

PROGRAMME

STE2024

4th INTERNATIONAL CONFERENCE

ON SCIENCE AND TECHNOLOGY EDUCATION

3-4 October 2024

FEUP, Porto - Portugal



PROGRAMME OF STE2024

Author underlined → presenting author

Thursday 3 October 2024	
8:30	STE2024 Opening (Room B032)
Session 1 – Learning mechanisms I (Chair: LFM da Silva and AM Ferreira)	
Room B032	
8:40	The effects of listening context on the retention and application of information from a podcast (STE24_22) <u>T Metsäkoivu</u> (Aalto University, Finland), T Kauppinen
9:00	What makes students motivated and engaged in online courses? (STE24_21) <u>J Tavaiila</u> (Aalto University, Finland), T Kauppinen
9:20	Continuous learning supporting development of knowledge and competencies in science and educational technology (STE24_36) <u>M Veermans</u> (University of Turku, Finland)
9:40	Exploring factors influencing pre-service teacher's systems thinking at technology and engineering: Empirical evidence from Slovenia (STE24_10) <u>B Kurent</u> (University of Ljubljana, Slovenia), S Avsec
10:00	Approaching introductory STEM courses through a transdisciplinary lens (STE24_41) LA Mauger, S Vokos, DL Smith, <u>EM Walter</u> (California State University Fresno, CA, USA), A Macalalag, Z El-Naggar, A Abd El-Aziz, FJ Merlino, H Elserafy, R Abouserie
10:20	Cross-curricular deployment of STEM language and communication learning routines (STE24_40) Z El-Naggar, E Skilton, <u>T Chau</u> (Arcadia University, PA, USA), LA Mauger, K Dean, A Macalalag, N Stauch, A Abd El-Aziz, FJ Merlino, H Elserafy, R Abouserie
10:40-11:00	COFFEE BREAK (Room under the Auditorium)
Session 2 – Learning mechanisms II (Chair: AZ Sampaio and A Macalalag)	
Room B032	
11:00	Enhancing mechanical engineering education through augmented reality: A case study on mechanism and machine theory (STE24_2) <u>J Puig-Ortiz</u> , L Jordi Nebot, <u>R Pàmies-Vilà</u> (Universitat Politècnica de Catalunya, Spain)
11:20	Teaching industrial data science: A lab module on chemical process digitization (STE24_46) R Machado, H Vendas, R Assis dos Santos, C Barata, HA Matos, <u>PSF Mendes</u> (University of Lisbon, Portugal)
11:40	Enhancing learning in mechanical engineering through video and artificial intelligence: A student perspective (STE24_3) <u>A Akhavan-Safar</u> (INEGI, Portugal), MM Kasaei, R Beygi, LFM da Silva
12:00	Architectural design education in an age of uncertainties (STE24_6) <u>DCKK Kowaltowski</u> (University of Campinas - UNICAMP, Brazil), N Bernardi, CA Cenci Jr.
12:20	Interactive MATLAB graphical user interface tool for teaching real applications of image processing: Wideband spectrograms for spectrum sensing (STE24_7) <u>A Rojas</u> (National Institute of Astrophysics, Optics, and Electronics (INAOE), Mexico), G Jovanovic Dolecek
12:40	A self-determination theory approach to blended learning in engineering mechanics (STE24_37) <u>C Della</u> (University of Glasgow, UK), G Peevers, K Kok, J Shah, OC Ming, JH Choo
13:00-14:00	LUNCH BREAK (Room under the Auditorium)
14:00	Workshop 1 – Fostering student conceptual understanding in introductory engineering courses using research-based cooperative-group worksheets (Chair: CH Kautz)
16:00-16:20	COFFEE BREAK (Room under the Auditorium)

Session 3 – Learning mechanisms III (Chair: M Veermans and BA Becker)

Room B032

16:20	Potential of the non-formal space Polo Astronomico Rodolpho Caniato to impact the continued training of elementary school teachers in southern Brazil (STE24_13) <u>CM Sitko</u> (Federal Technological University of Paraná, Brazil), OR Santos, MC Batista
16:40	Learn from anywhere with augmented reality (AR) (STE24_16) <u>T Rizzi</u> (University of Trento, Italy), T Kauppinen
17:00	BIM methodology empowered with virtual reality technology: Immersion and interaction (STE24_19) <u>AZ Sampaio</u> (University of Lisbon, Portugal), RS Sarmiento, AM Gomes
17:20	WikiMec: A tool to improve autonomous learning of classical mechanics (STE24_20) A Barjau, E Bosch, D Clos, <u>R Pàmies-Vilà</u> (Universitat Politècnica de Catalunya, Spain)
17:40	Investigating how biomedical science students understand complexity (STE24_33) <u>ST Anderson</u> (The University of Queensland, Australia), K Colthorpe
18:00	Inspiring engineering education: Service learning in manufacturing projects for ecological entities (STE24_31) <u>A Fabregat-Sanjuan</u> (Universitat Rovira i Virgili, Spain), A Mayolas, O Balsells, V Ismael-Biosca, F Huera-Huarte, R Pàmies-Vilà
19:00	Poster session and RECEPTION

