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# ABSTRACTS BOOKLET

## EUROPEAN STEAME CONFERENCE 2022

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[www.steame.eu](http://www.steame.eu)

[www.steame-hybrid.eu](http://www.steame-hybrid.eu)

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# **STEAME 01. HARMA+ EUROPEAN PROJECT IN MUSIC THEORY LANDSCAPE OF PEDAGOGICAL PRACTICES IN HIGHER MUSIC EDUCATION INSTITUTIONS**

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## **ABSTRACT**

HarMA+ is a project supported by the KA 203 Erasmus+ Programme – « Strategic Partnerships for Higher Education in Cooperation for innovation and the exchange of good practices ». Created by Salvatore Gioveni (Conservatoire royal de Bruxelles), HarMA+ promotes cross-border collaboration in the field of music theory through sharing knowledge and transferring pedagogical innovation. It thus responds to a lack of centralised sources and framework to deepen reflection by means of cross-disciplinary study at European and international level. There is a significant wealth of educational practices from one country to another in this sector, especially in terms of harmonic musical notation and analysis. However, Music HMEI's are facing the nonexistence of a European network for pedagogical staff in music theory so far in order to share theses information. To improve the situation, the project is developing four intellectual outputs (IO) related to music theory courses : An unique European digital platform of database (IO 1) integrating an European Bibliography (IO 2), a repository of courses' descriptions (IO 3), a multilingual glossary of basic terms and an exchange platform part integrating an online learning system (Moodle) and other usefull ressources for music theory faculties.

## **STEAME 02. SCHEMES FOR GIFTED HIGH SCHOOL STUDENTS**

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### **ABSTARCT**

In this talk I will describe the schemes used in Israel for teaching math to gifted high-school students. There are few schemes. One is organized by the Ministry of Education and is intended for in-school education according to the highest curriculum of the ministry. The other one is organized by a non for profit organization, with collaboration of the university and with blessing of the ministry. The second one is replacing the school education in mathematics/.I shall also report on the policy discussions for separated teaching of gifted students. I shall also describe adaptation of the scheme in other counters ( USA, China). I shall also mention a neuro pedagogy research suggesting a third scheme.

## **STEAME 03. SCIENTIX: GET INVOLVED AND BE INSPIRED!**

**Ioannis Lefkos**

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### **ABSTRACT**

Scientix is a huge, innovative and very energetic community for the Science Education in Europe and beyond. The core ideas behind Scientix are very simple, yet very important: to disseminate the results and products of public funded projects concerning Science Education, to foster collaboration between different projects and ensure that this information does not disappear.

Scientix itself is a H2020 funded project and it is currently on the 4rth round (2020-2022). In order to achieve these goals, Scientix is acting as the connecting tissue of all stakeholders in the field of Science Education (teachers, education researchers, policymakers, and STEM education professionals), by archiving all STEM related projects, organizing networking events, seminars and conferences, working with the Ministries of Education and the National contact points, recruiting educators to act as Ambassadors and creating collaboration between projects.

The Scientix.eu portal has been constructed to materialize most of the aforementioned goals, having more than 10.000 unique visitors and more than 120.000 students every month. The members of the community can find information concerning online or F2F seminars or courses, and of course information about STEM projects and a huge repository with more than 2500 resources.

Finally, through the portal, one can find information about current STEM initiatives promoted by Scientix, like the STEM discovery campaign, or the STEM School Label.

So, there are plenty of ways to get involved with Scientix and be inspired by the aims of this project for improving Science Education in Europe.

## **STEAME 04. EXPERIENTIAL LEARNING - PRACTICE FOR ACQUISITION OF PERMANENT KNOWLEDGE FOR STUDENTS**

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### **ABSTRACT**

Experiential learning is a broad term that includes discovering, experimenting, learning and connecting teaching with the natural world and engaging in environmental activities. It involves the transformation of knowledge, skills, attitudes and behaviors through direct practical activities in the external environment that benefit students, teachers, families, society and the planet.

Experiential learning has many forms and is always in favor of the educational process, such as: non-formal education- formation of various clubs, and formal education - such as programs and projects in schools, extracurricular and leisure student activities. With the innovation of the teaching process and the implementation of the new Concept for education in North Macedonia, where emphasis is placed on the acquisition of lasting knowledge of students, through experiential learning and the realization of outdoor learning, this is exactly what is achieved. Traditional classes, turn into outdoor and indoor research activities, so that teachers can provide students with a more attractive environment, full of natural light and fresh air to better stimulate the senses and promote learning and lasting knowledge. Subjects such as mathematics and science become more attractive and challenging for students when natural resources and materials are used, and students are themselves scientists and they are discovering knowledge through practical working. The paper explains an example of experiential learning and the establishment of a laboratory for experiential learning in the Primary School "St. Kliment Ohridski, Bitola, as well as empirical data research on change in the level of knowledge of students.

