

# EUROPEAN STEAME ACADEMIES CONFERENCE (ESAC 2026)

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ABSTRACT BOOKLET



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UNDER THE AUSPICES OF THE  
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# **EUROPEAN STEAME ACADEMIES CONFERENCE 2026**

## **ABSTRACT BOOKLET**

### **KEYNOTE PRESENTATION 1**

#### **Making Space for Learning**

Designing for Connection, Curiosity, and Purpose



#### **Prakash Nair, AIA**

Founding President & CEO  
Education Design International

#### **ABSTRACT**

Most school buildings today are still modeled on an industrial system designed to deliver uniformity, even though the world our children are growing into demands something entirely different. If education is to prepare young people for lives of meaning, health, and contribution, then the spaces where they learn must reflect those values. What if teachers and students were not confined to buildings designed as factories of instruction but immersed in ecosystems that nurture connection, spark curiosity, and give every child a sense of purpose?

In this keynote, Prakash Nair draws on global examples and insights from neuroscience, biophilic and health-promoting design, to show how schools can be reimagined as vibrant communities aligned with human development and well-being.

Yet design is only part of the story. Its full potential emerges when educators are spatially aware, able to notice how light, acoustics, layout, and material choices influence focus, energy, and connection. When educators activate this potential, schools transform from rigid systems into living environments that inspire curiosity, foster relationships, and help every learner grow into the best version of themselves.

#### **BIO**

**Prakash Nair** is a futurist, a visionary architect, and the Founding President & CEO of Education Design International (EDI), a company with consultations in 59 countries on six continents. He is the recipient of many international awards, including the A4LE MacConnell Award, the highest honor worldwide for school design.

He has written extensively in leading international journals about school design. He is the author of five books, including the new landmark publication *Blueprint for Tomorrow: Redesigning Schools for Student-Centered Learning*, published by the Harvard Education Press.

Prakash served as an instructor for [Harvard X "Leaders of Learning"](#) about the shifting landscape of learning. Leaders of Learning has had over 400,000 registrants worldwide.

He is widely considered to be the world's leading architect of Innovative Schools. He lectures frequently at major universities and authors a blog on school design. He is a regular keynote speaker at international events and has delivered a TEDx talk. Prakash's signature talent lies in his ability to communicate his passion for a new approach to education across the globe.

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## **INVITED SESSIONS**

### **The Silent Curriculum: How School Spaces Shape Learning and Well-Being**



**Dr. Parul Minhas**

Director of Research and Digital Innovation  
Education Design International

## **ABSTRACT**

Schools are more than lessons and textbooks. They also carry a silent curriculum, written into their learning spaces, that influences how students feel, connect, and grow. In this session, Dr. Parul Minhas explores how design choices such as natural light, opportunities for movement, and spaces for collaboration send powerful signals about curiosity, health, and belonging. Drawing on global examples and research in architecture, education, and well-being, she demonstrates how schools can become environments that foster both academic achievement and personal purpose. Educators and students will leave with a new understanding of how space influences daily experiences and lifelong learning.

## BIO

**Dr. Parul Minhas** holds a PhD in Health-Promoting School Design and serves as Director of Research and Digital Innovation at Education Design International. An accomplished author of three books and numerous publications, she researches and advocates for learning environments that foster student health and well-being. With a background that bridges architecture and education, and guided by her perspective as a conscious parent, she brings a multidisciplinary lens to the future of schooling, showing how thoughtfully designed spaces can help children thrive.

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## WORKSHOPS

### **STW1. STEAME Learning Space**



**Prof. Gregoris Makrides**

Professor of STEAME Education

University of the National Education Commission, Krakow, Poland

## **ABSTRACT**

In envisioning future schools and universities, the STEAME Teacher Facilitators Academy emphasizes in creating dynamic, project-based learning environments with advanced technologies including virtual reality and adaptable spaces. Key priorities include fostering creativity, communication, practical skills, and inclusivity while addressing ethical considerations such as equity, privacy, and diversity. Learning objectives focus on understanding the need for evolving educational methods and spaces, integrating technology, promoting digital citizenship, and designing inclusive environments.

Future STEAME teachers need to develop competences in creativity, critical thinking, communication, collaboration, innovation, adaptability, digital literacy, and ethical awareness. These skills are crucial for guiding students in a rapidly changing educational landscape and fostering a culture of inclusivity and responsible use of technology. In this workshop we will travel together into an imaginary learning space of the future.

## **STW2. Management of the STEAME Learning Space/Environment**



**Dr. Silvia Alcaraz-Dominguez**

Lecturer

Department of Didactics and Educational Organization  
Faculty of Education of the University of Barcelona, Spain



**Dr. Núria Molas-Castells**

Lecturer

Department of Theory and History of Education  
Faculty of Education of the University of Barcelona, Spain

### **ABSTRACT**

The overall objective of this workshop is to develop skills to use Virtual Learning Environments to their full potential to support STEAME project delivery. While Virtual Learning Environments (VLEs) are useful tools to support student learning, one of the characteristics of STEAME projects is that they are interdisciplinary, that is, they involve explicit instruction from one or more STEAME subjects. This means that given that schools usually deploy one VLE per subject, students may engage with different VLEs in a single project. This fact has deep implications for the correct delivery of STEAME projects, including students' learning experience as they find their way through these online spaces, how much time and effort they need to complete the tasks, and the support they will require from the teacher. For these reasons, it is necessary to develop skills to design and manage the STEAME virtual learning environment in a way that responds to teaching and learning needs.

## **STW3. STEAME Tech Resources and Methods**



**Assoc. Prof. Vanya Ivanova, PhD**

University of Plovdiv Paisiy Hilendarski, Bulgaria



**Coordinator Prof. T. Glushkova, PhD**

University of Plovdiv Paisiy Hilendarski, Bulgaria

### **ABSTRACT**

This workshop focuses on the effective integration of modern technologies and methods within project-based learning (PBL) for STEAME education. Featuring expert speakers and university professors involved in STEAME projects, the session aims to offer valuable insights and practical strategies. Participants will learn and have the opportunity to discuss the possibilities of applying artificial intelligence tools, dynamic geometry software, and virtual learning environments to design, implement, and manage interdisciplinary STEAME projects. Speakers will share their experiences and help define guidelines for creating digital resources, fostering collaboration, and improving the overall learning experience. By emphasizing real-world applications and the seamless integration of emerging technologies, participants will acquire the skills necessary to creatively and critically engage students in the context of STEAME.

## **STW4. VR Learning Environment for STEAME PBL Activities**



**Vlasios Kasapakis**

Associate Professor

Department of Cultural Technology and Communication

University of Aegean, Greece

### **ABSTRACT**

This workshop explores the use of Frame VR in creating immersive learning spaces for STEAME Problem-Based Learning activities. Participants will learn how Frame VR can be accessed from head-mounted displays (HMDs), mobile phones, and computers, allowing flexibility across different devices. The session will cover how to import 3D models, interact within virtual environments, and engage in real-time collaboration—all features that enhance student engagement and support deeper understanding. Instructors will also see practical examples of how Frame VR can be used to design dynamic VR environments that encourage creativity, critical thinking, and hands-on learning in a virtual space.

## STW5. Interactive STEAME Process



**Professor Mauro Figueiredo, PhD**

Instituto Superior de Engenharia  
University of Algarve, Portugal



**Aux. Prof. Paula Ventura Martins, PhD**

Faculty of Sciences and Technology  
University of Algarve, Portugal

### ABSTRACT

This workshop will focus on effective interaction within Project-Based Learning (PBL) for STEAME education, with an emphasis on organising and participating in diverse events, such as science fairs, competitions, workshops, Escape Rooms, and conferences. These activities provide students with meaningful opportunities to showcase their projects, exchange ideas, and collaborate with peers and experts from a wide range of subjects.

