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Proceedings of the
23rd European Conference on
e-Learning

Hosted by Universidade
Portucalense, Porto, Portugal

24-25 October 2024



Professor Fernando Moriera

A conference managed by ACI, UK



**Abstracts of the
23rd European Conference on e-Learning**

ECEL 2024

A Conference

Hosted By

Universidade Portucalense, Porto, Portugal

24-25 October 2024

Edited by Professor Fernando Moriera

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Papers submitted to this conference have been double-blind peer reviewed before final acceptance to the conference. Initially, abstracts were reviewed for relevance and accessibility and successful authors were invited to submit full papers. Many thanks to the reviewers who helped ensure the quality of all the submissions.

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About the 23rd European Conference on e-Learning, 2024

The European Conference on e-Learning (ECEL) is a prominent academic conference that serves as a platform for researchers, educators, and practitioners in the field of e-learning to share and discuss their findings and insights. With a history spanning 23 years, the conference has established itself as a vital forum for exploring advancements and innovations in e-learning.

The Proceedings of the 23rd European Conference on e-Learning, 2024 includes academic research papers, PhD research papers, Master's Research papers and work-in-progress papers, which have been presented and discussed at the ECEL 2024 conference. The proceedings are of an academic level appropriate to a professional research audience including graduates, post graduates, doctoral and post-doctoral researchers. All papers have been double-blind peer reviewed by members of the Review Committee.

Aims and Scope

The primary aim of ECEL is to foster collaboration and knowledge exchange among those involved in e-learning. It seeks to advance the field by providing a space where latest research, technologies, and pedagogical strategies can be presented. The conference encourages participation from a diverse group of attendees, including academics, industry experts, and policy-makers, reflecting the multifaceted nature of e-learning.

Topics Covered

The call for papers for the ECEL conference asked for contributions that considered the following topic. In addition, the committee welcomed papers on a number of specialist mini-tracks which can be seen at the end of this list.

- **Educational Technologies:** Innovations in digital tools and platforms designed to enhance learning experiences.
- **Blended Learning:** Strategies for effective teaching and learning in online and hybrid environments.
- **Distance Education:** Best practices and challenges in implementing distance learning programs.
- **Learning Analytics:** Use of data to improve educational outcomes and personalize learning experiences.
- **Inclusive Education:** Addressing accessibility and inclusivity in e-learning environments.
- **Mobile Learning:** Exploring the impact of mobile technology on education.
- **Game-Based Learning:** Integration of games and gamification in educational contexts to encourage engagement and motivation.

Experts in the field proposed mini tracks on the following topics. Papers accepted on these topics after the double-blind peer review process were presented as mini tracks at the conference and are also published in these proceedings.

- **Technology in Teaching and Learning**
- **Intelligent Adaptive e-Learning**

The programme from the 2024 conference can be downloaded from [here](#) and full details about the conference can be seen from the conference website: <https://www.academic-conferences.org/conferences/ecel/>

ECEL Preface

These proceedings represent the work of contributors to the 23rd European Conference on e-Learning (ECEL 2024), hosted by ACI and the Universidade Portucalense, Porto, Portugal on 24-25 October 2024. The Conference Chair was Professor Fernando Moriera, and the Programme Chair was Shital Jayantilal, both from Universidade Portucalense.

ECEL is a well-established event on the academic research calendar and in its 23rd year the key aim remains the opportunity for participants to share ideas and meet the people who hold them. The subjects covered illustrate the wide range of topics that fall into this important and ever-growing area of research.

The opening keynote presentation was given by Professor António Teixeira from the Universidade Aberta, who spoke about *Openness, Flexibility, Adaptability and Personalisation: How AI is Impacting Digital Education* and Professor Marta Mena from The National University of Tres de Febrero-UNTREF Argentina gave a keynote discussing *When Virtualization and Hybridization Causes Challenges for Teaching at University*. The final keynote address was given by Professor Cesar Alberto Collazos from University of Cauca-Colombia on the topic of *Collaborative Games as A Mechanism Supporting Monitoring and Evaluation of Collaborative Learning Processes*.

