ICEM

International Council For Educational Media

October 12-14, 2022

PORTUGAL

POLITÉCNICO DE SANTARÉM

MOVING ON TOWARDS 'NEW NORMAL' IN EDUCATION

ICEM2022 CONFERENCE

BOOK OF ABSTRACTS

OCTOBER 2022

International Council For Educational Media

BOOK OF ABSTRACTS

October 12-14, 2022

Polytechnic of Santarém

@ICEM2022

Title: Moving on Towards 'New Normal' In Education - ICEM2022 Conference: Book of Abstracts

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Wim Van Petegem

PROGRAM

12 October 2022 (Wednesday)

8h30 - 16h00	Participants' Reception	School of Education Lobby
9h00 - 16h00	Workshop A - Design Thinking Bootcamp (full day) facilitator: Otto Benavides	Room E0.10
9h00 - 11h00	Workshop G: AI Chatbot - Use and Design for Education facilitators: Huiyu Zhang, Linda Fang, and Ester Goh	Auditorium 2 ONLINE
9h30 - 12h30	Workshop B - Augmented Reality with Wikitude and Unity facilitator: Victor Álvarez	Room D0.06 (BYOD)
9h30 - 12h30	Workshop C - Emotional Methodologies facilitator: Marilene Garcia	Room B0.03
12h30 - 14h00	Lunch break	Campus Cantine
14h00 - 16h00	Workshop D - Methodological Analysis of Analogue Game Design for Educational Experiences facilitator: Micael Sousa	Room B0.03
14h00 - 15h30	Workshop E - Pedagogic Video Design Principles facilitator: Jack Koumi	Room D0.06 (BYOD)
15h30 - 16h00	Visit to the Museum of Technologies and the vídeo studios	Museums and Studio Rooms
16h00 - 17h30	Conference opening - Introduction and moderation by conference chair: Ana Loureiro (10 min) - Words of welcome: ICEM president M.ª José Loureiro (10 min) - Words of welcome: Santarém Municipality representant (10 min) - Words of welcome: School of Education director George Camacho (10 min)	Auditorium 1

	- Words of welcome: IPSantarém president João Moutão (10 min) - Words of welcome: Ministry of Education (10 min) - Words of welcome: Ministry of Science, Technology and Higher Education (10 min)	
17h30 - 18h30	Plenary session: - Keynote speech: M.ª João Horta - Vice Directorate-General for Education (45 min) "Digital education as a pathway for inclusion" moderation: Walter Olensky	
18h30 - 19h00	Cocktail Reception (wine & snacks)	**Room E0.14**
19h00 - 20h00	ICEM Meeting	Auditorium 1

13 October 2022 (Thursday)

8h30 - 9h00	Participants' Reception	School of Education Lobby
9h00 - 11h00	**Parallel Sessions / Symposium**	
	Symposium 1: Technologies and Education: reports of experiences in teacher training in Portugal moderation: Susana Senos, Cecília Guerra	Auditorium 1 ONLINE
	Symposium 2: "A Pesquisa que Ensina" na Escola: projetos catalisadores de competência e literacias plurais moderation: Teresa Cardoso	Room E0.10
	Parallel Session 1 moderation: Susana Leal	Room B0.03
	Parallel Session 2 moderation: Nuno Oliveira	Auditorium 2 ONLINE

11h00 - 11h30	**Pause - Hanging OUT @ Room E0.14**	
11h30 - 12h30	Plenary Session - Keynote speech: Badrul Khan “Blended Learning in the New Normal” moderation: Ruthi Aladjem	Auditorium 1
12h30 - 14h00	Lunch break	Campus Cantine
14h00 - 15h30	RoundTable: Women in Media & Tech: past, present and future in Educational Media moderation: M.ª José Loureiro, Inês Messias	Auditorium 1
15h30 - 16h00	**Pause - Hanging OUT @ Room E0.14**	
16h00 - 18h00	**Parallel Sessions / Symposium**	
	Symposium 3: Inclusion and Accessibility in the Digital Environments and Media moderation: Ana Afonso	Auditorium 1
	Symposium 4: O potencial das tecnologias digitais e dos ambientes educativos inovadores na promoção de aprendizagens moderation: Idalina Lourido Santos	Auditorium 2 ONLINE
	Parallel Session 3 moderation: Alexander Gardner-McTaggart	Room B0.03
	Parallel Session 4 moderation: João Torres	Room E0.10
18h00	Group walking from Campus to old town (meeting at school lobby)	
19h30	**Conference Dinner @ Taberna do Quinzena II (typical restaurant)**	

14 October 2022 (Friday)

8h30 - 9h00	Participants' Reception	School of Education Lobby
9h00 - 11h00	**Parallel Sessions / Workshop**	
	Parallel Session 5 moderator: Daniela Pedrosa	**Room B0.03**
	Parallel Session 6 moderator: Filipe T. Moreira	Room E0.10
	Parallel Session 7 moderator: Ana Loureiro	Auditorium 2 ONLINE
	Workshop F - The State of Digitisation in the German Education Sector - An Overview (60 min) facilitator: Johannes Schmied	Room D0.06 (BYOD)
11h00 - 11h30	**Pause - Hanging OUT @ Room E0.14**	
11h30 - 12h30	Plenary Session - Keynote Speech: Mark West - UNESCO (45 min) "Futures of Education" moderator: Otto Benavides	Auditorium 1
12h30 - 14h00	Lunch break	Campus Cantine
14h00 - 15h00	Plenary Session - Keynote Speech: António Moreira (45 min) "Healthy and Sustainable Educational Ecosystems in Different Times and Spaces" moderator: Rui Matos (CIEQV)	Auditorium 1
	Symposium 5: Going Digital on Learning - Developing Educational Technology moderator: Inês Messias	Room B0.03
15h00 - 16h30	**Parallel Sessions / Symposium**	

	Symposium 6: Designing faculty professional development for the new normal (online) moderator: Alev Komsuoğlu Elçi	Auditorium 2 ONLINE
	Parallel Session 8 moderator: Csaba Komló	Room B0.03
	Parallel Session 9 moderator: Ana Oliveira	Room E0.10
16h30-17h00	**Pause - Hanging OUT @ Room E0.14**	
17h00-17h30	Closing session - Conference summary by chairs: Ana Loureiro, Otto Benavides - Future vision of ICEM: M.ª José Loureiro, Csaba Komló, Ray Laverty - Invitation to the next ICEM annual conference in Kuching (Borneo island, Malaysia): Margaret Chan, Jamil Hamali, Kazys Vogulys	Auditorium 1
17h30-19h30	Media Festival	Auditorium 1
19h30 - 20h00	ICEM Board meeting	B0.04

15 October 2022 (Saturday)

9h00 - 12h30	Walking tour - Old Town (free, upon registration)	meeting point: campus main entrance
9h00 - 18h00	Medieval town (Óbidos) and sea shore (Nazaré & Peniche) tour (by bus - extra cost, upon registration and limited to 50 participants - lunch not included)	meeting point: school of education main entrance

INDEX

ICEM22

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PORTUGAL

POLITÉCNICO DE SANTARÉM

KEYNOTE SPEECHES

MOVING ON TOWARDS 'NEW NORMAL' IN EDUCATION

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OCTOBER 2022

KEYNOTE SPEAKERS

Maria João Horta

Ministry of Education of Portugal

Digital education as a pathway for inclusion

Moderation: Walter Olensky

Badrul Khan

George Washington University; University of Texas

Blended Learning in the New Normal

Moderation: Ruthi Aladjem

Mark West

UNESCO

Futures of Education

Moderation: Otto Benavides

António Moreira

Universidade Aberta (UAb); CEIS20; GPe-dU – UNISINOS/CAPES-CNPq

Healthy and Sustainable Educational Ecosystems in Different Times and Spaces

Moderation: Rui Matos

Maria João Horta

KEYNOTE SHORTBIO

Deputy Director-General of the Directorate-General of Education, since 2019.

She has a PhD in ICT in Education in the specialty of Information and Communication Technologies in Education, from the Institute of Education of the University of Lisbon (2012) and Master in Education – Specialization in Didactics of Sciences at the Faculty of Science of Lisbon (2002).

She is Team Leader, INCoDe.2030 Education Team at the Directorate General of Education, Ministry of Education, since 2017.

She is a representative in the Thematic Working Group – Digital Citizenship of European Schoolnet and in the Better Internet for Kids Advisory Board of European Schoolnet, since 2017.

She has been a guest lecturer at the Almeida Garrett School of Education since 2016.

She was Director of the Educom Teacher Training Center (2012/2017).

She was part of the Working Group that had the mission of defining the exit profile of young people at the end of 12 years of compulsory education, a group appointed by the Secretary of State for Education, through Order No. 9311/2016, of July 21.

She was a seconded teacher at the Ministry of Education, at the Educom ICT Competence Center (2011/2017).

She has been a certified trainer by the Scientific and Pedagogical Council for Continuing Education since 2008.

She develops research work in the area of education and ICT. She is author and co-author of books, scientific articles, studies, curriculum guidelines and evaluation reports of educational projects.

Digital education as a pathway for inclusion

Maria João Horta[1]

[1] Ministry of Education, Portugal

Abstract. The Policies promoting Inclusion in Portugal began in 2017 with the publication of the document "Students' Profile by the End of Compulsory Schooling ", a widely discussed document that constitutes the national benchmark for 12-year of compulsory education in Portugal. This was followed, in 2018, by the publication of the new laws for the Curriculum and for Inclusive Education and also by the intense work around the issues of promotion of Citizenship.

More recently, in April 2020, by decision of the Council of Ministers, a process of Digital Transition begins in the various sectors of society and, thus, the "Digitization Program for Schools" was born with three main axes: distribution of computers and connectivity to all students and teachers of primary and secondary education, training teachers for the development of their digital skills and production of digital educational resources for all subjects of the national curriculum. The first axis has already been completed, the second is undergoing extensive development (of the approximately 100,000 teachers, 64,500 have already completed training) and the third is still at an early stage, but its configuration has already been completed.

The set of policies for inclusion has shown positive results at various levels, according to a recent OECD (2022) study, one of which we highlight is the strong reduction in early school leaving.

Badrul Khan

KEYNOTE SHORTBIO

Professor Dr. Badrul Khan, formerly founding director of Educational Technology Graduate Cohort Programs at the George Washington University and University of Texas at Brownsville, coined the phrase Web-based instruction with his 1997 best-selling Web-Based Instruction book which paved the way for the new field of e-learning. Recognized as the founder of modern e-learning by 2014 NATO e-Learning Forum, he was inducted into the United States Distance Learning Association Hall of Fame.

He authored/edited fifteen books and over 100 manuscripts in e-learning, his Managing E-learning book has been translated into 23 languages. He is the host of KDW TV show on FOX 5 PLUS Washington, DC. Website: http://BadrulKhan.com/

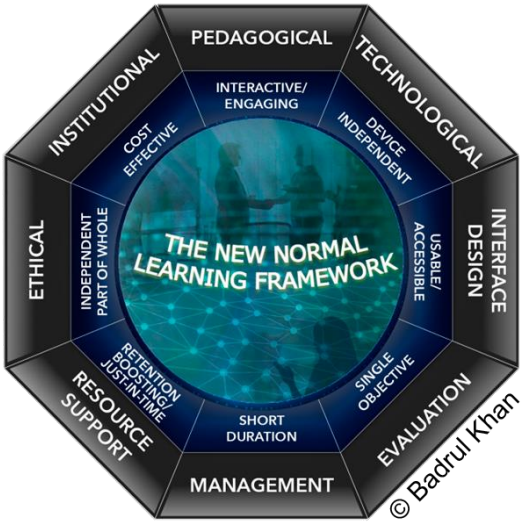
Blended Learning in the New Normal

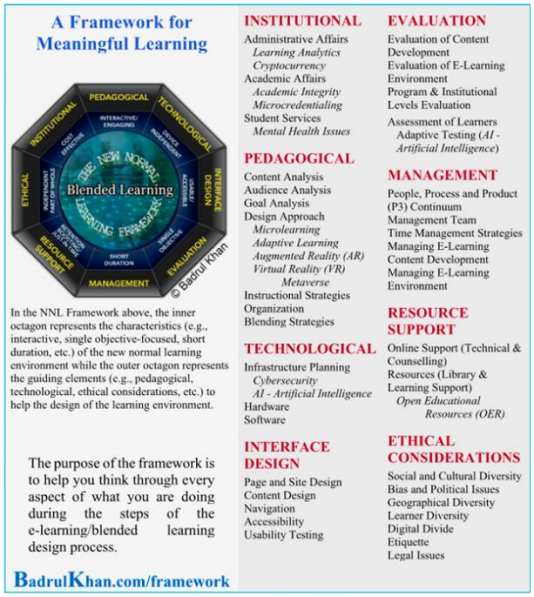
Badrul Khan[1,2]

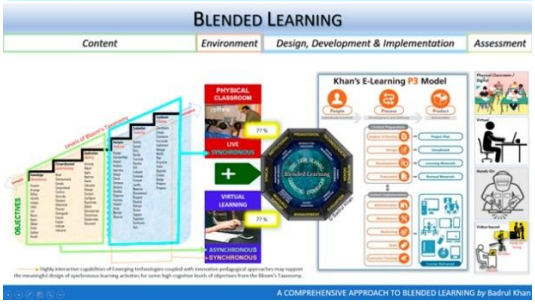
[1]George Washington University; [2]University of Texas

Abstract. The rise of the CoViD-19 pandemic in March of 2020, changed the way we learn and live. This global health crisis has given rise to a new normal. Education and training programs have shifted to self-paced e-learning and virtual classrooms. Post CoViD-19, even when learning returns to the physical classroom, the trend toward blended learning will continue. In this presentation, I explore how e-learning has evolved toward blended learning and how we can use modern technologies like artificial intelligence and learning models such as microlearning to improve blended learning.

Three relevant images are provided below:




A Framework for Meaningful Learning
PEDAGOGICAL
TECHNOLOGICAL
INTERFACE DESIGN
EVALUATION
MANAGEMENT
RESOURCE SUPPORT
ETHICAL
INSTITUTIONAL
INTERACTIVE/ ENGAGING
SINGLE OBJECTIVE
SHORT DURATION
THE NEW NORMAL LEARNING FRAMEWORK
Blended Learning
© Badrul Khan
In the NNL Framework above, the inner octagon represents the characteristics (e.g., interactive, single objective-focused, short duration, etc.) of the new normal learning environment while the outer octagon represents the guiding elements (e.g., pedagogical, technological, ethical considerations, etc.) to help the design of the learning environment.
The purpose of the framework is to help you think through every aspect of what you are doing during the steps of the e-learning/blended learning design process.
BadrulKhan.com/framework
INSTITUTIONAL
Administrative Affairs
Learning Analytics
Cryptocurrency
Academic Affairs
Academic Integrity
Microcredentialing
Student Services
Mental Health Issues
PEDAGOGICAL
Content Analysis
Audience Analysis
Goal Analysis
Design Approach
Microlearning
Adaptive Learning
Augmented Reality (AR)
Virtual Reality (VR)
Metaverse
Instructional Strategies
Organization
Blending Strategies
TECHNOLOGICAL
Infrastructure Planning
Cybersecurity
AI - Artificial Intelligence
Hardware
Software
INTERFACE DESIGN
Page and Site Design
Content Design
Navigation
Accessibility
Usability Testing
EVALUATION
Evaluation of Content Development
Evaluation of E-Learning Environment
Program & Institutional Levels Evaluation
Assessment of Learners
Adaptive Testing (AI - Artificial Intelligence)
MANAGEMENT
People, Process and Product (P3) Continuum
Management Team
Time Management Strategies
Managing E-Learning Content Development
Managing E-Learning Environment
RESOURCE SUPPORT
Online Support (Technical & Counselling)
Resources (Library & Learning Support)
Open Educational Resources (OER)
ETHICAL CONSIDERATIONS
Social and Cultural Diversity
Bias and Political Issues
Geographical Diversity
Learner Diversity
Digital Divide
Etiquette
Legal Issues


BLENDED LEARNING
Content
Environment
Design, Development & Implementation
Assessment
PHYSICAL CLASSROOM
77 %
LIVE SYNCHRONOUS
VIRTUAL LEARNING
77 %
ASYNCHRONOUS & SYNCHRONOUS
OBJECTIVES
Khan's E-Learning P3 Model
A COMPREHENSIVE APPROACH TO BLENDED LEARNING by Badrul Khan

Mark West

KEYNOTE SHORTBIO

Mark West works in UNESCO's Education Sector, where he examines how technology can improve the quality, equity, and accessibility of learning, especially in developing countries. He is part of a small team that is reimaging how knowledge and learning can shape the future of humanity and the planet as part of a flagship UNESCO initiative called Futures of Education.

The initiative is steered by an International Commission chaired by the President of Ethiopia and relies on a global consultation process that will run until early 2021. Mr. West is also active outlining strategies to make digital solutions more inclusive for people with low literacy skills, helping governments enact policies and practices to ensure that women and girls develop strong digital skills, and supporting country-level reviews of ICT in education work.

He has written extensively about technology and education, and his most recent publication, 'I'd Blush if I Could' (2019) was positively reviewed in The New York Times, Le Monde, The Guardian, Der Spigel, Time Magazine and numerous other publications. Prior to joining UNESCO in 2011, Mr. West researched education in Azerbaijan as a Fulbright Fellow and worked as a teacher and teacher trainer in the United States. He is a graduate of Stanford University.

http://www.unesco.org/new/en/unesco/

themes/icts/m4ed/

unesco-mobile-learning-week/webinar/mark-west/

Revisiting the promises of educational technologies in the aftermath of COVID-19

Mark West[1]

[1] UNESCO

Abstract. The COVID-19 pandemic pushed education from schools to educational technologies at a pace and scale with no historical precedent. For hundreds of millions of students formal learning became fully dependent on technology – whether internet-connected digital devices, televisions or radios. Mark West's keynote address will share findings and analysis from a forthcoming UNESCO publication that examines the numerous adverse and unintended consequences of this shift. The address will document how technology-first solutions left a global majority of learners behind and the many ways education was diminished even when technology was available and worked as intended. In unpacking what went wrong, Mr. West's address will illuminate lessons and recommendations to ensure that technology facilitates, rather than subverts, efforts to ensure the universal provision of inclusive, equitable and human-centered public education. Finally, Mr. West will explain how UNESCO is working with countries and wide range of partners to reorient global, national and local efforts to leverage technology for teaching and learning as part of the United Nations Transforming Education Summit process.

António Moreira

KEYNOTE SHORTBIO

Has a PhD and a Master's degree in Education Sciences from the University of Coimbra.

He is an Associate Professor with Aggregation in the Department of Education and Distance Learning, Director of the Delegation of Porto and Coordinator of the Development Unit of the

Local Learning Centres of Universidade Aberta (UAb).

Researcher and Coordinator of the Centre for Higher Education Pedagogy Studies at the Centre for Interdisciplinary Studies (CEIS20) at the University of Coimbra and Foreign Coordinator of the Digital Education Research Group at the University of Vale do Rio dos Sinos (GPe-dU – UNISINOS/CAPES-CNPq), Brazil.

Collaborating Professor in the Post-Graduate programmes in Education and Contemporaneity and Management and Technologies Applied to Education of the University of the State of Bahia (UNEB) and Guest Professor in the Specialisation Course in Education and Technologies of the Federal University of São Carlos (UFSCar), Brazil.

Since 2020 he is coordinator of the Digital Teaching Course for Higher Education Teachers at Universidade Aberta.

He currently coordinates the Project Distance Education in Prisons in Portugal (UAb) and Responsible Foreign Researcher of the Institutional Program of Internationalization CAPES/PRINT: “Digital Transformation and Humanities: Education, Communication and Technologies” (UNISINOS/UAb).

Healthy and Sustainable Educational Ecosystems in Different Times and Spaces

António Moreira[1,2,3]

[1] Universidade Aberta (UAb)
[2]CEIS20
[3]GPe-dU – UNISINOS/CAPES-CNPq

Abstract. The evolution of technologies and digital networks have brought profound changes in society, driving the birth of new paradigms, models, communication processes, as well as new scenarios and educational ecosystems. It is therefore impossible to imagine an education that does not contemplate different environments and spaces for synchronous and asynchronous communication, and the question is not whether we should articulate these scenarios, but how to articulate them in an organic way. This is a vision that requires a new paradigm, a vision of sustained innovation, which projects them reality of a path that is not always easy to follow. Considering this context, the aim of this communication is to envisage new healthy and sustainable educational ecosystems onlife, bearing in mind the guidelines of the Digital Education Action Plan (2021) of the European Commission and the recent UNESCO report – Reimagining our futures together: a new social contract for education (2022).

