



# Conference Programme

## 18 - 19 March 2021



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## Thursday 18 March

Synchronous Presentations	
First Morning Session: 9:30 – 11:10	First Morning Session: 9:30 – 10:50
Science Teaching Models	Science Teaching Methodologies

Morning Break (11:10 – 11:40)

Synchronous Presentations Second Morning Session: 11:40 – 13:00
Primary Education

Half-Day Break

Synchronous Presentations First Afternoon Session: 14:30 – 15:50
Student Conceptions in Science Education

Afternoon Break (15:50 – 16:20)

Synchronous Presentations Second Afternoon Session: 16:20 – 18:20
STEM Education

## Friday 19 March

Multiplier Event First Morning Session: 9:30 – 11:00
STEM Education through Arts and Mini-Games

Morning Break (11:00 – 11:30)

Synchronous Presentations Second Morning Session: 11:30 – 13:10
Student Assessment

Half-Day Break

Synchronous Presentations First Afternoon Session: 14:30 – 15:30
Chemistry Education

Afternoon Break (15:30 – 16:00)

Synchronous Presentations Second Afternoon Session: 16:00 – 17:40
Curriculum Development



## Thursday 18 March 2021

**Introductory Speech and Practicalities: 9:00 – 9:10**

**Opening Speech: 9:10 – 9:25**

**University Science Education: Today and Tomorrow**  
*Derek Raine, University of Leicester (United Kingdom)*

**Synchronous Presentations**

	<b>First Morning Session: 9:30 - 11:10</b>	<b>First Morning Session: 9:30 – 10:50</b>
	<b>Science Teaching Models</b>	<b>Science Teaching Methodologies</b>
<b>9:30 – 9:50</b>	A Synoptic Approach to Science Education <i>Chris Brignell, University of Nottingham (United Kingdom)</i>	PHERECLOS: Boosting Science Capital and promoting STEAM Engagement with Open Schooling approaches <i>Phil Smith, Teacher Scientist Network (United Kingdom)</i>
<b>9:50 – 10:10</b>	Educational Mobilization of the Society: Gulen Movement <i>Mehmet Evrim Altin, International University of Bad Honnef (Germany)</i>	Elements of History and Evolution of Brain Science in High School Work-Alternative Activities <i>Marina Minoli, High School Marconi - National Biologists Order - Royal Society of Biology (Italy)</i>
<b>10:10 – 10:30</b>	Hannah Arendt's Philosophical Thoughts on Plurality as Theoretical Foundation for SoTL Projects <i>Alice Watanabe - Tobias Schmohl, OWL Technical University of Applied Sciences and Arts (Germany)</i>	New Approach to Teach Product Development in the Area of Smart Textiles <i>Manuela Bräuning, Albstadt-Sigmaringen University (Germany)</i>
<b>10:30 – 10:50</b>	The Closing Down of Schools due to the Covid-19 Pandemic and the Consequences for Science Education <i>Jan-Eric Mattsson - Ann Mutvei, Södertörn University (Sweden)</i>	Does the Organisation of Study Groups into Different Knowledge Levels Improve the Performance in a Bachelor Degree Course? <i>Anna Fensel, University of Innsbruck (Austria)</i>
<b>10:50 – 11:10</b>	The Prospect of Using Automatic Programming Assistant for Providing Direct Feedback in an Online Learning Environment <i>Marko Jevtić, University of Split (Croatia)</i>	Fostering Student's Engagement in the Digital World: Technology - A Boon or a Barrier <i>Geetika Goyal, Ellis Guilford School (United Kingdom) –</i>

**Morning Break: 11:10 – 11:40**

**Synchronous Presentations – Second Morning Session: 11:40 – 13:00**

<b>Primary Education</b>	
<b>11:40 – 12:00</b>	The Affective Dimension Implied in Mathematical Problem Solving by Future Primary Education Teachers <i>Iñigo Rodríguez-Arteche, Universidad Rey Juan Carlos (Spain)</i> <i>Mónica Arnal-Palacián, University of Zaragoza (Spain)</i>
<b>12:00 – 12:20</b>	Plugging the Leaky Pipeline: Perceptions of Primary Teachers and Students towards STEM Education <i>Janet Helmer - Kathy Malone, Nazarbayev University (Kazakhstan)</i>
<b>12:20 – 12:40</b>	The Role of Design-Based Research in the Development of Primary Level i-STEAM Curriculum in Kazakhstan <i>Kathy Malone - Janet Helmer - Gulnara Namyssova - Gulfarida Myrzakulova, Nazarbayev University (Kazakhstan)</i>
<b>12:40 – 13:00</b>	A Systematic Review of the Use of BBC Micro:bit in Primary School <i>Michail Kalogiannakis - Efransia Tzagaraki - Stamatios Papadakis, University of Crete (Greece)</i>