The session will offer valuable insights and practical strategies for planning and executing successful events. Key topics related to event management will be explored, including design thinking, communication and collaboration skills, creativity, and innovation. The speaker will also introduce useful frameworks and tools, such as MILAGE (a gamification platform) and Trello (a project management tool).

In addition, the workshop will feature a practical case study on the design and implementation of an educational Escape Room. This example illustrates how game-based learning can be effectively integrated into PBL, fostering problem-solving, teamwork, and critical thinking. The goal of this activity is not only to support learning outcomes but also to create more interactive and engaging experiences for participants during expositions, transforming traditional project showcases into dynamic, participatory events.

## **STW6. STEAME Project-Based Learning (PBL)**



**Dr Eleni Papageorgiou**

Mathematics Teachers Educator

Cyprus Pedagogical Institute, Ministry of Education, Sport and Youth, Cyprus



**Dr Georgios Tsalakos**

Science Teachers' Educator

Cyprus Pedagogical Institute, Ministry of Education, Sport and Youth, Cyprus

### **ABSTRACT**

The Project-Based Learning (PBL) workshop will introduce the basic principles and benefits of this teaching approach, where students actively explore real-world challenges to acquire knowledge and skills. The workshop, through experiential activities, will give participants the opportunity to understand what PBL is, how it differs from traditional learning methods, and why PBL is not the same as a project assignment. The key characteristics of PBL and its learning benefits will be discussed.

The goal of the workshop is for participants to acquire the necessary knowledge and skills to be able to implement project-based learning in their teaching practice.

## **STW7. STEAME Learning & Creativity Plans**



**Thomas Economou**

R&I Department Coordinator  
Doukas School, Greece

### **ABSTRACT**

The workshop will highlight the importance of documenting STEAME learning activities in a consistent and structured way to promote collaboration and sharing among teachers, enabling the effective design and development of project-based STEAME activities. Participants will be introduced to the STEAME Learning and Creativity Plan (L&C Plan), with a focus on its various sections and ensuring the interdisciplinary nature of the activities.

Key topics will include setting interdisciplinary learning objectives, aligning with the STEAME ACADEMY and STEAME in Life (SiL) framework, selecting tools, materials, and resources, and outlining the sequence and context of project-based activities. Additionally, the workshop will showcase user-friendly generative AI platforms that pre-service and in-service STEAME teachers can use to enhance the development of STEAME L&C Plans. Participants will learn how to choose the most suitable platform—whether general or education-specific—and craft effective prompts to generate valuable responses for their STEAME L&C Plans

## **STW8. STEAME Learning with Entrepreneurial Mindset**



### **Grigore Albeanu, PhD Professor**

Professor of Computer Science

"Spiru Haret" University, Bucharest, Romania

### **ABSTRACT**

This workshop aims to promote the usage of entrepreneurial mindset approach when applying the STEAME learning approach through:

- a) developing entrepreneurship attitudes and skills through learning and teaching across the whole curriculum;
- b) promoting the entrepreneurship capacity of each pupil and ensuring they experience and develop an understanding of the world of work in all its diversity;
- c) building the 'can do' mindset through 'hands-on' entrepreneurship experience within the teaching and learning dynamics.

Mainly, the following topics will be addressed:

- 1. Introduction to Entrepreneurship: Evolution, Types and Qualities of Entrepreneurs, Entrepreneurial Cultures.
- 2. What is an entrepreneurial mindset?
- 3. A project-based view of Entrepreneurship: Idea generation; Funding and legal issues; Marketing; The business plan.
- 4. Entrepreneurship in STEAME curriculum
- 5. Project Ideas and evaluations.

## **STW9. Learn How to Learn**



**Tomasz Szemberg**

Prof. of Mathematics

University of the National Education Commission, Krakow, Poland

### **ABSTRACT**

This interactive workshop is designed to help educators explore and develop reflective teaching strategies that support continuous professional growth and improved student outcomes. Reflective practice is a vital skill in the 21st-century classroom, enabling teachers to evaluate their instructional choices, adapt to diverse student needs, and remain responsive to the dynamic challenges of education today.

During the session, participants will engage in guided reflection using authentic teaching scenarios, including video analysis of real and simulated lessons, to identify effective and ineffective teaching practices. Structured group discussions and individual reflection activities will foster deeper insights into personal strengths and areas for development. Participants will be introduced to practical tools such as Moodle.

By the end of the session, each participant will produce a personalized Reflective Action Plan outlining specific goals and strategies for enhancing their teaching practice. The workshop also emphasizes the importance of fostering reflection in students, promoting metacognition, and cultivating a classroom culture built on communication, collaboration, and growth.

Designed for both early-career and experienced teachers, this workshop encourages a culture of shared learning, peer feedback, and continuous improvement. Whether working in-person or in virtual settings, educators will leave equipped with practical, research-based strategies to support reflective teaching and learning.

## **STW10. External Collaboration and Networking**



**Dr. Milena Koleva**

Teacher and Project manager  
Prof. Ivan Apostolov High School, Sofia, Bulgaria



**Mr. Momchil Benov**

Science teacher and Project manager  
Prof. Ivan Apostolov High School, Sofia, Bulgaria

### **ABSTRACT**

In an era of constant change and innovation, education must connect classrooms with the wider world. This workshop on “External Collaboration and Networking” brings the STEAME (Science, Technology, Engineering, Arts, Mathematics, and Entrepreneurship) approach to life by helping teachers and students expand their learning horizons beyond school walls.

It empowers educators to build meaningful partnerships with experts, organizations, and institutions, unlocking authentic learning experiences and hands-on opportunities for students. Through real-world collaboration and project-based learning, participants will explore how to inspire creativity, teamwork, and critical thinking—key skills for success in today’s dynamic global environment.

## **STW11. STEAME Evaluation Methods with emphasis in PBL**



**Andreas Skotinos**

European Association of Career Guidance, Cyprus

### **ABSTRACT**

The workshop will introduce STEAME EVALUATION METHODS with emphasis in PBL. It aims at the identification of the various actors that are involved in the process and organize the means that are going to provide information for the various associates in the approach. For this the presentation provides elements for the identification of important criteria or aspects that are determining or reflecting the distinguishing factors that led to the adoption of the STEAME approach. Furthermore, it is important to identify who are the various partners involved, ranging from the students and the teachers that have to be engaged, as well as other contributors and the society. Particular emphasis is given to the STEAME PBL Competence Framework, which provides ample ideas that are setting the forum for the certification of the STEAME teachers. This framework provides a basis covering a set of criteria that are essential for the STEAME approach.

## **STW12. Facilitation of Feedback About the Process in Schools**



**Nuno Escudeiro**

Professor, School of Engineering  
Polytechnic University of Porto, Portugal

### **ABSTRACT**

Meaningful feedback and reflection are essential for fostering student engagement and continuous growth. This workshop introduces practical tools and strategies for promoting effective self and group reflection in both physical and hybrid learning environments, with a focus on Project-Based Learning (PBL) and STEAME education.

Participants will explore techniques such as guided reflection prompts, World Café, and digital portfolios, along with digital tools and the use of AI to transform feedback into a dynamic and empowering experience. Through examples and best practices, educators will learn how to create a feedback-rich classroom culture that supports critical thinking, collaboration, and student ownership of learning. Whether experienced in PBL or new to these frameworks, attendees will leave with actionable insights to enhance their teaching and boost student success.

## **STW13. Sustaining and Improving the STEAME Process**



**Florence Mihaela Singer**

Prof. of Math Education, Ph.D.

Asociatia "Institutul Pentru Dezvoltarea Evaluarii in Educatie" – IDEA, Romania

### **ABSTRACT**

The workshop discusses the critical need for sustaining and improving STEAME education in contemporary society. By integrating sustainability, educators can instill environmental stewardship alongside academic excellence, while collaborative teaching models and community partnerships enhance learning experiences, bridging gaps between education and industry.