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ROUND TABLE SESSIONS

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OCTOBER 2022

ROUND TABLE

Women in Media & Tech: past, present and future in Educational Media

Moderated by Maria José Loureiro[1] e

Inês Messias[2]

[1]Full-time professor in mobility at the ICT Competence Center at the University of Aveiro, (Portugal) which is part of the Team of Resources and Educational Technology of the Portuguese Ministry of Education. She is a teacher's trainer and member of several international projects and research teams in the fields of Digital Education. President of ICEM.

[2]Is currently a lecturer at the Polytechnic Institute of Santarém. She is a researcher at the Information Sciences, Technologies and Architecture Research Center (ISTAR-IUL), one of ISCTE's research centers, and a researcher at the Distance Education and Elearning Laboratory (LE@D), one of the Universidade Aberta's research centers, where she is part of the Center's Clustering Project Education in Time of Pandemic, created to study and monitor digital transition in emergency times.

Speakers:

Andriani Piki – CYPRUS [Lecturer in Computing and Deputy Course Leader of BSc (Hons) Computing, at UCLan Cyprus – https://www.uclancyprus.ac.cy/academic/dr-andriani-piki]

Anita Stangl – GERMANY [Owner and CEO of MedienLB (Medien für Lehrpläne und Bildungsstandards GmbH). Past President of ICEM. https://en.medienlb.de/index.cfm/ueber-uns/the-team/]

Hannah R. Gerber – USA [Full Professor and Doctoral Director of Literacy at Sam Houston State University and an Honorary Professor in the Department of Psychology of Education at the University of South Africa, past President of ICEM. https://www.shsu.edu/academics/school-of-teaching-and-learning/faculty/literacy-edd/hannah-gerber]

Margarida Lucas – Portugal [Is a Researcher at the CIDTFF – Research Centre on Didactics and Technology in the Education of Trainers, a research unit located at the Department of Education and Psychology of the University of Aveiro (Portugal).]

Manuela Novais Santos – Portugal [Is a former secondary school teacher who collaborated with Universidade Aberta (Open University, Portugal) for twenty years, as a researcher, lecturer, educational technologist and video producer. As director of the Educational System Support Unit, she produced educational videos, and also coordinated projects on media production, media literacy and ICT. In Macau, she had the opportunity to represent Universidade Aberta not only as director of the Portuguese Programmes, but also as member of the Administration Board of Asia International Open University.

She was appointed Open University delegate in several European Projects (Lingua, ERCI, Arcipelago); in ICEM, first as member, then as national chair and member of the Media Education working group; in EAAME (European Association for Audiovisual Media Education; and in the Group of Experts of Educational TV of the EBU – European Broadcasting Union. She was also member of the Jury of School Video Contests: School Video Contest "Universidade Aberta", "Prix de Bâle" (EBU), "Audiovisuel et École" (EAAME / ICEM).

As a researcher on Media Education, she authored a monograph published by the Ministry of Education (A Educação para os Media no Contexto Educativo). She also published several articles on distance learning and media literacy. Past member of ICEM and National Chair.]

Marina McIsaac– USA [Professor Emerita from Arizona State University. Currently consulting and conducting workshops in area of Professional Development for teachers using interactive technologies in schools. CARDET's Director of International Relations. Past President of ICEM.]

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SYMPOSIA

MOVING ON TOWARDS 'NEW NORMAL' IN EDUCATION

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OCTOBER 2022

Symposium 1

Technologies and Education: reports of experiences in teacher training in Portugal

Susana Senos[1] and Cecília Guerra[2]

[1] Centro de Competência TIC da Universidade de Aveiro, Portugal

[2] Research Centre Didactics and Technology in the Education of Trainers, University of Aveiro, Portugal

Discussant: Daniela Pedrosa[1]

[1] Research Centre Didactics and Technology in the Education of Trainers, University of Aveiro, Portugal

Speakers and presentations titles:

1. **Neuza Pedro** - Digital transition in Teachers' Initial and Continous Training: Problems and solutions
2. **Célia Lopes** - Continuous teacher training as a determining factor in digital empowerment and leveraging educational modernization
3. **Daniela Pedrosa** - How to prepare future teachers to integrate ICT in their teaching and learning practices?!
4. **António Lucas** - Digital development of schools: the role of ict competence centers in the pilot digital manuals project

Symposium Abstract

In a highly digitalized world, where education plays a key role in promoting citizens' digital skills, meeting the demands of educating and training digital citizens, the discussion about the role of teachers in promoting these skills has been central, since to educate digitally capable citizens, teachers also need to be digitally competent. (European Comission, 2020). Moreover, it is essential to endow citizens with digital skills that allow them to move safely, critically and creatively in a world that is heavily enriched and empowered by technology.

In recent years, we have witnessed the proliferation of measures at European and national level, in order to consolidate the work around the development of citizens' digital competences and, specifically, the digital competences of educators, resulting in the publication of a fundamental guiding document, the DigCompEdu: European Digital Competence Framework for Educators, 2017.

Still, in Portugal, despite the various efforts to equip schools over the last two decades (e.g. with computers), the use of technologies (hardware and software) by teachers in various subject areas seems to continue to be made more at a personal and/or administrative level, rather than at a pedagogical-didactic level (e.g. to innovate teaching practices) (Guerra, Moreira & Vieira, 2017).

There is also a consensus among the community dedicated to research in this area (Guerra, Moreira & Vieira, 2018; Guerra, Loureiro, & Senos, 2021) that one of the obstacles to the educational integration of technologies in the teaching and learning process is related to the poor training (initial and continuing) of teachers. In fact, Lucas, Dorotea and Piedade (2021) have addressed the digital skills profile of teachers in Portugal, resulting in recommendations for greater investment in teacher training for an effective integration of technologies in the teaching and learning process.

The European Digital Action Plan (EDAP) (2021-2027) highlights in its priorities the need for highly skilled educators in what digital competences are concerned (cf. Priority 1) and the recent pandemic the world faced, stressed the need to reconfigure educational environments, towards approaches where hybrid learning is the norm (European Comission, 2020). In this context, the EDAP, which presents several strategic pillars, where education is included, lays on 3 fundamental axes: equipment distribution to schools and students, including mobile connectivity; teacher training of in service teachers; access to digital educational resources, including digital schoolbooks.

Considering these recommendations and the assumption that the development of competencies in the pedagogical-didactic use of technologies should be considered in an integrated way, in this symposium we intend to create discussion about the use of digital technologies in education (from pre-school to higher education), trying to present a global picture of the current efforts to help educators develop their digital competences, in the dimensions presented by European guidelines for educators, such as DigCompEdu (Redecker, 2017).

This symposium gathers 4 communications presented by experienced Portuguese teacher trainers focusing on educational issues in the training of Portuguese teachers regarding the use of innovative technologies in education.

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Digital transition in Teachers' Initial and Continuous Training: Problems and solutions

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Abstract. Considering the European ambition of promoting the digital transition in schools' ecosystems, innovative and sustainable models for teachers' initial education and continuous professional development are in serious need. As today's educational problems complexify and become more global than local, transnational training formats, collaborative online models, and context-embedded hybrid practices are shared, discussed, and reflected upon as possible (parts of the) solutions.

Keywords: teacher trainers, digital skills, pedagogical-didactic competences, Portuguese teacher education context.

Continuous teacher training as a determining factor in digital empowerment and leveraging educational modernization

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Abstract. Continuous training is crucial for the professional modernization of teachers, where digital proficiency plays an important role in equal opportunities and in the access and use of digital resources by the Organic Units. It is intended to share and witness a privileged way of building knowledge, empowering and encouraging educational modernization and pedagogical innovation, through the implementation of Digital Training Workshops, aiming at the continuous improvement of the quality of student learning and the innovation and development of digital ecosystems. Digital training is a structural element in improving the quality, effectiveness and efficiency of educational processes.

Keywords: teacher trainers, digital skills, pedagogical-didactic competences, Portuguese teacher education context.

How to prepare future teachers to integrate ICT in their teaching and learning practices?!

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Abstract. In the initial teacher education provide opportunities for experimentation, use and application of ICT with the combination of pedagogical knowledge, contributes to a better preparation of future teachers for their practice and the development of knowledge, digital skills, and self/co-regulation learning strategies. Thus, it is important to help future teachers to be aware of how to integrate technology, pedagogy, and content knowledge in their educational practice. So, how can future teachers be helped to have this awareness?

Digital development of schools: the role of ict competence centers in the pilot digital manuals project

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Abstract. It is intended to present a brief characterization of the ICT Competence Centers, as structures that are part of the Educational Resources and Technologies Team of the Directorate-General for Education. Purposes and functions will be highlighted and support the mission that aims to contribute to the digital development of schools. Thus, the Digital Manuals Pilot Project will be taken as an example to be scalped, since it aims to promote the development of teachers' digital skills, in concrete aspects such as the use of digital equipment and resources (for example school manuals digital) and understanding of development processes, methodologies and pedagogical practices with the integration of digital equipment and resources.

Keywords: teacher trainers, digital skills, pedagogical-didactic competences, Portuguese teacher education context.

Symposium 2

“A Pesquisa que Ensina” na Escola: projetos catalisadores de competência e literacias plurais

Moderated by Teresa Cardoso

Assistant Professor at Universidade Aberta (Portugal)

Researcher at Distance Education and eLearning Laboratory (LE@D)

Speakers and presentations titles:

1. **Teresa Cardoso, Filomena Pestana, Paula Queirós[3], Joana** - “A Pesquisa que Ensina” na Escola: a dimensão digital e pluridisciplinar nos projetos Vox Populi

2. **Teresa Cardoso, Filomena Pestana, Paula Queirós, Dulcídia, Joana Rodrigues** - “A Pesquisa que Ensina” na Escola: a dimensão pedagógica nos projetos Vox Populi

3. **Teresa Cardoso, Filomena Pestana, Paula Queirós, Dulcídia, Joana Rodrigues** - “A Pesquisa que Ensina” na Escola: a dimensão tecnológica nos projetos Vox Populi

4. **Teresa Cardoso, Filomena Pestana, Paula Queirós, Dulcídia Cruz, Joana Rodrigues** - “A Pesquisa que Ensina” na Escola: a dimensão organizacional nos projetos Vox Populi

“A Pesquisa que Ensina” na Escola: a dimensão digital e pluridisciplinar nos projetos Vox Populi

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Abstract. A Fundação Vox Populi (FVP), de acordo com o Grupo Marktest (2008, s.p.), foi criada com vista à “prossecução e difusão das boas práticas aplicáveis à exegese dos estudos de opinião, ao desenvolvimento de investigação científica, académica e de cidadania”, sendo que incorpora “nos seus órgãos sociais um conjunto de personalidades reconhecidas pelo trabalho desenvolvido em várias áreas de actividade, mormente na área da pesquisa de opinião que […] irão colaborar para o crescimento e sucesso deste novo projecto”.

É neste âmbito que a Fundação integra um conjunto de programas vocacionados sobretudo para a área educacional, cuja designação se recorda: o “Nossa Escola Pesquisa Sua Opinião” (NEPSO), o “Rato de Biblioteca” e o “Flags”. Tais programas, todos integrados na “Pesquisa que Ensina na escola”, estão vinculados a contextos educativos específicos e contam com o apoio institucional das direções de escola, sendo celebrado um protocolo de colaboração, também para secundar e legitimar o envolvimento dos professores e dos alunos participantes nos projetos anuais.

De acordo com a FVP (s.d., s.p.), o NEPSO “baseia-se numa metodologia de ensino que propõe o uso dos estudos de opinião como instrumento pedagógico para incrementar a literacia, aumentando os conhecimentos, a capacidade de interpretação dos mesmos, a tomada de consciência e a mudança de atitude dos alunos através de uma forma ativa e participativa”. Já o “Flags” é “um projeto transnacional para ser desenvolvido em simultâneo por dois grupos de alunos de escolas localizadas em lugares diferentes, tais como continentes, países, regiões, etc. O objetivo é que os dois grupos de crianças/jovens se deem a conhecer e que conheçam outras realidades mais próximas ou mais longínquas” (idid, idem).

Por sua vez, com o “Rato de Biblioteca” pretende-se “Aprender a Olhar Criticamente a Informação”, com vista a “desenvolver/aprofundar com os alunos/professores um projeto de ‘Desk Research’, sobre um tema proposto” (idid, idem) pela própria FVP. Assim, partindo de um tema transversal e permitindo diversas abordagens na pesquisa dos dados, os professores podem estudar com os alunos o tema sob diferentes vertentes, pesquisando sobre o mesmo nas mais diversas fontes. Deste modo, a partir das pesquisas efetuadas e dos dados recolhidos, e com o suporte à estatística e à análise de conteúdo, os conteúdos são trabalhados digitalmente, com recurso a ferramentas Office –Excel, para elaboração de gráficos e tabelas; Word, para elaboração e tratamento de texto; PowerPoint, para elaboração de apresentações eletrónicas, as quais complementam os trabalhos escritos, apresentados no formato de relatório.

> A concluir, destacamos, uma vez mais, que os resultados coligidos pelos restantes membros deste painel, permitem sustentar, na linha de Bolívar (2012), a mudança positiva pretendida numa Educação "de e com qualidade, justa e comprometida com a formação de uma sociedade (mais) humana, democrática, equitativa e inclusiva" (Cardoso, Pestana, Valpradinhos & Costa, 2021, p. 77).

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“A Pesquisa que Ensina” na Escola: a dimensão pedagógica nos projetos Vox Populi

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Abstract. As metodologias ativas assumem-se como elementos incontornáveis de apoio a ambientes centrados no aluno/estudante (Cardoso & Pestana, 2021; Marques, Campos, Andrade & Zambalde, 2021). Neste campo de ação, Figueiredo (2021) identifica um conjunto de pedagogias de primeira geração, nas quais destaca as pedagogias de projeto e nelas incorporando a metodologia de trabalho de projeto (MTP). Esta metodolgia assume, na dimensão pedagógica dos projetos de “A Pesquisa que Ensina” na Escola, concretizados em colaboração com a Fundação Vox Populi, um papel central, particularmente em articulação com outras dimensões, também elas relevantes, tais como, por exemplo, o trabalho dinamizado no âmbito da dimensão tecnológica.

Segundo os autores antes aludidos, estamos em presença de uma metodologia que está intimamente relacionada com uma forte componente de aquisição de competências e que, de acordo com Jintapitak (2022, p. 13), incorpora valências muito próximas das que são preconizadas pelo Lifelong Learning World Economic Forum, enquanto competências para o século XXI, num conjunto total de 16, segmentadas em três vertentes, a saber: “Foundational Literacies [–] How students apply core skills to everyday tasks”; “Competencies [–] How students approach complex challenges”; ”Character Qualities [–] How students approach their changing environment”.

No contexto português, tais vertentes encontram eco em áreas de competência conforme preconizadas no PASEO, “Perfil dos Alunos à Saída da Escolaridade Obrigatória” (Martins, 2017), isto é: Linguagens e Textos; Informação e comunicação; Raciocínio e resolução de problemas; Pensamento crítico e pensamento criativo; Relacionamento interpessoal; Desenvolvimento pessoal e autonomia; Bem-estar, saúde e ambiente; Sensibilidade estética e artística; Saber científico, técnico e tecnológico.

Neste sentido, a MTP, para diferentes autores (Bell, 2010; Cardoso & Pestana, 2021; Jintapitak, 2022), além de consubstanciar uma abordagem centrada no aluno/estudante, incorpora uma estratégia construtivista e colaborativa, pelo que a formação inscrita em cada projeto assume o preconizado na área 3 (competências pedagógicas dos educadores) do “DigCompEdu” (Lucas & Moreira, 2018, p. 20), ou seja, a “aprendizagem autoregulada, aprendizagem colaborativa, ensino, orientação”.

Em suma, estamos em presença de programas que se consubstanciam em práticas pedagógicas que potenciam a construção de ambientes de aprendizagem que promovem o desenvolvimento pessoal, em paralelo com a capacitação pessoal dos

indivíduos, nomeadamente para intervir numa sociedade cada vez mais complexa, dinâmica e exigente.

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“A Pesquisa que Ensina” na Escola: a dimensão tecnológica nos projetos Vox Populi

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Abstract. Os programas de “A Pesquisa que Ensina” na Escola, realizados em colaboração com a Fundação Vox Populi, proporcionam múltiplos aspetos da dimensão tecnológica, conforme plasmada em referenciais nacionais, europeus e internacionais, que atualmente constam das agendas educativas, tais como, e para recuperar aqueles que anteriormente foram já mencionados, o PASEO (Martins, 2017), o DigCompEdu (Lucas & Moreira, 2018), e ainda “a resolução da Organização das Nações Unidas (ONU) intitulada ‘Transformar o nosso mundo: Agenda 2030 de Desenvolvimento Sustentável’, constituída por 17 objetivos, desdobrados em 169 metas, que foi aprovada pelos líderes mundiais, a 25 de setembro de 2015, numa cimeira memorável na sede da ONU, em Nova Iorque (EUA).”

De facto, a formação de professores, que está agregada à concretização dos projetos anuais, é ministrada em regime de blended-learning (cf. por exemplo: Cardoso, Costa & Pestana, 2021; Cardoso, Pestana & Pina, 2019), ou seja, assume tanto uma dimensão física face-a-face quanto uma dimensão online, através de software criado pela própria fundação, para o desenvolvimento dos projetos, desenvolvimento que implica, aliás tal como a respetiva apresentação final, o recurso a outros suportes digitais (entre os quais: processadores de texto, folhas de cálculo e apresentações de diapositivos).

Perspetivando agora uma das facetas associada ao pesquisar, neste caso, voltada para a contextualização teórica de suporte aos projetos e corporizando a finalidade de “Aprender a Olhar Criticamente a Informação”, numa relação direta com os recursos digitais e os direitos de autor, consideramos uma das Tecnologias Educacionais em Rede, a enciclopédia da atualidade, ou seja, a Wikipédia, que é suportada pelos wikis, em particular o MediaWiki, software que suporta todos os projetos da Wikimedia Foundation, enquanto ambiente virtual aberto de aprendizagem (AVAA).

Em paralelo, os artigos da Wikipédia assumem-se enquanto Recursos Educacionais Abertos (REA), pelo que, e conforme Cardoso, Pestana, Queirós & Queirós (2022), a formação de professores passou a versar também sobre os REA, em particular a Wikipédia. Neste sentido, foram incluídos conteúdos e recursos técnico-pedagógicos sobre as licenças Creative Commons e os direitos de autor. Esta faceta dos projetos vem dar corpo ao preconizado no DigCompEdu, mais especificamente a duas das suas áreas – área 2 e área 6.

Assim, na área 2 “Competências pedagógicas dos educadores”, nos objetivos relativos à Seleção, é possível reconhecer os propósitos de “Identificar, avaliar e selecionar recursos digitais para o ensino e aprendizagem”; já nos objetivos relativos à Criação e modificação, destacamos o propósito de “Modificar e desenvolver recursos existentes com licença aberta e outros recursos onde tal é permitido”; por último, nos objetivos relativos à Gestão, proteção e partilha, evidenciamos o propósito de “Respeitar e aplicar corretamente regras de privacidade e de direitos de autor. Compreender a utilização e criação de licenças abertas e de recursos [educacionais] abertos, incluindo a sua atribuição apropriada” (Lucas & Moreira, 2018, p. 20).

No que respeita à àrea 6 “Competências dos aprendentes”, concretamente associada à promoção da competência digital dos aprendentes, salientamos o propósito de “Ensinar aos aprendentes como os direitos de autor e as licenças se aplicam ao conteúdo digital, como referenciar fontes e atribuir licenças” (Lucas & Moreira, 2018, p. 25). Neste campo de ação, a Wikipédia é o catalisador para se trabalharem as questões relacionadas com as licenças Creative Commons e os direitos de autor, previamente mencionados.

