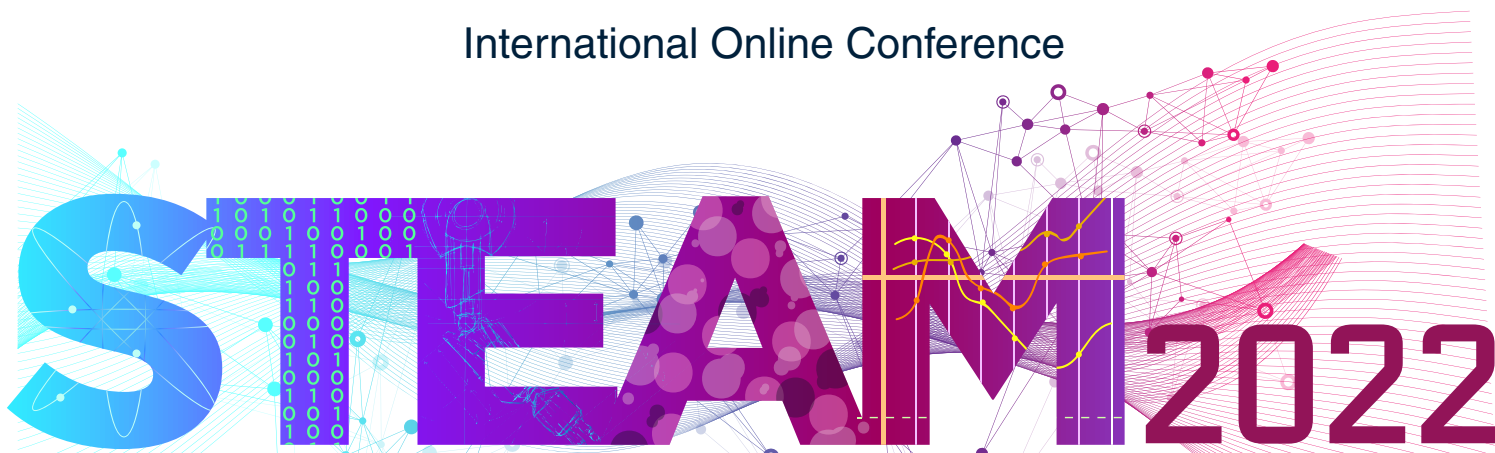The MOFET Institute

## International Online Conference

# STEAM 2022

## The Wonders of STEM and STEAM Education: What, Why, and How?

## July 5-6, 2022

### The MOFET Institute, Israel

**SUBMIT PROPOSAL**

## Rationale and aims

Education systems around the globe recognize the need to prepare today's learners for tomorrow's world. In line with this need, importance is ascribed to the integrated approach to teaching and learning, and in particular, significant integration among the STEM (Science, Technology, Engineering, and Mathematics) or STEAM (Science, Technology, Engineering, Art and Mathematics) disciplines. The benefits attributed to integrative teaching and learning of STEM or STEAM disciplines concern the development of students' creativity, curiosity, mental flexibility, entrepreneurial spirit, self-regulated learning skills, problem solving abilities, and collaboration and cooperation competencies.

Nonetheless, currently, there are various streams and a wide range of definitions related to STEM and STEAM education. The variety of definitions, perceptions, and conceptualizations leads to a lack of agreed-upon objectives and theories about the appropriate pedagogies for implementing integration among the STEM/STEAM disciplines. In all levels of education, four main terms of disciplinary integration are used alternately - transdisciplinarity, interdisciplinarity, multi-disciplinarity, and cross-disciplinarity - often as synonyms, when the distinction between them is unclear.

This lack of agreement raises a wide range of fundamental questions, including:

- What are the long-term goals of STEM/STEAM education? What are the proper educational approaches? What are the indicators for achieving the goals and how can they be measured and assessed?
- What is the unique added value of adding the A to the STEM education framework, in terms of learning opportunities and learners' personal, emotional and social development?
- Should we strive to identify optimal amalgamation of content knowledge, skills, approaches, and thinking patterns from the entire STEM/STEAM disciplines? And if so - what methods should be adopted to achieve this?
- Should STEM/STEAM be considered an independent discipline? Why? And if so – how can it be realized? Or perhaps creating a new discipline is merely a theoretical idea that is not implementable?