Learning mechanisms

Poster 1	Designing and implementing a collaborative inquiry-oriented teaching program on food justice issues (STE24_27)	<u>LH Chen</u> (Tamkang University, Taiwan), ZL Peng, HH Weng, CY Lin
Poster 2	Development of an interactive tool to support laboratorial classes in adhesive bonding (STE24_42)	<u>EAS Marques</u> (University of Porto, Portugal), RJC Carbas, A Akhavan-Safar, LFM da Silva
Poster 3	Designing sustainable online communities for higher education (STE24_45)	<u>T Kauppinen</u> (Aalto University, Finland), T Metsäkoivu, T Rizzi, J Tavaila, J Angouri
Poster 4	Virtual tools to support the teaching of curricular units in engineering fields (STE24_47)	<u>RJC Carbas</u> (INEGI, Portugal), EAS Marques, FC Sousa1, CSP Borges1, TP Duarte, JAS Almacinha, JJM Machado, LFM da Silva
Poster 5	Evaluation of current teaching and learning practices in engineering education to industry 4.0 (STE24_50)	<u>NI Morar</u> (City University of London, UK), R Roy
Poster 6	Expeditionary learning around Europe (STE24_51)	<u>S Rouvrais</u> (IMT Atlantique, France), A Audunsson, A Barus, S Silalahi
Poster 7	Networking for engagement and re-design in STEM teaching (NERDS)!: Exploring outcomes from a faculty teaching camp using applied improvisation and storytelling (STE24_55)	<u>EM Walter</u> (California State University, USA), AJ Ressler, A Mendez
Poster 8	'I have heard the voice of my colleagues and my students': Enhancing STEM pedagogy through collaboration with Kazakhstani teacher educators (STE24_57)	<u>O Nuta</u> (Nazarbayev University, Kazakhstan), <u>A Nam</u> (Nazarbayev University, Kazakhstan), A Yembergenova, K Malone, B Goodman, A Azhigaliyeva, A Amrenova
Poster 9	Guided drawing in medical education: Evaluating AR and MR systems for anatomy learning (STE24_58)	<u>M Poupard</u> (University of Bordeaux, France), F Larrue, H Sauzéon, A Tricot
Poster 10	Novel educational tool for the first course of image processing: Design, description, and examples (STE24_59)	<u>A Rojas</u> (National Institute of Astrophysics, Optics, and Electronics, Mexico), G Jovanovic Dolecek

Diversity and inclusiveness

Poster 11	Engineering technology students' intercultural and human-centered design competency impact: Short-term South American study abroad (STE24_15)	<u>RD Webster</u> (Purdue University, USA), JM Ramos
Poster 12	Developing university STEM programs using culturally relevant socio-scientific issues (STE24_39)	<u>LA Mauger</u> (21st Century Partnership for STEM Education, Wayne PA, USA), S Vokos, DL Smith, EM Walter, <u>A Macalalag</u> (Arcadia University, PA, USA), Z El-Naggar, A Abd El-Aziz, FJ Merlino, H Elserafy, R Abouserie
Poster 13	Integrating and engaging students in the first year of Mechanical Engineering at FEUP (STE24_56)	<u>CFM Guedes</u> (University of Porto, Portugal), T Duarte, A de Jesus

Assessment

Poster 14	Evaluating the effectiveness of adaptive testing in a power engineering technology course (STE24_4)	MJ Turner, RD Webster (Purdue University, USA)
Poster 15	What is this green thing? Determining the psychometric properties of a test related to the concept of "plant blindness" (STE24_23)	R Adamkova, M Kubiátko (JE Purkyne University, Czech Republic)
Poster 16	Assessing scientific publication indices of Mechanical Engineering faculties in Portugal (STE24_25)	VCMB Rodrigues (INEGI, Portugal), AM Lopes, LFM da Silva