**Half-Day Break**

**Thursday 18 March 2021**

**Synchronous Presentations – First Afternoon Session: 14:30 – 15:50**

**Student Conceptions in Science Education**

<b>14:30 – 14:50</b>	Primary School Students' Preconceptions about the Term Nanotechnology and the Water Nano-Filters <i>George Peikos, University of Western Macedonia (Greece)</i>
<b>14:50 – 15:10</b>	Teaching Entropy at Bachelor Level in a Conceptual Change Perspective <i>Vincent Natalis, University of Liège (Belgium)</i>
<b>15:10 – 15:30</b>	Can Teaching on Ticks Increase Learning about Body and Health? <i>Ann Mutvei - Jan-Eric Mattsson, Södertörn University (Sweden)</i>
<b>15:30 – 15:50</b>	Analysis of Plant Reproduction Presentations in Austrian Biology Textbooks <i>Peter Lampert, Austrian Educational Competence Centre Biology (AECC-Bio) - University of Vienna - Austria Institute for General Education at Secondary School (IAS) - University College of Teacher Education (Austria)</i>

**Afternoon Break: 15:50 – 16:20**

**Synchronous Presentations – Second Afternoon Session: 16:20 – 18:20**

**STEM Education**

<b>16:20 – 16:40</b>	STEM Education in Gulen Inspired Schools through Extra Curricula Activities <i>Mehmet Evrim Altin, International University of Bad Honnef (Germany)</i>
<b>16:40 – 17:00</b>	STEM in the Classroom through Problem Solving on Bacteria and Drugs <i>Mónica Arnal-Palacián, University of Zaragoza (Spain) Iñigo Rodríguez-Arteche, Universidad Rey Juan Carlos (Spain)</i>
<b>17:00 – 17:20</b>	Hidden in Plain Sight: Students with Disabilities in STEM Education <i>Joseph Schneiderwind - Janelle Johnson, Metropolitan State University of Denver (United States)</i>
<b>17:20 – 17:40</b>	"Don't Throw away your Mobile!": Pupils' Perception of Raw Materials in Electronics <i>Mariaconcetta Canino, National Research Council of Italy – CNR / Institute for Microelectronics and Microsystems – IMM (Italy)</i>
<b>17:40 – 18:00</b>	REEdI: Rethinking Engineering Education in Ireland <i>Fiona Boyle, School of Science Technology Engineering and Mathematics - Munster Technological University (Ireland)</i>
<b>18:00 – 18:20</b>	Application of Cloud Technologies in Science Education <i>Stefka Tzanova, York College, City University of New York (United States)</i>

**End of Virtual Conference Day One**





## Friday 19 March 2021

### Multiplier Event – First Morning Session: 9:30 – 11:00

#### STEM Education through Arts and Mini-Games



9:30 – 11:00

The Multiplier event, organized in the framework of the G.A.STEM project (<https://gastem.pixel-online.org/>), is structured into three interactive sessions, each beginning with a presentation of activities and results achieved by the G.A.STEM project and finishing with a discussion:

09:30 – 10:00

An Overview on the G.A.STEM Project: Objectives and Aims

*Heli Brander, University of Turku, Finland*

*Antonio Giordano, Pixel, Italy*

10:00 – 10:30

Art and Mini-Games for STEM: from Students for Students

*Greet Bekaert, Sint-Lievenscollege, Belgium*

*Michela Tramonti, EU – Track, Italy*

10:30 – 11:00

Generating Game Ideas with your Students

*Mikhail Fiadotau, Tallinn University, Estonia*

### Morning Break: 11:00 – 11:30

### Synchronous Presentations – Second Morning Session: 11:30 – 13:10

#### Student Assessment

11:30 – 11:50

Effectiveness of Learning Assistants on Student's Active Learning in College STEAM Courses