Além disso, e em última instância, a análise de cada artigo da Wikipédia, que é objeto de pesquisa e reflexão crítica, quer no âmbito da formação de professores ministrada, quer no âmbito da realização dos projetos, por alunos e professores, vai ainda ao encontro da competência digital no seio da “Global Competency” (OECD, 2018, p. 15), na medida em que os “[g]lobally competent students are able to reason with information from different sources, i.e. textbooks, peers, influential adults, traditional and digital media. They can autonomously identify their information needs, and select sources purposefully on the basis of their relevance and reliability. They use a logical, systematic and sequential approach to examine information in a text or any other form of media, examining connections and discrepancies. They can evaluate the worth, validity and reliability of any material on the basis of its internal consistency, and its consistency with evidence and with one’s own knowledge and experience. Competent students question and reflect on the source author’s motives, purposes and points of view, the techniques used to attract attention, the use of image, sound and language to convey meaning, and the range of different interpretations which are likely for different individuals”.

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“A Pesquisa que Ensina” na Escola: a dimensão organizacional nos projetos Vox Populi

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Abstract. À exceção do “Flags”, que é mais recente, os restantes programas que integram “A Pesquisa que Ensina” na Escola, da Fundação Vox Populi, contam com mais de uma década implementação no terreno, em diversos contextos educativos a nível nacional. De facto, o dinamismo do “Rato de Biblioteca” e do NEPSO está patente no número de projetos que são concluídos anualmente, em cada escola ou conjunto de escolas (Cardoso & Pestana, 2022). Outra característica que importa ressaltar está associada ao trabalho que é desenvolvido, o qual visa uma articulação curricular e que se traduz na valorização que resulta da integração de vários níveis de ensino em cada projeto, assim permitindo que cada turma participante possa contribuir de acordo com a idade dos alunos envolvidos, e/ou com o saber de, no mínimo, uma determinada disciplina específica.

Por sua vez, as parcerias que são concretizadas, com autarquias e outras instituições locais, reflete a abertura à comunidade, assegurando, segundo Sousa & Sarmento (2010, p. 147), “o estreitamento das relações entre escola, família e comunidade, ao implicar uma atitude de comunicação e participação dos vários actores, induz a uma cultura de cidadania e a um aprofundamento democrático, quer a nível representativo, quer participativo”, numa palavra, permitindo evidenciar e promover “o papel mobilizador que a escola pode desempenhar nas comunidades, enquanto agência de desenvolvimento das mesmas”. Deste modo, a abertura à comunidade pode ser corporizada quer através do apoio dado aos alunos para a recolha de evidências para os seus projetos (por familiares e população em geral), quer no apoio à disponibilização de infraestruturas existentes.

Considerando, ainda, que, para Alves & Varela (2012, p. 36), a abertura à comunidade tem vindo a assumir “uma centralidade crescente nas últimas décadas, quer enquanto alvo de atenção dos debates sociais e políticos, quer como objeto de pesquisa educativa”, sendo que, por tal, esta relação se “configura, simultaneamente, uma área de ação educacional e uma temática de investigação educativa que hoje se revestem de significativa relevância social e científica”, concluimos apresentando exemplos dessa abertura e relação, com enfoque na dimensão organizacional, a partir da experiência de dinamização de projetos Vox Populi numa escola do 1.º Ciclo do Ensino Básico de Vila Real.

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Symposium 3

Inclusion and Accessibility in the Digital Environments and Media

Moderated by Ana Afonso

Assistant Professor at Universidade Aberta (Portugal)

Researcher at Distance Education and eLearning Laboratory (LE@D), Universidade Aberta & Centre of Informatcs and Systems of University of Coimbra (CISUC), Portugal

Speakers and presentations titles:

1. **Isabel Cristina Carvalho**- Inclusive Cities: the role of digital literacy in the exercise of citizenship
2. **Carla Charana**, **Ana Afonso** & **Lina Morgado** - Active and Inclusive Ageing in the Digital Society: The AGEING+ Project
3. **Manuela Francisco** - Accessibility in online learning environments: challenges and solutions
4. **Cecília Tomás** & **António Teixeira** - Personalização ou Perfilagem: em torno de aspetos éticos associados ao uso da AIoT em educação inclusiva

Symposium Abstract

We propose to discuss the theme of equitable access to digital environments and media, in an educational context (school or other), for all citizens. In addition to the challenges posed by the pandemic context by COVID19 in the field of accessibility and the risks that the personalisation of (inclusive) education runs of getting confused with standardisation of learning, projects for the inclusion of citizens from more vulnerable groups, such as women and the elderly, through digital media will also be discussed. Speakers will present papers resulting from their research practice.

Inclusive Cities: the role of digital literacy in the exercise of citizenship

Isabel Cristina Carvalho[1][0000-0002-0499-7464]

[1] Universidade Aberta, Portugal

Author's Short Bio:

Isabel Cristina Carvalho is currently a fulltime Júnior Researcher at the Research Centre for Arts and Communication (CIAC) Universidade Aberta (Portugal) where she develops research regarding the real/virtual interdependence in the unfolding of dimensionally hybrid urban experiences, as well as the role of locative media in spatial enjoyment, in mapping appropriated and transformed spaces through interactive/responsive artistic practices. Her research project "Gender in Map – women empowerment in planning and urban development" is co-financed by the Portuguese Foundation for Science and Technology (FCT). She was a post-doctoral researcher in Computer Animation at the National Centre for Computer Animation (Bournemouth University, 2018-2019). A researcher, artist, community and educational consultant, speaker and author, she has authored and co-authored international book chapters, conference and journal papers, concerning the interaction between people, urban space and technology, thus exploring different processes of appropriation and apprehension of urban spaces, part of them developed with the community in a collaborative and intergenerational way, including the educational context. She develops research and artistic practice in collaborative mapping processes and data visualization. Her research interests include the relationship of digital education with entrepreneurship in the cultural and creative industry. She participates in some international projects that promote innovative thinking competencies for creative art entrepreneurship, as well as digital skills supported by digital pedagogical strategies. She graduated in Architecture (School of Arts of Porto, 2001), post-graduated in Town Planning, Environment and Urban Design (Porto University, 2004) and Town Management from Moderna University and Urban Research and Intervention Centres (2003). She earned her PhD in Digital Media Arts from Universidade Aberta and the University of Algarve (2016). She is a member of the Editorial Board of the International Journal of Virtual and Augmented Reality, the International Journal of Creative Interfaces and Computer Graphics and the Cambridge Scholars Publishing. ORCID ID https://orcid.org/0000-0002-0499-7464

Active and Inclusive Ageing in the Digital Society: The AGEING+ Project

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Abstract. Isolation in the elderly constitutes a risk factor for health (physical, mental, emotional) and a limiting element for active ageing. The review of the state of the art, around 3 fundamental axes (active-ageing, digital-presence and digital-literacy) points to critical reflection on how the physical and social environment facilitates (or not) the favourable adaptation of the elderly and provides them with opportunities for civic participation of personal fulfilment, lifelong learning, as well as access to an extended support network in old age, thus promoting the improvement of the quality of life contexts, the enhancement of learning ecosystems and also the fight against the social and digital exclusion of older people. In this theoretical framework, the ongoing research project AGEING+ arises, registered in the category of Type-1 Social Intervention Projects, which addresses the problem of social and digital isolation in the elderly as a conditioning element for active and inclusive ageing. The project delimits the study problem to the low participation of the elderly in active ageing programs associated with local dynamics of social inclusion and aims to minimize the vulnerability situation of the elderly by reducing social isolation and digital exclusion through the implementation of senior digital training activities. In a Design-Based Research approach, the data obtained so far correspond to the analysis coming from the diagnostic assessment applied to students at a Portuguese Senior University (2021/2022). The preliminary results reveal the overall lack of basic digital skills in this population and the relevance, for active and inclusive ageing in the digital society, of the implementation of senior digital empowerment plans.

Keywords: Elderly Isolation, Active Ageing, Inclusive Ageing, Digital Inclusion, Design-Based Research.

Authors' Short Bios:

Carla Charana is currently a Master's student in eLearning Pedagogy, postgraduate in eLearning Pedagogy (if you want to withdraw the postgraduate course), degree in Education, Social and Training Pedagogy, develops research in the area of Educational Gerontology by the Distance Education and eLearning Laboratory (LE@D/UID 4372/FCT). Social Educator and coordinator of PNPSE - PDPSC, in the Chamusca School Grouping. CCP trainer, technical director and teacher at CATL Academia Hosana since 2012. Author of the "Motor Expression" section in the technical magazine "Coisas de Criança" with the publication of 19 original articles between 2007 and 2012. Sports Trainer TPTD and Technical Expert in Physical Exercise TPTEF.

Ana Afonso is currently an invited assistant Professor at the Department of Education and Distance Learning at Universidade Aberta (Open University), Portugal. She is a full researcher at UID-FCT

no 4372, Distance Education and eLearning Laboratory (LE@D, Portugal) and a collaborating researcher at the Centre for Informatics and Systems (CISUC) of the University of Coimbra (Portugal). A researcher, lecturer, trainer, author, and independent educational and community consultant, is the author and co-author of indexed international books, book chapters and conference papers, concerning distance and digital education and learning issues. Her research work about developing teachers' digital readiness during the pandemic was awarded the Best Research in Progress Award (BRIPA2020) by the European Distance and E-Learning Network (EDEN). Her research interests include open and distance learning, e-learning, contextual learning, digital pedagogies, EaD training for teachers, digital transformation in education, e-mentoring, digital communities, senior education and game-based learning. She graduated in Education Sciences from the University of Coimbra (1996), has a Master in Educational Sciences - major in Educational Psychology (2000) and obtained her PhD in Educational Technologies also from the University of Coimbra (2009). In 2015 she concluded her post-doctoral studies at the University of Coimbra with the project "Personalized Learning through Adaptive Gameplay Designs: from concepts to media". She has been involved in several international projects on distance, open, networked and digital education. She is a member of the Editorial Board of the Smart Learning Environments Journal and the International Design and Art Journal and a member of the Bodrum Journal of Art and Design Advisory Board. ORCID ID https://orcid.org/0000-0001-6701-0922

Lina Morgado is a PhD in Education major in Online Education. She is currently an Associate Professor with Habilitation at Universidade Aberta (Portugal) in the domain of Distance and Networked Learning. She is also the Coordinator of the Masters in eLearning Pedagogy (Universidade Aberta). She is a founding member and the Coordinator of the Distance Education and eLearning Laboratory (LE@D) where, as a Full Researcher, she conducts research on emerging environments and pedagogies in the Open Distance Education field: Social Web and Social Media, Open and Distance Education, OERS, Virtual Mobility in ODL and MOOCs. She is co-author of a European pedagogical model for MOOCs - the sMOOC model supported by the European Commission. Co-author of the Virtual Teaching Model ©. Coordinated innovation teams in the Innovation Program in Distance Education at Universidade Aberta and was responsible for the design and implementation of an innovative training model for university teacher education program for eLearning. She is also an expert in learning design for online learning scenarios. https://orcid.org/0000-0002-4973-6727

Accessibility in online learning environments: challenges and solutions

Manuela Francisco[1][0000-0002-4507-7859]

[1] Distance Education and eLearning Laboratory (LE@D), Universidade Aberta, Portugal

Abstract. Learning environments that use Internet inevitably involve technology and pedagogy. To be usable and useful to the largest number of users, these environments must consider specific aspects related to: a) synchronous and asynchronous interaction (with and between technology; community, resources and learning activities, and with the institution); b) technological infrastructures to support the teaching-learning process; c) digital content formats (produced and made available in compliance with WCAG); d) pedagogical strategies that value individual skills. Based on studies developed over 15 years, the main challenges and some pedagogical and technological solutions are presented, contributing to greater equity in learning and, consequently, in academic success, particularly in the context of higher education.

Author's Short Bio:

Manuela Francisco has PhD in Distance Education and eLearning, Master in eLearning Pedagogy, developing studies about inclusive eLearning and digital accessibility. Learning Designer at Politécnico de Leiria, Visiting Professor at Universidade Aberta, Digital Accessibility advisor, Researcher at LE@D and CI&DEI, being author of several publications. Participation in European, National, and governmental projects about eLearning, accessibility and digital inclusion. She was part of the team that revised the WCAG 2.0 Portuguese version.

Personalização ou Perfilagem: em torno de aspetos éticos associados ao uso da AIoT em educação inclusiva

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Author's Short Bio:

Nota biográfica de Cecília Tomás: Doutorada em Educação a Distância e e- learning, mestre em Pedagogia do eLearning, especializada em Educação Especial, pós-graduada em Educação para a Cidadania e licenciada em Filosofia (vertentes ético-política e educacional), desenvolve investigação na área da Personalização em Educação e na Ética na Internet das Coisas e da Inteligência Artificial. Docente de educação especial (grupo 910) no AE Dr. António Augusto Louro, docente convidada na Universidade Europeia e na Universidade Aberta. É membro integrado do Laboratório de Educação a Distância e e-learning (LE@D/UID 4372/FCT) da Universidade Aberta e autora de várias publicações seguindo o desígnio da educação aberta. Tem estado envolvida em grupos de trabalho internacionais e nacionais como especialista em e-learning.

Symposium 4

O Digital com Propósito: práticas e recursos pedagógicos

Moderated by Idalina Lourido Santos

Researcher at I&D – GILT (Games Interaction and Learning Technology), Instituto Superior de Engenharia do Porto, Portugal

Researcher LabTE (Laboratório de Tecnologia Educativa), of University of Coimbra, Portuga

Speakers and presentations titles:

1. **Célia da Graça Lopes** - Recursos Didáticos Digitais
2. **Adelina Moura** - SOLE: Perguntar não ofende, enriquece
3. **Maria Manuela Simões** - "Gallery Walk" e "Observa e Questiona"
4. **Teresa Pombo** - Roteiros da leitura

Recursos Didáticos Digitais

Célia da Graça Lopes[1]

[1]Agrupamento de Escolas João da Silva Correia, em São João da Madeira, Portugal

Abstract. No ambiente educativo atual, as metodologias ativas e as estratégias de aprendizagem são alicerçadas nas tecnologias digitais, onde os recursos didáticos digitais se tornaram valiosos num mundo de informações, novidades e tecnologia. Com a enorme influência destes recursos, nos meios de produção, conhecimento e comunicação, a escola precisa absolutamente de os integrar, encarandoos como novos recursos didáticos, potenciadores de novas práticas baseadas nas pedagogias ativas e centradas no aluno. Torna-se inevitável a utilização dos recursos didáticos digitais, devendo estes servir de fonte de acesso ao conhecimento, dentro ou fora da escola, no quadro de um projeto ou de uma metodologia de trabalho inovadora que os integre de forma significativa e sistemática no currículo. A participação nesta mesa redonda pretende dar um contributo para o desenvolvimento de professores reflexivos, criativos, empreendedores, provocadores de mudança e de inquietude, disponíveis para responder de forma positiva aos desafios, utilizando e/ou construindo colaborativa e cooperativamente recursos didáticos digitais criativos, capazes de promover as aprendizagens e ao mesmo tempo promoverem o desenvolvimento cognitivo e emocional da criança/jovem de forma lúdica e didática, fomentando ainda o raciocínio lógico a responsabilização e a concentração. O estímulo à produção de recursos didáticos digitais tem sido uma tendência entre as correntes pedagógicas mais inovadoras e alvo de apoios por parte das políticas educativas, onde se pretendeu intensificar a presença destes recursos nas escolas e a sua utilização por parte de alunos e professores.

Author's Short Bio:

Célia da Graça Lopes Docente do Agrupamento de Escolas João da Silva Correia, em São João da Madeira, Grupo 110. Exerce funções como professora dos apoios educativos e coordenadora de departamento. No Centro de Formação das Terras de Santa Maria exerce as funções de Embaixadora Digital. Doutorada em Multimédia em Educação, pela Universidade de Aveiro, mestre em Ciências da Educação - Supervisão, pela Universidade do Algarve, pós-graduada em Administração Escolar, pelo instituto Superior Dom Afonso III e licenciada em Ensino Básico – 1.º ciclo (complemento de formação), pela Universidade Aberta. É formadora acreditada desde 2008, pelo Conselho Científico-Pedagógico da Formação Contínua e membro do grupo "PROTEXTOS – Ensino da produção de textos", do Departamento de Educação e Psicologia da Universidade de Aveiro.

SOLE: Perguntar não ofende, enriquece

Adelina Moura[1, 2]

[1] GILT (Games Interaction and Learning Technology), Instituto Superior de Engenharia do Porto;
[2] LabTE (Laboratório de Tecnologia Educativa), Universidade de Coimbra

Abstract. SOLE (Self Organized Learning Environments) é uma estratégia pedagógica que permite aos alunos trabalharem em grupo, enquanto aprofundam o conhecimento sobre Grandes Questões, apresentadas por eles, e relacionadas com o programa curricular. Fundamenta-se nas Teorias de Aprendizagem que sustentam a aprendizagem colaborativa e a construção de conhecimento pelos próprios alunos. Através de um projeto eTwinning, alunos portugueses, galegos e brasileiros, em grupos mistos, criam as narrativas (storytelling) a partir das quais nascem as perguntas baseadas no "Como" ou "Porquê". Durante a fase de pesquisa os alunos aprofundam o tema, elaboram um glossário de termos alusivos e curadoria de conteúdos, integrando, naturalmente, os seus dispositivos móveis. Nesta fase, os alunos dão atenção à qualidade e fiabilidade das fontes de informação, contribuindo para desenvolver a sabedoria digital. A apresentação e avaliação dos trabalhos finais é por videoconferência. A divulgação pelas redes sociais e imprensa fica a cargo dos alunos de cada país.

Author's Short Bio:

Adelina Moura Licenciatura em Ensino do Português e Francês, DESE em Administração Escolar, Mestrado em Supervisão Pedagógica do Ensino do Português e Doutoramento em Ciências da Educação, na especialidade de Tecnologia Educativa. Tem vindo a desenvolver investigação na área do Mobile Learning, com várias publicações em Portugal e no estrangeiro. É docente do ensino básico e secundário, tutora de cursos de formação à distância do Camões - Instituto da Cooperação e da Língua e formadora da formação contínua de professores, em didáticas específicas (Português e Francês) e tecnologia educativa. É investigadora integrada do grupo de I&D – GILT (Games Interaction and Learning Technology), sedeado no Instituto Superior de Engenharia do Porto, e membro do grupo LabTE (Laboratório de Tecnologia Educativa), da Universidade de Coimbra. É colaboradora do Plano Nacional de Leitura 2027.

“Gallery Walk” e “Observa e Questiona”

Maria Manuela Simões[1]

[1] Escola Secundária Dr, Joaquim Gomes Ferreira Alves, Vila Nova de Gaia, Portugal

Abstract. A “Gallery Walk” e o “Observa e Questiona” são dois exemplos de metodologias ativas, muito flexíveis, em que os alunos são encorajados a partir do seu conhecimento sobre um tópico ou conteúdo a promover o pensamento de ordem superior, a interação e a aprendizagem cooperativa. Estas propostas podem ser operacionalizadas em formatos variados. Nesta mesa redonda será testemunhado a forma como os recursos digitais podem ser integrados neste tipo de atividades, contribuindo para práticas mais atuais e de acordo com os modos de fazer dos alunos, ao mesmo tempo que influenciam positivamente as suas aprendizagens e contribuem para o desenvolvimento das competências previstas no Perfil dos Alunos à Saída da Escolaridade Obrigatória (PASEO)..

Author’s Short Bio:

Maria Manuela Simões Licenciatura em Matemática pela Faculdade de Ciências da Universidade do Porto, Mestrado em Supervisão Pedagógica do Ensino da Matemática, pela Universidade do Minho e Doutoramento em Ciências da Educação, na especialidade de Educação e Matemática, pela Universidade do Minho também, com a tese denominada Laboratórios Virtuais de Matemática, que se dedicou à integração da Internet e dos recursos digitais no trabalho diário com os alunos.

Professora de Matemática na Escola Secundária Dr, Joaquim Gomes Ferreira Alves, em Vila Nova de Gaia e formadora no Centro de Formação Aurélio Paz dos Reis no âmbito da capacitação digital de docentes.