- How should we communicate the knowledge, skills, approaches, and thinking patterns related to STEM/STEAM education? How should we prepare teachers to apply the ideas inherent in STEM/STEAM learning and teaching in their classrooms? Who should educate the teachers? Who might serve as a role model?

The international conference **The Wonders of STEM and STEAM Education** is intended to bring together people from around the world to discuss these and other related issues, and to share knowledge from diverse perspectives: practical, theoretical, and research-based.

## Target Audience

The conference addresses a wide range of audiences: prospective and in-service teachers of all age levels, teacher educators, scientists, technologists, engineers, artists, mathematicians, academics, policymakers, entrepreneurs and developers, stakeholders from the private, public, and third sectors, and anyone who is interested in the area of STEM and STEAM education.

Everyone is welcome to take part in the conference, both as presenters and listeners!

**The conference will be held in English.**

## Conference format

The conference will take place on July 5-6, 2022, and will be held in a synchronous online format.

Each day will be devoted to a plenary lecture, in which experts will present up-to-date information concerning STEM/STEAM education, followed by parallel sessions, as described below:

- **Thematic Panels:** A 60-minute framework dedicated to panelists' short presentations of personal perspectives on a specific issue related to STEM/STEAM education (total of 20-30 minutes), followed by a discussion among the panelists and the audience.
- **Paper presentations:** A 20-minute framework for presenting empirical or theoretical research and evidence-based best practices related to STEM/STEAM education (15 minutes for the study presentation and 5 minutes for discussion).
- **Research & Development Working Groups:** A 90-minute framework dedicated to discussing key issues related to STEM/STEAM education from different perspectives, or to research methodologies aimed at inquiring about various associated concerns. The purpose is to establish the basis for future international collaborations of R&D working groups. At the end of the second day of the conference, each working group will present a summary of the ideas that arose during the group's work, as well as its vision regarding the continuation of the group's work and intended plans, and invite conference participants to join the group for further international cooperation.
- **Workshops:** A 90-minute framework designed to allow participants to experience STEM/STEAM activities, and to discuss insights that arise following their experience. The workshops can be held in a hybrid format, namely, a local face-to-face meeting combined with an online broadcast to the conference participants.
- **Visual Presentations:** This is a 10-minute framework in the format of a "gallery talk", intended for exhibiting projects and initiatives in STEM/STEAM education. This can be, for example, a game, a short video, or an interactive study unit. The presentation should be dynamic/interactive and will be followed by an informal dialogue.

At the end of each conference day, several virtual rooms will remain open for further discussion with the panelists and presenters, and the continuation of the collaboration among the members of the various working groups.

# Call for proposals

We invite you to submit one or more proposals according to the following guidelines:

- **Thematic Panels**: Each panel will have 3-5 presenters, each of whom will address a specific perspective related to one central issue of the panel. Each panelist will have about 5 minutes for the presentation (a total of 20 to 30 minutes), and at the end of the presentations, the panel head will lead a discussion with the audience participation.
  The proposal should include:
  - The panel theme (title)
  - The name and the affiliation of the panel head, as well as the other panelists
  - An abstract of 300 words at most, describing the panel theme and the main issues that will be introduced within its framework, as well as the questions that will be presented for the discussion with the audience.
  Submitters whose proposals are accepted for presentation will meet representatives of the conference organizers (on Zoom) to coordinate the panel structure.

