ETE 2025
Educating the Educators

5th International Conference on STEM Teacher Education: 21st century challenges

May 8 - 9, 2025, St Raphael Hotel Limassol, Cyprus

Call for proposals

We are pleased to share this call for proposals for our upcoming fifth international conference Educating the Educators (ETE) 2025. The topic of the conference is **STEM Teacher Education: 21st century challenges**. This conference follows on from the conferences held in 2014, 2016, 2019 and 2023. Almost 200 researchers, policy makers and practitioners participated in the last ETE conference that was held in Leiden, The Netherlands, in May 2023, and we are looking forward to welcoming all in Cyprus in May 2025.

The conference board welcomes contributions to this event that will be held on May 8-9, 2025. We invite you to submit proposals for research or practice paper presentations, posters and workshops. The conference is hosted by the InSSTER Center at the University of Nicosia (Cyprus) in collaboration with the International Centre for STEM Education, the ICSE consortium (both on www.icse.eu) and the Erasmus+ project ICSE Academy (*proSTEM* is co-funded by the EU under grant no. 101052670, icse.eu/icse-academy). The ICSE Academy project started in 2022 and will finish with its Final Conference on the ETE 2025.

Plenary Talks:

- Jonathan Osborne, Kamalachari Professor of Science, em.
- Hilda Borko, Professor, Professor of Education
- Anastasios Hovardas, Senior Associate Scientist

Special Conference Features: an invited Policy Round Table & a Teachers' Day

Location: St Raphael Hotel, Limassol, Cyprus (www.straphael.com)

Deadline for submission of proposals: 4th November 2024

To submit your proposal and for regularly updated information about the conference, please visit educating-the-educators.icse.eu. We are looking forward to receiving your contributions and to seeing you at the conference. With kind regards, the conference chairs:

Prof. Katja Maaß, ICSE, University of Education Freiburg, Germany
Prof. Maria Evagorou, University of Nicosia, Cyprus

ICSE Academy UNIVERSITY of NICOSIA ICSE Consortium

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1. Conference overview

1.1. Aims and objectives

Join the groundbreaking fifth edition of the international conference series Educating the Educators (ETE), where we gather to advance professional development in mathematics and science education. This prestigious event is the perfect platform for teacher educators, policymakers, teachers, and various stakeholders in STEM education to connect, share, and innovate.

ETE 2025 is an international conference on professional development in STEM education that brings together teacher educators, policy makers, teachers and various other stakeholders related to STEM education. ETE 2025 will focus on implementing and scaling up innovative teaching approaches in STEM education. The aim is to discuss different approaches with a rich variety of participants on four broad tracks. The conference on the one hand will give researchers the chance to present their work, on the other hand we invite researchers, teachers, teacher educators, and policymakers to shape the future of STEM classrooms by tackling 21st century challenges in STEM education.

1.2. Conference Tracks

The conference theme '21st Century Challenges in STEM Education' is addressed through four key tracks: Diversity in STEM Education, STEM Education in the Digital Era, Interdisciplinarity in STEM Education, and Sustainability in STEM Education.

Track 1: Diversity in STEM Education

Diversity in STEM classrooms is a crucial cornerstone in the ongoing conversation about advancing STEM education. This theme delves into the multifaceted landscape of diversity within STEM disciplines, with a particular emphasis on gender inclusivity, gender-sensitive pedagogies, and intercultural approaches. In contemporary society, fostering diversity in STEM classrooms has transcended beyond a mere social imperative; it has become an essential catalyst for innovation, progress, and societal transformation. Recognising the vast array of perspectives, experiences, and identities within STEM fields not only enriches learning environments but also drives innovation by leveraging diverse insights and problem-solving approaches. This thematic area invites scholars, educators, researchers, and practitioners to engage in meaningful dialogue and exploration of strategies to create inclusive STEM classrooms. Participants will have the opportunity to share best practices, innovative strategies, and evidence-based interventions aimed at promoting diversity, equity, and inclusion in STEM classrooms.

Track Leader: Michiel Doorman, Utrecht University, Netherlands

Track 2: STEM Education in the Digital Era

Digitalisation is one of the most significant topics of the 21st century. The rapid pace of technological development often leaves individuals struggling to understand these new tools. This evolution presents both challenges and opportunities for the educational sector. On one hand, the incorporation of new technologies - along with their potential and risks - into curricula is essential, while on the other hand, these technologies provide unprecedented teaching and learning opportunities. For example, the "digital divide" - a term describing the gap between those with and without access to digital technologies - poses a significant challenge in integrating these technologies into education. 3D technologies, such as 3D printers and augmented reality, render abstract teaching content more tangible, while AI-based tools assist teachers in lesson preparation and practice, and serve as personalized learning tools for differentiated education. Overall, digitalization demands a new understanding of both what and how we teach and learn. In this area, you will find workshops featuring hands-on activities and best practice examples, alongside in-depth analyses and effectiveness studies that illustrate the modern developments in STEM education in the digital age.