Experiência de Supervisão de grupos de Estágio pelo Instituto de Psicologia e Educação da Universidade do Minho e pelo Departamento de Matemática da Faculdade de Ciências da Universidade do Porto.

Roteiros Digitais de Leitura e Aprendizagem

Teresa Pombo[1]

[1] PNL: Plano Nacional de Leitura - Ministério da Educação, Portugal

Abstract. Em 2018, o Plano Nacional de Leitura 2027 implementou um repositório digital de Roteiros de Leitura, com diversos objetivos, construídos com ferramentas Google. Os roteiros foram realizados em torno de obras recomendadas pelo PNL2027 entre outras. Este projeto visa reforçar o entendimento do potencial da literacia digital na promoção da competência leitora, dotando professores e alunos de novos recursos e estratégias, tendo em em conta os seguintes objetivos do PNL2027: - Potenciar a presença e a projeção mediática da leitura nos meios escritos, impressos e digitais, em presença e na Internet; - Associar a leitura às ciências, às humanidades, às artes e às tecnologias digitais, de acordo com uma nova ecologia que se faz de múltiplas literacias. Resultado da formação já proporcionada, este repositório conta agora com mais de 180 roteiros digitais de leitura que exemplificam um tratamento transdisciplinar das questões da literacia tão importantes no mundo atual.

Keywords: Estratégias Pedagógicas, Recursos Didáticos Digitais, Metodologias Ativas, Roteiros Digitais de Leitura e Aprendizagem

Author's Short Bio:

Teresa Pombo Teresa Pombo é docente de Português no 3.º Ciclo do Ensino Básico, Mestre em Ciências da Educação na área das Tecnologias Educativas e Formadora de Docentes nas áreas de Educação para os Media e Tecnologias Educativas. Entre 2010 e agosto de 2017, colaborou a tempo parcial com a Direção-Geral da Educação onde desenvolveu diversos projetos, a nível nacional e europeu, no âmbito da integração curricular das tecnologias e da educação para os media. Entre 2008 e o início de 2018, desenvolveu, a título pessoal, o projeto "Viagens literárias" cujo principal objetivo é providenciar aos professores apoio e desenvolvimento profissional sobre o uso de recursos educativos digitais criados com ferramentas Google. Em setembro de 2017, iniciou a colaboração com a Equipa do Plano Nacional de Leitura 2027 onde desenvolve as áreas das literacias digital e dos media, apresentando os projetos "Roteiros Digitais de Leitura" e "Cenários de Aprendizagem: Leitura, Escrita, Tecnologias" e colabora noutras iniciativas que visam a promoção da literacia digital, da leitura e a escrita com as ferramentas do século XXI.

Symposium 5

Going Digital on Learning - Developing Educational Technology

Moderated by Inês Messias

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Speakers and presentations titles:

1. **Inês Messias** - Going Digital on Learning: Developing Educational Technology
2. **Victor Alvarez** - Virtual and Augmented Reality in the Classroom
3. **Ruthi Aladjem** - Hidden connections- Designing an app for Informal Lifelong Learning
4. **Ricardo Queirós** - Gamification in Education: the beauty and the beast

Going Digital on Learning: Developing Educational Technology

Inês Messias[1,2,3][0000-0003-4771-6455]

[1] Laboratory of Distance Education & eLearning, Portugal
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Abstract. While the world has gone digital, education is bringing technological innovation into pedagogical strategies to create more motivating, proactive, interesting classes. Mostly because latest studies highlight that teachers present shortcomings when it comes to being prepared for teaching with digital technology (Helleve et al., 2020; Howard et al., 2021; Lund & Aagaard, 2020; in Skantz-Åberg et al., 2022), focusing on best practices and on the most innovative adequate, efficient and effective ways of integrating technology in teaching and learning is part of the solution to the already found problem that is the Digital Transition of Education.

Admiraal (2020) states that the last 2 decades have been introducing the use of technology in education, even if not massified. Technological enhanced strategies like Virtual Learning environments, Augmented Reality, simulation, gamification, games, Visualization of complex models, helped by the use of laptops, tablets, smartphones, whiteboards, smart technology, supported by email, online forae, LMSs, instant-messaging systems, social media, and of course high-speed internet and wireless technology have been already researched for educational purposes.

The recent event of the pandemic has presented the vast majority of educators all around the world with digital transformation in a brisk and accelerated manner, showing us at first what Emergency Remote Teaching (ERT) is, and then forcing blended and distance learning models into our pedagogical strategies. According to Fisher, back in 2010, Technology Enhanced Learning Environments (TEAL), that were first introduced by MIT in 2003, were slowly forcing us to rethink the traditional classroom. And even though until the pandemic this was very much at slow pace, in the past pandemic years this reality has changed. Curaj et al. (2020) and Gaebel et al. (2021) show that by 2021 almost all educational institutions around the globe managed to deliver some form of blended or online learning, having had implications on the way educators now see the integration of educational technology, and also introducing different forms and types of learning to a considerable part.

While most have knowledge about forms of teaching, such as e-learning, blended learning, flipped learning, flipped classroom, problem-based learning (PBL), Project-based Learning (PjBL), Inquiry-based Learning (IBL), Process-Oriented Guided Inquiry Learning (POGIL) Learning Scenarios or Bring Your Own Device (BOYD), not so many of us have considered different types of learning to augment formal learning. Incorporating informal and non-formal types of learning in pedagogical experiences can help leverage and augment our learning capacity.

However, preparing such tools and environments for learning purposes require expertise and know how. When considering studies like Rubach & Lazarides (2021)

teachers' digital competence, along with their beliefs in educational technology's, both influence greatly the successful implementation of digital technology in educational contexts. In the perspective of the teacher, researcher, instructional designer, careful and specific considerations during the development of such learning objects is needed.
This symposium will present the implications of developing educational technology, from the perspective of tools and apps developers, teachers, researchers and instructional designers in the hopes that the sharing of good practices will inspire and pass forward knowledge of how to create such rich, motivating, immersive, innovative technology for learning.

Keywords: Developing Educational Technology, Digital Transition on Education, Innovative Learning

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Author's Short Bio:

Inês Messias has a PhD in Education, with focus on eLearning, more specifically in the creation of hybrid environments, methods of social network analysis and educational network analysis (2017). Had a scholarship at the special project for distance learning at Universidade de Coimbra (2017). Has a Master in Multimedia Education and Communication (2009) and a degree in Education (2003). She worked as a multimedia specialist at the Finnish company Learnmera Oy, where she participated in several innovative educational international projects (2015-2019). Was a lecturer at ISCTE-IUL (2017-2020).

She is currently teaching at the Polytechnic Institute of Santarém. She is a researcher at the Information Sciences, Technologies and Architecture Research Center (ISTAR-IUL), one of ISCTE's research centers, and a researcher at the Distance Education and Elearning Laboratory (LE@D), one of the Universidade Aberta's research centers, where she is part of the Center's Clustering Project Education in Time of Pandemic, created to study and monitor digital transition in emergency times.

She was part of the consultant specialists' team of the European Comission for 2 projects: "Vocational education and training in e-skills and certification and accreditation (for the QUALITY project)" and "Projeto the Development of an e-skills vision and a scenario-based forecasting of s-skills demand and supply in European countries from 2012 - 2020 (for the VISION project)."

Virtual and Augmented Reality in the Classroom

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Abstract. Virtual and augmented reality (VR/AR) have arrived to classrooms with the promise of creating new opportunities for teachers, students and professionals. The pandemic caused by COVID-19 has led to rethinking instructional design and educational strategies. For example, face-to-face training was interrupted by confinements and the application of other health measures, and education was quickly adapted to new modes of teaching. Alternatives such as distance learning via video calls were adopted on a massive scale (Verde A, Valero JM. Teaching and Learning Modalities in Higher Education During the Pandemic: Responses to Coronavirus Disease 2019 From Spain. Front Psychol. 2021 Aug 24;12:648592. doi: 0.3389/fpsyg.2021.648592) and other tools or methodologies appeared with the aim of improving knowledge acquisition, making students participate in their own learning, achieving greater motivation and engagement during the process (Abu Talib M, Bettayeb AM, Omer RI. Analytical study on the impact of technology in higher education during the age of COVID-19: Systematic literature review. Educ Inf Technol (Dordr). 2021. doi: 10.1007/s10639-021-10507-1). The contribution of highly visual and experience-oriented virtual reality (VR), is particularly noteworthy in this regard, by visually contextualizing and making immersive the way we communicate, work, learn and play online. In this communication, Víctor Álvarez (PhD and lecturer at the University of Oviedo) describes how computer engineering students in Spain are using problem-based learning and team multidisciplinary collaboration to develop VR and AR software supported by game development as well as 3D modelling and animation tools. Three examples are highlighted to describe how the apps created by students are being used in laboratory training and neurophysiologycal diagnosis: QuimilabVR is a virtual reality tool whose purpose is to emulate a set of six practices carried out in a chemistry laboratory. A VR Preclinical lab app places students in a clinical room where various healthcare techniques are explained and it was used in the first pre-clinical practices of first year nursing students during the COVID pandemic. VR-Photosense is a virtual reality intermittent photic stimulation (IPS) software that uses visual stimuli to study abnormal electroencephalogram responses in photosensitive patients and is currently enabling to study the impact of visually-sensitive stimuli in the human brain (Martín S, Álvarez V, García-López B, González VM, Villar JR. VRPhotosense: A virtual reality photic stimulation interface for the study of photosensitivity. 16th International Conference on Soft Computing Models in Industrial and Environmental Applications SOCO 2021 doi: 10.1007/978-3-030-87869-6_17; Moncada Martins F, Martín S, González VM, Álvarez V, García-López B, Gómez-Menéndez AI, Villar J. Virtual reality and machine learning in the automatic photoparoxysmal response detection. Neural Computing and Applications. 2022 doi: 10.1007/s00521-022- 06940-z).

Keywords: Virtual and augmented reality, new modes of teaching, problem-based learning, game development, VR Preclinical lab

Author's Short Bio:

Victor Alvarez (University of Oviedo, Spain) is a surf bum wannabe and consolidated lecturer and researcher in the areas of virtual and augmented reality, technology enhanced learning and biomedical engineering, fields in which he has collaborated with leading universities and research networks in Europe and Oceania. He held postdoctoral research contracts at KU Leuven University, Belgium and Murdoch University, Australia. He was responsible for coordinating a work package of the European Commission funded project "iTEC – Innovative technologies for an engaging classroom". He also served on the advisory board for the Australian Tertiary Education (NMC Horizon Report 2016) and was a member of the programme committee for the World Wide Web 2017 conference in Perth, Australia. He has delivered VR/AR courses in Egypt, Norway, Sweden and Portugal as well as in the European EA-TEL network. His academic work has been published in International conferences and leading scientific journals. Applications of this research include medical diagnosis and training, music learning, natural sciences and wildlife conservation. In his spare time, he can be seen practicing open water swimming, surfing and walking with his dog.

Hidden connections- Designing an app for Informal Lifelong Learning

Ruthi Aladjem[1]

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Abstract. Lifelong learning (LLL) and personal development are focal issues on the global policy making agenda. Generally, LLL can be formal, non-formal, or informal, but it is primarily described as a process of personal meaning making, often taking place in authentic settings, in an informal, unplanned, and unstructured manner (Poquet & De Laat, 2021; Rubenson, 2019). In the informal learning process, the absence of a teacher or a structured curriculum allows learners to follow their personal interests and to define their own learning goals on their free time. However, this independent and intermittent process can be challenging for learners, and it requires motivation, commitment, and self-direction, especially given the multitude of distractions that constantly compete for learners' attention.

As technology mediates all aspects of our lives, it holds the potential to support learners in daily informal learning interactions. The main challenges that should be considered when designing technological tools for the informal learning process, are rooted in its inherently unstructured and incidental nature, often characterized by seemingly anecdotal and discrete learning events (Aladjem & Nachmias, 2014; Chan, Walker & Gleaves, 2015; Crompton, 2014; Sharples et al., 2007).

To this end, we designed a learning app for supporting interest-driven informal learning processes in authentic settings. The app is designed for learning on the go, with short, micro-learning sessions, formed automatically out of OER (Open Educational Resources). This enables coverage of a wide array of areas of interests. Using a learner-centered approach, the app is built to tackle some of the challenges of engaging in informal learning in the following manner:

1- Incorporating personal interests, preferences, and contexts into the learning process

In addition to supporting explicit learning intents from the learner, the app crafts micro-learning items tailored to their profile. The app's profiling system takes into account the learner's interests, needs, and preferences. It also incorporates contextual parameters (such as location, situation, time, and schedule). The app then selects learning materials that correlate highly with the learner's profile, leading to a personalized and highly relevant learning offering.

2- Identifying learning opportunities to trigger learning

Once a potential learning opportunity has been identified by the app, its triggering system looks for relevant timeframes and contexts for learning. The system uses push notifications to encourage the learner to begin learning (an initiating trigger) as well as to pick up and continue learning (a continuing trigger) once a new opportunity is identified. Thus, learners are "nudged" and encouraged to engage in relevant learning during available times, without having to pre-plan or intentionally set aside times dedicated for learning.

3- Creating a network of connections between discrete learning events

The app goes beyond individual learning interactions to create learning structure and continuity, by connecting the learning items into novel learning paths. The app's content engine uses structural heuristics and Natural Language Processing (NLP) to identify non-trivial relationships between microlearning items. This creates a cohesive network of connections between past, current and future learning events. By doing so, learners are able to revisit and reflect on past learning as well as to continue in virtually endless learning paths, resulting in a meaningful process of knowledge construction and in-depth reflection.

In conclusion, designed to address the challenges of informal learning, technological tools can offer new possibilities for personalizing, encouraging, and structuring the learning process. A personal learning environment (PLE)such as described above, can serve not only to support informal daily learning, but may also supplement formal learning. As such, it may facilitate a continuum between formal and informal learning, and support an ongoing learning process across mediums, contexts, and time, leading to a truly learner-centered, continuous lifelong learning.

Keywords: Lifelong learning, designing technological tools, informal learning process, Open Educational Resources, Mobile app design

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Author's Short Bio:

Ruthi is an academic researcher, an ed-tech entrepreneur and a product innovation expert.

Her PhD, from Tel Aviv University, focused on the potential of supporting informal, serendipitous learning processes with mobile technology, from a socio-constructivist, learner centered perspective.

In addition to her academic experience as researcher and lecturer, Ruthi has held several product management and product innovation positions, and has co-funded an edtech startup.

Gamification in Education: the beauty and the beast

Ricardo Queirós[1,2,3][0000-0002-1985-6285]

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Abstract. In the last decade, gamification has been widely used as a mechanism to influence behavioral habits in users so that they are more positively involved in learning and business processes.
Its growth has been so strong that nowadays we can already find gamification implemented built-in on several platforms from Learning Management Systems to cloud providers.
There are many articles that witness this adoption by showing success stories where dynamics, mechanics and components are presented and applied in educational scenarios. In fact, gamification is a powerful tool to promote engagement. But to use something powerful it is important to know how to use it.

Despite the importance already demonstrated, there is the reverse side of the medal that has been little (or not at all) discussed. There are many problems that can arise when applying a gamified strategy. Several studies (Hammedi, 2022 & Toda, 2018) were carried out in the last decade in order to identify the other side of gamification, that is, its negative side. A systematic mapping study (Almeida, 2021) was conducted to identify the gamification negative effects in education contexts. Almost all the results presented 4 negative effects: Indifference, Loss of performance, Undesired behavior and Declining effects.
In fact, loss of performance is the most cited effect and it is due mainly to the fact that learners focus more on gamified mechanics than on the assessment or some users did not understand the rules and this may have hindered their performance and, also due to demotivating effects on the inappropriate use of certain gamification elements that foster demotivation. Another negative effect is undesired behaviour when gamification causes a different effect (positive or negative) either due to bad planning or to the lack of it. Some studies reveal indifference as a common behaviour when users were not interested in the gamification that was implemented, choosing traditional methods over gamified ones.

Also some of these studies reveal the sense of undesired competition which is pointed as a big issue in the engagement process. Here the leaderboards are a common resource to promote competition, still, it can be harmful for users with low performance and low self-esteem, since they can feel forced in a competition with their peers, which can negatively affect their sense of competence and result in the reduction of their interest and engagement mostly if they are constantly positioned in the lower places of the leaderboard (Andrade, 2016).

This work shares the main precautions to be taken when creating a gamified strategy, promoting the use of gamification design and evaluation frameworks, in order to create a balanced approach that meets the profiles of its users.

Author's Short Bio:

Ricardo Queirós holds a PhD on Computer Science and is an Assistant Professor of Computer Science at the Media Arts and Design School of the Polytechnic Institute of Porto where he teaches mainly Web and Mobile programming. He is also a researcher in the field of e-learning interoperability and programming languages learning at the Center for Research in Advanced Computing Systems (CRACS) research group of INESC TEC Porto. He is also the Coordinator of the Distance Learning Office from the Pedagogical Innovation Center (CIP) of the Polytechnic of Porto. He is the main chair of the International Computer Programming Education Conference (ICPEC). He is currently working in the design and implementation of gamified learning environments to foster the teaching-learning process of computer programming curricula. He is also the author of more than 10 books regarding Web/Mobile development and more than 100 scientific publications focused on computer science education, gamification and interoperability in e-learning systems.

Symposium 6

Designing faculty professional development for the new normal

Moderated by Alev Komsuoğlu Elçi

Aksaray University, Turkey

Speakers and presentations titles:

1. **Alev Komsuoğlu Elçi** - Rethinking faculty development toward the new normal

2. **Oya Guneri** - The Role of Faculty Leadership Development Programs to Prepare Higher Institutions to the New Normal/s

3. **Aytac Gogus** - Designing faculty professional development: How does the Faculty Member adapt to the new normals? Between blended, online, face-to-face or hybrid, where is the harmony?

4. **Linda Beith** - Preparing faculty for Implementing Universal Design of Learning (UDL) Principles for Flexible, Responsive, and Sustainable Courses

Rethinking faculty development toward the new normal

Alev Komsuoğlu Elçi[1]

[1] Aksaray University, Turkey

Abstract. "If you want to learn to swim jump into the water. On dry land no frame of mind is ever going to help you"? The emergency remote learning during the pandemic increased the importance of the teaching and learning centers that organized increased faculty development activities. Besides the formal faculty development achieved by higher education institutions, informal online activities that are organized by individuals, private institutions, or formations started to increase. These activities should make us think about new faculty development and the need for change. Are these changes going to fill the gap that is formed and integrate face-to-face and online learning?

Author's Short Bio:

Assoc.Prof.Dr. Alev Elçi

She has recently established and now acting as managing director of a group entitled Higher Education Professional Development Network "Yüksek Öğretim Mesleki Gelişim Ağı (YÖMEGA)" in Turkey. YÖMEGA has faculty members and researchers from different universities in Turkey, mainly faculty professional development experts and academics. She has main research areas as faculty development, digital teaching and learning, technology enhanced learning, social networks, learning communities, animation and game based learning, internationalization, and narrative approaches. She is the co-editor of IGI Global book, Handbook of Research on Faculty Development for Digital Teaching and Learning, contributing chapter "Faculty Development Centers for Digital Teaching and Learning: Implementation of Institutional Strategy and Infrastructure". She has a book titled Faculty Beliefs and Needs: Opening the Gate to ICT-based Professional Development in Teaching and Learning. She is currently reviewer of two SSCI journals. She was a visiting researcher in Roger Williams University, RI, USA with a grant by Scientific and Technological Research Council of Turkey (TÜBİTAK). She received BSc in Mathematics (Hacettepe University) and MSc in Computer Engineering (Middle East Technical University), Ankara, Turkey. She got PhD in Educational Sciences (Eastern Mediterranean University), Famagusta, North Cyprus. Her dissertation was on faculty beliefs and needs for ICT-based professional development in teaching and learning. Prior to academia, she worked for 15 years as software support and training specialist for Unisys and Oracle in Turkey, Pakistan, China, and Kuwait. She has been teaching for 20 years and lately was an Assistant Professor in Department of Management Information Systems, Aksaray University, Turkey.