Friday 4 October 2024

Session 4 – Learning mechanisms IV (Chair: C Della and P Shekhar)

Room B032

8:40	Engineering technology students' demonstration of iterative product design without a design process diagram (STE24_11) MJ Turner , RD Webster (Purdue University, USA)
9:00	Enhancing conceptual comprehension of electrical quantities through the Blinker visualization tool (STE24_14) D Rihrtaršič (University of Ljubljana, Slovenia), M Lavrič, K Susman
9:20	Energy teaching and the Joule experiment (STE24_44) R Lopes Coelho (University of Lisbon, Portugal)
9:40	Improvement of teaching for digital signal processing course (STE24_26) C Aviles-Cruz (Autonomous Metropolitan University, Mexico), A Zúñiga-López, C Benavidez-Alvares, A Ferreyra-Ramírez
10:00	A preliminary study on customizing education and training of modern manufacturing technologies for diverse learner profiles and organizational demands (STE24_28) A Huusko (University of Turku, Finland), H Piili, M Veermans
10:20	Developing an online course for educators in disciplines outside computing on how computing will affect their disciplines (STE24_30) BA Becker (University College Dublin, Ireland)

10:40-11:00 **COFFEE BREAK (Room under the Auditorium)**

Session 5 – Diversity and inclusiveness (Chair: S Avsec and EAS Marques)

Room B032

11:00	Integrating systems and design thinking for enhanced engagement in sustainable and inclusive design (STE24_8) S Avsec (University of Ljubljana, Slovenia), M Jagiełło-Kowalczyk, A Żabicka, A Gawlak, J Gil-Mastalerczyk
11:20	Beyond the doctorate: Is engineering career progression gender bias? (STE24_18) CMC Ferreira (INEGI, Portugal), M Ribas, BD Simões, EAS Marques, RJC Carbas, LFM da Silva
11:40	Advancing equity and inclusivity in STEM mentorship: Leveraging co teaching and universal design for learning (STE24_12) N Stauch (California Polytechnic State University, USA), K Dean (Arcadia University, PA, USA), K Payne
12:00	Developing student agency through authentic application of socio-scientific issues in STEM classrooms (STE24_17) B Mathers (Arcadia University, PA, USA), J Johnson (Mercyhurst University, Erie, Pennsylvania, USA)
12:20	Empowering women in STEAM: Promoting equality with "Associação Beatriz Ângelo" (STE24_9) BD Simões (INEGI, Portugal), C Freire, H Lopes, S Diogo, A Branco, D Costa, R Zimmmler, P Soares, P Tamagnini, R Gaió, LFM da Silva
12:40	Exploring factors related to engineering students' enrollment in entrepreneurship courses (STE24_29) P Shekhar (New Jersey Institute of Technology, USA), CF Rodriguez-Hernandez

13:00-14:00 **LUNCH BREAK (Room under the Auditorium)**

Room B032

14:00 **Workshop 2 – New strategies for teaching current topics using cybersecurity and AI as use case studies** (Chair: CToregas and D Zeichick)

16:00-16:20 **COFFEE BREAK (Room under the Auditorium)**

Session 6 – Assessment (Chair: LFM da Silva and AM Ferreira)

Room B032

16:20	Socioscientific Issues: Teachers' perspectives on the successes and challenges of grades 6-12 students in social justice STEM education (STE24_1) <u>AZ Macalalag</u> (Arcadia University, Pennsylvania, USA), A Kaufmann, A Ricketts
16:40	University outreach as part of the engineering curriculum: Challenges and opportunities at the University of São Paulo, Brazil (STE24_48) <u>AN Rodrigues da Silva</u> (University of São Paulo, Brazil), L Montanari
17:00	Implementing G-STEAM education in schools: In-service teacher perspectives, challenges and curricular impacts (STE24_35) <u>S Rantanen</u> (University of Turku, Finland), X Huang, M Veermans
17:20	The invariant nature of students' grades in engineering programmes (STE24_52) <u>JP Pêgo</u> (University Porto, Portugal), A Freitas
17:40	Transfer of learning through authentic assessments in mechanics of solids (STE24_38) A Tan, <u>C Della</u> (University of Glasgow, UK), JB Jasin, LHI Lim, CM Ong, V Wang, A Molina-Cristobal
18:00	Advantages of implementing an active interdisciplinary final exam for mechanical engineering bachelor's degree candidates (STE24_43) <u>D Persano Adorno</u> (Università di Palermo, Italy), Ni Pizzolato
20:00	STE 2024 BANQUET (Restaurant Rabelos)