Attendees will explore ways to develop resilient STEAME programs through strategic resource management, actionable frameworks, and continuous improvement strategies. Join us to discover how to drive positive change and foster interdisciplinary learning in your educational setting, contributing to empowering students to navigate future challenges and helping them to become responsible and creative citizens in a rapidly evolving world.

## **STW14. STEAME Green and Energy Issues in Education**



**Luc Zwartjes**

EUROGEO VZW, Belgium

Researcher/Teaching Assistant,

Geography Department Ghent University, Belgium

### **ABSTRACT**

This workshop explores integrating sustainability into STEAME education through hands-on, interdisciplinary approaches. Topics include environmental science, green technologies, data science, and urban planning, with a focus on project-based learning and citizen science.

Participants will gain practical strategies to engage students in climate science, green chemistry, and sustainable computing. We will also discuss the role of policy and economics in sustainability education. Through real-world examples, educators will learn how to foster critical thinking and problem-solving for a greener future. Join us to discover innovative methods for embedding sustainability into the curriculum.

## **STW15. Learning with Generative Artificial Intelligence: STEAME in the Classroom of Tomorrow**

**Efstathia Dariou**

Cyprus University of Technology

### **ABSTRACT**

Generative Artificial Intelligence (GenAI) is no longer an abstract concept of the future; it is already shaping everyday life, work, and education. This workshop aims to immerse educators in the possibilities of GenAI for STEAME (Science, Technology, Engineering, Arts, Mathematics, Entrepreneurship) education through an interactive and collaborative 90-minute session.

Participants will be introduced to the fundamental concepts of Artificial Intelligence through classroom-ready examples, experiment with user-friendly tools such as educational chatbots and data-analysis applications, and explore ways to foster critical thinking, creativity, and inquiry-based learning in their students.

The workshop follows three interconnected pillars:

1. **Understanding GenAI through STEAME scenarios** – an accessible introduction to core AI concepts, illustrated with concrete and meaningful classroom applications.
2. **Hands-on experimentation** – engaging activities with chatbots and real data analysis, enabling teachers to “see GenAI in action” and reflect on its potential to enhance student learning.
3. **Pedagogical design** – collaborative creation of mini STEAME teaching scenarios where GenAI is meaningfully integrated into the learning process.

By the end of the workshop, participants will have gained not only a comprehensive overview of the opportunities and challenges of GenAI in education but also practical tools, strategies, and classroom ideas that can be implemented immediately.

Ultimately, the workshop seeks to inspire educators to view AI as a *partner* in STEAME teaching and to empower them to cultivate in their students the essential skills of creativity, critical inquiry, and innovation that will prepare them for the school and society of tomorrow.

## **STW16. Magic Electrostatics**

**George ROUNGOS**

EKFE Lesvou

### **ABSTRACT**

Two electrified objects develop forces that are either attractive or repulsive. We assume that these forces are due to the existence of a physical quantity that we call electric charge. Electrified (charged) bodies can be classified into two types: Those that have a positive charge and those that have a negative charge. Bodies that have the same type of charge repel each other. Two bodies that have a different type of charge attract each other. We can charge objects by friction.

#### **Materials:**

1. Plastic tubes
2. Woolen cloth
3. Plastic bags
4. Insulated stanchion

Experiment 1

<https://www.tiktok.com/@groungos/video/7489022513561734422>

Experiment 2

<https://www.tiktok.com/@groungos/video/7482708163016412438>

Organization site: <http://ekfe.les.sch.gr/>

## **STW17. Virtual Reality is Here... and You: A Hands-On Workshop**

**Maria Begoña Codesal Patiño**

University of A Coruña

### **ABSTRACT**

This practical workshop invites participants to experience firsthand how generative artificial intelligence and immersive technologies can be integrated into primary education to address the United Nations Sustainable Development Goals (SDGs). Participants will explore the combination of AI tools with virtual and augmented reality platforms (CoSpaces and Merge Cube) to create engaging educational experiences focused on environmental sustainability and ecological awareness.

Workshop Structure:

- Introduction (10 minutes): Overview of the AI+IE approach (Artificial Intelligence + Immersive Experiences) and presentation of student projects from our Science Club.
- Hands-On Activity 1 (20 minutes): Participants will use generative AI tools to design content related to SDGs (environmental challenges, sustainability solutions).
- Hands-On Activity 2 (20 minutes): Integration of AI-generated content into immersive experiences using CoSpaces and/or Merge Cube to create interactive VR/AR scenarios.
- Sharing and Discussion (10 minutes): Participants share their creations and discuss practical applications for their own educational contexts.

What Participants Will Learn:

- How to combine generative AI with VR/AR technologies in primary education
- Practical strategies for integrating SDGs into immersive learning experiences
- How to transform students from technology consumers to creators
- Ready-to-implement activities for developing digital competencies and environmental awareness

Requirements: Participants should bring a laptop/tablet and smartphone (if possible). No prior experience with AI or VR technologies is necessary.

## **STW18. Examples of STEAME Practical Applications**

**Sotos Voskarides**

Affiliate Professor

Cyprus University of Technology

### **ABSTRACT**

In this Workshop will be presented several examples of practical applications of the STEAME philosophy, which include various projects involving (a) students and teachers in primary and secondary schools in Cyprus (b) groups of children and adolescents with whom we have mainly outdoor meetings during weekends (together with their parents) as well as (c) courses for adolescent girls (BridgeSTEAM) designed for focusing on building strong foundational skills in coding, while embedding discussions around gender equality, global challenges, and personal development.

## **STW19. From idea to measure impact: A hands-on check-up for STE(A)M Projects**

**Anastasios Hovardas\*, Jessica Niewint-Gori\*\*, Francesca Pestellini\*\*\***

\*Research in Science and Technology Education Group, University of Cyprus

\*\* Head of Research Department, INDIRE, Italy

\*\*\*INDIRE, Italy

### **ABSTRACT**

Teachers often launch great STE(A)M ideas, but turning them into sustainable, inclusive, high-impact projects is not always easy. This interactive workshop gives teachers and school leaders a simple, structured way to “stress-test” their plans using the SEER Project Evaluation Protocol (PEP), the classroom-ready version of SEER’s Impact Assessment Mechanism (IAM). The PEP provides practical checklists and minimum core requirements to help users self-assess their STE(A)M projects, reflect upon their strengths and weaknesses, and take action to improve them. It is available to teachers, coordinators and school leaders to ensure viability and impact of STE(A)M initiatives.

Working in small groups, participants will use the PEP tool to review a project (either an own project or a provided scenario for those who would like to implement the PEP to a new context.) across key dimensions: empirical evidence, partnerships, best practice reuse, small-wins, sustainability and ethics, plus STE(A)M pedagogy, leadership, inclusion and professional development. The open-source Excel tool auto-summarises results to highlight strengths and weaknesses, making next steps clear and actionable.

By the end of the workshop, teachers will leave with: (1) a concise “impact snapshot” of their project; (2) a short list of concrete improvements mapped to the SEER Roadmap pathways; and (3) the resources of the IAM kit for continued use in their school.

With the ready-to-use tools and templates, this workshop helps educators move from good ideas to demonstrable impact, so projects are easier to fund, implement, improve and sustain.