The Role of Faculty Leadership Development Programs to Prepare Higher Institutions to the New Normal/s

Oya Guneri[1][0000-1111-2222-3333]

[1] TED University

Abstract. The COVID-19 pandemic has been a reminder indicating that uncontrollable events can occur at any time in our lives and impact every aspect. Higher education institutions, like all other institutions severely affected by the pandemic. It seemed like finding solutions to keep teaching and learning was their focus. The quick start to remote teaching and learning was witnessed. Faculty development specialists or teaching and learning center directors supported faculty and students by assisting in remote teaching and learning. During the pandemic, teaching and learning seem to be on the test. Indeed, the academic leaders' decision-making and management skills were on the test. Academic leaders were faced with the challenges of making many quick educational decisions in a world of uncertainty, and their reactions significantly impacted how education was handled. We all hope to return to the old normal, but we have questions regarding the extent to which that would be possible, or "what would the new normal we need to adapt to look like"? Since the pandemic's start, faculty members have become more experienced in how they can do all their academic tasks remotely; they have become more skillful in using different digital tools in teaching.

On the other hand, another type of support gained more importance in the professional development of the faculty. All faculty members lead in their careers. In this post-pandemic period, we have experienced how academic leaders' skills and abilities made a significant difference during the pandemic. Thus "how can we prepare faculty as educational leaders so that in the future they can more effectively manage institutions in difficult times and enable institutional change and adjustment? has become an important question. This presentation will address this question by referring mainly to the role of faculty professional development programs in developing the leadership skills of faculty members by focusing on how we can prepare academic leaders for ambiguous times or crises.

Author's Short Bio:

Prof Oya Yerin Güneri

Oya Yerin Güneri is the Vice-Chancellor of Education and Teaching at TED University. She is also a faculty member in the Educational Sciences Department. Previously, she was a professor in the Department of Educational Sciences at Middle East Technical University (METU), where she was also a faculty between 1990-2020, a Director at the METU Learning and Student Development Office (2009-2015), and director of the Center for Advancing Learning and Teaching (2017-2020). Dr Güneri also served as the Vice-Chancellor for Education and Teaching between the 2015-2016 academic year at Abdullah Gül University and the 2016-2017 academic year at Middle East Technical University Northern Cyprus Campus. Dr Güneri received her PhD from METU

Educational Sciences Department, Guidance and Psychological Counselling Program. During her doctoral studies, she was a visiting researcher at the University of Minnesota with a PhD grant from the Turkish Academy of Sciences (TUBA) between 1997-1998. She completed her post-doctoral study at Harvard University, within the Fogarty International-Mental Health and Developmental Disorders Researcher Training Program. Her research areas of interest include counseling with university students, teaching and learning in higher education, faculty professional development, college student development, career counseling.

Designing faculty professional development: How does the Faculty Member adapt to the new normals? Between blended, online, face-to-face or hybrid, where is the harmony?

Aytac Gogus[1]

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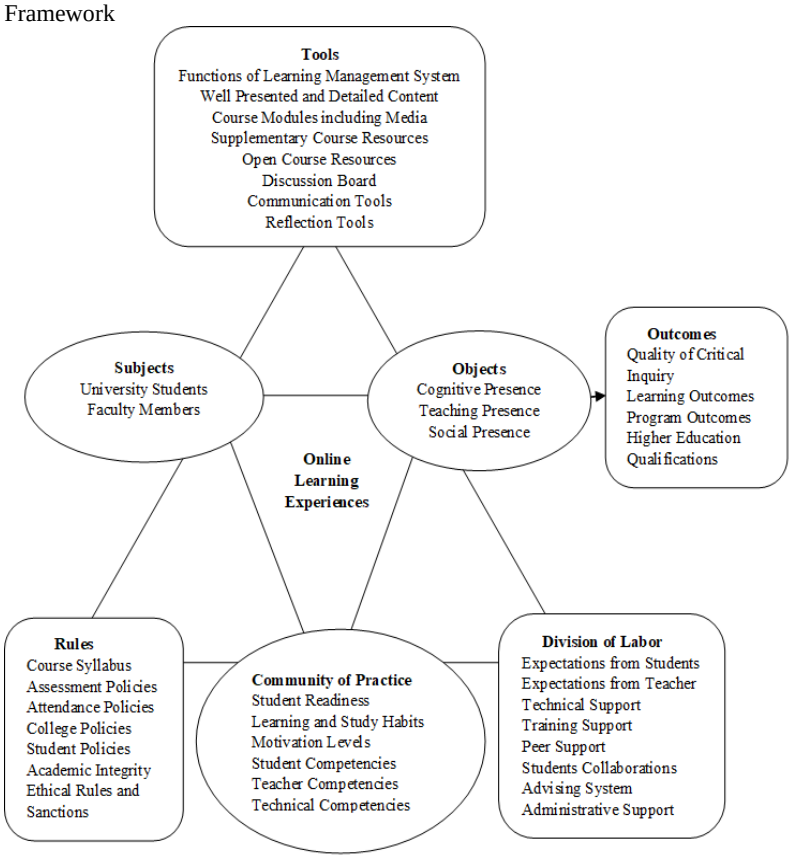
Abstract. While shifting to digital learning environments, it becomes vital to support teachers for adapting their teaching to online platforms and appropriate teaching and assessment techniques. This became so evident during the Covid-19 pandemic in early 2020. Many researchers conducted studies about the importance of online learning, blended learning and hybrid learning in the time of crisis. The digital transformations of teaching and learning were faced with several challenges. These challenges include the lack of teaching experiences, the use of technology skills, time constraints to plan for the accompanying changes, and issues to enhance effective online learning environments. In the middle of 2022, there are challenges to adopt to the new normal. It is challenging to develop content which not only covers the course plan but also involves the students. Enhancing effective learning environments requires to use well-developed models for learning environments. Professor Gogus present a framework developed to adapt the Activity Theory for the design of the courses between blended, online, face-to-face or hybrid forms so that the learning outcomes of the course, as well as the required qualifications of higher education, can be reached.

The presented Activity Theory Framework in the Figure 1 offers a complete framework for teachers and educational designers to gain a meaningful insight for planning, implementing, and evaluating their courses. and for examining how to mediate teachers' technology integration practices for effective online/hybrid/blended/face to face learning experiences. As seen in Figure 1, the conceptual framework presents the main components of a learning activity aiming at concrete learning outcomes. This conceptual framework is adapted from the Activity Theory with the main components of the included context (e.g. the learners' characteristics, teachers' characteristics, and online learning management systems' functionalities), the tools and resources used (e.g. resources for content delivery and learning activities, communication tools between the learners and the teachers or among the learners), the concrete learning tasks (e.g. learning activities, teaching techniques, assessment methods), and the relations between the three (e.g. how the tools and resources are used, how self-paced/individual the tasks are designed and implemented, and how the learning outcomes are assessed). In the present study, the components of the conceptual framework adapted from the Activity Theory refer to:

- Subjects (university students, faculty members)

- Objects (online/hybrid/blended/face to face learning experiences with cognitive presence, teaching presence, social presence)
- Outcomes (the quality of critical inquiry, reaching expected learning outcomes, program outcomes, higher education qualifications)
- Tools (functions of the Learning Management System, well-presented and detailed content, course modules including media, supplementary course resources, open course resources, discussion board, communication tools, reflection tools)
- Rules (course syllabus, assessment policies, attendance policies, college policies, student policies, academic integrity, ethical rules and sanctions)
- Community of Practice (student readiness, learning and study habits, motivation levels, student competencies, teacher competencies, technical competencies)
- Division of Labor (expectations from students, expectations from teacher, technical support, training support, peer support, student collaborations, advising system, administrative support)

Figure 1. Effective Learning Experience and Activity Theory Framework



Professor Gogus will also present how to design a faculty professional development program. Professor Gogus conducted the need assessment study about teaching competencies and training for faculty members in 2021 in order to design, develop and implement a faculty support program. Then, "Training the Trainer, Faculty Support Program" has been conducted since the academic year 2021-2022 by Professor Gogus. The program aims to support the faculty members working at Istanbul Okan University and establishes a learning community between faculty members from different faculties and various domains.

Keywords: First Keyword, Second Keyword, Third Keyword.

Author's Short Bio:

Professor Aytac Gogus

Professor Aytac Gogus is dean of the Faculty of Education and a professor of Educational Sciences at Istanbul Okan University, Turkey. She received her PhD degree in Instructional Design, Development and Evaluation (IDD&E) in 2006 and her MA in May 2001 at Syracuse University, USA. She received MS in Mathematics from the Middle East Technical University in January 1999, and BSc in Mathematics from Gazi University in June 1994. She has 5 years of teaching experiences in K-12 and 20 years of teaching experiences in higher education in both Turkey and USA.

She published a book called "Teachers' Voice", 15 book chapters, and many articles in SSCI indexed journals that are cited in the literature. One of her book chapter, "Reconceptualizing a College Liberal Arts Curriculum based on the 21st Century Skills" was published in the book "Emerging Technologies for STEAM Education". She has eleven different chapters related to educational psychology and learning theories that were published in the Encyclopedia of the Sciences of Learning. She had another chapter in the Encyclopedia of Creativity, Invention, Innovation, and Entrepreneurship. She was co-author of the book chapter "Competitiveness of Top 100 U.S. Universities: A Benchmark Study Using Data Envelopment Analysis (DEA) and Information Visualization" in the book titled Strategic Measurement and Management Performance using Data Envelopment Analysis: Theory and Applications.

She has contributions to the research in learning, complex skill acquisition, program evaluation, higher-order thinking skills, study skills, learning habits, and privacy perception and information technology utilization. She has also important contributions to the research in teaching and technology integration, adoption to innovative teaching methods, diffusion of innovation, faculty development, and teacher training. Her courses at Faculty of Education include Principles of Teaching and Learning, Measurement and Evaluation, Non-Test Techniques, Learning Psychology, Program Development and Evaluation, and Instructional Technologies.

Between September 2007 and February 2015, she has worked in Academic Support Program (ASP) of the Center for Individual and Academic Development at Sabancı University to design and run training programs for students from various fields and knowledge bases. She trained teaching assistants and graduate students in various topics related to the professional development. She has experiences in working collaboratively across programs as an instructional designer and an educational researcher.

Between July 21, 2014 and January 20, 2015, she was a visiting research scholar at the Department of Curriculum & Instruction of the Judith Herb College of Education at University of Toledo. Between May 2006 and May2007, she was a postdoctoral fellow in Instructional Design, Development, and Evaluation (IDD&E) at Syracuse University, Syracuse, New York. Between October 2005 and May 2007, she worked as a course writer and instructional designer on designing

and developing college level online mathematics courses for McGraw Hill Higher Education Online. At the same time, she worked as a Vice President for Communication at Training and Performance Division of Association for Educational Communications and Technology (AECT) in 2007-2008.

Professor Aytac Gogus has good project management skills and runs interdisciplinary research projects. She administrated a research project, Evaluation of Mental Models in Mathematics Domain, which was supported by TUBITAK. In addition, she was a researcher in two grant projects supported by TUBITAK. The first grant project was “Developing Handwriting Recognition Technologies for Smart Classrooms and Its Use in E-Content Development” and the second grant project was “Privacy Preserving Data Analysis and Publishing in Education”. Professor Aytac Gogus and Dr. Ozgur Bolat led Teacher Leadership project as the first application of International Teacher Leader Project in Turkey, first started at the Cambridge University in England and was put into practice in 14 countries. I provided training programs for teachers related to instructional strategies, classroom management, assessment of student learning and students learning and thinking styles, technology integration into classroom activities. Another international project that she has worked on bringing OPEDUCA (OPen EDUCational Areas) project into Turkey as “OPEDUCA Istanbul”, administrated by RCE Rhine-Meuse in Holland and supported by European Union and UNESCO.

While in the IDD&E program at Syracuse University, she had excellent opportunities to gain experiences in both K-12 and higher education settings. She got the Project Management Award for thoughtful and feasible guidance on funded Research and Development Projects at IDD&E program. She was a research assistant in the “Enhanced Evaluation of Learning in Complex Domains” project funded by National Science Foundation (NSF) and conducted by Professor J. Michael Spector and Professor Tiffany A. Koszalka. She contributed to this study by designing, conducting, analyzing, and reporting upon the DEEP (Dynamic Evaluation of Enhanced Problem Solving) research methodology. In another IDD&E research project, she conducted observations and interviews with middle school science teachers who trained in Web-Enhanced Learning Environment Strategies through the integration of NASA's missions-based Astronomy and Space Science research, conducted by Professor Tiffany A. Koszalka. Also, she worked in a formative evaluation project of literacy projects funded by the Central New York Community Foundation and worked program evaluation projects with Professor Nick L. Smith and Professor Philip A. Doughty. She took advantages of her interdisciplinary background and could contribute to education projects in different contexts and in different fields.

Currently, Professor Gogus has conducted the need assessment study about teaching competencies and training for faculty members in 2021 in order to design, develop and implement a faculty support program titled "Training of the Trainers". After the needs analysis, "Training the Trainer, Faculty Support Program" was conducted in the academic year 2021-2022 by Professor Gogus. The program aims to support the faculty members working at Istanbul Okan University and establishes a learning community between faculty members from different faculties and various domains.

Preparing faculty for Implementing Universal Design of Learning (UDL) Principles for Flexible, Responsive, and Sustainable Courses

Linda Beith [1]

[1] Roger Williams University, USA

Abstract. Post-COVID higher education requires faculty to be flexible and responsive to diversity, equity and inclusion (DEI) of all learners as well as the ability to quickly transition among different modes of instruction from in the classroom to a hybrid or fully online delivery. The best preparation for this ever-changing landscape is to incorporate the basic principles of Universal Design for Learning (UDL) into their overall course design.

Universal Design for Learning is a framework based on the neuroscience of how people learn. UDL encompasses three design principles –

Multiple strategies for learner engagement

Representation of content to accommodate a range of learning styles/preferences as well as the removal of barriers to learning like physical challenges (blind/low vision students, deaf/hard of hearing students, dyslexic learners, stroke survivors with some paralysis) and language differences

Action and expression that allow learners more control and involvement in their learning process.

Although this may seem daunting, there are some easy modifications that faculty can make to future-proof their course design and development to make their courses more accessible and flexible. Throughout the pandemic, most faculty began to use their learning management system (LMS) and technologies like web conferencing software like Zoom or Google Meets as a necessity to reach out to their students beyond the classroom. This larger-scale adoption of this broader range of tools and strategies provides a good foundation for faculty to increase access to instructional content as well as to deepen engagement for learners across all course delivery modes.

This session will offer some simple examples of how faculty can build on this foundation to implement some of the DEI and UDL concepts in their courses that will allow them to pivot their instruction as needed and, at the least, improve the access to their courses for all students. One of the benefits of using technologies like learning management systems is that faculty can modify their content with UDL principles in mind and that content can be reused in future semesters. This allows faculty to slowly transition their courses to be more accessible, flexible, and sustainable.

Author's Short Bio:

Dr. Linda Beith is currently an instructional designer of competency-based education programs for the University College division at Roger Williams University. She has spent 32 years among five different institutions involved with teaching and learning in higher education, specifically in the areas of faculty development, instructional technology and adult learning. In addition to supporting faculty initiatives, Linda also has an interest in alternative delivery methods of instruction and has taught online, onsite and hybrid courses for 14 years in the graduate program for instructional design at University of Massachusetts at Boston and University of Massachusetts Online in addition to four years of workforce development instruction. Her educational background includes a doctorate in instructional design from Capella University in Minnesota; a master's degree in instructional design from University of Massachusetts at Boston and a Bachelor of Arts in Psychology from Bridgewater State College in Massachusetts.

ICEM

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POLITÉCNICO DE SANTARÉM

PARALLEL SESSIONS

MOVING ON TOWARDS 'NEW NORMAL' IN EDUCATION

ICEM2022 CONFERENCE

BOOK OF ABSTRACTS

OCTOBER 2022

Parallel Session 1

Moderation by Susana Leal[1]

[1] Centro de Competência TIC da Universidade de Aveiro, Portugal

Authors and presentations titles:

1. **Ana Lúcia Bento Miguens**, **Rui Jorge Bernardes dos Santos**, **Tiago Lopes Oliva**, **João Manuel Nunes Piedade** - Meaningful Learning In Mathematics: A Study On Motivation For Learning And Development Of Computational Thinking Using Educational Robotics

2. **Inês Messias and Ana Loureiro** - Digital Open Educational Resources - Teachers' perceptions of the Pedagogical implications

3. **Susana Leal, Sandra Oliveira, Carla Vivas, João Nascimento, Cláudio Barradas and Ana Loureiro** - Time to Act through Sustainable Experiences for Higher Education Students: A project to Promote Sustainability

4. **Fátima Pires and Cecília Guerra** - "Chemistry to City" (CtoC): a learning approach that brought Chemistry to Oliveira do Bairro city

MEANINGFUL LEARNING IN MATHEMATICS: A STUDY ON MOTIVATION FOR LEARNING AND DEVELOPMENT OF COMPUTATIONAL THINKING USING EDUCATIONAL ROBOTICS

Ana Lúcia Bento Miguens[1], Rui Jorge Bernardes dos Santos[1], Tiago Lopes Oliva[1], João Manuel Nunes Piedade[1]

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Abstract. The present proposal aims to report an experience of good practices in a formal environment. The theme being the understanding of the impact of robotics and programming on the motivation of students in the development of computational thinking in the learning of mathematical concepts, within two third-grade classes.

The idea for the theme arose from the need to make educational practices more motivating and relatable to the children of today. Based on the guidelines of the new Portuguese curricular orientations in mathematics, which highlight computational thinking as one of the transversal mathematical skills and indicate that the promotion of mathematical learning benefits from the use of various resources, including technological tools (DGE, 2021).

The theoretical framework used for the observation and analysis of motivation, computational thinking, and the content that children consolidated, involves a framework for motivation (Portugal, G. & Laevers F., 2018) as well as literature on computational thinking, with an emphasis on the dimensions presented by Piedade et al. (2020). Piedade et al. (2020) sought to list the processes explained by students and outlined dimensions to categorize them: 1) decomposition; 2) abstraction; 3) pattern recognition; 4) algorithmics; 5) testing and debugging.

Two activities were designed and applied by using different robots (mbot and microbit), in order to allow students to be actively involved in solving the proposed problems, which was essential for this study, as only in this way would it be possible to access students' mathematical thinking (NCTM, 2014).

The study followed a qualitative approach, as a way of gaining an in-depth understanding of a phenomenon through the participants' perspective, with the purpose of describing it (Amado, 2014). Data were collected from the interactions and dialogues regarding the performance of two tasks: one using microbit and the other using mbot. The tasks were applied in the context of participant observation and then a semi-structured interview was conducted with each class group.

The analysis model used allowed the collected evidence to be grouped into operational categories, which helped in (1) observing the influence that programming and/or robotics have on the motivation for learning; and (2) analyzing the dimensions of computational thinking for the consolidation of the concepts of length measures, area-perimeter relation, and cardinal points in 3rd grade students.

The results show that the practice of the activities enabled students to learn and construct knowledge from previous knowledge. Therefore, the tasks effectively

contributed to the consolidation of concepts of length measurements, area-perimeter relationship, and cardinal points, to the development of computational thinking and to the enhancement of motivation for learning in 3rd grade students. The dialogues and interviews with the students allowed us to identify that the educational use of the robots encourages students' participation. It is possible to conclude that although learning is not only achieved through the use of technologies, these also have a favorable role in learning and motivating students to increase their knowledge. It remains central to wager on initial and continuing teacher training so that teachers can take advantage of this knowledge in their classes and thus develop practices that are transversal to the curriculum and promote meaningful learning.