Track Leader: Gultekin Cakmakci, Hacettepe University, Turkey

Track 3: Interdisciplinarity in STEM Education

The global expansion of STEM Education has been accompanied by a broad discussion about its meaning. Although there is no consensus on its definition, STEM Education generally entails the interdisciplinary integration of concepts and skills from at least two of the four disciplines represented by the acronym. Interdisciplinarity in STEM Education has particular relevance in addressing innovative solutions to authentic problems, where each STEM discipline plays a particular role in responding to these problems. Furthermore, involving students in exploring these authentic problems fosters the development of their STEM skills, including critical thinking, creative problem-solving, communication, and cooperation. Despite the potential benefits of interdisciplinary STEM Education for students, experiences involving STEM integration in the classroom remain relatively scarce. This thematic area invites scholars, educators, researchers, and practitioners to share best practices, interdisciplinary curriculum approaches, and evidence-based interventions aimed at promoting interdisciplinarity in STEM education.

Track Leader: Martin Bilek, Charles University Prague, Czech Republic

Track 4: Sustainability and STEM Education

Preparing the next generation for the future is of great importance. Issues and topics related to sustainability still often seem to be structurally interrupted in primary and secondary education or take an unclear or even contradictory approach in science, geography, citizenship and economics lessons. How do we teach about sustainability so that our students don't just see problems but develop a hopeful perspective? They need a perspective which shows that choices and actions matter. The need for action also concerns our STEM education community to make use of the transformational potential of teaching and learning. We need to share good practices, research results and innovative classroom materials that allow for implementing approaches that support the implementation and scaling up of education for sustainability. These actions are broad in scope and attend not only to the practices of teachers, teacher educators and researchers but also involve other important stakeholders, including school principals, policymakers and the students themselves. Moreover, these actions require and appreciate the capillarity of educational institutions and their communities and require collaboration and commitments that ensure educational opportunities and joint responsibilities.

Track Leader: Marta Romero Ariza, University of Jaen, Spain

1.3. Target groups

The conference is designed for teacher educators and researchers, teachers, relevant networks, teacher professional development (PD) centers, mathematics, science and STEM education support centers, presidents and representatives of PD institutions, teacher associations and relevant networks, as well as policymakers in the field of STEM education.

1.4. Conference formats & features

The ETE 2025 conference will use both traditional and innovative formats to help bring out the specific benefit of gathering a circle of participants from research, practice and policy. Vivid exchange and collaborative work will be ensured by spaces for co-creation and for sharing ideas and results. Participants are invited to submit their work in the following conference sessions:

- ***Oral presentations*** to report on research, approaches and projects
- ***Interactive poster sessions*** to report on projects and research
- ***Workshops*** and ***co-creation spaces to*** actively involve participants

  For details please see below in part 3.

Particular conference features also include the following:

- ***Plenary talks*** with the following speakers:
  - Jonathan Osborne, Kamalachari Professor of Science, em.
  - Hilda Borko, Professor of Education
  - Anastasios Hovardas, Senior Associate Scientist
- An ***Invited Policy Round Table*** focusing on Teacher mobility in STEM education, to be held on May 9th.
- ***Half-day teacher program*** with workshops, presentations and posters specifically addressed to STEM teachers, to be held on May 8th (see 1.5).
- ***Conference Dinner & Social Event*** (details tba)

1.5. Teachers' Day

ETE 2025 provides a variety of activities designed specifically for STEM educators. The conference features hands-on workshops that showcase innovative teaching strategies and activities, offering participants practical and cutting-edge approaches to enhance their educational practices. In addition, the Teachers' Day includes oral presentations that delve into the latest trends and insights from research, practice, and policy, providing valuable updates and knowledge in the field. Participants will also have opportunities for networking, connecting with fellow teachers, researchers, and policymakers to discuss challenges, explore opportunities in STEM education, and build meaningful professional relationships.

To summarise, participants in Teachers' Day:

- will have the chance to attend the opening keynote,
- will be invited to a special teachers' welcome,
- will be invited to offer and/or join hands-on workshops,
- can connect through discussion formats focused on the four conference tracks,
- and present their work in a poster session with networking opportunities.

The Teachers' Day will take place on Thursday 8 May 2025 and special rates for teachers will be offered. Information on submission can be found on 3. The same proposal submission information apply to teachers and possible deviations are explicitly mentioned in chapter 3.