## **STW20. From Grandparents' Narratives to AI in the Classroom: Tradition and Innovation for Inclusive Learning**

**Stefano Costantini**

Department of Education, Languages, Interculture, Literatures and Psychology (FORLILPSI), University of Florence, Italy

### **ABSTRACT**

In European school systems, the growing presence of heterogeneous, multicultural, and multilingual classes often relies on digitalization and external sources for the construction of social memory and personal identity. Based on this premise, field research was conducted with a fifth-grade primary school class in Florence (22 students, aged 10–11; 12 female, 10 male). The students took an active role by administering open-ended questionnaires to their grandparents on significant aspects of their lives. During the feedback stage, it emerged that these family narratives provided a shared foundation for the class, fostering mutual understanding and promoting cultural diversity as a common value. Furthermore, a complementary pedagogical experiment was launched, focused on the critical use of emerging technologies and artificial intelligence in education. Students worked in small groups to design activities that integrated digital tools with reflections on the historical topics addressed, with the aim of developing transversal skills and critical thinking. The experience demonstrated how inclusion can be strengthened through the encounter between family memory and technological innovation, creating a dialogical and participatory learning environment and outlining a model replicable in other European contexts. The integration of tradition and innovation thus emerges as a promising pathway to make education more inclusive, sustainable, and future-oriented.

## **STW21. Project-Based Learning Strategies Using Makerspace Technologies**

**Kalliopi Sisamou\*, Costas Sisamos\*\*, Mark Venton\*\*\*, Emily Sisamou \*\*\*\***

Engino NET LTD

### **ABSTRACT**

This workshop focuses on empowering educators to implement makerspace-based STEAM learning through the ENGINO Makerspace ecosystem. Mathematical concepts are woven seamlessly into the design-build-test cycle: students engage with geometry when designing parts in CAD, ratios and proportions when scaling models, trigonometry when analyzing motion or structural angles, measurement and estimation during fabrication, and data handling when collecting and interpreting sensor outputs. Through robotics and programmable electronics, learners also explore algebraic relationships, functions, logic sequences, and algorithmic reasoning, transforming abstract concepts into tangible problem solving tools. Within this context, teachers play a critical role in designing and facilitating meaningful hands-on learning environments. The workshop introduces participants to a comprehensive makerspace framework that combines engineering construction systems, digital fabrication technologies, and programmable electronics to support interdisciplinary learning. Participants will engage in guided demonstrations and practical activities that illustrate how students can move from creative ideas and design concepts to functional prototypes. A dedicated module addresses 2D and 3D computer-aided design (CAD), highlighting how digital modelling, simulation, and fabrication can be integrated into classroom practice to strengthen spatial reasoning, mathematical understanding, and creative expression. Emphasis is placed on pedagogical strategies for embedding makerspace activities within STEAM curricula, including cross-curricular project design, competency-based learning, and formative assessment. Examples of classroom-tested challenges will be shared to demonstrate practical implementation across different educational contexts. By the end of the workshop, educators will be equipped to design inclusive, learner-centred STEAM environments that foster creativity, critical thinking, and real-world problem-solving skills.

## **STW22. Co-Creating a Science Theatre Script**

**Dr Edward Duca\*, Valentina Delconte\*, Menelaos Sotiriou\*\*,  
Priscila Doran\*\*\***

\*Faculty of Education, University of Malta, Malta

\*\*ScienceView, Greece

\*\*\*Núcleo Interativo de Astronomia e Inovação em Educação, Portugal

### **ABSTRACT**

The Hero's Journey is a storytelling framework popularised by mythologist Joseph Campbell. It describes a universal narrative pattern where a protagonist (the 'hero') embarks on an adventure, faces challenges, transforms, and returns changed (Campbell, 1949). This framework can support educators in structuring a science theatre piece, by engaging student narratives, supporting character development and emotional engagement. This approach, adopted by the Learning Science through Theatre initiative and the Learning STEAM Through Performing Arts project (Erasmus+, 2024–2027) uses transdisciplinarity, problem-solving and project-based learning approaches to develop student's creative and critical thinking in STEAM disciplines. In this 120-minute workshop, participants will gain an introduction to collaborative storytelling frameworks and hands-on experience in adapting theatrical tools for education. They leave knowing how to use narrative development for STEAM education in primary and secondary classrooms. All participants will equally contribute to the development of the hero journey around a STEAM topic. Split into groups, they will receive a Hero's Journey worksheet to start developing. After 15 minutes, each team rotates, leaving the worksheet on the table, and visits the other team's tables to continue the journey and so on, until the story comes to an end. During this process, each group offers feedback and expands the ideas by answering one second question in each worksheet. The workshop will conclude with the teams performing or presenting initial narrative ideas, selecting the narrative they like the most and enroll in a reflective discussion: How can this process be adapted in the classroom?

## **STW23. Learning Science Through Music: A Design Thinking, Project-Based Learning Workshop**

**Vasilia Philippou, Olia Tsivitanidou**

\*EU Project Manager, INQUIRIUM LTD, Cyprus

\*\*Managing Director, INQUIRIUM LTD, Cyprus

### **ABSTRACT**

This workshop presents 'Learning Science through Music', a STEAM module designed in the connect of the STEAM Innovation project, funded by the Creative Europe programme (CREA-CULT-2024-COOP-1; number: 101173445), following the design thinking approach (FEEL-IMAGINE-CREATE-SHARE). The approach is grounded on inquiry-based and project-based learning, interdisciplinary teaching with emphasis on arts integration, and the use of creative technologies, demonstrating how sound and music can function as powerful mediators for scientific understanding and student engagement. The workshop, positions learners as active creators who investigate scientific concepts (sound waves, vibration, data patterns, and ecosystems) to translate them into musical, sonic, and audiovisual projects. Project-based learning structures, guide students through extended inquiry cycles, where real-world data, everyday materials, and digital tools are used to design meaningful artifacts, including soundscapes, data sonifications, AI-generated compositions, and AR-triggered audiovisual experiences. The workshop adopts the FEEL-IMAGINE-CREATE-SHARE sequence as the reflected in classroom module, engaging educators experientially while making the pedagogical design explicit. Participants explore how curiosity and emotional engagement are activated (FEEL), how scientific and creative ideas are analysed and conceptualised (IMAGINE), how interdisciplinary projects are developed through progressive making (CREATE), and how learning is consolidated through presentation, reflection, and dialogue (SHARE). Emphasis is placed on the role of artificial intelligence as a creative partner within project-based learning, alongside ethical reflection, sustainability, and cultural awareness. The workshop combined hands-on participation with pedagogical reflection, and supports teacher professional development by offering transferable strategies, assessment considerations, and design principles for implementing AI-supported, project-based STEAM learning across diverse educational contexts.

## **STW24. Moving STEAM: Teaching and Learning Through Embodied Dialogue**

**Dr Edward Duca\*, Valentina Delconte\*, Kerry Chappell\*\***

\*Faculty of Education, University of Malta, Malta

\*\*School of Education, University of Exeter, UK

### **ABSTRACT**

Insights from embodied cognition and the creative pedagogies show that learning is deeply rooted in bodily experience (Shapiro, 2014; Wilson & Foglia, 2017, Chappell et al., 2019), offering transformative potential for making STEAM education more inclusive, accessible and creative. This workshop will apply the concept of embodied dialogue in project based learning. Embodied Dialogue are interactions that go beyond words and uses our bodies to learn and connect. Learners interact with others and the environment to gain new perspectives and co-create knowledge through movement and visuals (Kersting et al., 2023).

Tested in SciCulture & ScicultureD (Erasmus+, 2017–2024), empirical evidence from comparative on-field research and thematic reviews showed that embodied dialogue, explored through movement and dance workshops, invited participants from different backgrounds to reflect together on scientific and artistic ideas linked to open questions. This dialogic, embodied approach engaged participants in both the arts (e.g., movement, theatre) and sciences (e.g., scientific literature) to foster creative problem-solving addressing societal challenges with an ethical lens and dialogue (Chappell et al., 2025, ScicultureD intensive course evaluation reports). The participant groups each created a different project through this methodology, which will be the focus of this workshop.