Keywords: Computational thinking. Technology in education. Mbot. Microbit. Mathematical concepts

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Digital Open Educational Resources - Teachers' perceptions of the Pedagogical implications

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Abstract. The educational paradigm has been changing in the last couple of years, impacted greatly by the COVID-19 pandemic, that made us all witness the field's strengths, weaknesses and lack of readiness making the transition from traditional classroom teaching to Online Remote Teaching and Learning (ORTL). Despite the disruption, most teachers were able to use some digital tools and resources. In the pre-pandemic world of 2017 Haelermans (2017) argued the existence of 2 types of teachers: those who do not want to change and those that are willing but do know how to or feel insecure about the change. 4 years later, and after a pandemic that has forced Education to go digital, findings show that by 2021 practically all educational institutions managed to deliver some sort of blended and online learning, in a format that has been characterised as emergency remote teaching (ERT), having implications on the way educators now see and use technology in the classroom (Gebel et al., 2021). Even though this positive change regarding the way teachers now look at educational technology, it is important to measure the actual knowledge of how to do it effectively and efficiently. A study conducted by Zhao et al. (2021) with data from 2015 to 2021, shows that the majority of university teachers, as well as students, have only the basic or medium level of digital competences. The authors found that despite having gone through the ERT imposed by the pandemic, some were still unsure when it comes to integrating digital technology into their pedagogical strategies (Ryhtä et al., 2020 in Zhao et al., 2021), with most feeling that their approach to complex pedagogical use of technology is shortcoming (Zhao et. al, 2021). As for the findings of Rubach and Lazarides (2021) on their study, teachers' digital competence together with their beliefs in educational technology influence the successful implementation of digital technology in educational context, and the more they are at ease with the use of technology, the better they correctly use it in the classroom. According to Skantz-Åberg et al. (2022), studies suggest that there are several shortcomings when it comes to the digital competences of teachers in general and working at different school levels. These authors suggest that research shows teacher's limited digital skills when it comes to integrating technology into their teaching in a more complex and regular fashion than just the sporadic use of already made digital resources and tools. We can then infer that work is still to be made when it comes to teacher training for the integration of technology in pedagogical context, not only in university teachers, but for all teachers. The study here presented is being conducted at a Higher Education Institution, to present and former students of a Master Degree in the field of Digital Education Resources, after they were trained in the development and implementation of digital Open Educational Resources (OER).

This paper presents findings concerning teachers' perceptions about the pedagogical implications of using OER after having received specific training on how to prepare, adapt, create and implement them.

Keywords: Open Educational Resources, OER, Teacher's Perceptions, Pedagogy, Educational Technology

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Time to Act through Sustainable Experiences for Higher Education Students: A project to Promote Sustainability

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Abstract. In this work, we propose to present the project "Time to Act through Sustain-able Experiences for Higher Education Students", also known as TIME2ACT@SD. TIME2ACT@SD aims to contribute to the development of knowledge, skills, and attitudes, as well as changing behaviours among European HE (Higher Education) students in the field of sustainable development (SD) and SD Goals (SDG), through the development of interactive content, digital tools, and innovative teaching methodologies, based on the use of the gamification, for HE teachers' use in formal and non-formal education.

TIME2ACT@SD seeks to produce a set of open educational resources that can be used by higher education teachers in the teaching and learning processes. Through innovative practices of training (e.g., MOOC and gamification strategies) and through active methodologies (workshops and bootcamps, as activities of experimental nature), the project aims to promote literacy in the target group in the field of SD/SDG, as well as behavioural changes regarding individual preferences, awareness of SD, consumption habits and lifestyles.

In this article, it is presented the methodology for the development of the project, which comprises four phases. The 1st one is the needs analysis - the needs that we want to address is the lack of knowledge, skills, and actions towards SD among young people attending HE, as well as innovative educational tools to bridge this gap in students' education. The 2nd one is the partnership arrangements - the project involves a total of seven partners from six countries (Politécnico de Santarém; UCLan Cyprus; Thomas More Mechelen -Antwerpen; Learnmera Oy; Galileo IT; Rosto Solidário; Gazi University). The 3rd one is the project design and implementation - the project comprises five work packages (WP): WP 1 Project Management, WP2 Transnational studies with HE students and teachers, WP3 Development of interactive con-tent and digital/innovative tools, WP4 SD/SDG training Workshops and Bootcamps, and WP5 Strengthening the cooperation partnership & dissemination and exploitation of the project's results). The 4th one is about the project impact - to assess if the project goals have been achieved, different monitoring levels must be considered, either in the short or long term, and in every stage of the project.

TIME2ACT@SD will be developed through (a) Transnational studies with HE students and teachers to identify skills gaps on the SD/SDG topic; (b) Development of interactive content and digital/innovative tools, namely using immersive and gamification approaches; (c) SD/SDG training workshop and bootcamps to promote HE students' attitudes and behaviours changing through learning by doing;

(d) Strengthening the cooperation partnership and exploitation of the project's results to other HEI stakeholders.
The TIME2ACT@SD results will be transnational studies with HE students and teachers about SD topics (scientific papers), MOOC and webinars aiming to promote the HE students' literacy on environmental, social and economic sustainability, web/mobile-based and immersive games on SD, a virtual workshop on educational games, sustainability bootcamps, an online platform, focus groups with HEI stakeholders, an international conference.
The work presented is a project proposal, financing is expected to be in place by the end of 2022, then the main limitation is that it has not yet been implemented.
This project will contribute to education for sustainable development with innovative tools (e.g., using gamification and virtual/augmented reality) and educational technology that will be made available to higher education teachers for greater effectiveness in the educational process.

Keywords: sustainability, higher education, innovative teaching methodologies, Erasmus project

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“Chemistry to City” (CtoC): a learning approach that brought Chemistry to Oliveira do Bairro city

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Abstract. Chemistry is a central science, basic to, for example, Biology and Geology, in which its existence is easily observable in everyday life, Chemistry is more difficult.

During the “International Year of the Periodic Table” (2019), several teachers from Olivera do Bairro (OB) high school (Portugal) participated in the science communication project called "Science for the City". The purpose of the project was to involve the teachers and students in the development of non-formal learning activities with the goal of promoting students and citizens’ awareness of scientific, cultural and historical heritage of the city of Oliveira do Bairro (https://clube-ciencia-viva-aeob.webnode.pt/os-meus-servicos/). In fact, according to the "Strategic Plan for Urban Rehabilitation" of Oliveira do Bairro (Portugal), teachers should create innovative activities and resources to revitalize the city and improve local identity and sense of belonging about the scientific, cultural and economic heritage of the city (PERU, 2019).

To sustain the “Science for the city” results (Guerra and costa, 2021), and innovate them based on a Science, Technology, Engineering, Arts and Mathematics approach (STEAM), a didactic sequence called “Chemistry to City - CtoC” was developed during the school year 2021/2022 to promote students’ competences on Chemistry (12th grade students - 17 years-old). The relationship between History, Art and Chemistry in the city of OB served as a motto to make the subject of Chemistry more appealing to students’ learning.

Inspired by the design thinking approach (Doran et al., 2021), 20 high-school students collaborate with a master's student (who was also a Chemistry teacher at OB high school), in the development of a set of non-formal science communication and education modules. The common goal of each module (hands-on learning activities and digital resources) was to contribute to the scientific literacy of community (school and residents).

Each module was developed by group of students (3-5 students) and explored the relationships between Chemistry and the social, cultural and scientific capital/heritage of the city of OB. The diversity of monuments and structures (e.g., the copper roof of the municipal library) existing in OB was the motto for the students to design the scientific trail “TuQ-TuC – Química na Cidade de Oliveira do Bairro". For that, the theme “Metals and Metallic alloys” (one subject of Chemistry of 12th grade) was associated with diverse aspects of the History, Economy and Architecture of the City of OB. The idea of the TuQ-TuC trail was that the work developed by the students would allow them to get to know the city, thinking of Chemistry as a means of intervention in the local community. This project has also benefited from the collaboration of local and regional partners such as universities and institutions in the municipality.

The scientific and pedagogical potential of the didactic sequence "CtoC" was evaluated. Data collection involved the application of a questionnaire (Acar & Tarhan, 2007) to the students involved before and after the didactic sequence CtoC, and the participant observation of the teacher throughout the study. The main goal was to understand if the innovative character of the TuQ-TuC trail was related to the mobilization of students' transversal competences during the development of modules.
The main objective was to understand whether the innovative nature of the TuQ-TuC trail promoted the improvement of students' learning and the mobilization of their competences while developing the project's modules.
Content analysis (Bardin, 2009) shows that there was mobilization of students' competences, promoted the improvement of students' learning such as: understanding the relationship between the properties of metals, their structure and metallic bonds (changing alternative conceptions such as, for example, perceiving the metallic bond as molecular or ionic); and mobilization of students' transversal competences such as: the critical and creative sense and interpersonal relationship during the process of developing the modules (Acar & Tarhan, 2007).
This communication aims: i) to present the results of the evaluation of the scientific and didactic quality of the didactic sequence "CtoC - Chemistry to City" in promoting the essential learning of the students involved in the project; ii) to disseminate a R&D project, the CtoC didactic sequence, where technologies helped to enhance Chemistry learning of 12th grade students involved; iii) to discuss about the curricular flexibility, interdisciplinarity, students' autonomy emerged from the evaluation process of CtoC.
This initiative should be shared by other peers because a teacher is a researcher capable of going beyond the textbooks and leaving the common educational spaces (school borders), and explore the city and imagining and creating, as a team, a project that can be shared for the growth of their community. The goal is to create sustainability of a resource, the didactic sequence CtoC, but, like everything in education, it must be adapted to its reality. Every school has a city, an open-air museum to be explored creatively.

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Keywords: Design thinking, Metals and Metal Alloys, Scientific Pathway

Parallel Session 2

Moderation by Nuno Oliveira[1]

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Authors and presentations titles:

1. **Huiyu Zhang, Linda Fang** - Successful Chatbot Design for Polytechnic Students in Singapore

2. **Takao Ichiko** - Cooperative Aspects of Learning with an Assessment Concept Scheme through Intentional Communications Extended for Distance Learning

3. **Ricardo Carvalho, Maria Ferreira, Bárbara Cleto, Tiago Paralta, Vítor Silva, Vasco Silva, Carlos Santos, Nelson Zagalo, Mário Vairinhos and Fernando Ramos** - Building/customization of educational scenarios for Immersive Web Environments

4. **Rui Raposo, Mário Vairinhos and Pedro Reisinho** - Exploring the use of Augmented Reality for training computer workstation ergonomic issues

5. **Muhammad Rizal Ismail, Nur Aisha Khalid, Linda William and Simon Chan** - Game-based Assessment using Dynamic Database Pooling

6. **Rui Raposo and Mário Vairinhos** - Building awareness towards issues related with Universal Design: The case of the MrUD project

7. **Silver Püvi, Birgy Lorenz and Sigrid Ester Tani** - How Owl almost Ruined Hybrid Learning - Hybrid Classroom Technical Example From Vocational School

8. **Bulut Karadag, Zeynep Erbasi, Kazim Tamer Karagoz and Samet Ozmen** - Digital Tools Learning Platform for Mentally Disabled

9. **Birgy Lorenz** - Women in Tech – role models for girls. Estonian Case

Successful Chatbot Design for Polytechnic Students in Singapore

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Abstract. In the past decade, chatbots have been increasingly used in the field of education, to assist the teaching and learning. For the teachers, chatbots can be deployed to share the workload of answering repetitive FAQs and also other administrative tasks such as sending reminders on submission dates, providing timetables to enhance the personal productivity of the learners. Not forgetting they can use chatbots as digital teaching assistants to teach concepts and procedures to the learners. For the learners, the chatbots support them to construct knowledge and practice specific skills such as language or people-facing abilities through dialogues.

In Temasek Polytechnic, Singapore, several chatbot as digital teaching assistants were trialed to teach in different ways to both pre-employment training (PET) and continuous-employment training (CET) learners. There was an EXCEL Bot to support the independent learning of Microsoft Excel to prepare for a certification exam. An APA Bot was also employed to help learners identify and correct errors in APA style formatting to self-improve their writing quality. For a subject, Social Media Analytics, a SOMA Bot was used to provide supplementary content to use a software effectively. Last but not least, an Airline Management Bot was used to support learners complete their project work. The chatbots were developed using Google Dialogflow platform and were deployed as a web application where the URL link can be embedded into the Learning Management System or virtual classroom space such as the MS Teams.

We looked at data from these four different types of educational chatbots, including chatbot logs, pre- and post-surveys, interview, and subject performance. These data captured the learners' reaction and motivation to use them, and also the efficacy of the implemented chatbot features to support the different purposes. For SOMA Bot, the learners feedbacked that how to apply such supplementary knowledge was lacking. Having examples provided through the dialogues would help. For the EXCEL Bot to learn a software independently, while the 'how-to's with rich media examples were provided, some learners wished that rationale for doing so was given too. These chatbots also fell short of providing troubleshooting help. Particularly for the CET learners (adults), learners even had difficulty accessing and navigating the chatbot. We also noticed the usages typically peaked near assessments, particularly for those chatbots tutors which furnished administrative procedures and tips for a summative assessment, such as project work. Altogether, learners valued features such as recognizing them as returning users, has an attractive user interface, prompts them with a menu of options, suggest learning content for them and allowed them to get in touch with a human expert when their queries were not answered.

Through these data, along with the literature reviews of critical attributes for educational chatbots, such as reliability, interpersonal communication, pedagogy and experience (RiPE), we found that to engage and motivate learners, they need to be supported with a structured developmental process. It is important to have key design principles that would encourage the use of the chatbots in the correct way. With the new normal in education, polytechnic courses are adopting the blended learning to fully online approach. Learners require strategic skills such as monitoring and regulating their learning, and how to sustain attention on tasks, even more so if it is learning with a chatbot. These principles will also promote self-regulated learning which is essential for successful learning with the AI bot.
In this paper, we will present a design model that defines the stages with examples elucidating them. The model highlights the importance of 'Initiate the Access' to boost awareness and lower barrier to use this technology, that is to know that the chatbot exists and what it does. 'Springboard the Learning', that is how to use it, is also required to help the learners get started with the content or learning tasks. This can be supported by completing a task successfully with the chatbot. 'Differentiate with Autonomy' is to ensure they can use the chatbot effectively for learning, with self-regulated learning strategies. These sequential stages are foundational in the chatbot design to provide focused, personalised, learner-controlled online learning environment.

Keywords: Artificial intelligence, Chatbot, Learning design, Technology enhanced learning

Cooperative Aspects of Learning with an Assessment Concept Scheme through Intentional Communications Extended for Distance Learning

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Abstract. In distance learning, it is no exaggeration to say that one of the most important issues and matters is learning quality assurance. Learners are prepared for cooperative aspects of learning on an educational core leading scheme with an assessment, and make use of such a scheme through intentional communications extended with reconfirmation as dynamically conducted, for a learner-based driving force with a mobile focus. More advanced comprehensions are extended improvements for teaching and learning on a platform verified in practice. The introduction of subjects which may help readers visualize learners' advanced comprehensions, and for the extensions leading to learning quality, has been studied. Introducing online assessment scheme applications, according to circumstances, could be effective
in class. Forms of communication which are able to capture both a core leading scheme and an assessment scheme are being deliberated for advanced comprehensions and for the extensions to learning quality in STEM to STEAM, by integrating the Arts.
Thus, it can be feasible to introduce cooperative aspects of learning into concept mapping-based assessment for a more highly objective learning quality assessment through intentional communications extended on a real-time basis. It is expected that the form and roles of distance education and learning will rapidly emerge from the current conventional methods and lead to more innovative approaches which provide more extensive options in educational and learning processes, including the concept of a life-long educational model, which are required to widely empower individual learners with qualitative rationality and sensibility. It may be effectual to find, through cooperative aspects of learning and assessment with detailed analysis on questions and answers, a trial solution for advanced software paradigms which come to a possible approach for a high quality software design process and its verification with transparencies in instances when software is more dominant than hardware, and therefore conducted differently from the conventional software design process accompanied with hardware constraints. On the background, a possible answer to design critical and creative thinking integrated rubrics with an aid of the software paradigms may be alluded to.

Keywords: Cooperative aspects of learning, Concept map, Learning quality, Rubrics, STEAM learning

Building/customization of educational scenarios for Immersive Web Environments

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Abstract. This article introduces the origin and development of a project named "Construction/customization of educational scenarios for Immersive Web Environments", part of the Students@DigiMedia program. Also presented are the contributions that this project will have in the development of ongoing research, as well as in the training of primary and secondary school teachers. The participants were three researchers and three students from the New Communication Technologies degree program. The Students@DigiMedia program is run by DigiMedia, the Digital Media Research Unit (RU) of the University of Aveiro (UA), which suggested to its researchers to stimulate the involvement of students of Communication Sciences and Technology (CST) from the three cycles of training from the University of Aveiro, in scientific activities through the participation in short-term research project activities.

Keywords: Immersive Web Environments, 3D object modelling, Students digimedia

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Exploring the use of Augmented Reality for training computer workstation ergonomic issues

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Abstract. Teaching and learning activities area often based on a teacher conveying information in the form of lectures to a group of students and expecting that this information will become useful knowledge in the mind, the behaviour and decision-making processes of those same students. Students are asked to understand sometimes complex concepts and memorize a large number of facts without being granted the opportunity to learn by doing and to come into contact with this knowledge applied in real hands-on case scenarios. The classroom has, to some extent, become a comfort zone, in which the information, the help, and the support provided are more than often worlds apart from what will truly be useful in a real case practical environment. The project presented in this paper is one of the 4 outcomes resulting from the ATOMIC Erasmus + project developed by a multinational and multidisciplinary team from 5 European Higher Education Institutions. The ATOMIC project focuses on exploring the use of Virtual Reality and Augmented Reality based solutions for training students and teaching in a diverse array of contexts. The context presented in this paper dealt with training students in regard to computer workstation ergonomic inherent issues. The number of hours dedicated to working at a desk and in from of a computer is gradually taking its toll on millions of people and has drastically increased the number of health issues associated with this study and work habit. The prototype presented is this paper is closely concerned with training its users to recognise their poor decisions, in terms of their desk workstation organisation, and helping to improve their decisions and behaviour in this context. The prototype resorts to an augmented reality solution projected onto the desktop in which information is captured with a common webcam and with the aid of either a computer vision solution, using OpenCV and Python, or a QR code solution through the use of Unity and Vuforia. It was evaluated during a summer school with the participation of 20 users, all of them higher education students, and adopted a tailored framework that included think-a-loud protocol activities and a post-experience questionnaire. Results attained provided an interesting insight as to the pertinence of the prototype and its context, as well as a list of suggestions for further improvement as to its UX strengths and weaknesses. Overall, the prototype and its evaluation results confirmed the idea that solutions such as the one provided may be considered an innovative and engaging method for training users to assess and improve their computer workstation ergonomic layout.

Keywords: ICT in Education, Augmented Reality, Ergonomics, Computer vision, Unity

Game-based Assessment using Dynamic Database Pooling

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Abstract. Serious game has been introduced as a vehicle for interactive learning and student's assessment. Serious game provides learning engagement, motivations, and constant feedback. These characteristics can support formative and summative assessment. However, the implementation of assessment features into serious game environments is still limited due to (1) significant time and effort required in the design process, (2) unclear impact to the assessment reliability and validity, and (3) high risk of having monotone game play. This paper aims to tackle these issues by developing a serious game with dynamic question pooling to entice the students to keep engaging and interacting with the game. The dynamic question pooling would provide different challenges (i.e., questions) for each game play to reduce the monotonous game play. The proposed serious game is also equipped with question management system that allows the lecturers to start with limited number of questions and add more questions along the way. This question management system would reduce the design time and effort. To evaluate the impact of the game, we analyse our student's scores when playing with the game and compare it with the student test results. The evaluation result shows there is a significant impact between the game scores and test scores. It indicates that the serious game can help the students to better understand the subject.