## **W03ETRe: A Competence Framework that will enable teachers to rapidly transition from physical to a digital learning environment**

**Target audience:** Teachers, school principals

**Thomas Economou, Project Manager at School of the Future International Academy, Sofia**

### **ABSTRACT**

The ETRe - Empowering schools' transition readiness to a distance/hybrid learning model enhanced by cloud technology tools project is an ERASMUS+, Partnerships for Digital Education Readiness in the field of School Education (KA226), that initiated in 2021 and has an implementation period of 24 months. The results of the project include a teacher competence framework that will enable the teacher to effectively transit from a physical learning environment to a digital, a guide on how to adapt the learning material, a set of tools to support the on-line learning process, and a certification process to certify the readiness of schools.

During this session participants will be presented with the process of selecting digital and/or teaching Competence Frameworks, their analysis and the validation of the results of the analysis through multiple focus groups in several EU countries, and the development of the representation of the competence framework. The competence frameworks that were analysed are: DigiComp 2.1, UNESCO – Digital Literacy Global Framework, Microsoft 21<sup>st</sup> Century Learning Design Competence Framework, DigiCompEdu, DQ Framework – Global Standards for Digital Literacy, Skills, and Readiness, and Partnership for 21<sup>st</sup> century skills – Framework of the 21<sup>st</sup> Century Skills.

The project's website is [www.etre-project.eu](http://www.etre-project.eu) and the report of the competence framework analysis may be found [here](#). The project partners are SoFIA (UK), EAEC (CY), SAN (PL), DLearn (IT), IVAN APOSTOLOV (BG), AMETA (NMK).

## **W10. Special math education schemes in Israel**

### **ONLINE**

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### **ABSTRACT**

In the talk I'll elaborate on the special programs for gifted high school students in israel . In particular I shall describe , the selection process, the time line, the syllabus , the collaboration with the universities , the government support .

## **W11. E Π I – STEAME**

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### **ABSTRACT**

About 2500 years ago Pythagoras established a university, where Science, Technology, Engineering, Arts, Maths and Entrepreneurship (STEAME) but also Logistics, Ethics, Environmental Studies, History were taught, leading students to Philosophy.

Also when alternative teaching and learning methods and gamefication are introduced results are expected to be excellent.

That is why the term "EΠI-STEAME" it is suggested, which adds to the Latin name "STEAME", the greek letters: E [ ΕΠΙΜΕΛΕΙΑ (Logistics) ], then three consecutive Πs [ ΠΕΡΙΒΑΛΛΟΝ (Environment), ΠΑΙΧΝΙΔΙ (Game), ΠΑΙΔΕΙΑ (Education, which is offered by the family environment, in other words ENTIMOTHTA (Ethics) ] and the letter "I" [ ΙΣΤΟΡΙΑ (History) ]. The acronym "EΠI-STEAME" (combination of greek and latin letters) can be pronounced as "EPI-STIMI" ("ΕΠΙΣΤΗΜΗ"), meaning "SCIENCE", in Greek.

I apply "EΠI-STEAME" approach for about four decades. One of the relevant applications being "MOSSAiC" project ("Mathesis (Learning) On Saturday (and) Sunday, Arts, imagination, Creativity"). Meetings with students anywhere discussing and exchange of ideas on various themes related to: Ethics, Arithmetic, Geometry, Stereometry, Astronomy, Physics, Chemistry, New Technologies, Environment, Mythology, History, Geography, Arts (Playing music and singing, drawing, painting, poetry, theatre etc.), History of Philosophy, More positive verbal communication, time management, the importance of Logistics in everyday life plus more, without the children having any sort of homework. We also use geometric instruments and some engineering and/ or agriculture tools during practical sessions. Visiting places of importance, meeting remarkable people and participating in public events is a must.

All "MOSSAiC" members love each other, truth, happiness and optimism.

## **WT01. STEAME pedagogy and STEAME methodology: Developing STEAME-Learning and Creativity Plans for Project Based Teaching and Learning**

**Eleni Papageorgiou, Ph.D., Teacher Trainer in Mathematics, Cyprus Pedagogical Institute**

### **ABSTRACT**

The workshop aims to introduce and discuss the pedagogical and methodological elements involved in the STEAME framework and to enhance participants' competences in developing STEAME activities that draw content knowledge and skills from different Curriculum subjects. Specifically, participants will be invited, through experiential activities, to seek the key components of Project Based Learning (PBL) and Inquiry Based Learning (IBL), in order to put them into action in developing STEAME Learning and Creativity Plans, for a multifaceted exploration and study of a subject. Examples of STEAME Learning and Creativity Plans and ideas of STEAME Projects will be presented and discussed, in order to get familiar with the various components of STEAME methodology.

## **WT02. WORKSHOP - How to integrate climate change and environmental awareness by engaging students in STEAME project-based activities involving the use of online data or the use of IoT to obtain data from plants placed in learning spaces**

### **ABSTRACT**

This workshop has been developed building on three European ERASMUS+ projects in the field of school and tertiary education, and more specifically Teaching the Future, TEASPILS - Teaching Environmental Awareness with Smart IoT Planters in Learning Spaces, and STEAME - Guidelines for Developing and Implementing STEAME Schools.