*Shintaro Tajiri, Hokuriku University (Japan)*

11:50 – 12:10

The Effectiveness of Physics Lab Reports and Practical Tests as Assessment Tools of Practical Skills

*Rodrick Cini & Martin Musumeci - MATSEC Support Unit - University of Malta (Malta)*

12:10 – 12:30

Why Students' Interest in Science Declined? On Focus Group Interview of Japanese Undergraduate Students

*Shotaro Naganuma, Kyushu University (Japan)*

12:30 – 12:50

Drop Out and Attendance in Online Pre-Study Preparatory Physics Courses

*Dominik Giel, Offenburg University of Applied Sciences (Germany)*

12:50 – 13:10

How Students Can Explore the Activity of Critical Thinking

*Alice Watanabe – Tobias Schmohl, OWL Technical University of Applied Sciences and Arts (Germany)*

### Half-Day Break

## Friday 19 March 2021

### Synchronous Presentations – First Afternoon Session: 14:30 – 15:30



<b>Chemistry Education</b>	
<b>14:30 – 14:50</b>	Reducing the Cognitive Load: Facilitating Learning in Organic Chemistry by Incorporating Mechanism Videos <i>Christoph Bley, Friedrich Schiller University Jena (Germany)</i>
<b>14:50 – 15:10</b>	Transitions in University Lab Teaching in an Age of Pandemic <i>Thomas Anderson, University of Sheffield (United Kingdom)</i>
<b>15:10 – 15:30</b>	Chemistry and Society: Peer-Review as Teaching and Evaluation Devices within a Multitude of Subjects <i>Sérgio P. J. Rodrigues, University of Coimbra (Portugal)</i>

**Afternoon Break: 15:30 – 16:00**

**Synchronous Presentations – Second Afternoon Session: 16:00 – 17:40**

<b>Curriculum Development</b>	
<b>16:00 – 16:20</b>	European Cooperation Opportunities and Funds in the Field of Science <i>Elisabetta Delle Donne, Pixel (Italy)</i>
<b>16:20 – 16:40</b>	Where Were We: Science Teacher Professional Development under the Night Sky <i>Richard Hechter, University of Manitoba (Canada)</i>
<b>16:40 – 17:00</b>	The Effect of a Number of SEC Subjects on A Level Physics in Malta <i>Nicola Cutajar &amp; Martin Musumeci - Our Lady Immaculate School (Malta)</i>
<b>17:00 – 17:20</b>	An Investigation of the Perception of Inquiry-Based Learning amongst Science Teachers in Saudi Arabia <i>Faris Alsaadi, University of York (United Kingdom)</i>
<b>17:20 – 17:40</b>	Lesson Study as a Vehicle to Foster Teacher Agency: A Systematic Literature Review <i>Mairead Holden - Nikolaos Fotou, University of Lincoln (United Kingdom)</i>

**End of Virtual Conference**

## Virtual Presentations

(Available on the Conference Website)

<p>“Si(n)Ce You Are a Driver”: A PCTO Experience about Semiconductor Physics in Italy <i>Mariaconcetta Canino - Francesco La Via, National Research Council of Italy – CNR / Institute for Microelectronics and Microsystems – IMM (Italy)</i> <i>Laura Vivani, MOVERIM (Belgium)</i></p>
<p>Adaptation and Updating of an Instrument for the Curricular Didactic Analysis of STEM Teaching and Learning Units <i>María Teresa Sánchez Compañá - Cristina Sánchez-Cruzado - Juan Antonio Macías-García - Isabel Duarte-Tosso, University of Málaga (Spain)</i></p>
<p>AI-Based STEM Education: Generation of Individualised Mathematics Tasks <i>Markus Lange-Hegermann - Tobias Schmohl - Alice Watanabe - Stefan Heiss - Jessica Rubart, OWL University of Applied Sciences and Arts (Germany)</i></p>



## Virtual Presentations

(Available on the Conference Website)

Bromination of Fluorescein – A Facile Model Experiment for Electrosynthesis in Chemistry Classes