Keywords: serious game, evaluation, assessment, dynamic pooling, database

Building awareness towards issues related with Universal Design: The case of the MrUD project

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Abstract. Empathy has become a part of the design and is loudly manifested in several frameworks such as universal design, inclusive design, and human-centred design. The ability to feel and understand the challenges and emotions experienced by others can help generate new perspectives regarding what surrounds us and fully grasp the idea that one size does not fit all. Although studies show that there have been great leaps in the overall awareness of Universal Design issues, there is still room for improvement in proactive design and development of solutions capable of tackling challenges related to basic things such as shopping, attending a class or simply taking a stroll down the street. This paper presents the work done in an Erasmus + project called MrUD that is focused on developing Mixed Reality solutions in which virtual reality technologies, alongside tangible resources, are used to contribute to the increase of awareness and empathy towards some Universal Design issues that challenges a wide array of people in common everyday life activities. In the paper, five scenarios will be presented and deconstructed as to their concepts, purpose and technology. These scenarios, developed by a multinational and multidisciplinary team of European higher education institutions, take on concerns focused on vision impairments, autism spectrum disorder, mobility impairments, issues lived during a pregnancy state and some problems commonly linked with elderly people. The virtual reality application developed is prepared for Oculus Quest 2 in association with tangible equipment such as a geriatric suit, a pregnancy belly simulator and a wheelchair. In each scenario, users are invited to see and experience different situations through another persona's point of view and, by doing so, further understand the relevance and challenges posed by things that seem irrelevant. The scenarios were validated by experts who evaluated the quality of proposed tasks and the possibility of simulating a set of limitations or issues through the combined use of the virtual reality experience and tangible equipment. The project is currently developing additional field trials with small samples of users in which a virtual reality experience assessment framework is being used to further validate the prototypes developed. Apart from the use of an observation grid, a post-test questionnaire, and user experience captured footage, the team has also decided to include the use of a small EEG device and data collection software in order to collect additional information on each user's brain activity during the experience. The Muse2 band in connection with the Emotions software from NaxonLabs will shed some additional light on what the user was feeling while immerse in the experience. The team is well aware of the frailty and exploratory nature of the data collected through this setup but feels that its inclusion is an innovative add-on to the evaluation stage of the project. When tapping into

empathy-related issues there may be relevant differences between what is said and what is felt. By adding these resources to the assessment framework there may be the possibility of narrowing the gap related to these differences. Findings until now have shown that the project's approach and the scenarios developed have great potential for their use not only with stakeholders in the field but also with a wider audience with the sole purpose of promoting awareness and empathy towards issues many times overlooked or simply unknown.

Keywords: ICT in Education, Mixed Realities, Universal Design, Virtual Reality

How Owl almost Ruined Hybrid Learning - Hybrid Classroom Technical Example From Vocational School

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Abstract. Covid-19 hit the education system worldwide, but the strategies for coping were different depending on the previous experience and readiness of information systems - some converted to e-learning (Bashir et al., 2021), some executed hybrid possibilities (Mazloumiyan et al., 2012), and some even used traditional distance learning (Zeer et al., 2020) (learning from books at home) and some stopped at all (Avanesian et al., 2021).

In this paper, we will be examining a vocational school (VET) case study that struggled with traditional in-class setting training but also needed to convert practical lessons into e-learning in a hybrid setting. As Estonian schools will retain the right to continue distance learning after May 15th, 2020 if deemed necessary, reasonable, and possible (Distantsõppe Korraldamise Juhis Üldhariduskoolidele, 2021) it is important to assess and continue to develop different e-learning solutions. Hybrid learning will be the new normal in VET education with the development of different simulation technologies. For this article, we define hybrid learning as a form of education where some students can be present in a classroom and some attend the same class from a distance through different technological solutions.

According to a government-conducted study, two-thirds of teachers attended weekly or daily online meetings with the team during the lock-down; 54% of students answered that they participated in video lessons on a daily or weekly basis (Tammets et al., 2021). A study conducted in Estonian vocational schools indicates that teachers can be divided into 3 subgroups based on their approach to distance learning. Group I makes up 37% of the respondents, whose teaching activities were dominated by giving students independent assignments weekly during distance learning. Group II includes 35% of the vocational teachers who used discussions most often. Group III includes 28% of survey participants whose teaching practices are characterized by the orientation of students towards creative and research activities, which also distinguish them from other groups (Loogma & Sirk, 2021).

Implementing proper distance or hybrid learning requires special technology for classes, various cameras, and/or room microphones (El-Gayar & Dennis, 2005; Tornik, 2020). In this article, we talk about how to apply this technology and what to consider when building a hybrid classroom as well as how teachers have coped with the changes caused by the introduction of hybrid teaching after 6 months.

In the empirical part, we explore the solutions developed for hybrid classrooms including Blackmagic Atem Mini (Tornik, 2020) or other devices like Owl cameras (Woodland School District 50 Return-to-School Plan in Response to Covid-19. Hybrid Learning Phase-In Plan, 2020) and more. We review teachers' feedback

from 3 months and 6 months into the implementation cycle. The technological solution discussed in this article divides the provision of theoretical explanations during practical training into theoretical learning and practical learning based on simulators. The goal of the school is to provide 10% of all classrooms with the possibility to use hybrid settings in the future (Loogma & Sirk, 2021). From the study with students and teachers, it is evident that this is welcomed by the students, but also by the teachers who feel that hybrid learning, but also e-learning, has improved the quality of teaching methods. Using digital environments, and introducing different learning paths in the theoretical lessons has enhanced the study and bridged the gap between theory and practice (technology-enhanced learning possibilities have been improved). However, there are challenges like agreeing to use online environments; availability of digital learning tools; availability of practical learning tools e.g. instructional videos; user skills for both teachers and students.

Some examples of results the case study will showcase:

· Students pointed out a need for solutions to be accessible with secure access examples to industrial controllers for practical training. One option that was developed was to use an SSH or RDP-based jump host technical solution (Configuring and Managing Remote Access for Industrial Control Systems, 2010). Due to the architecture of the school network, the students were introduced to our solution of a VPN connection to the school Jumphost, from where they can further connect to the industrial slide controllers via RDP. Through this connection, students can configure the controller and use a webcam to monitor how industrial equipment responds to changes made by the student.

· IT support was important to distinguish between video surveillance cameras and cameras used in teaching. Cameras used for teaching should not be used to monitor employees or students (Galligan et al., 2020) It must also be assumed that the cameras and microphones in the room are switched off when no training takes place. The use of cameras and microphones must be targeted to support teaching and the equipment must be secured against unauthorized use.

In the end, we also need to take into account that practical activities like teaching cooking soup for 500 people or practicing changing a car tire remotely might sometimes be an impossible dream. Of the technological solutions, simulations, and virtual reality capabilities used in distance learning it can shape your mind, but they will not give you the skills and competencies to do it in real life. So this is a great limitation that vocational schools will face when implementing whatever technical solution.

Keywords: Learning and Collaborative Technologies, hybrid classroom setting, challenges in teaching online, vocational training

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Digital Tools Learning Platform for Mentally Disabled

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Abstract. Our quality of life is improving as technology advances and the internet becomes an indispensable part of our lives. We use internet-based technology tools to make our daily tasks easier. Both ordinary people and people with disabilities use these tools. Individuals with intellectual disabilities, on the other hand, may find it difficult to learn digital tools and programs. The designs and contents of digital tools are incompatible with the use of mentally challenged people. In this study, a mobile and a web application was created to teach people with disabilities how to use digital tools. The Inclusive Digital Academy (IDA) project, funded by the European Union and carried out through the Erasmus+ Key Action 2 program, involved 11 partners from ten countries. Within the scope of this project, the design, content, development, testing, and outputs were completely prepared for and made available to disabled individuals. This study explains the application's digital contents, technical details, and test results.

Keywords: Persons with disabilities, Accessibility, Cognitive disabilities, Digital contents for PWDs, Mobil App for PWDs.

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Women in Tech – role models for girls. Estonian Case

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Abstract. The IT sector needs many new specialists in Estonia and elsewhere - both men and women, but unfortunately only 10-25 percent of the girls in their target group start studying IT and cybersecurity (see Informatics Europe Higher Education Data portal). The same applies to whatever area that relates to technology and engineering. One of the reasons for this can be the lack of role models (Latu, 2013) and the fact that the issues is not widely discussed in schools(Lorenz, 2021). Other reasons are sadder: women's skills and abilities are not always considered equal to men's, and they must prove themselves more than men (Williams, 2016).
PURPOSE OR GOAL
Estonia is a small country (1,3 million people) that aims to be good in IT and cyber security; while in masters-level we have reached 40% of the female intake to the university programs, BA, DOC levels, and workplace we see 23-25% of women vs 75% of men; we have carried out studies with 75 000 students over 5 years that give us a good understanding of how and when girls IT-related education at schools needs to push - its 4-9th graders; one is that girls are better in social situations, they also need a wider understanding of the bigger purpose to be on IT and its possibilities as a career choice, role-models that they can relate as well technical skills.
There are many good people in Estonia who help to make our IT and cybersecurity better, and who are, among others, women. Sadly no one really knows women in Tech in Estonia. In the study we wanted to know more about them: What was their journey to IT and how have they succeeded? What do they dream of for their future? Where do they see the strength of women being in IT-sector? At the same time, to show the more humane side of things - to share also challenges and doubts and the ability to overcome them.
In the process material was developed for 7-12th year old students and their teachers, parents that was both analytical and educational. The goal of the project was to learn about the good and the bad and the ugly of top-level role models and specialist in the field of IT – to help to shape the career path for the young girls that are still in the schools today.
APPROACH
Based on the need of the IT-sector and universities we have caried out ta research and developed a material to highlight women in the IT and cybersecurity, but also to provide opportunities to understand the opportunities and careers in starting cybersecurity and IT:

- collection of 59 stories of women in an interview from October to November 2021 including their background, their career - how they

become specialist or leader in the area, what they are inspired with, what downsides they have overcome in their path etc.

- investigation of several career building programs in the world to learn about may models how one should look at the first steps in IT, career and personas in IT/cyber security to develop a reading material about: possibilities to learn IT, analyse one's skills and competencies, learn about different occupations and be aware of challenges being a woman in the field.
- This paper also includes:

o patterns emerging form the cyber security competitions 2020 and 2021 for the 7.-12th graders – what are the main differences between boys and girls that one should be aware of when approaching to provide career discussions with the youth;
o university admissions and regulations in Estonia:

- is there a issue like that girls can apply to the BA level as men, but as girls math national test is in a lower level than top boys, how much it has effect when one chooses the filed to study;
- using one university IT-studies BA level statistics, when the girls and boys drop out the most in the 1st schoolyear.

ACTUAL OR ANTICIPATED OUTCOMES

In this study we have opened the discussions and gathered the claims why women are needed in the IT and cyber sector, why it is important: who to involve everyone, how to benefit from getting everyone voices heard, how differences raise company's skillset. Also, the paper gives suggestions list to the education sector (schools, universities, and educational ministry), companies how to approach the challenge that women feel appreciated and not violated at the workplace that have emerged from the interviews of the women. From the surveys and open data, we will see the patterns where the universities should point their focus on when girls apply to study in the IT filed to help them improve and not to drop out.

CONCLUSIONS/RECOMMENDATIONS/SUMMARY

Each field is as strong as the talent and experience it has accumulated. There must be more people with different backgrounds and experiences in cyber security, which gives the industry a more multi-layered view and, in the end, an advantage. Men and women see things from a slightly different angle and this value should be better exploited.

Keywords: Women in Engineering Careers, Diversity in IT, Role-Models, Learning and Skills for Digital Era, Cybersecurity Gender Balance, Challenges for Women Working in Tech.

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Parallel Session 3

Moderation by Alexander Gardner-McTaggart

Manchester Institute of Education

School of Environment Education and Development

The University of Manchester

Authors and presentations titles:

1. **Mart Laanpere and Maiki Hint** - Building an OER Ecosystem in Estonia
2. **Rosinete de Jesus Silva Ferreira** - Hybrid, virtual, or face-to-face? How to incorporate new teaching habits?
3. **Ana Raquel Simões, Susana Senos and Mariana Coronha** - Digital Citizenship Education – Training opportunities for Foreign Language Teachers
4. **Micael Sousa** - Informal Adult Learning and Training Sessions: Playing Modern Board Games in the Digital Age
5. **Alexander Gardner-McTaggart** - Carpe diem! The post-covid moment for a sustainable and transformative world through flexible learning
6. **Annika Volt, Mart Laanpere and Jüri Kurvits** - Supporting Flexible Learning Paths in Mathematics with Interactive Learning Resources
7. **Susana Senos, Nuno Dorotea and Neuza Pedro** - Digital inclusion for parents: preliminary results of the digital academy project

Building an OER Ecosystem in Estonia

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Abstract. The term Open Educational Resources (OER) was defined first by UNESCO Forum on Open Courseware in 2002 (UNESCO, 2020) as 'learning, teaching and research materials in any format and medium that reside in the public domain or are under copyright that have been released under an open license, that permit no-cost access, re-use, re-purpose, adaptation and redistribution by others'. Since then, the OER movement has evolved and upscaled fast, more so in the higher education sector. The main mission of this movement is voiced by Downes (2011) as 'the provision of access to learning opportunities to those who would not otherwise be able to obtain them'. Knox (2013) contrasts two opposite approaches to the role of OER in education at large: while some proponents seek to enhance and innovate the current education system with the help of OER, the others are trying to build an OER ecosystem (Macintosh, McGreal, and Taylor 2011) that would become an alternative to existing educational institutions. Ecosystem here means Hewlett Foundation (Atkins et al, 2013): (1) sponsor high-quality content, (2) remove barriers, (3) understand and stimulate the use, (4) equalise access.
In Estonian primary and secondary education, OER movement was initiated more than 20 years ago. In 2008, the first OER repository (Koolielu.ee) was launched by Tiger Leap Foundation. Koolielu was a universal teachers' portal, attracting more than 50% of professional primary and secondary school teachers in the country to weekly visits. Although the OER repository was the most frequented section, the portal also provided educational news, announcements of job vacancies and training opportunities for teachers, as well as communication and collaboration platform. Any teacher could create a user account for herself and upload OER (mostly as PPT, DOC and PDF files) that were reviewed by a community of paid moderators. However, the growth rate of Koolielu OER repository remained on disappointingly low level, which led to development of a new national OER portal eSchoolbag (e-koolikott.ee) with completely different concept in 2016. While this new concept still leans towards the above mentioned 'enhancement approach', it opens the new avenues for replacing traditional textbooks authored by expert teachers with the help of H5P templates, providing also advanced quality assurance mechanisms, as well as learning analytics and recommender tools. This paper presents the eSchoolbag concept and the results of a recent study on growth factors of eSchoolbag OER repository. Mixed method research design was carried out in 2022. After in-depth analysis of eSchoolbag usage statistics and trends, a purposive sample of 8 of experts was invited to a focus group interview (using Nominal Group Technique) to build a common understanding of current barriers that hinder upscaling the OER development, sharing, use and redesign on the eSchoolbag platform.
This study was guided by the following research questions:

1. What are the main growth factors and barriers of the eSchoolbag OER repository?
2. How differed the growth patterns of eSchoolbag OER repository and commercial digital textbooks during and after the COVID-19 pandemic?
3. How could we upscale the use of eSchoolbag by teachers for creating, sharing and using OER?

The focus group recognised the main achievement of eSchoolbag in removing barriers to OER and the main weakness in stimulating the use of OER, suggesting a list of specific recommendations for addressing these issues.

Keywords: digital education ecosystem, Open Educational Resources, OER repositories, OER uptake,mixed method research

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Hybrid, virtual, or face-to-face? How to incorporate new teaching habits?

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Abstract. According to UNESCO (2020, p.11), "education is a fundamental and universal human right and society should make effort to sustain it" this is the principle for our choice to be based on a humanistic vision of education and development and human rights framework. COVID -19 revealed our weaknesses not only as a human, but also in an educational context. We observed difficult moments for both teachers and students. Suddenly, what we named a normal situation was not anymore, and we had to reorganize our class agenda and relationship. It is necessary to investigate these processes lived in the education field because this reflection contributes to thinking about curricular flexibility autonomy and pedagogical innovation related to media, education, and technology-enhanced learning. After the first pandemic period, we started to come back to schools and universities differently because we changed our comportment. Therefore, we establish distance from each other; we still use the mask in some situations, we use alcohol to clean up our hands frequently, and we modify our pedagogical practice. We are not going to teach as we taught before because our students changed too. They returned to school with their needs and teachers returned to different classrooms because they are in a virtual room, hybrid or present. Therefore, our questions to this report are; what is to be normal from now on? How are we going to include a variety of class possibilities in a curriculum? Covid-19 pointed up some fragilities in the education system, but we also observe positive items according to UNESCO (2020). To reach the answers we propose to apply questionnaires to teachers in order to know their thoughts about the proposed subject.

Keywords: teachers, education change, pandemic 2020-2022

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Digital Citizenship Education – Training opportunities for Foreign Language Teachers

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Abstract. According to the Council of Europe (2007, p.9) there is a "lack of awareness among educators of the importance of digital citizenship competence development for the wellbeing of young people growing up in today's highly digitalized world". Thus, the DiCE.Lang project (2020-1-DE01-KA203-005712;10/2020-09/2023) aims to strengthen the profile of Digital Citizenship Education (DCE) within Foreign Language (FL) Education, providing teachers and teachers trainers with tools and resources which can promote DCE practices in FL classrooms, and consequently developing the digital competences of teachers and their students.

This three-year Erasmus+ KA203 project involves 5 European Educational Institutions from different European countries (Portugal, Germany, Latvia, Ireland and Italy) intending to put in evidence innovative pedagogical practices to be implemented in FL classrooms, in order todevelop young people's skills and willingness to actively engage in the digital society and become responsible digital citizens, according to the recommendations of the Digital Education Plan: "digital citizenship is seen as an indicator of political participation, and social media promotes citizens' digital civic participation and engagement in several communities" (MINDTheGaps, 2019, p. 7).

It is a core component of DCE to promote democratic competences, including critical reflection, the development of social and intercultural competences, critical thinking and media literacy. Bearing this in mind, the third intellectual output of the DiCE.Lang project is a Teacher Training Package (TTP), whose main objective is to promote professional development and qualification of pre- and in-service FL teachers as well as teacher trainers, as far as DCE is concerned, namely, pedagogical methodologies, practices and resources.

In this communication we would like to present one part of the TTP, the Free Online Training Course for Self-guided Professional Development, which directly approach teachers' professional knowledge in the DCE domain. This course was created by the University of Aveiro and the University of Limerick and is organized in 5 modules, which correspond to the 5 concepts /domains of DCE created within the DiCE.Lang project: Critical Digital Literacy, Module 2 - Critical and Meta Reflective Component, Module 3 - Content Oriented Perspectives, Module 4 - Identity Oriented Component and Module 5 - Inter & Transcultural Perspectives on Digital Exchanges.

Each module presents documents, resources and entails two tasks which aim to introduce teachers to the concept of DCE and its policy framework, to promote the development of methodologies and resources related to the DCE in FLE and to reflect on their own (past, present and future) practices, qualifying them in this area. To conclude the training course, teachers have to design a teaching unit suitable for their own classes and write a final reflection.

This Free Online Training Course is an opportunity for teachers to reflect on the importance of Digital Citizenship in the FL teaching and learning and think about possibilities of how to adapt and apply them in view of local curricular contexts. This Course has already concluded its piloting phase, which took place from April to June 2022, with 12 participants in Portugal, and will soon be available online for free, so everyone who is interested can complete it by themselves in the future.

In the conference we are going to present the Course goals, structure, and give examples of some of activities developed. We intend to share the results of the data analysis related to their completion: the teaching units created as a final task and the overall reflection of the teachers concerning the course. The data analysis of the teaching unit will focus on the selected: DCE goals and domains, curricular contents and resources. In the analysis of the final reflection we intend to present the perceived input of the Course in teachers' professional development, as far as DCE is concerned.

In conclusion, our presentation intends to raise awareness of the importance of a pedagogical approach of Digital Citizenship in FL education and its potential in contributing to innovative practices and methodologies of teaching and learning.

Keywords: Digital citizenship education, Foreign languages, Teacher education

Informal Adult Learning and Training Sessions: Playing Modern Board Games in the Digital Age

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Abstract. Board gaming is a popular activity, growing despite all the pressures of digitalization. People are gathering to play socially. Besides this ludic movement, modern board games can be used directly or adapted to achieve other goals beyond entertainment, approaching serious game methods as a modding exercise. This paper describes a process where a facilitator selected a sequence of modern board games (mostly party games) and played them with the employees of an enterprise (design and marketing) during an informal meeting. The games were played in a restaurant, in an environment, testing whether participants could recognize learning and training utility. The game facilitator observed the game dynamics and collected participants' comments during gameplay and debriefing.
Participants recognized the activity as a pleasant learning and training informal session. The author argues that these informal playable learning spaces can be beneficial for institutions that wish to foster them because participants would train, learn, and strengthen social bonds.

Keywords: Adult Learning, Board Games, Informal Learning, Post-Digital, Serious Games

Carpe diem! The post-covid moment for a sustainable and transformative world through flexible learning

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Abstract. This study reports on an ethnocentric case of educational leadership in the online and flexible space. It then provides theoretical analysis of this experience through the work of Habermas, to provide recommendations and stimuli for positive futures through flexible learning.