With an initial submission of 111 abstracts, after the double blind, peer review process there are 56 Academic research papers, 3 PhD research papers, 1 Masters Research paper, 1 non-academic paper and 6 work-in-progress papers published in these Conference Proceedings. These papers represent research from Algeria, Australia, Austria, Belgium, Bhutan, Canada, China, Croatia, Czech Republic, Denmark, Estonia, France, Germany, Greece, Hong Kong, China, Hungary, Ireland, Japan, Morocco, Norway, Oman, Pakistan, Chile, Portugal, Singapore, Slovakia, South Africa, Spain, Sri Lanka, Sweden, United Arab Emirates, UK and USA.

We would like to thank everyone who participated in this conference.

Professor Fernando Moriera and Professor Shital Jayantilal
Universidade Portucalense
Porto
Portugal

ECEL Conference Committee

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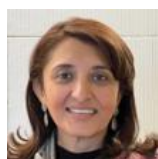
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Conference and Programme Chairs



Professor Fernando Moreira has been a member of the Science and Technology Department at Portucalense University since 1992, currently as a Full Professor, and a visiting professor at the University of Porto Business School. He was the head of the Science and Technology Department from May 2018 until February 2022. He is graduated in Computer Science (1992), M.Sc. in Electronic Engineering (1997) and PhD in Electronic Engineering (2003), both at the Faculty of Engineering of the University of Porto and Habilitation (2018). He teaches subjects related to undergraduate and post-graduate studies. He supervises several PhD and M.Sc. students. He is a (co-)author of more than 200 scientific publications with peer-review on national and international journals and conferences. He serves as a member of the Editorial Advisory Board for several journals and books. He organized several special issues from JCR journals. He has already regularly served as a member of Programme and Scientific committees of national and international conferences. He was the MSc in Computation coordinator during the last ten years. He holds editorial experience, and he is co-editor of several books. He is associated with NSTICC, ACM and IEEE. His principal research areas are mobile computing, ICT in Higher Education, Mobile learning, Social business and Digital transformation. He was awarded Atlas Elsevier Award in April 2019



Shital Jayantilal is the Head of the Department of Economics and Management at Portucalence University. She lectures under graduate and graduate courses in Strategy and Strategic Management. She has a PhD in Business Studies from Extermadura University (2016) and a degree in Economics from the Faculty of Economics, University of Porto (1999). She is also a practitioner and an experienced Senior consultant, with more than 15 years hands-on experience in aiding more than 50 SMEs and family firms, across diverse industries promoting their sustainability and enhancing trans-generational family business wealth. She is a member of the research unit REMIT – Research on Economics, Management and Information Technologies, Porto. Her main topics of research are Family Firms; Strategy and Game Theory, and she has published in various international journals. She has been awarded the 2021 Schulze Publication award by Entrepreneurship and Innovation Exchange and Family Business editorial teams.

Keynote Speakers



António M. Teixeira is Associate Professor of open, distance and network education at the Universidade Aberta where he has been Pro-Rector for Innovation in Distance Education and chaired the Department of Distance Education and e-Learning. He is a researcher at the Laboratory of Distance Education and e-Learning and at the Centre for Philosophy at the University of Lisbon. He has been on several boards of directors and many expert committees at national and international level. He's currently an external expert at AQU Catalunya and ACPUA quality assurance agencies and the research and innovation national agency of Uruguay (ANII) among others. António M. Teixeira has participated in many international research projects and authored a number of scientific articles and publications. His main research interest is educational innovation and learning futures; open education, particularly MOOCs; distance

learning and educational ethics. He has been part of the MOOC movement for some time co-authoring the first institutional pedagogical model dedicated to massive open education – the iMOOC. He has also co-designed the sMOOC pedagogical model.



Marta Mena is currently a Professor at the National University of Tres de Febrero-UNTREF Argentina. She is a director of the Virtual Training Program for Researchers-PROFORVIN at the National Technological University-UTN-Argentina, an Advisor at the National University of San Luis for the development of the Hybrid Classrooms Project and the Current Ambassador for Latin America at the International Council for Distance Education (ICDE) and member of the editorial board of Open magazine Praxis. Professor Mena received the Award of Excellence from the International Council for Open and Distance Education in November 2023. She has written countless articles and books about modality in Latin America.