Following up on this, the Learning STEAM Through Performing Arts summer school (6–11 July 2025, Erasmus+ 2024–2027) proposed an innovative teacher training programme for educators to implement performing arts in their classrooms to teach STEAM disciplines, where embodied dialogue engaged educators to explore the bodily experience and interactions to address the question 'What is STEAM?'. The approach was embedded in a final theatrical performance about the Solar System.

This 45-minute workshop will invite participants to the 'dance' floor, to learn how movement can be used in project based learning to bring diverse groups of students together. They will be journey into movement, highlighting nonverbal cues—gestures, posture, movement, facial expression, and breathing—as integral to communication, learning and teaching. By using the body to express, listen, and respond, participants will deepen interaction, cultivate empathy, and access felt knowledge, generating a co-created answer to an open-ended question that is instrumental to project based learning.

## **STW25. The SENSEI Project - Inclusive history teaching: theories and ready-to-use materials**

**Marco Tibaldini**

Researcher, University of Bari

Board member of the Italian association of History Teachers Clio '92

### **ABSTRACT**

History teaching has never been easy, but due to the rapid change of circumstances in our classrooms is becoming even more complex and difficult. Both traditional teaching methods and narratives have always been challenged by the new attitudes and expectations of the students, and for decades, teachers dealt with this constant request, adapting to the changes in students' behaviour and interests.

In recent years, two elements accelerated this process so much that teachers struggle to keep pace with the students' change: the larger use of technological devices and the increasing multiculturalism of our society. Students today have more divergent opinions, mindsets, and values, educational needs than in the pre-pandemic period.

This challenge seems to lead to two different approaches, which are attested more or less in every European country: one that seeks the opening of curricula and methods to be more inclusive, and one that aims for the opposite, going back to the traditional frontal lesson and to the nationalistic narrative.

EuroClio decided to put efforts in the renewal of the teaching methodologies and fostering the inclusivity of history teaching, allowing more cultures to be represented in history curricula. This view was implemented by the SENSEI project, devoted to inclusive history teaching.

In this workshop, the general theoretical framework of the SENSEI project will be presented, as well as materials already prepared and ready to be used the very next day with our students.

These materials feature games, practical activities, and experiences, and we will start by testing them ourselves during the workshop.

## **STW28. STEAME in Action – Basic Concept of Biometrics**

### **Sladjana Jovic \***

Science teacher \* Secondary school Svetozar Markovic, Nis, Serbia

### **Bojana Mitriceski Andelkovic\*\***

Geography teacher \*\* Primary school Branislav Nusic, Donja Trnava, Serbia

### **Silvester Gereg\*\*\***

IT teacher \*\*\*Primary school Mesa Selimovic, Novi Pazar, Serbia

## **ABSTRACT**

The workshop "*Basic Concepts of Biometrics*" is designed for upper primary and secondary school students. The aim of the workshop is to help participants understand the concept of biometrics, its areas of application, as well as the benefits and risks associated with the use of biometric technologies. Through an introductory presentation, hands-on activities, group work, scenario analysis, and discussion, participants are introduced to various biometric characteristics (hand geometry, body proportions, fingerprints, facial geometry, iris, voice, DNA), the functioning of biometric systems, and the technical, ethical, and legal aspects of their use. Special emphasis is placed on developing critical thinking and examining biometrics from the perspectives of different stakeholders.

**Learning outcomes** after completing the workshop:

- understand the basic concepts and principles of biometrics and biometric technologies,
- recognize different applications of biometrics in everyday life,
- develop awareness of privacy, ethics, and personal data protection,
- are able to analyze the benefits and risks of biometric systems,
- learn to articulate and defend different viewpoints and to view technology from multiple perspectives.

## **PRESENTATIONS**

### **STP1. How to Spark the Interest of Young People in Microelectronics**

**Bernd Deutschmann, Christoph Maier, Nikolaus Juch**

Technical University of Graz, Institute of Electronics, Austria

#### **ABSTRACT**

Europe is currently facing a significant skills gap in microelectronics. By the end of 2030, the microelectronics industry is expected to experience a shortage of approximately 200,000 qualified engineers. In response, a range of initiatives have been launched to spark interest in microelectronics among young people and to strengthen education and training in this field. This presentation provides a brief overview of the current situation in Europe and outlines key elements of the EU's Chips Act. The main focus lies on the importance of initiatives aimed at inspiring students and teachers to engage with microelectronics at an early stage. As a practical example, we will present a simple electronic circuit that can be easily integrated into school teaching programs. This hands-on approach enables undergraduate or pre-university students to build and understand an electronic circuit themselves, thereby fostering practical skills and enthusiasm for microelectronics.

## STP2. Innovative Approaches to Sustainability Education: Integrated STEM with Scientix and Loess

**Júlia Lotina Cartanyà\***, **Giuseppe Mossuti\*\***, **Christina Makarona\*\*\***, **Àgueda Gras-Velázquez\*\*\*\***

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### ABSTRACT

Scientix®, the Community for Science Education in Europe coordinated by European Schoolnet, supports the improvement of STEM education by connecting educators, policymakers, researchers and industry partners across Europe. Its activities are guided by priorities defined in close consultation with the Scientix Ministries of Education STEM Representatives Working Group. This contribution focuses on the priority of linking STEM education to global challenges, specifically environmental sustainability.

By presenting the LOESS project alongside key Scientix services, this session will show how integrated STEM approaches can support education for environmental sustainability (EfES) by connecting scientific concepts to real-world environmental challenges, thereby contributing to STEAME education.

The presentation focuses on **two core Scientix services** that support innovation in STEM education and EfES. The **STEM Discovery Campaign** is an annual initiative engaging over 800,000 participants worldwide, providing visibility to innovative STEM activities and fostering exchange and inspiration among educators. **Scientix Collections** helps schools plan whole-school STEM initiatives through curated resources organised by themes, educational levels, and competences (GreenComp, DigiComp, LifeComp). The initial Collections focus on Environmental Sustainability and Citizen Science, guiding school leaders and teachers in implementing **whole-school, interdisciplinary, sustainability-focused STEM strategies**.

The session also highlights the LOESS project, a Scientix partner initiative addressing soil education, an often underrepresented topic in formal curricula, through **integrated STEM learning scenarios** for primary and secondary students combining scientific, environmental, societal, and ethical dimensions. It also offers professional development outputs, including a MOOC and an augmented reality app, supporting educators in applying innovative sustainability approaches.

## **STP3. Integrating Disaster Risk Reduction Education in Primary Education: A Cross-Curricular Framework**

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Competence Centre for a Sustainable and Resilient Built Environment using Smart Technologies (SURE)

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**\*\*\*\*Maria Amoiridou**

Directorate of Primary Education of Kozani

### **ABSTRACT**

Disaster Risk Reduction (DRR) is increasingly recognised as a key priority for education systems facing climate change and growing natural hazards. Yet, in many schools DRR is still addressed through isolated activities rather than being systematically embedded in everyday teaching. This presentation outlines a cross-curricular framework for integrating Disaster Risk Reduction Education into primary education, enabling DRR to be taught across various subjects while supporting the goals of the core curriculum. The framework is developed within the Erasmus+ KA2 project "STEAME for Saving Life: Guidelines for developing and implementing Disaster Risk Reduction Education" and offers practical guidance for curriculum design and classroom implementation. It is grounded in context-based and inquiry-based learning, the use of storytelling, digital tools, and narrative approaches, and demonstrates how learning objectives from various subjects can be combined with DRR outcomes, to promote risk awareness, critical thinking, and resilience. The proposed framework provides actionable guidance and resources to help teachers design coherent, interdisciplinary DRR learning experiences that enhance both subject learning and students' disaster preparedness.