The Teaching the Future project aims to embed climate change and environmental education in secondary school education and in teacher training. The TEASPILS project focuses on creating environmental awareness towards plants and greenery, educating young people and their teachers towards ecological learning spaces. The STEAME project developed a prototype school structure design with suggested dynamic curriculum, activities, learning and creativity plans and methods, and a teacher training course.

The Teach the Future project aims to support teachers in integrating STEAM activities that will engage students in working with online data that relate to climate change (e.g., average yearly temperature of their city), while the TEASPILS project aims to do the same but with the use of data collected by IoT sensors from the plants placed within the learning space itself. On the other hand, the STEAME project has developed an approach on how to develop a project based STEAME Learning and Creativity Plan through the collaboration of different STEAME subject teachers.

During this workshop, participants will be presented with the STEAME Learning and Creativity plan, examples of project-based activities that relate to climate change and raising environmental awareness, and examples of project-based activities where students work with data sets. Participants will then engage in groups to discuss and develop their own ideas and produce their own STEAME Learning and Creativity plan that would allow a teacher to introduce their students to climate change and environmental awareness issues through STEAME project-based activities.

### **Presented by:**

- Thomas Economou, Project Manager and Coordinator at Doukas School
- Elpiniki Margariti, Project Manager at Doukas School

## **WT03. EDUCATIONAL INFOGRAPHICS AS STEAM INTELLECTUAL OUTPUTS**

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### **ABSTRACT**

Known as visual representations of data or information, using graphics, diagrams, images, pictures, colours and other visual elements, Educational Infographics represent a modern solution for transmitting as much information as possible in the shortest time and in a way as concise as possible, becoming important instruments in the teaching process. They arouse students' interest, more than a classical textbook page can do it.

Representing the intellectual outputs of the Erasmus+ project intitled “E-I-STEAM – Educational Infographics on STEAM” (Reference number: 2019-1-PL01-KA201-064984), the Educational Infographics were created in order to meet the need of students to understand the challenging topics in the textbooks, especially related to STEAM subjects.

Teachers and students alike, from 9 partner institutions in 8 countries (Romania, Poland, North Macedonia, Greece, Cyprus, Italy, Spain and Portugal), used their knowledge and competences to create helpful learning tools for those who have difficulty in acquiring STEAM concepts. Creativity and digital skills were an important factor in designing the infographics, the aim being to create material for teaching through innovative methods and approaches.

Besides the 57 infographics created as the intellectual outputs of the Erasmus+ project, many more were designed during the activities meant to raise motivation for studying STEAM subjects.

## **WT04. Scientific methods -useful tools for fostering creativity**

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### **ABSTRACT**

Scientific methods can empower students getting deep, long-lasting structural knowledge. One of the most pressing challenges teachers face today is how to create appropriate, useful and interesting problem solving examples for students. This paper reviews the all scientific methods, but put accent of generalization and provide possibilities for development the mathematical thinking through appropriate examples of problem solving. Carefully selected examples and solving them help students see and understand, in that few examples, the underlying general structure of problem solving. Consequently, they become powerful in solving problems, reasoning and all this contributes towards their mastering of getting deep, structural, long -lasting knowledge and understanding.

Key words: Scientific methods, mathematical thinking, long-lasting knowledge, creativity

## **WT05. BYOD: Learn Mathematics at any time, any place, and by any device, on-line, using tailored multimedia learning content based on students' learning needs and mastery of the subject**

### **Presented by:**

- Elpiniki Margariti, Project Manager at Doukas School
- Thomas Economou, Project Manager and Coordinator at Doukas School

### **ABSTRACT:**

The “BYOD: Learning at Any Time, at Any Place via any Device” European project is approved and co-funded by the European Commission under the Erasmus+ KA2 programme, with an implementation period of two years. This project will introduce a new and innovative approach for teachers and students in Math education to follow and use as an additional teaching material. The idea behind the project is to provide an alternative flipped-classroom learning environment through video lessons covering the curriculum in support of two-fold solutions: (1) digital learning solution and (2) support to mix ability classes outside the classroom. The BYOD project will focus on students learning mathematics in secondary education, especially 7 graders.

Presentation of the BYOD project objectives and expected results. How students can benefit from engaging in multimedia (video) of different length and difficulty based on their learning needs or level of advancement in a specific topic. How this approach enables students to learn at any time, place, and by any device at their own pace.

The digital learning will occur through developing videos with Math contents, based on the specific curricula in the partnership countries. The innovative aspect of the project is the fact that each content will be designed in three different time duration frames, for the different types of achievers. 15- minute videos for the overachievers in Math, 30 minutes for the average students, and 45 minutes for the underachievers.

The project partners are: Pedagogical University of Krakow (PL), CYMS (CY), Doukas School (EL), AMETA (NMK), OU Ivan Bazov (BG), Skybridge (EL), Plovdivski University (BG), and I.E.S. Arcebispo Xelmirez II (ES). The project’s website is <https://byod-learning.eu/>.