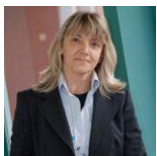


Cesar Alberto Collazos received the Ph.D. degree in computer science in 2004. He is currently a Professor at the Systems Department, Faculty of Electronic Engineering and Telecommunications, University of Cauca-Colombia. Coordinator of IDIS Research Group and also a Coordinator of the HCI-Collab Network: Collaborative Network Supporting HCI education on Iberoamerican countries. His areas of interest focus on human-computer interaction, collaborative systems, ICT, and education. Has published a lot of papers in recognized conferences and journals.

Mini Track Chairs



Prof. Dr. Abbas Fadhil Aljuboori is working currently at Media Technology Engineering, College of Engineering, University of Information Technology and Communications, Iraq. He has a Ph.D. in Computer Science from Dongguk University, SOUTH KOREA. Fulbright Visiting scholar – University of Central Oklahoma – Edmond – USA –2017. International Advisory Board Member for CT University in India. His field of Interest are in Data Mining, Web Applications, Big Data, Data Security, Information Systems, Social Media Analysis, and Smart Applications. He is a Member of several of Academic and Professional Societies. He is an Editor-in-Chief, Editorial Board Member and Reviewer of many eminent International Journals and Conferences worldwide.



Ana Paula Lopes is Professor at the Mathematics Department of the Porto Accounting and Business School (ISCAP) of the Polytechnic Institute of Porto (P.PORTO), Portugal, since 2000. She has a PhD in Mathematics (2006), in the field of Numerical Linear Algebra. She is author and co-author of several peer-reviewed publications on teaching and learning methodologies and innovations on educational technology. She has coordinated several projects related to the Use of Technology and Pedagogical Innovation in Distance Education since 2007 and has received many awards over the years.

Designing a Very Flexible Asynchronous/Synchronous Faculty Development Course

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Abstract: The Faculty of Health Sciences at the University of Cape Town has embarked on an innovative pilot project to enhance faculty development through a course that marries traditional and digital pedagogies. To address busy clinicians' and clinical educators' professional growth needs, this initiative replaces a face-to-face course with a flexible model allowing synchronous f2f or online and asynchronous participation. It focuses on leveraging technology in teaching, aiming to extend its reach and accessibility beyond the limitations of traditional formats. It fosters social and collaborative learning through structured weekly tasks. This hybrid modality offers flexibility, ensuring that participants have access to course materials and interactions in a manner that suits their schedules and learning preferences. Multimodal content caters to diverse learning preferences, promoting meaningful engagement with the material. The course design is anchored in a review of theoretical and methodological frameworks. Kirkpatrick's model guides the evaluation of educational outcomes across various dimensions, including participant reactions, learning achievements, behaviour changes, and overall accomplishments. There is an initial face-to-face session, critical to this blended learning experience, designed to build a community of practice among participants. After the first session, participants can choose their preferred mode of interaction with the content. The structure of the course is planned to enhance participants' technological skills while integrating fundamental educational principles into their professional practice. This pilot faced challenges, notably meeting role-specific content needs and addressing participants' varied IT proficiency levels. Participant feedback from previous f2f courses has been overwhelmingly positive, emphasizing the course's clear objectives, well-aligned content, and the effective integration of social and collaborative learning elements. Whether this will recur when the new format runs in 2024 remains to be seen. This pilot project represents a significant step forward in faculty development, showcasing the feasibility and benefits of a flexible learning model by offering synchronous and asynchronous participation options, demonstrating a commitment to accommodating diverse needs and preferences.