*Philipp Lanfermann - Christoph Weidmann - Tom Schüler - Thomas Waitz, Georg-August-University Göttingen (Germany)*

BYOD to Enhance Students Motivation in STEM Learning

*Beata Jarosievitz, Dennis Gabor College (Hungary)*

Copyright Literacy as a Component of the Modern Information and Media Literacy in University Environment: Project Concepts

*Tereza Trencheva - Evelina Zdravkova, State University of Library Studies and Information Technologies (Bulgaria)*

Developing Culture of Communication in Children Aged 5 - Years Using Game-Based Learning Technologies

*Anton Stoykov, Trakia University (Bulgaria)*

Developing sustainability related competencies for employees and trainees in food processing professions in industrial and artisanal food production

*Christina Strotmann - Marie Nölle - Julia Kastrup, Münster University of Applied Sciences (Germany)*

*Marc Casper - Werner Kuhlmeier, University of Hamburg (Germany)*

Development of a Virtual Wetland Ecological System Using VR 360 for Applications in Environmental Education

*Shun-Ting Chu - Wernhuar Tarng - Kuo-Liang Ou, National Tsing Hua University (Taiwan, Republic of China)*

Didactic Example of Physics Applied to Jurisprudence

*Luca Indovina, Fondazione Policlinico Universitario Agostino Gemelli IRCCS (Italy)*

*Carmela Coppola - Rocco Romano, Università degli Studi di Salerno (Italy)*

*Carlo Altucci, Università degli Studi di Napoli Federico II (Italy)*

*Riccardo Barberi, Università della Calabria (Italy)*

Digital Challenges in Education Crisis - Case Study of ESTGL

*Ana Branca Soeiro de Carvalho, IPV/ESTGL Centro de Investigação CIDETS (Portugal)*

*Nídia Menezes - Carlos Costa - Fernando Santos, Instituto Politécnico de Viseu (Portugal)*

Enhancing STEM Education for the Online Environment

*Melissa Caspary, Georgia Gwinnett College (United States)*

*Diane Boothe, Boise State University (United States)*

Escape MD: Using Escape Room as a gamified educational and skill building tool for Internal Medicine Residents

*Aakanksha Khanna - Adharsh Ravindran - Brandon Ewing - Regina Makdissi - Archana Mishra, University of Buffalo (United States)*

Evaluating Student Understanding of Uncertainty in Level 1 Undergraduate Physics Laboratories

*Philippa Petts - G Peter Swift - Samuel C Nightingale, Durham University (United Kingdom)*

Examination of the Theoretical Framework for Science Learning Material Incorporating Activity of Engineering in Elementary School STEM Education

*Yuuri Kimura - Rumi Haraguchi - Tadashi Ohtani, Tokyo Gakugei University (Japan)*

From Science to School - Educational Transfer Research of Modern Science Topics in the Interplay of Curriculum Development and Empirical Research

*Theresa Jünger - Philipp Engelmann, Friedrich Schiller University Jena (Germany)*

Gamification with Active Methodologies in Mathematics Learning in Secondary Education

*Silvia Natividad Moral Sánchez - María Teresa Sánchez Compañía, University of Málaga (Spain)*

Glyphoscape: An Escape Room Game based on the Biochemical Principles of Herbicides using the Example of Glyphosate

*Hilko Aljets - Niklas Momberg - Ingo Mey - Thomas Waitz, Georg-August-University Göttingen (Germany)*

Green Education for a Sustainable Future

*Iro Koliakou - Elias Kalambokis - Virginia Arvaniti, Anatolia College (Greece)*

*Tharennos Bratitsis, University of Western Macedonia (Greece)*



## Virtual Presentations

(Available on the Conference Website)

How to Incorporate Local Wisdom and Powerful Ideas into Creation of Innovative STEM Projects for Sustainable Agricultural Development

*Ruetai Chongsrid - Sukasem Awnpoon - Naruemon Sukkasame, National Science and Technology Development Agency (Thailand)*

Improving Scientific Practice Skills in a Virtual Chemistry Lab Course

*Patricia Morales Bueno - Rosario Santos Rodas, Pontificia Universidad Católica del Perú PUCP (Peru)*

Interdisciplinarity: Making the Teaching-Learning Process Global and Motivating

*Inês Braga, Instituto Superior de Contabilidade e Administração do Porto – Politécnico do Porto / CEOS / CITCEM (Portugal)*