## **STP4. Why STEAM Educators Must Collaborate and How They Can be Supported**

**Achilles Kameas\*, Natalia Spyropoulou\*\*, Konstantinos Mathiopoulos\*\*\***

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### **ABSTRACT**

Several recent studies stress the ever-pressing need for STEAM educators to engage in intra- and inter-institutional collaborations and to participate in relevant communities. To benefit from such collaborations, STEAM educators must develop a set of competences that extend beyond those required in the classroom. Our investigation of the Greek STEAM educators' collaboration needs has shown that they are familiar with educator communities, but they prefer to join local CoPs over more renowned international ones. In this paper, we shall discuss the STEAM educators' competences that relate to collaboration, the different roles that require these competences, how do they perceive their involvement in CoPs and how collaboration can contribute to improving their teaching practice and professional development. We shall present initial combined results from desk and field research, which were conducted in the context of European projects STEAMonEdu and Spice. These projects produced competence frameworks for STEAM educators, in which collaboration constitutes an important pillar. Based on these, they created MOOCs and blended courses and established online Communities of educators, which assisted them in completing the trainings. Moreover, occupational profiles for educators and necessary personnel to collaboratively deliver STEAM education in the classroom were designed.

## **STP6. Can Students Trust AI in Mathematics? A Case Study on the Success of ChatGpt Math Solver in Solving Competition Tasks**

**Maja Buhin Pandur\*, Mara Grašić\*\***

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### **ABSTRACT**

Artificial intelligence (AI) has significantly transformed the way students learn, especially in mathematics. AI tools such as ChatGPT Math Solver have increased knowledge access and supported the development of analytical skills by providing immediate feedback and diverse approaches to problem-solving. Despite these advantages, concerns about their precision, reliability, and impact on students' critical thinking and cognitive development still exist.

This study examines the reliability of AI in solving mathematical problems by evaluating 170 tasks from Croatian mathematics competitions across four domains: algebra, combinatorics, geometry, and number theory. The research specifically evaluates the performance of ChatGPT Math Solver, focusing on the accuracy, logical structure, and clarity of its solutions.

The results show that the AI tool correctly solved approximately 63% of fifth-grade and 60% of eighth-grade tasks, with performance varying by competition level and mathematical domain. The highest accuracy was observed at the school level, while least accurate results were at the state level, particularly for fifth-grade tasks. Notably, the solver performed best in algebra (around 75% accuracy) but struggled with geometry, solving only 35% of problems correctly.

Overall, the results indicate that although AI can effectively support algorithmic reasoning, it remains less capable at tasks requiring spatial visualization and creative problem-solving. Consequently, the study emphasizes the need for a critical and pedagogical approach to integrating AI in mathematics education, advocating for its use as a supportive tool rather than a substitute for human reasoning.

## **STP7. Pre-Service Teacher Training in STEAME and CLIL Approaches: Ukrainian Experience**

**Maryana Natsiuk**

Associate Professor, Taras Shevchenko National University of Kyiv

### **ABSTRACT**

The presentation aims to provide an overview of the Ukrainian experience of training pre-service teachers in STEAME and CLIL with a focus on the progress in this sphere due to Erasmus+ MultiEd project (2020-2024) launched at 8 Ukrainian universities. Among the central MultiEd's outputs are developing the course "CLIL methodology" taught at 8 universities and devising Multilingual Education Strategies. The initiatives were significant for starting structured future teacher training and making a turn in language education. Although STEAME methodology has not been purposefully taught as a separate subject, the study has concluded that it is often implemented as part of the "New Ukrainian School" reforms, aiming to modernize the curriculum and make learning more relevant for real-world contexts. Numerous schools in Ukraine are actively introducing it through integrated courses, labs, and project activities that go beyond traditional lecture formats. The study is going to demonstrate the shift in pre-service English language teachers' perception of innovative approaches like STEAME and CLIL, expressed in the structured interviews. The key results have revealed students' preparedness to implement new approaches in their school practice. In spite of the overall positive attitude towards the innovations, to initiate STEAME and CLIL means encountering the inevitable challenges such as educational legislation at all the levels (from laws to school policies), lack of qualified experts, and stakeholders' insufficient awareness. Consequently, the study is going to offer certain possible solutions to the mentioned challenges.

## **STP8. Activating Entrepreneurship Competencies Through Experiential Pedagogy: Evidence from the Edu&Tegu Competence Model**

**Airi Noppel**

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### **ABSTRACT**

Entrepreneurship education increasingly relies on competence frameworks to structure learning outcomes and assessment; however, empirical evidence on how specific pedagogical approaches activate these frameworks in higher education remains limited. This study examines the development of entrepreneurship competencies within a semester-long entrepreneurship course designed around experiential and problem-based pedagogy, using the Estonian Edu&Tegu competence model as an analytical framework.

The study employs a quantitative pre–post research design involving 382 students enrolled in an entrepreneurship course at Tallinn University of Technology. Students completed self-assessment surveys measuring 14 entrepreneurship sub-competencies across four competence clusters—self-management; value-creating thinking and problem-solving; resolving social situations; and business implementation—at the beginning and end of the course. Paired-sample t-tests were used to assess changes in competence scores over time, while analysis of variance was applied to examine differences by gender and level of study. Correlation analysis was conducted to explore associations between selected teacher-related variables and perceived support for students' entrepreneurship competence development.

The results indicate statistically significant improvements in several entrepreneurship sub-competencies over the course of the semester. The strongest gains were observed in creativity, public speaking confidence, and planning and resource management. Problem-solving and collaboration demonstrated more modest but significant development, whereas ethical and sustainable thinking showed minimal change, likely due to high baseline self-assessment scores.

Overall, the findings underscore the importance of pedagogical design in competence-based entrepreneurship education and demonstrate how a nationally developed competence framework can function as both an assessment and developmental tool when aligned with experiential pedagogy in higher education.

**Keywords:** entrepreneurship competence; Edu&Tegu; entrepreneurship education; experiential learning; problem-based learning

## **STP9. Preparing Students for Danish High School's Math Exams: Oral and Written Challenges**

### **Mirela I. Redzic**

Experienced high school teacher in mathematics and history  
Developer of international seminars, and External Lecturer on Danish universities

### **ABSTRACT**

**Tagline:** *Innovative strategies to engage and prepare learners for unique exam formats.*

In Danish high schools, students take both oral and written mathematics exams. Oral math exams are highly effective for developing students' problem-solving and reasoning skills, yet they are uncommon in many other countries. This is what makes this topic particularly relevant for an international STEAM audience. Written exams are also distinctive, as they consist of two parts: one with only pen, paper, and formulas, and another with access to digital tools. Given the widespread integration of technology in education and workplaces, preparing students for these conditions is increasingly important.

This workshop will introduce practical didactical strategies for preparing students over two to three years for these exams. Participants will engage in interactive classroom activities such as peer feedback, game-based tasks, movement-based repetition, formative assessment, and more. The session begins with a brief overview of the Danish exam system, followed by hands-on exercises that can be adapted to diverse teaching contexts.

The goal is to inspire educators from different countries by showcasing elements of the Danish approach that are both innovative and adaptable.

## **STP10. The Next Generation of Educators: The Role of Young Teachers in Shaping STEAM Learning for Students**

**Alessia Pepa**

The Independent College of Tirana, Physics and Maths teacher, Albania, Tirana

### **ABSTRACT**

Young teachers bring a unique energy, creativity, and digital fluency that make them powerful catalysts for advancing STEAM education. Positioned close in age and mindset to their students, they can bridge generational gaps, foster inclusive learning environments, and introduce innovative methods such as gamification, project-based learning, and cross-disciplinary approaches.

This presentation explores how young teachers can serve as connectors between tradition and innovation—drawing on cultural heritage, local contexts, and modern technologies to make STEAM education more relevant and inspiring. It highlights the importance of mentorship, collaboration, and continuous professional growth for young educators, as well as the challenges they face in balancing authority with approachability.