Keywords Online course, Faculty development, Technology

Strategies to Reduce Digital Distractions in e-Learning

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Abstract: The use of eLearning within youth serving organizations and schools has evolved from an add-on to becoming an integral part of the educational setting. The access and acceptance of digital devices in and outside of the classroom for eLearning has grown at the cost of student digital distraction. Digital distractions may include internet surfing, watching movies, texting, emailing, and scrolling social media. These social media applications have created a permanent change in a youth's capacity to focus. Most teenagers in the United States report becoming distracted when using digital devices in class, and it has some correlation with their academic performance (Langreo, 2023). In many ways, these digital distractions have created a technostress within our youth, which is the stress of being overwhelmed by technology and does not allow students to easily disengage from classwork or devices (Sellberg & Susi, 2014). There is also a feeling of never getting caught up, or the feeling that students need to multitask to get ahead (Carrier et al., 2015). The constant feed of information for digital consumption creates overload and stress. Students struggle to be engaged in learning because attention is being diverted to other online spaces. This affects mental health, effective learning, time management, and overall academic success of students. From information overload to confusing lesson designs, students have a difficult time focusing on their learning objectives. Fortunately, there are ways to liven up the eLearning experience and alleviate cognitive overload, so students do not get diverted from their educational objectives. As educators, we should aim to design content that draws youth attention and holds it long enough for them to absorb the information. Students also play a key role in managing their own focus and attention while on devices, but often do not have the tools to accomplish this. We, as conference presenters, will outline the latest in research about student digital distraction and highlight best practices to help educators design eLearning platforms to keep youth engaged. Grounded in the latest research, presenters will share strategies on helping youth set boundaries with personal devices to limit digital distractions and information overload.

Keywords eLearning strategies, Digital distraction, Impacts on learning, Multitasking, Digital overload

E-Learning with 3D Virtual Escape Rooms

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Abstract: Elearning is nowadays often used to open further possibilities to learn and memorize theoretical inputs apart from the classical scripts and books used in lectures. With elearning, additional learning material (like quizzes, tests, more detailed theoretical input, ...) can be provided for the course participants. This can on the one hand be useful during the lecture to diversify the presentation. On the other hand, it can also be used by the lecturer to give participants additional information outside the lecture (e.g. recommendations to understand the topic better, useful links, ...) or also homework. A more attractive (and interactive) form of elearning can even be realized by developing a game for students. In this work a 3D virtual chemistry escape room called "ChemScape" will be described which has been programmed in the last year and around 10 tasks have already been implemented. In escape games one task after the other have to be solved in order to be able to leave the playing scene (the room, the house, ..) or in a modified way to find a treasure. The "ChemScape" is intended to be used by students to apply theoretical knowledge in a game based elearning environment and to solidify theory. In this way, it shall also be useful for exam preparations. The special feature of the described escape room is that the escape game plays in a 3D programmed realistic looking laboratory (with laboratory desks, glass ware, instruments, cupboards, ...) where analytical instruments can be used in a realistic way (weighing with a spoon, using a pipette, sorting test tubes, ...). First tests with students have already taken place and improvements have been made. At the moment, only a certain set of tasks is available, but currently a database is being programmed in order to have the possibility to insert different questions at the same task stations. The "ChemScape" should be implemented in chemistry lectures in future – as one method to make chemistry more tangible – not only in laboratory courses, but also in chemistry lectures. Furthermore, the game gives the possibility as an exam preparation.

Keywords Chemistry, E-learning, Exam preparation, Virtual laboratory, Escape game