2.General Information & Organisational structure

2.1. Chairs and Boards

Conference Chairs

Prof. Dr. Katja Maaß, ICSE, University of Education, Freiburg, Germany
Prof. Dr. Maria Evagorou, University of Nicosia, Cyprus

Conference Coordinator

Elena Schäfer, ICSE, University of Education, Freiburg, Germany

Conference Board

Monica Baptista University of Lisbon, Portugal
Michiel Doorman, Utrecht University, Netherlands
Oliver Straser, ICSE, University of Education, Freiburg, Germany
Stefan Zehetmeier, University of Klagenfurt, Austria

Scientific Board

The Scientific Board will provide the conference chairs with scientific and conceptual guidance in selecting proposals, ensuring the conference's high relevance and scientific quality, along with any potential subsequent publications. The Board also includes members closely connected to practice, such as teacher educators, to ensure an appropriate selection of practice-oriented contributions. Each track has one scientific lead and several other carefully selected members.

Additionally, the Scientific Board is responsible for organizing the conference program.

Members of the Scientific Board:

Track 1: Diversity in STEM Education
Lead: Michiel Doorman, Utrecht University, Netherlands

Track 2: STEM Education in the Digital Era
Lead: Gultekin Cakmakci, Hacettepe University, Turkey

Track 3: Interdisciplinarity in STEM Education
Lead: Martin Bilek, Charles University Prague, Czech Republic

Track 4: Sustainability and STEM Education
Lead: Marta Romero Ariza, University of Jaen, Spain

Local Organizing Board

Maria Evagorou, University of Nicosia, Cyprus
Isabel Maria Cruz Lorite, University of Nicosia, Cyprus
Efi Nisiforou, University of Nicosia, Cyprus
Evi Konstantinidou, University of Nicosia, Cyprus
Maria Nicolaou, University of Nicosia, Cyprus
Irene Drymiotou, University of Nicosia, Cyprus
Eleni Papageorgiou, Cyprus Pedagogical Institute, Cyprus
George Tsalakos, Cyprus Pedagogical Institute, Cyprus

2.2. Venue and accommodation

The conference venue will be St Raphael's hotel in Limassol, Cyprus. Participants will be able to make reservations either for the conference venue or for other suggested hotels through the online system on our website.

2.3. Registration & fees

Early registration (until 20 March 2025): 180 Euros
Late registrations (from 21 March 2025 onwards): 200 Euros

Special rates apply for teachers and will be announced in due time.

2.4. Important dates

Submission of all contributions: 1 September 2024 – 4 November 2024

Author notification: January 2025

Conference registration begins: 1 December 2024

Last day for registration for authors: 20 March 2025

Schedule release date: April 2025

3. Proposal submission information

3.2. Oral presentations

We welcome oral presentations of research-based papers, as well as reports of best teaching practices (e.g. simulation of a professional development situation, demonstration of (classroom) materials, demonstration of e-learning support platforms, classroom materials, examples from implementations of activities, best teaching practices). Your proposal should outline:

(1) How it relates to the overall conference theme: STEM Teacher Education: 21st-century challenges

(2) The content of your planned presentation/input.

Proposals should be precise and include sufficient details and references for a critical review. Please keep in mind when planning/writing your proposal that it should also address the underlying purpose of STEM Education.

The length of the proposal can be up to 1000 words, including references, tables and figures. Please consider using the following structure, if applicable:

- Purpose of the presentation
- Importance of the presented work
- Theoretical perspectives linked to the contribution
- Methodology or description of the context
- Findings, suggestions and discussions
- References

3.3. Poster presentations

We welcome interactive posters, either of scientific nature, or practical (e.g. simulation of a professional development situation, demonstration of materials, demonstration of e-learning support platforms, classroom materials, examples from implementations of activities, best teaching practices). Your proposal should outline:

(1) How it relates to the overall conference theme: STEM Teacher Education: 21st-century challenges

(2) The content of your planned presentation/input.

Proposals should be precise and include sufficient details and references for a critical review. Please keep in mind when planning/writing your proposal that it should also address the underlying purpose of STEM Education.

The length of the proposal can be up to 500 words, including references, tables and figures. Please consider using the following structure, if applicable:

- Purpose of the poster
- Importance of the presented work
- Theoretical perspectives linked to the contribution (only for scientific posters if applicable)
- Methodology or description of the context (if applicable)
- Findings, suggestions and discussions
- References (if applicable)

3.4. Workshops and co-creation spaces

We welcome proposals for workshops or co-creation spaces which actively involve participants. Workshops provide opportunities for participants to experience already designed classroom or PD materials for teachers or teacher educators. Co-creation spaces provide an opportunity for the participants to be involved in an idea-in-progress, get feedback from various stakeholders such as teachers and policy makers and other representatives, explore the feasibility and adjust the design of proposed ideas by role-playing and direct tryouts.