Letting Mechanistic Reasoning Emerge: Pre-Service Teachers Scaffolding Strategies in Primary School Classrooms

*Víctor Grau Torre-Marín - Isabel Jiménez Bargalló - Jordi Martí Feixas, Universitat de Vic - Universitat Central de Catalunya, CODI Research Group (Spain)*

New and Challenging Perspectives in Science Education: Relationship between Involved Parties, Intellectual Property and Intellectual Capital, and Steps Identified in Intellectual Capital Study

*Cristina Raluca G. Popescu, University of Craiova - University of Bucharest - The Bucharest University of Economic Studies - National Institute of Research and Development for Environmental Protection (INCDEP) - National Institute for Research and Development COMOTI TURBOMOTORS (Romania)*

Planning and Practice of a RIKADOKU (Science Reading) Program "Until Milk Arrives Home" Based on the 5E-Model

*Rumi Haraguchi, Tokyo Gakugei Univ. Children Institute for the Future (Japan)*

*Asami Ohnuki, Shirayuri University (Japan)*

Problem-Based Tuition in Blended Environments

*Sarah Gretton - Dylan Williams - Derek Rayne, University of Leicester (United Kingdom)*

Rakursi Gallery - Initiatives for People with Visual Impairments

*Sanya Sachanska, Sofia University "St. Kliment Ohridski" (Bulgaria)*

*Tania Todorova, State University of Library Studies and Information Technologies (SULSIT) (Bulgaria)*

RAWsiko – Materials around us: A Digital Serious Game to Teach about Raw Materials' Importance for the Transition towards a Low-Carbon Economy

*Armida Torreggiani - Alessandra Degli Esposti - Emilia Benvenuti - Renata Lapinska-Viola, National Research Council of Italy (CNR) (Italy)*

*Alberto Zanelli, National Research Council of Italy (CNR) - Istituto per la Sintesi Organica e la Fotoreattività (ISOF) (Italy)*

*Mariaconcetta Canino, National Research Council of Italy (CNR) - Institute for Microelectronics and Microsystems (IMM) (Italy)*

*Lorenzo Forini, External consultant (Italy)*

*Maurizio Turinetto, ARraise S.r.l. (Italy)*

Reimagining Student Laboratories: Design and Evaluation of Two Innovative Concepts

*Marcel Simon - Nicolai ter Horst - Timm Wilke - Friedrich Schiller, University Jena - Chemistry Education Department (Germany)*

Science in the Spotlight: Didactic Reconstruction of Current Research for Chemistry Education

*Timm Wilk - Friedrich-Schiller, University Jena (Germany)*

SimScape – Integrating Novel Teaching Strategies in Medical Education

*Archana Mishra - Ahmed Munir - Rajesh Kunadharaju - Aakanksha Khanna - Karen Zinnerstrom - Connor Grabowski Adharsh Ravindran - Brandon Ewing - VandanaPai - Nalini Kalandhabhatta, University at Buffalo, NY (USA)*

Some Educational Innovations for Overcome the Deficit Of Information Literacy in a Time of Crisis

*Steliana Yordanova - Diana Stoyanova - Stoyan Denchev, University of Library Studies and Information Technologies (Bulgaria)*

Study of Parents' Attitudes to Distance Learning of Preschoolers During Pandemic

*Liliya Goryunova - Nadezhda Markova, Southern Federal University, Academy of Psychology and Pedagogy (Russian Federation)*

The Anthropocene Project – A Solution to the New Environment Challenges

*Cintia Lucia Colibaba, University of Applied Life Sciences and Environment Iasi (Romania)*





## Virtual Presentations

(Available on the Conference Website)

*Irina Gheorghiu, Albert Ludwigs Freiburg University (Germany)*

*Carmen Antonita, Scoala Primara Euroed (Romania)*

*Ovidiu Ursa, Iuliu Hatjeganu University of Medicine and Pharmacy Cluj (Romania)*

*Claudia Dinu, Gr. T. Popa University of Medicine and Pharmacy, Iasi (Romania)*

*Anca Colibaba, GR. T. Popa University / EuroED Foundation (Romania)*

The Application of 3D Data Visualization in Education and Research

*Ivan Trenchev, University of Library Studies and Information Technologies (Bulgaria)*