Critically Observing and Evaluating Personalised Learning in Higher Education

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Abstract: Purpose: The notion of personalised learning has reached a significant stage in its development, and emerging technologies such as Artificial Intelligence (AI), Machine Learning (ML), and Gen-AI appear to have considerable potential for its further advancement. With the advent of the latest technology, a wide range of AI-powered learning platforms have emerged. For instance, ALEKS, Smart Sparrow, and Knewton are AI-driven platforms that use Machine learning algorithms to personalise learning based on individual students' skills and interests. Several claims have been made about personalised learning platforms, including improved learning outcomes, enhanced student agency, and teachers' roles as facilitators. Such claims, however, remain debatable due to a significant lack of data supporting their usefulness and conceptualization in teaching and learning. Therefore, there is a need for further research to identify the characteristics that link personalised learning platforms to improved student agency. This research aims to critically analyse and evaluate personalised learning to gain a better understanding of how student agency is conceptualised and defined in the development of AI-driven personalised learning platforms. Additionally, this study intends to examine the role of teachers, their responsibilities, and interventions in a technology-assisted personalised learning environment, and any impact they might have. Method: The methodology used in this qualitative study involves a desk-based approach that primarily evaluates technology-assisted personalised learning platforms. In addition to the desk-based analysis, the study includes a qualitative dimension that involves interviews and conversations with teachers and learners who have firsthand experience with personalised learning platforms. Significance: This study aims to help educational institutions evaluate the effectiveness of AI-driven personalized learning platforms in promoting student agency. It also sheds light on the perceptions and expectations of educators regarding the potential benefits and challenges of technology-assisted personalized learning environments. Ultimately, the findings of this research will be available to policymakers, edtech companies, relevant stakeholders enabling them to better understand how personalised learning can be used to enhance student agency in technology-assisted educational settings.

Keywords Artificial Intelligence (AI), Personalised learning, Student agency, Teacher's role, Higher education

Professional Practice Students' Perspective on the Support of Developing an E-portfolio as a Means of Developing Their Work Experience Through Evidence Based Practice

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Abstract: This study investigates the perceptions of professional practice students regarding the utilization of e-portfolios as a tool for enhancing their work experience through evidence-based practice. The study analyzed the perspective of professional practice students on the support they received in developing an e-portfolio. Professional practice students at the University of Fort Hare are two sets of students which is Faculty of Education and Faculty of Social Science students. The research explores the support provided to students in developing e-portfolios and examines how these digital platforms contribute to their professional growth. A qualitative approach is employed, utilizing interviews and surveys to gather insights from a sample of professional practice students. Findings reveal the significance of e-portfolios in facilitating reflective learning, showcasing skills and accomplishments, and fostering evidence-based practice. Additionally, the study highlights the importance of effective guidance and support systems in the successful implementation of e-portfolios. Implications for educators, practitioners, and policymakers are discussed, emphasizing the need for tailored support mechanisms to optimize the benefits of e-portfolio integration in professional practice education.

Keywords E-portfolios, Professional practices, Evidence-based based practice

Asynchronous Training: Opportunities and Challenges for Seniors' Learning

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Abstract: E-learning is now an essential component of lifelong learning (Charytanowicz, 2019). Seniors are one of the most excluded groups from e-learning (Lipphardt & Slysachak, 2016). Its unfamiliarity can increase the risk of social exclusion (Pappas et al, 2019), as organizations increasingly providing asynchronous online training to their members (Chen & Hoarau, 2024). However, declining cognitive and physical abilities has negative effects on its adoption (Johnson & Finn, 2017), whereas while, when considering the learner's cognitive style, this type of training could, under certain conditions, enable more learning than in traditional training (Limone et al, 2018). To offer different paths to lifelong learning, organizations working with seniors could benefit from this type of training if it were accessible to their clientele. But what do seniors think of e-learning? Are they able to use these environments (power to act)? Do they want to use them (willingness to act)? Are they obliged to do so (duty to act)? This was explored in an action research project carried out in Canada by the Centre collégial d'expertise en gérontologie and Le-Cours, a company specialized in e-learning. The general objective was to develop an e-learning training framework that considers seniors' perceptions, supports and barriers to accessibility and learning. Two conceptual frameworks have been used: 1) the gerontagogical approach (Lemieux, 2000; Aubin, 2014), which links seniors' learning to health, socialization, needs, supports and barriers to learning, 2) user-centered design (Still & Crane, 2017), which involves the learner to create highly usable and accessible products. Individual meetings with two components were held in 2021 with nine people aged 70 and over: 1) direct observation of the person interacting in an asynchronous e-learning course, expressing their thoughts aloud (think-aloud method (Jaspers et al, 2004)), to better understand practices and accessibility issues, 2) a semi-directed individual interview to explore in depth the events observed as well as barriers and supports to learning. A mixed thematic qualitative content analysis have been performed on the data (Paillé & Mucchielli, 2003). The results highlight that asynchronous training can be of interest to seniors, but that accessibility remains an issue. Taking account of learning and design for seniors is essential, especially as e-learning features can compensate some learning barriers associated with ageing.