Through real examples and reflective insights, the talk emphasizes how empowering young teachers not only strengthens the teaching profession but also directly impacts students' motivation, creativity, and future career readiness. By nurturing a generation of educators who are adaptable, empathetic, and innovative, we can ensure that STEAM learning evolves to meet the needs of today's learners and tomorrow's society.

## **STP11. Bridging STEAME Education and Workforce Success: A Three-Pillar Framework for Democratized Career Readiness**

**Marta Bas**

Head of Careers, Le Wagon | Lecturer, American University of Beirut (Paphos) | EdTech Consultant

### **ABSTRACT**

STEAME education develops technical excellence but often neglects career readiness—leaving graduates unprepared whether pursuing entrepreneurship or employment. This presentation proposes a three-pillar framework addressing this gap through embedded learning, strategic positioning, and democratized tools.

Pillar 1: Entrepreneurship Embedded in Learning recognizes that all STEAME graduates—whether launching startups or seeking employment—need entrepreneurial skills: commercial awareness, pitching, value articulation. Drawing on experience supporting 10,000+ technology learners across European bootcamps, this approach demonstrates embedding commercialization thinking and presentation training into project-based learning. Students learn to communicate not just technical execution but business impact, developing skills applicable across career paths.

Pillar 2: Job Search Readiness (or Client Acquisition) teaches professional positioning strategies that work for both employment and entrepreneurship. Students build digital portfolios (LinkedIn, GitHub, video demonstrations), develop value propositions, practice targeted networking, and learn strategic outreach—skills that translate whether applying for jobs or acquiring clients.

Pillar 3: Democratized Career Readiness Tools addresses underfunded career services and absent high school support. Rather than requiring institutional investment in dedicated programs, this pillar advocates building accessible, scalable tools: AI-enabled self-service platforms, peer learning structures, open-source curricula, and mobile-first content. These tools complement teacher efforts, making career readiness a baseline capability rather than luxury.

The presentation provides practical integration strategies, curriculum examples, and implementation approaches ensuring every STEAME student—regardless of institutional resources—develops workforce readiness alongside technical excellence.

**Keywords:** STEAME employability, entrepreneurship education, career readiness tools, democratized learning, workforce development

## **STP12. A Competence Framework to Empower Learners in a Data-Driven World: Building Critical, Ethical and Action-Oriented Data Literacy in Compulsory Education with the DATA-READY Project**

**Apostolos Kostas\*, Tomasz Szemberg\*\***

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### **ABSTRACT**

Data plays an increasingly central role in education, everyday life and democratic participation, yet most compulsory education systems lack coherent structures for supporting students in developing the knowledge, skills and dispositions needed to engage meaningfully with data. In the EU-funded project DATA-READY, we developed a Data Literacy Competence Framework for Compulsory Education (Grades 1–9) that provides a structured, developmentally aligned model for integrating data-driven inquiry across learning contexts. The Framework is grounded in international research and in comparative evidence drawn from national curricula, policy analysis and school-level practices across partner countries. The Framework defines seven interconnected domains of competence (Awareness, Ethics & Agency, Questioning & Problem Framing, Data Acquisition & Management, Representation & Visualisation, Analysis & Interpretation, Modelling & Automation, and Communication & Action), supported by three progression bands (Primary 1, Primary 2, Lower Secondary) and three proficiency levels (Starting, Intermediate, Advanced). Together, they describe how learners progressively build the capacity to pose investigable questions, collect and manage data, interpret patterns critically, evaluate uncertainty and bias, and communicate evidence-based conclusions responsibly. Addressing persistent implementation challenges identified in the evidence base, including fragmented curriculum provision, limited teacher preparation and insufficient emphasis on ethical and civic dimensions, the Framework offers descriptor matrices, practical examples and implementation guidance to support curriculum planning, teacher professional development and authentic project contexts. The presentation will introduce the Framework's structure, evidence base and pedagogical implications, highlighting its potential to enable students to become critical, ethical and empowered users of data in a rapidly evolving digital society.

### **Contributors (Project partners)**

Bastian, J., Batsi, Z., Bidarra, G., Biniari, L., Fernandes, J., Frangou, S., Höfer, M., Kazantzidou, N., Krein, U., Kritikos, G., Lasica, I-E., Makrides, G., Makrides, L., Margariti, E., Matilde, C., Michael, M., Mouzakis, C., Papageorgiou, E., Paparistodemou, E., Papke, L., Paraschou, B., Pitsikalis, S., Silva, J., Solarz, P., Spyrou, S., Szpond, J., Tzortzoglou, F., Vaz-Rebelo, P., Wójcik, D., Ziontaki, Z.

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## **STP13. Implementing the STEAME Model in VET: Experiences from Monlau Fp**

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### **ABSTRACT**

The integration of the STEAME model (Science, Technology, Engineering, Arts, Mathematics & Entrepreneurship) into Vocational Education requires practical experiences that combine technical expertise with social, creative, and entrepreneurial skills. At Monlau FP, we have developed an approach aimed at educating well-rounded professionals through active methodologies, interdisciplinary projects, and initiatives focused on personal and social development.

Among our key initiatives are values, volunteering, and soft skills workshops, which strengthen students' ethical and social formation, as well as the use of a personal learning portfolio in the IPO subject, where each student designs their professional pathway through self-reflection activities, contact with the labor market, and a personalized action plan.

In addition, we apply Design Thinking as a transversal methodology to foster creativity and innovation in intermodular projects, together with Project-Based Learning (PBL), which in the business area includes participation in competitions such as iFest (in which we have received several awards).

In the automotive field, we organize the Monlau Automotive Day, an event where students present their projects to companies in the sector. This not only highlights emerging talent but also creates a space where companies actively identify and recruit young professionals, ensuring a real connection between training and employability.

These experiences demonstrate how Vocational Education can become a real STEAME laboratory, preparing students not only with technical skills but also with transversal competences, critical thinking, and an entrepreneurial mindset, aligned with labor market demands and the values of a more innovative and sustainable society.

## **STP14. Implementation Strategies for STEAME Programs in Primary and Secondary Education in Greece: A Study of Teachers' Perspectives**

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\*\*Postgraduate Student, National and Kapodistrian University of Athens & University of the Aegean, Greece

### **ABSTRACT**

STEAME education (Science, Technology, Engineering, Arts, Mathematics, Entrepreneurship) is a modern interdisciplinary approach that aims to develop 21st century skills through experiential, collaborative and creative learning experiences. Its aim is to connect theoretical knowledge with practice, encouraging critical thinking, problem solving, innovation and business dimension. This research investigates the perceptions of Greek teachers regarding the implementation of STEAME programs in Primary and Secondary Education, focusing on the benefits, difficulties and conditions of implementation. The data were collected through an online survey. Results indicate that STEAME enhances learning engagement, increases student interest in courses, and contributes to the development of creativity and team skills. In addition, teachers report that cross-curricularity makes learning more meaningful, as students incorporate knowledge from a variety of fields to solve complex problems. However, obstacles were recognized, such as limited resources, inadequate logistical infrastructure, lack of time for cooperative planning and the need for systematic training. In conclusion, STEAME is considered a promising and pedagogically worthwhile approach that can transform teaching practice, provided it is supported by institutional measures, adequate resources and targeted training programs for teachers. The implementation of STEAME requires collaboration between schools, universities and local agencies, as well as the development of educational resources, digital tools, evaluative tools and practical success indicators to monitor learning outcomes and adapt programs to the needs of students. In addition, political support and investments are required for sustainable implementation and continuous evaluation of practices at a practical level.

