5th International Conference on STEM Teacher Education:
21st Century Challenges

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

Call for proposals (V2)

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 the conferences held in 2014, 2016, 2019 and 2023. Almost 200 researchers, policy makers and practitioners participated in the last ETE conference in Leiden, The Netherlands, in May 2023, and we look 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 of Education, Center to Support Excellence in Teaching, Stanford University
- **Anastasios Hovardas**, Research in Science and Technology Education Group, University of Cyprus

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: 24th 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.

ETE2025 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. ETE2025 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 key 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 be able to share best practices, innovative strategies, and evidence-based interventions to promote 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 needing help understanding these new tools. This evolution presents both challenges and opportunities for the educational sector. On the 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. At the same time, 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, participants 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 is particularly relevant 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, STEM integration experiences in the classroom remain relatively scarce. This thematic area invites scholars, teachers, 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 sustainability topics still seem 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 use the transformational potential of teaching and learning. We need to share good practices, research results, and innovative classroom materials that allow for the implementation of approaches. 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, representatives of PD institutions, teacher associations and relevant networks, as well as policymakers in the field of STEM education.

1.4. Conference formats and features

The ETE2025 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 workshops and spaces for co-creation and for sharing ideas and results. Participants are invited to submit their work in the following conference sessions:

- ***Oral presentations***
- ***Interactive poster sessions***
- ***Workshops***
  (For details, please see part 3 below.)

Particular conference features also include the following:

- ***Plenary talks*** with the following speakers:
  - **Jonathan Osborne**, Kamalachari Professor of Science, em.

o **Hilda Borko**, Professor of Education, Center to Support Excellence in Teaching, Stanford University

o **Anastasios Hovardas,** Research in Science and Technology Education Group, University of Cyprus

- An ***Invited Policy Round Table*** focusing on teacher mobility in STEM education, to be held on May 9th

- ***Special 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

ETE2025 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 to network and connect 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. Information on submission can be found in part 3. The same proposal submission information applies to teachers, and possible deviations are explicitly mentioned in part 3.

2. General Information and Organisational structure

2.1. Chairs and Boards

Conference Chairs

Katja Maaß, ICSE, University of Education, Freiburg, Germany

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

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 can make reservations either for the conference venue or other suggested hotels through the online system on our website.

2.3. Registration and fees

Early registration (until 20 March 2025): 180 Euros
Late registrations (from 21 March 2025 onwards): 200 Euros
One-day pass: 140€
Via: https://educating-the-educators.icse.eu/registration/

2.4. Important dates

Submission of all contributions: 1 September 2024 – 24 November 2024

via https://educating-the-educators.icse.eu/submission/

Author notification: January 2025

Conference registration begins: 1 December 2024

Last day for registration for authors: 20 March 2025

Programme release: April 2025

3. Proposal submission information

3.1. Oral presentations

We welcome oral presentations of research-based papers, as well as practical reports (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 the proposal relates to one of the four main tracks

(2) From which perspective (e.g. country-specific, target group-specific, context- or issue-specific) it will address the track

(3) Clearly describe how the major outcomes/implications that will be presented

Proposals should be precise and include sufficient details and references for a critical review. When planning and writing your proposal, please ensure that it also addresses the core 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 and description of the context
- Findings, suggestions and discussion
- References
-

3.2. Poster presentations

We welcome posters, either of a scientific or practical nature (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) the work to be presented on the poster (topic, target-group, what, etc.)

(2) how the poster relates to one of the four main tracks

(3) and, if applicable, from which perspective (e.g. country-specific, target group-specific, stakeholders, supporting institutions) it will address the track.

Proposals should be precise and include sufficient details and references for a critical review. When planning and writing your proposal, please ensure that it also addresses the core 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 and description of the context (if applicable)
- Findings, suggestions, and discussion
- References (if applicable)

3.3. Workshops

We welcome proposals for workshops which actively involve participants. Workshops provide opportunities for participants to experience already designed classroom or professional development materials for teachers or teacher educators, or 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.

In your proposal, highlight the key question or problem participants will engage with and the working method they will experience. Keep in mind that these sessions are 60 minutes long, so there won't be time for a lengthy presentation. Instead, focus primarily on practical examples.

Your proposal should outline:

(1) How it relates to the overall conference theme

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

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

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

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 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 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 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 projects.
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, strongly emphasising 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 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.

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