Keywords E-learning, Online accessibility, Asynchronous training, Gerontagogical approach, Design for elderly, Centre collégial d'expertise en gérontologie

Empowering Hong Kong Educators: Enhancing Teaching Through Blended Learning

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Abstract: The emergence of the COVID-19 pandemic triggered global educational reform, compelling a swift transition to blended and innovative learning models. In response to this critical need, a unique collaboration was forged in 2022 between two pioneering universities in Hong Kong, aimed at empowering primary and secondary school educators to refine their teaching methods through blended learning techniques. The project, stemming from a previous successful flipped learning pilot scheme, provides comprehensive support to the educational community. It encompasses school-specific consultations conducted by university faculty and veteran practitioners in blended learning, alongside professional development opportunities, including a certificate course tailored to formalize school leaders' expertise in blended learning pedagogies. Additionally, the initiative includes a self-learning platform developed by the project team, offering a curated collection of instructional videos and ready-to-use lesson plans to enrich the teaching and learning experience. Moreover, the initiative has united school leaders from 16 institutions to formulate a detailed guideline for the school-wide adoption of innovative teaching methods. Workshops and other engagement activities are also hosted to provide guidance and incentives among parents and students to bolster self-directed learning. Over the course of three years, the project aims to outreach to 100 partner schools, train 400 teachers, and positively influence the learning journeys of 10,000 students. Currently, over 60 schools and more than 400 teachers are actively implementing blended learning strategies with the project's support, benefiting thousands of students. This remarkable progress has earned international acclaim, with the initiative being awarded for its innovative approach to addressing contemporary educational challenges. As the project progresses, educators previously involved will be invited to take up mentorship positions to lead and support new participants. This train-the-trainer approach is envisioned not only to broaden but also reinforce the success of blended learning practices, echoing with the project's ultimate goal of nurturing a culture of innovation and resilience that can adeptly meet the region's forthcoming educational challenges.

Keywords Blended learning, Educational innovation, Teacher professional development, Flipped learning, Self-directed learning

Assessing e-Portfolio Usability Within Blackboard Learning Management System for Enhancing Experiential Learning

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Abstract: The value of student portfolios as a pedagogical tool for encouraging students to learn reflectively and experientially is growing. A teaching portfolio is essential for student teachers since it contains their lesson plans, pedagogy, educational philosophy, and observational feedback. It also acts as a self-reflective tool for professional growth and demonstrates their teaching abilities. It allows aspiring teachers to record their professional development and abilities by giving tangible illustrations of their capacity for lesson planning, teaching, and student interaction. In recent years, there has been a shift to online and mobile learning to increase student access to learning, such as using e-portfolios in experiential learning for student teachers. In 2019, the University of Fort Hare's Teaching and Learning Centre (TLC) Portfolio Development Team introduced e-portfolios using Google Sites, which proved successful. In 2022, a new portfolio module on Blackboard Learning Management System (LMS) was introduced, which compelled the portfolio development team to start rolling out training e-portfolios using Blackboard LMS for the institution as the institution is subscribed to Blackboard as the LMS of choice. Student teachers must develop e-portfolios to showcase, reflect, and evidence their work as evidence of their professional activity. This study aimed to Assess e-portfolio usability within the Blackboard Learning Management System (LMS) for Enhancing Experiential Learning by examining its appearance, usability, and effect on learning results. This implies that the study's main focus will be on how effective and user-friendly e-portfolios are when utilised with Blackboard LMS. This study assessed the usability of the Blackboard e-Portfolios using the global e-learning framework as a guide. A qualitative survey was administered to undergraduate student teachers who provided feedback on the online questionnaire to gather

data for the study. A thematic analysis was used to aggregate and categorise responses into themes based on the research questions. Recommendations will be made because this study examined the effectiveness of the Global e-Learning Framework in assessing the accessibility of learning.

Keywords Blackboard, Student mobility, e-Portfolio, e-Learning, Usability