Emphasize in your proposal the question or problem that participants will work on, and the way of working that they will experience. Please be aware that these sessions will be 60

minutes long and you will not have time for an extensive presentation, but should focus mostly on practical examples.

Your proposal should outline:

(1) How it relates to the overall conference theme: STEM Teacher Education: 21st-century challenges

(2) The content of your planned presentation/input.

The length of the proposal must be up to 500 words including references, tables and figures. Please consider using the following structure:

- Purpose of the workshop/co-creation space
- Added value of the workshop/co-creation space
- Theoretical perspectives linked to the contribution
- Description of the context (i.e. brief description of what will be included during the session)
- References (if applicable)

Examples to illustrate the ideas of workshops and co-creation spaces

Example 1:

Title: How to use ChatGPT in sustainability education?
This workshop will illustrate the use of ChatGPT and similar AI tools to enhance sustainability education. Participants will learn about specialized versions of ChatGPT that access research data on environmental issues, enabling the conduct of life cycle assessments (LCA) and carbon footprint calculations. The session will provide practical classroom applications, such as performing LCAs on everyday products to illustrate their environmental impact from production to disposal and methods to calculate and compare the carbon footprints of various activities, helping students identify more sustainable practices.
We will also focus on the critical evaluation of AI-generated information. Attendees will learn best practices for formulating precise queries to obtain accurate and relevant information from ChatGPT. Moreover, the workshop will emphasize the importance of reviewing AI content critically, including techniques to cross-reference data, assess its credibility, and consider the context in which it is presented.

Example 2:

Title: Including Visually Impaired Students in STEM Education with 3D Printing
This workshop will explore how 3D printing can be used to include visually impaired students in STEM education. The session will begin with a brief introduction to 3D printing technology and its applications within the STEM field-
The focus will then shift to practical examples of how 3D printing can be effectively used in the classroom. Participants will learn how to create simple Braille-labeled educational materials, enabling visually impaired students to access and interact with the same content as their peers. Additionally, the workshop will cover the development of tactile models and diagrams, allowing students to feel and understand complex concepts that are often visual in nature.

4. Conference Hosts

The conference is hosted by the InSSTER Center at the University of Nicosia (Cyprus) in collaboration with the International Centre for STEM Education (www.icse.eu) and the project ICSE Academy (https://icse.eu/icse-academy/). The project ICSE Teacher Academy is an Erasmus+ Teacher Academy that started in June 2022, and will finish in May 2025.

Consortium of the International Centre for STEM Education (ICSE)

The ICSE consortium is coordinated by ICSE at the University of Education Freiburg and focuses on the connection of research, policy and practice in the field of STEM (**S**cience, **T**echnology, **E**ngineering and **M**athematics) education.

The ICSE consortium consist of 18 higher-education and research institutions from across Europe. Its activities focus on the connection of research in STEM education in Europe and its transfer into practice.

ICSE and its consortium are continuously developing and implementing innovative (EU funded) projects, consolidating these activities and coordinating their future development, while sustainably growing the network of stakeholders from research, practice, policy and industry. As a transnational STEM education network, our activities in these include, amongst others, the development, in-situ evaluation and refinement of high-quality classroom materials and professional development materials, the conduction of professional development courses and student workshops as well as the organization of international conferences and competitions. Furthermore, ICSE and its consortium develop and execute numerous local and international projects. We offer consultancy and support, carry out summer schools and workshops and invest in joint research project.

Website: https://icse.eu/

InSSTER Center at the University of Nicosia, Cyprus

InSSTER, Innovative STS (Science, Society, Technology) Education Research Centre, is a dynamic multidisciplinary research hub that brings together passionate educators and scholars from diverse fields within the field of education. Our collaborative team includes faculty members and researchers from the Department of Education at the University of Nicosia. Together, we explore the intersection of inclusive research education, science, society, and technology, with a strong emphasis on innovative and inclusive practices.

Website: https://www.unic.ac.cy/insster/

ICSE Academy for European STEM teachers (proSTEM)

The ICSE Academy is a joint project of 13 higher education institutions, 13 public authorities and 65 schools in 13 European countries. The project proSTEM - ICSE Academy is co-funded by the EU under grant no. 101052670.

The proSTEM ICSE Academy project focusses on teachers. As part of the ICSE Academy, innovative forms of professional learning for STEM teachers are developed and offered during their training and in their professional careers. These include activity formats such as job

shadowing, workshop series and summer schools that bring together current and future STEM teachers from across Europe.

Specialists in mathematics, computer science, natural sciences and technology (STEM) are in demand: the International Centre for STEM Education (ICSE) (https://icse.eu/icse-academy/) at the Freiburg University of Education (https://www.ph-freiburg.de/index.html) has set itself the goal of improving education in these disciplines across Europe through practical research and its transfer.

Website: https://icse.eu/icse-academy/