The Model of Teaching Reading as a Type of Speech Activity to Foreign Students of Philology in the Innovative Educational Environment

*Olga Khaleeva - Alena Kuvaeva - Irina Leshutina - Yulia Naumenko - Liliia Vokhmina, Pushkin State Russian Language Institute (Russian Federation)*

The Project Work Methodology that Promotes Articulation between Educational Levels

*Paula Quadros-Flores - Margarida Marta - Susana Sá, Escola Superior de Educação - Instituto Politécnico do Porto (Portugal)*

The Role of College-Level Mathematics in STEM Major Persistence

*Jaimi Paschal, California State University, Bakersfield (United States)*

*Amanda Taggart, Utah State University (United States)*

The Role of the Bulgarian Church in Education – Traditions and Modernity

*Maria Nikolova - Sofia Vasileva - Ivanka Yankova - Stoyan Denchev, University of Library Studies and Information Technologies (Bulgaria)*

Using Science and Creativity in Interdisciplinary Liberal Education

*Alex Kizuk – University of Lethbridge (Canada)*

Using Two-Eye-Seeing to Integrate Science Teaching and Indigenous Practices in a Graduate Course for Teachers

*Lilian Pozzer - Amy Farrell – Richard Hechter, University of Manitoba (Canada)*

Value-Based Management as an Opportunity to Increase Performance of Higher Education Institutions in Romania: Discovering Successful Methods and Representative Models of Measurement for Intellectual Capital

*Cristina Raluca G. Popescu, University of Craiova - University of Bucharest - The Bucharest University of Economic Studies - National Institute of Research and Development for Environmental Protection (INCDPM) - National Institute for Research and Development COMOTI TURBOMOTORS (Romania)*

## Poster Presentations

(Available on the Conference Website)

A Case Study on Communication to Boost Citizen Science Social Education: CS Track Community Platform

*M<sup>a</sup> Begoña Rivas Rebaque, Universidad Rey Juan Carlos (Spain)*

Assessment Tool for Scientific Thinking and Reasoning Skills: An Inspiration for University Graduates in Natural Sciences

*Lubomíra Rathouská Pyskatá - Eva Stratilová Urválková - Svatava Janoušková, Charles University (Czech Republic)*

Changes in Electrodermal Activity During Science Experiments: Preliminary Results of Case Studies among 6-Year-Old Children

*Angelika Pahl, University College of Teacher Education Bern (Switzerland)*

Comparison of Two Different Educational Approaches to the Experimental Teaching of a Luminometric-Based Analytical Method

*Ana M<sup>a</sup> Rodríguez Quesada, Universidad de Málaga (Spain)*



## Virtual Presentations

(Available on the Conference Website)

Digital and Low-Cost - Development of a Polarimeter on a Raspberry Pi

*Manuel Wejner, Friedrich Schiller University Jena - Chemistry Education Department (Germany)*

Drugs within a Context of Chemistry Teaching

*Theresa Jünger, Friedrich Schiller University Jena - Chemistry Education Department (Germany)*

Encouraging the Development of Higher-Order Cognitive Skills via Applied Exercises and Web-Based Self-Assessment to Teach the Basic Principles in Molecular Biology

*Katharina Wiessner - Thomas Machacek, University of Applied Sciences Technikum Wien (Austria)*

Interdisciplinary Course Smart Building Engineering: A New Approach of Teaching Freshmen in Remote Teamwork Project under Pandemic Restrictions

*Lina Schulze-Buxloh - Rolf Groß, FH Aachen University of Applied Sciences (Germany)*

Learning about Krebs and his Four Metabolic Cycles by Using a Problem-Based Learning Approach

*Miguel Ángel Medina Torres, Universidad de Málaga - Andalucía Tech (Spain)*

Nanomaterials in Cancer Therapy - A Model Experiment for Chemistry Education

*Björn Bartram, Friedrich Schiller University Jena - Chemistry Education Department (Germany)*

SOS for Researching Seafarers – Introducing Professional Doctorate in Maritime Education

*Goran Vukelic, University of Rijeka - Faculty of Maritime Studies (Croatia)*

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