## **STP15. A Teacher-in-the-Loop Approach to AI-powered Learning Design**

**Symeon Retalis\*, Ioanna Pana\*\*, George Lambropoulos\*\*\*, Georgia Aretou\*\*\*\***

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### **ABSTRACT**

The rapid emergence of generative AI (GenAI) is shifting the teacher's role from content transmitter to designer of technology-enhanced learning experiences. While current AI lesson planners offer efficiency, they often lack the structured, theory-grounded reasoning required for pedagogical rigor. This paper investigates how to reconcile AI efficiency with design intentionality through a human-in-the-loop co-creation model. We present a case study of the AI-enhanced CADMOS LD tool, which embeds GenAI features into its structured, layered design framework to provide dynamic scaffolding. The AI guides teachers through defining goals (mapped to Bloom's Taxonomy) and generating aligned activity sequences.

Crucially, the teacher retains full pedagogical autonomy to accept, refine, or reject AI suggestions. We present the results of usability testing with novice in-service teachers, demonstrating that the tool effectively supports Design Completeness, maintains Pedagogical Flexibility and Guidance, and exhibits strong Usability and Scaffolding. This structured co-creation model aligns with the goals of the AI4Teach Erasmus+ project and ensures AI amplifies the teacher's central design role.

## **STP16. DESIGNING AND IMPLEMENTING METAVERSE CIVIC LEARNING SCENARIOS: TEACHER AND STUDENT INSIGHTS FROM THE METACIVICEDU PROJECT**

**Dr. Andri Ioannou\*, Maria Chrysostomou\*\***

\*Cyprus University of Technology, Limassol, Cyprus

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### **ABSTRACT**

This presentation reports on the MetaCivicEdu project (Erasmus+ KA220-SCH), which integrates metaverse-enabled civic education scenarios into primary-school teaching across Cyprus, Greece, and Ireland. A central output of the project is the open MetaCivicEdu Zenodo Repository, which hosts a structured collection of metaverse-enriched civic scenarios supported by metadata, pedagogical documentation, SDG alignment, and teacher-ready guides that facilitate reuse, adaptation, and classroom implementation.

Pilot implementations using Spatial.io were followed by student focus groups and teacher interviews. Thematic analysis reveals consistently high learner engagement: students described the experience as “fun,” “like a game,” and enabling them to “explore wherever you want.” The immersive scenarios supported understanding of rights, fairness, and stereotypes, with children articulating insights such as “Girls can do everything boys can do” and “Don’t stereotype people in real life.” Teachers confirmed that the metaverse learning design increased motivation, autonomy, and participation—especially among students with learning difficulties who typically struggle to remain engaged in traditional lessons.

Teachers highlighted the value of the repository’s clear scenario structure and handbooks, which made orchestration “simple,” “intuitive,” and feasible even for first-time users. They noted that metaverse environments expand pedagogical possibilities by enabling scenarios that would otherwise be difficult to enact in face-to-face settings. At the same time, teachers identified key design and implementation challenges: varying device and network capacity, classroom management of avatars, and limited interactivity (e.g., objects, quizzes, movement).

Overall, findings indicate that metaverse-enriched civic scenarios—openly accessible in a structured repository—can enhance civic engagement, perspective-taking, and learner motivation, while offering clear guidance for further refinement of XR learning environments within STEAME-aligned pedagogical ecosystems.

## **STP17. STEAM in Colors and Sounds**

**Assoc. Prof. Galina Momcheva, PhD**

Institute of Mathematics and Informatics, Bulgarian Academy of Sciences,  
Bulgaria

### **ABSTRACT**

During the presentation, scientific areas related to colors, sounds and their combination will be classified, suitable for individual, team, project, entrepreneurial and research STEAM projects. Concrete and successful practices from training of students and teachers will be demonstrated. An ecosystem supporting STEM initiatives at the national and regional level, including students, scientists and industry representatives, will be shared.

## **STP18. Storytelling as a STEAME Innovation: Connecting Narrative, Design, and Technology Through Augmented Reality Creation in Primary Education**

**Eirini Christou\*, Antigoni Parmaxi\*\*, Stella Timotheou\*\*\*, Andri Ioannou\*\*\*\*, Lawrence Farrugia Caruana\*\*\*\*\*, Leonard Busuttil\*\*\*\*\*, Laura Alonso Martínez\*\*\*\*\***

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### **ABSTRACT**

This study explores how technology-enhanced storytelling can operate as a STEAME-aligned learning experience in primary education. Building on the principles of creativity, interdisciplinarity, and learner autonomy, the project engaged sixth-grade students from Cyprus in designing original narratives and transforming them into interactive augmented reality (AR) artifacts. Using a Learning Experience Design (LXD) framework, learners moved through cycles of story ideation, visual and digital story creation, digital asset creation, and multimodal composition. The activity connected language literacy, arts, technology, and digital media, allowing students to integrate writing, storyboarding, and digital reasoning within the same workflow.

Data collected through classroom observations, student reflections, and teacher interviews indicate that AR-based storytelling promoted high levels of engagement, supported collaborative problem-solving, and encouraged students to think critically about narrative structure and digital asset creation as they made decisions about how stories and digital elements interact and connect. Students demonstrated emergent STEAME competencies, including creative expression, iterative design, and multimodal meaning-making. Teachers viewed the approach as a promising model for interdisciplinary learning that aligns with students' digital dispositions. Challenges included time requirements, varying levels of technical readiness, and the need for structured facilitation. The findings highlight the potential of narrative-centred AR creation as an integrative pathway for implementing STEAME principles in everyday classroom practice.

## **STP19. Virtual Reality i Here... And You: Integrating AI and Immersive Technologies in Primary Education for Sustainable Development**

**Maria Begoña Codesal Patiño**

University of A Coruña

### **ABSTRACT**

This abstract presents an innovative educational approach developed with primary school students in our Science Club, where cutting-edge technologies converge to create meaningful learning experiences centred on the United Nations Sustainable Development Goals (SDGs).

Our project uniquely combines generative artificial intelligence with both immersive and semi-immersive virtual reality experiences, utilising platforms such as CoSpaces and Merge Cube. Students engage in the creation of virtual environments and interactive scenarios that address real-world environmental challenges, from climate action to responsible consumption, from life below water to sustainable cities and communities.

Through this AI-enhanced approach (where Artificial Intelligence meets Immersive Experiences, or AI+IE), young learners develop digital competencies whilst exploring solutions for environmental improvement, sustainability, and ecological awareness. Generative AI tools support students in designing, prototyping, and refining their virtual reality projects, enabling them to transform their ideas into tangible experiences that can be explored through VR headsets and augmented reality devices.

This work demonstrates how the integration of AI and immersive technologies in primary education fosters creativity, critical thinking, collaborative problem-solving, and a profound sense of environmental responsibility. The results show how primary school students can become active creators of technological solutions (rather than mere consumers) whilst developing a deeper understanding of global sustainability challenges and their role in addressing them.

## **STP21. Mathematical Games as Catalysts for Strategic Thinking within a STEAME Framework**

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### **ABSTRACT**

Mathematical games represent powerful didactic tools for fostering strategic thinking, creativity, and problem-solving abilities across different educational levels. Their pedagogical value extends beyond entertainment, emerging from their capacity to stimulate logical reasoning, analytical thinking, and decision-making through structured mathematical activity.

This paper presents and analyzes selected mathematical games grounded in strategy, logic, and number concepts, implemented in primary education and teacher-training contexts. The games are examined within a STEAME framework (Science, Technology, Engineering, Arts, Mathematics, and Entrepreneurship), highlighting their interdisciplinary nature and their contribution to the development of creativity, collaboration, initiative, and adaptive thinking. The presented examples demonstrate how mathematical games may function as introductory activities, mechanisms for conceptual reinforcement, and instruments for formative assessment.

The study indicates that when mathematical games are aligned with clear instructional objectives and supported by appropriate methodological design, they act as effective catalysts for strategic thinking, deeper conceptual understanding, the construction of long-lasting structural knowledge, and enhanced student engagement in STEAME-oriented learning environments.