and support late primary and early secondary teachers' skills in science education by creating meeting points of inquiry-based science and other creative and cultural disciplines such as music, theater and creative employment of social media tools in formal education systems, thereby constructing the main core of a new pedagogical methodology: the CREAT-IT pedagogical framework. CREAT-IT provides a system for meeting points of Science, Creativity and Technology based on Possibility Thinking (PT) and Living Dialogic Spaces, within three Case Studies: Junior Science Café (JSC), Science Theater (ST) and Write a Science Opera (WASO).

Get to Know the Creative Science Classroom



The Portal - portal.creatit-project.eu

The project's website provides an entryway to the CREAT-IT Portal which makes the project resources available to teachers, students, artists and researchers.
Get familiar and participate in:
Junior Science Cafes
Science Theater
Write A Science Opera

The Website - www.creatit-project.eu/

The development of the CREAT-IT website allows for constant online presentation and dissemination of the project's progress and results.
The website acts the project's main hub of information about the project's planned activities and serves as a provider of relevant educational activities in school.