- **Paper Presentation:** The proposal should include:
  - The paper title
  - The author/s name/s and affiliation/s
  - An abstract of 500 words at most, including a brief introduction, theoretical/contextual background, methodological information, results/findings/reflection, discussion, and references (no more than 7)

- **Research & Development Working Groups (R&D WGs):** R&D WGs are managed by the group leader and 3-4 co-leaders from different STEM/STEAM disciplines, and possibly from different countries. The leaders and co-leaders should be experts in a specific theme related to STEM/STEAM education.
  The proposal should include:
  - The theme (title) of the R&D WG
  - The name and the affiliation of the group leader and co-leaders
  - An abstract of 500 words at most, including a short description of the key methodological/practical issues the WG will focus on, its short/long-term goals, the planned schedule of its activity (within a 90-minute session), intended outcomes, suggestions for future collaboration, and a list of recommended reading materials before the session (if relevant).

- **Workshops:** Workshops will engage the participants with hands-on activities related to STEM/STEAM education. The workshop can be held at a designated center or laboratory, at a school, etc., with face-to-face participation of a local audience (e.g., prospective teachers, in-service teachers, school students), while simultaneously being broadcast online for the conference participants (in such a case, the workshop presenters are responsible for the technical details, and they will hold rehearsals with the conference organizers). Another option is to film the workshop in advance and screen it during the workshop session while engaging the participants. The workshop can be held in any other format.
  The proposal should include:
  - The workshop theme (title)
  - The name/s and affiliation/s of the workshop leader/s
  - An abstract of 300 words at most, describing the workshop topic, information on how it will be conducted, and the key questions that will be discussed following the participants' experience
  If workshop participants will have to do any preparations in advance, please indicate this and give details.

- **Visual Presentations:** The time allotted for presenting a project or initiative is 10 minutes (5 minutes for presentation and 5 minutes for discussion).
  The proposal should include:
  - The theme (title) of the visual presentation
  - The name/s and affiliation/s of the presenters
  - An abstract of 300 words at most, including a description of the type of presentation, information about the content and context of the visual presentation, and (if relevant) links to sites related to the presentation

## The review process

The abstracts will be evaluated blindly by two or three reviewers according to the following criteria:
1. Meets the conference fundamental questions
2. Based on current STEM/STEAM theories, issues, and practices
3. Implications for STEM/STEAM pedagogy and/or research
4. The degree of clarity of the proposal

## General Guidelines

The language of the conference is English, therefore proposals must be submitted in English.
Signing up for submission purposes is FREE of charge, however, it does NOT constitute registration for the conference itself.
Presenters of accepted proposals must register for the conference by Thursday, April 14, 2022 in order to confirm their participation.

## Important dates

**Final date for submission** | **Sunday, January 30, 2022.**

**Final date for acceptance notification** | **Thursday, March 31, 2022.**

**Final date for presenters registration** | **Thursday, April 14, 2022.**

## Registration and payment

The payment for the conference is $80.

## For further information

If you have any questions regarding the conference and the submission process, please contact:
**event@macam.ac.il**
**For conference site press here**

**SUBMIT PROPOSAL**

## Conference Chairs:

**Atara Shriki,** Kibbutzim College of Education; **Noa Ragonis,** Beir Berl Academic College

## Steering Committee Members:

**Lior Bar,** The Mofet Institute; **Sigal Barkai,** The Israeli Ministry of Education; **Sheana Braizblatt,** The MOFET Institute; **Arielle Friedman,** The MOFET Institute; **Orit Hazzan,** Technion - Israel Institute of Technology; **Eli Hurvitz,** Trump Family Foundation; **Tal Yizrael,** Bar Ilan University; **Fadeel Joubran,** The Arab Academic College for Education in Israel; **Sara Klein,** Orot Israel – Academic College of Education; **Ilana Lavy,** Max Stern, Yezreel Valley College; **Debora Marchak,** Weizmann Institute of Science; **Raed Mualem;** Oranim College of Education; **Michal Nachshon,** Oranim College of Education; **Liora Nutov,** Gordon Academic College; **Tikva Ovadiya,** Oranim College of Education; **Rina Russo,** The MOFET Institute; **Chen Schechter,** The MOFET Institute; **Ruti Segal,** Oranim College of Education; **Ornit Spektor-Levy,** Bar-Ilan University; **Avigaiel Tzabary,** Talpiot College.