

# **2023 32nd Annual Conference of the European Association for Education in Electrical and Information Engineering (EAEIE 2023)**

**Eindhoven, Netherlands  
14-16 June 2023**



**IEEE Catalog Number: CFP2396D-POD  
ISBN: 979-8-3503-4676-3**

**Copyright © 2023, European Association for Education in Electrical and  
Information Engineering (EAEEIE)  
All Rights Reserved**

***\*\*\* This is a print representation of what appears in the IEEE Digital  
Library. Some format issues inherent in the e-media version may also  
appear in this print version.***

IEEE Catalog Number:	CFP2396D-POD
ISBN (Print-On-Demand):	979-8-3503-4676-3
ISBN (Online):	978-90-386-5690-8
ISSN:	2376-4198

**Additional Copies of This Publication Are Available From:**

Curran Associates, Inc  
57 Morehouse Lane  
Red Hook, NY 12571 USA  
Phone: (845) 758-0400  
Fax: (845) 758-2633  
E-mail: [curran@proceedings.com](mailto:curran@proceedings.com)  
Web: [www.proceedings.com](http://www.proceedings.com)

CURRAN ASSOCIATES INC.  
**proceedings**  
.com

# Papers

STEAM educator, one educator who does it all? An investigation of educators' perceptions regarding the definition of STEAM educators' job profile(s) .....	1
Monitoring large class practice in a virtual learning environment: online formative assessment experience.....	7
Exploring the Potential of Machine Learning to Predict Student Performance in an EM Course .....	12
Engineering education as a 'choose your own adventure' story.....	18
Long-term aspects of interdisciplinary learning: The case of electronic circuits.....	24
Teaching Digital Systems Engineering Courses and Students Performance and Satisfaction .....	28
Improved Teaching Concept for Lab Experiments .....	32
Blended On-the-Job Training with Collaborative Learning to Enhance the Robotic Skills of Industrial Electronic Students in Workplace-based Learning Program .....	38
The need to extend CBL courses over longer periods .....	43
ATHENA European University: a holistic approach to personalized learning .....	48
A Low-Cost Bench for Training Students in Power Amplifier and Digital Predistortion .....	54
Perceived Practical Competency amongst Electrical and Electronic Engineering Students .....	60
Utilization of Case-Based Learning in Problem- Solving Skill Development of Electrical Service Engineer for High-Rise Building .....	65
A Case Study of Engaging PhD Students in Applied Research.....	70
Early Warning System with Formative Feedback to Support Engineering Students in Electromagnetism .....	76
Mobile Programming with Kuika: A Course Design .....	82
Digital Technologies for Lecturing and Learning.....	88
Multidisciplinary Capstone Design Project: Biomedical Engineering, Mechanical Engineering, Engineering Management and Product Design.....	93
Billions of blue blistering barnacles! What we can learn from comics about the visualization of .....	98
Applying Project-Based Learning in Electrical Engineering: A 6 Year-long Experience .....	104
Empowering STEM candidates for employability and entrepreneurship.....	110
Technical Education for Industry 4.0: Generation Z's motivation to study technical subjects - a comparative study of selected universities in Denmark and Poland.....	116
Augmented Reality Applications in Mathematics and Science: Exploring Pedagogical Viability in the Amazon Region	121
Innovative teaching methods in engineering education: the STEAM-Active project.....	127
Building Global Competencies: A Strategic Approach to Internationalization of Engineering Education .....	132
Drones as Pedagogical Technology in STEAM Subjects: Analysis of Student Perceptions .....	137
Computational thinking through an online game to develop soft and hard skills.....	143
Advancing Personalized and Adaptive Learning Experience in Education with Artificial Intelligence .....	149
Digital Training for Cybersecurity in Industrial Fields via virtual labs and Capture-The-Flag challenges .....	155
Overcome learning obstacles in circuit network analysis with flowcharts .....	161
Educational Tools for Processor Design Classes: A Case Study.....	167
Best Practices Persisting in Engineering Education Since the Lockdowns .....	171
Cyber security in technical education.....	175
Standard-Based Braille Learning: a new proposal for teaching the Braille system .....	179
A web-based platform and a methodology to teach programming languages in electrical engineering education – evolution and student feedback.....	185
Experimental Learning in Electrical Engineering with the Erasmus+ DIG-SENSING Blended Intensive Program .....	191
Role of Student Associations in the Acquisition of Competences in University Engineering Programs .....	197
Women in IT Project: Survey Results .....	203
Framework for the conversion of RDI project outputs into educational material.....	208
The Effect of Self-Directedness on Learning Outcomes in Distance Learning Courses in Higher Education .....	213

Women, Science and Technology Chair - Promoting women's careers in STEM fields .....	219
Scratch4All Project - Educate for an All-inclusive Digital Society .....	225
Enhancing Engineering Competencies Curricula in the Context of University-Industry Chairs .....	230
An integrated framework for STEM education experiments with focus on sustainability and renewable energies .....	236
Gaining engineering skills by building an electric sports car – Formula Student team created by students for students .....	241
A Comprehensive Introductory Course Approach for Electrical and Computer Engineering Students .....	247
A Blueprint for Future Electrical Engineering Education .....	251
Analysis of Students' Pre-Knowledge of Computer Programming over Time .....	256
Education in Interaction with Industry.....	261
Why microelectronic education becomes a global priority ? .....	265
Non-Traditional Learning Activities to Improve Student Engagement.....	270
Automation of Homologation.....	275
Determination of complex permeability of materials in the context of loss reduction in submarine cables .....	280
Industry Master Courses – Successful Digitalisation and Lifelong Learning – Recent Case Studies.....	286
Contract Cheating – Dead or Reborn? .....	292
Reform, Innovation and Practice of Electronic Circuit Teaching .....	297
Qualitative Assessment Guidelines for MSc Graduation Projects in Electrical Engineering.....	302
Robocup MSL as a platform for Education and Applied Research .....	308
Developing a New Course "Mechatronics in Automotive" in Collaboration with Companies with Experience in the Field ..	313