In line with globalisation, the world of education has come to be entwined in pervasive technicist thinking since the end of the 1970's (Apple, 2000; Ball, 2012; Gunter, 2016). This ideological policy trend privileges teaching and learning for workforces not citizens; articulating social divisions and generating systems where some children are worth more than others (Gunter, 2016; Sahlberg, 2006). This world-order projects a facile, yet seductive economical rationality that is as depoliticised as it is market savvy (Gill, 2012). However, the globalising focus on numbers and growth, has also accelerated the gravest crises of our in human history, namely: climate change, standardised inequity, population displacement, and the decline of valid knowledge (Gardner-McTaggart, 2020).

Despite these gloomy realities, the pandemic has shown how collective humanity can move towards a sustainable world. COVID clearly showed what happens when systems work for agents, (rather than agents working for systems) with a pervasive shift away from the technical, towards the emancipatory (Habermas, 1981). For example, pandemic isolation facilitated a significant reduction in the output of fossil fuels through travel (Le Billon, Lujala, Singh, Culbert, & Kristoffersen, 2021; Smith, Tarui, & Yamagata, 2021), and more educationally, the globe witnessed a none too gentle induction into online, blended and flexible learning (Anderton Ryan S., 2021; Dhavan, 2020).

The traditional model of a university (and school) idealises the notion of a dedicated location, a set time frame, and the face-to-face lecture/lesson. While flexible learning is nothing new in the 21st Century, COVID brought an urgent need for remoteness and an emergency of separation - with teaching and learning being moved rapidly online (ibid). This shift acted as the catalyst for new ways of thinking that were not defined by a technicist agenda (to maximise profit efficiency and effectiveness), but by an emancipatory one – to live and not die. Habermas outlines three thinking domains that constitute human endeavour. Firstly, the technical domain is concerned with numbers, figures, and maintenance. Second, the interpersonal domain is to do with people, interactions the practical thought of the day-to-day. Third, the emancipatory domain is where humans improve, and seek for a better world. By deploying these Habermasian thinking tools, this paper highlights how the urgency of a global pandemic was causal in de-emphasising the privileging of the technical. While only for a brief sojourn where global relations became concerned with emancipatory thinking (Habermas, 1981), this work extends the thinking lessons from COVID to critically appreciate the new post-pandemic landscape as a transformational opportunity for sustainability through

flexible learning (Collis & Moonen, 2002) and the educational turn. This work engages on a theoretical interrogation of teaching and learning in the 21st Century against the backdrop of my ethnocentric educational leadership. It is my account of moving a large, elite, UK university towards the flexible space in a time of crisis but doing so with a focus on transformational and socially responsible education to counter the Neo-Liberal exigencies associated with flexible learning (Houlden & Veletsianos, 2021). This involves triangulation through social theory, to better understand the barriers to learning thrown up by dominant field agents and gate keepers (Gardner-McTaggart, 2020) and the marketized capture of flexible spaces by Neo-Liberal actors (Houlden & Veletsianos, 2021). In thinking of futures, it considers the myth and misrecognition of flexible learning in the post COVID educational landscape.

The work concludes by providing a working template for flexible learning for superior transformational education, capturing the key aspects of providing quality in quantity, and recommendations for educational institutions and actors who are ready to move seize the day, and take the turn.

Keywords: Flexible Learning, Post Covid, Crises, Habermas, Sustainable Higher Education, Educational Leadership

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Supporting Flexible Learning Paths in Mathematics with Interactive Learning Resources

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Abstract. The COVID-19 pandemic caused some serious setback is primary and secondary education around the world, while some countries and schools were better prepared to this abruption than others. In 2021, Estonian Ministry of Education and Research (MoER) identified the main gaps in mathematics education in grades 9 and 12 in Estonian schools. A group of researchers and expert teachers were contracted to address these gaps by A group of researchers and expert teachers were contracted by the MoER to address these learning gaps by a research-based design and validation of original interactive learning resources that support personalised/flexible learning paths to meet the needs of learners with various educational needs. The eSchoolbag platform that was used for developing this set of innovative digital learning resources, it includes adapted H5P templates with MathML support. In addition, some tasks involved use of GeoGebra (embedded in H5P learning objects). This paper presents the results of piloting the learning resources in 9th grade in ten pilot schools. Altogether, a set of learning resources covering six lessons were created for 9th grade, estimating 8-12 hours of learning time for students. Two models of implementing flexible learning paths were supported by the learning resources: student-created paths vs automatically adapted learning paths with the help of H5P Branching Scenario template. Piloting was carried out in spring 2022 in a sample of ten pilot schools. Mixed methods research design was applied, combining quantitative data collected through learning analytics and structured surveys (responded by both teachers and students) and qualitative dat from interviews with teachers only. In addition, external reviewers evaluated the resources, piloting process and its results. Based on the analysis of these results, we identified the main technological and pedagogical challenges in supporting flexible learning paths with interactive digital learning resources.

Keywords: interactive learning resources, school mathematics, flexible learning paths, classroom research

Digital inclusion for parents: preliminary results of the digital academy project

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Abstract. The project "Academia Digital para Pais" was born in a pandemic context, in a joint effort of E-Redes and the General Directorate of Education, aiming at helping the digital-struggling families.

According to the promoters, the project objectives were twofold (E-Redes, 2021):

i. Provide parents /tutors with the digital skills needed to help their children, during remote teaching
ii. Provide parents /tutors with digital skills crucial for social integration in today's society

In fact, the disruption caused by the COVID-19 pandemic context, which led schools to a sudden closure, highlighted the challenges many families faced, not only in terms of access to technologies, but also, in terms of the digital skills needed to fully participate in a highly digitalised world.

According to UNESCO, more than one billion children in 188 countries were affected by the COVID-19 pandemic, which forced school actors - teachers, students and parents/tutors - to deal with a forced, sudden and new digital way of teaching and learning, that no one had expected and therefore, that no one was prepared to deal with (Affouneh, Salha, & Khlaif, 2020; Hodges et al., 2020).

However, as aforementioned, the goals of the project were quite ambitious, as its mentors realized the importance of providing citizens with digital competences that are considered crucial to be fully integrated in today's world.

This concern is, in fact, in line with the European recommendations when it comes to the key competences citizens need. The first recommendation of the European Parliament and Its Council presented in 2006 already included Digital Competences as one of the 8 Key Competences for Lifelong Learning. In 2018, the same Council once again presented these competences, reinforcing their need in a social context which has been underlining the urgency for digital competences and pursuing their development among all citizens. This same document highlights the interconnection between the competences presented, stressing not only that these all present the same degree of importance, but also that ICT plays a crucial role in the development of all the others.

According to the European Commission (2018) "Key competences are those which all individuals need for personal fulfilment and development, employability, social inclusion, sustainable lifestyle, successful life in peaceful societies, health-conscious life management and active citizenship." (p. 7).

In fact, in a highly digitalized world, where most daily actions are dependent on digital services, it is crucial to provide all citizens with proper skills, so they don't

become digitally excluded and, in this special context, so that families don't have their right to education compromised.
Although at first the issues of digital inclusion were seen as a binary, rather simplistic, issue of having vs. or not-having access to technology, studies have shown this is a much more complex subject, as mere access does not mean the development of the digital competences needed to be considered digitally included (Helsper, van Deursen & Eynon, 2015; Livingstone & Helsper, 2007)
As digital competences and its role in the inclusion processes is regarded as crucial, several actions were taken in the European Union, one of which led to the creation of the first version of the DigComp - A Framework for Developing and Understanding Digital Competence in Europe, recently updated to its 2.2 version.
In this communication we intend to present some preliminary results of a study being undertaken at the Institute of Education of Lisbon University about the Project "Academia Digital para Pais". This study intended to describe the role of the project "Academia Digital para Pais" in the development of the digital competences of the parents/tutors who participated in it in the school year 2020-2021, when it was first implemented.
To do so, a quantitative approach was taken. An online survey was developed and applied to all participants in the project.
This study assumed three main objectives:

- Identify the parents/tutors' self-perceptions on the digital competences developed
- Determine the participants' self-perceptions when it comes to the attainment of the global goals of the project
- Determine the satisfaction of the parents/tutors involved in the project.

In this paper we will focus our attention on this last aspect, presenting preliminary data on the parents'/tutors' level of satisfaction with the project.
The study found favourable results, which point to the participants' general satisfaction, despite some variations dependant on some personal variables of the respondents. Conclusions indicate the project represents an added value to those who engaged in it.

Keywords: Digital Inclusion, Digital competences, Parents

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Parallel Session 4

Moderation by João Torres[1]

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Authors and presentations titles:

1. **Teresa Margarida Loureiro Cardoso, João Paulo Pinto and Filomena Pestana** - Investigação Em Rede E Ciência Aberta: A Experiência WEIWER®

2. **Cátia Valéria** - Programação nas aulas de Espanhol? Sim!

3. **David Rua** - Pensamento Computacional e Aprendizagens Essenciais da matemática no 1.º ciclo do ensino básico - revisão sistemática de literatura

4. **Susana Senos, João Grácio, João Torres and Maria José Loureiro** - The Project "Líderes Digitais" (Digital Leaders) and education for digital citizenship

5. **João Grácio, Nuno Dorotea and Maria Rosário Rodrigues** - A community of practice of primary school teachers – 2nd year of implementation

6. **Cátia Valéria** - Europeana na aula de Espanhol

7. **Paula Costa and Margarida Lucas** - Inovação pedagógica com tecnologia digital: o que é e o que implica? Uma revisão integrativa de literatura

8. **João Torres, João Grácio, Maria do Rosário Rodrigues and Miguel Figueiredo** - Reflexões sobre cursos de verão Scratch: perspetivas dos formadores

Investigação Em Rede E Ciência Aberta: A Experiência WEIWER®

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Abstract. Com esta comunicação, que aborda a importância das redes de colaboração científica no contexto da ciência aberta, pretende-se apresentar a experiência adquirida com a Rede Académica WEIWER®. Para tal, assume-se uma metodologia de ensaio para refletir sobre o contributo destas redes de investigação para a produção e difusão do conhecimento cientifico. Com a explicitação da WEIWER® como caso prático, será possível evidenciar que as iniciativas de empreendedorismo científico baseadas na investigação colaborativa são um caminho válido para a superação do individualismo que tradicional ou convencionalmente ainda se encontra em muitas instituições universitárias.

Para o enquadramento teórico, convocamos conceitos relacionados com o movimento da ciência aberta, que assenta no princípio de que a investigação científica deve ser partilhada e reutilizada, propondo uma nova forma de produzir e partilhar conhecimento. A ciência aberta é comummente associada ao acesso aberto e à reutilização dos resultados de investigação científica, mas também à transparência dos processos, métodos e práticas (como o registo de experiências, código de software, utilização de tecnologias e infraestruturas digitais em rede para facilitar a colaboração científica). Trata-se, sobretudo, da forma como a investigação é realizada, divulgada, implementada e transformada, com recurso a ferramentas digitais, redes e meios de comunicação, permitindo, em suma, tornar o processo científico mais eficiente, transparente e efetivo.

A ciência aberta, um campo em que as redes de cooperação científica afirmam o seu potencial, tem evoluído e já não se circunscreve à disponibilização online das publicações revistas por pares, mas, atualmente, preconiza o estímulo do trabalho colaborativo para que a produção de conhecimento seja mais global, mais rápida e eficaz, e com menores custos. Neste sentido, a partilha de informações e experiências é essencial para agilizar e maximizar os avanços da ciência, evitando trabalho redundante, facilitando a replicação das metodologias e, ainda, contribuindo para que investigadores com motivações e interesses semelhantes, mas separados pela distância geográfica, se reúnam em torno de projetos comuns, integrando-os e proporcionado a abertura e a partilha do conhecimento. Deste modo, importa recordar que as redes são normalmente construídas para relacionar pessoas com níveis semelhantes de capacidades, habilidades, competências e experiências que, somando os seus esforços, em conjunto, possam alcançar resultados melhores do que se trabalhassem cada uma por si só.

É neste quadro que surge a WEIWER® (Rede Académica Internacional WEIWER® - Wikis, Educação & Investigação | Wikis, Education & Research), como espaço de encontro entre investigadores em torno das Wikis no contexto da educação aberta. O termo Wiki é um conceito muito utilizado no âmbito da internet e da web para referir, plataformas cujos conteúdos podem ser editados online por múltiplos utilizadores. Com a evolução das tecnologias e, nomeadamente das pedagogias educacionais, passou a ser sinónimo de trabalho colaborativo em rede e online. Um dos exemplos da sua utilização em larga escala é o da conhecida enciclopédia online Wikipédia, eleita como objeto de estudo central da Rede WEIWER®, cujos objetivos emergiram da necessidade de (in)formar diferentes públicos, principalmente atores educativos, acerca das potencialidades das Wikis, em particular em projetos da Wikimedia Foundation, e especificamente da Wikipédia, em contextos de formação, de investigação e de educação, neste caso, nos diferentes níveis de ensino. Oficialmente, a WEIWER® nasceu no LE@D, Laboratório de Educação e Elearning da Universidade Aberta (Portugal) em 2018, fruto do trabalho académico e científico de investigadores desta unidade de investigação. No presente, a rede integra quinze investigadores da Universidade Aberta e de outras instituições, incluindo de ensino superior, nomeadamente do Brasil. Todos os membros da equipa colaboram em torno de interesses e temas comuns, que marcam agendas internacionais, corporizando estudos e intervenções que pretendem atender a necessidades locais, ainda que também enquadrados a nível global. Tem procurado realizar periodicamente atividades de natureza diversa, incluindo formação para diferentes públicos-alvo, desde alunos e professores do ensino básico e secundário a estudantes e docentes do ensino superior. Além da formação, a equipa WEIWER® tem dinamizado e participado em eventos científicos, com duração e formatos distintos, assim como submetendo trabalhos em publicações científicas com peer review. É ainda de referir a divulgação da rede e a disseminação de resultados da investigação concretizada, em vários fora e comunidades, cumprindo o espírito da ciência aberta.

Assim, com esta comunicação, pretendemos evidenciar que o trabalho colaborativo preconizado pela investigação em rede adquire sentido no contexto da ciência aberta, como é o caso da rede WEIWER®, consolidando-se, esta última, como uma importante experiência formativa e coletiva, permitindo-nos concluir que as redes de colaboração científica são um contributo para a concretização de sinergias (in)formais entre investigadores e instituições, tanto no espaço académico como na sua relação com a sociedade em geral.

Keywords: Networked Research, Open Science, WEIWER®.

Programação nas aulas de Espanhol? Sim!

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Abstract. Pretende-se apresentar uma experiência pedagógica de integração curricular da ferramenta digital Scratch num DAC - Domínio de Autonomia Curricular (uma opção curricular de trabalho interdisciplinar e/ou articulação curricular, favorecendo o trabalho prático e/ou experimental e o desenvolvimento de competências de investigação, relacionamento e análise) - entre as disciplinas de Espanhol como Língua Estrangeira, Físico-Química e Tecnologias de Informação e Comunicação (TIC).

As Aprendizagens Essenciais de Espanhol, em estreita articulação com o PASEO - Perfil do Aluno à Saída da Escolaridade Obrigatória - afirmam que o aluno "deve mobilizar ações estratégicas em atividades e tarefas de interação e produção oral, adaptando-as a novos documentos e situações trabalhadas em aula; explorar ideias, associar e recolher informação e utilizar meios convencionais e tecnológicos para produzir textos; utilizar diferentes tecnologias na exploração, organização, criação, partilha e divulgação de ideias, produtos e experiências, em vários formatos". Neste sentido, a plataforma /linguagem de programação Scratch, baseada em blocos gráficos e com uma interface muito simples, intuitiva e acessível, permite aprender a programar, criar animações, jogos, histórias interactivas, em língua espanhola.

Esta experiência pedagógica, implementada numa escola secundária pública portuguesa, teve como objetivos explorar ideias, desenvolver o pensamento computacional e produzir artefactos digitais criativos, utilizando estratégias e ferramentas digitais para apoiar a criatividade, ativando o conhecimento e a aprendizagem nas disciplinas de Tecnologias de Informação e Comunicação, Físico-Química e Espanhol (ELE).

Os resultados mostrarão os artefactos digitais criados, a relação dos alunos com as ferramentas digitais, as suas avaliações em termos de eventual aplicabilidade nas aulas de línguas estrangeiras, o valor acrescentado do projeto/trabalho colaborativo/inclusivo/inovador, as rubricas de avaliação utilizadas e as conclusões da real integração da programação e robótica num processo multidisciplinar de ensino, aprendizagem e avaliação.

A comunicação a apresentar será organizada em três partes. Começarei por explicar o estado da arte sobre o Scratch - programação e conceito de robótica; demonstrarei as atividades, tarefas realizadas na implementação da integração curricular multidisciplinar proposta; salientarei os principais aspetos positivos e negativos da implementação. Além disso, comunicarei os resultados desta experiência pedagógica, partilhando produtos de aprendizagem criados pelos estudantes ao longo da implementação, delineando conclusões e linhas futuras relativas à integração da programação e robótica na aprendizagem de línguas estrangeiras.

Keywords: Scratch, Espanhol, DAC, colaboração, artefactos digitais

Pensamento Computacional e Aprendizagens Essenciais da matemática no 1.º ciclo do ensino básico - revisão sistemática de literatura

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Abstract. Numa era onde a tecnologia, os ambientes digitais e a inteligencia artificial estão cada vez mais presentes no quotidiano de todos, impera a necessidade de desenvolver a literacia digital dos cidadãos e dotá-los de competências para poderem usar ferramentas capazes de entender o funcionamento de todo este universo digital. Só assim serão cidadãos integrados capazes de interagir conscientemente com o mundo tecnológico, resolver problemas, criar soluções e ultrapassar obstáculos. Na equação das competencias essenciais para o Sec. XXI o Pensamento Computacional (PC) ocupa cada vez mais uma parcela importante. Tal como refere Wing (2006, p. 33), "Computational thinking is a fundamental skill for everyone, not just for computer scientists".

Desde 2016, após as conclusões do estudo CompuThink (Bocconi et al., 2016), muitos paises europeus têm vindo a rever os seus curriculos escolares com vista à integração do PC na escolaridade obrigatória. Mais recentemente, o relatório da comissão europeia Reviewing Computational Thinking In Compulsory Education (Bocconi et al., 2022), apresenta-nos um panorama mais alargado da integração do PC nos currículos de 22 estados membros da União Europeia (UE) e oito países fora da UE.

Portugal é um dos países onde a integração do PC no currículo tem vindo a ser estudada e onde recentemente ganhou forma através da sua integração no currículo da matemática.

Esta integração materializou-se na alteração às Aprendizagens Essenciais (AE) da matemática para os 1.º, 2.º e 3.º ciclos do ensino básico, homolgadas pelo Despacho n.º 8209/2021, de 19 de agosto. Contudo, só entram em vigor a partir do ano letivo 2022/2023, inicialmente para os 1.º, 3.º, 5.º e 7.º anos de escolaridade.

As novas AE da matemática integram agora o domínio do PC e as suas práticas, tais como, i) a abstração, ii) a decomposição, iii) o reconhecimento de padrões, iv) a análise e definição de algoritmos, e v) o desenvolvimento de hábitos de depuração e optimização dos processos. Estas alterações carecem de operacionalização para que todo o processso de integração seja efetivo e eficaz. O professor terá um papel preponderante neste processo ao ser o facilitador que permitirá aos jovens alunos desenvolver as competências relacionadas com a resolução de problemas e PC. É nesta esfera que a nossa Revisão Sistemática de Literatura (RSL) encontra objetividade.

Pretende-se com esta RSL identificar estudos sobre Pensamento Computacional e as Aprendizagens Essenciais da matemática no 1.º ciclo do ensino básico. Neste sentido, este estudo pretende responder às seguintes questões:

Qual o enfoque dos estudos na relação entre o Pensamento Computacional e o currículo da Matemática?
Quais as metodologias que estão associadas ao ensino da matemática no domínio do Pensamento Computacional?
Que recomendações existem para o desenho e implementação de atividades promotoras do desenvolvimento de competências de Pensamento Computacional?
Pretende-se que os resultados deste estudo irão sustentar a criação de um guião de atividades de matemática, disponibilizado para professores, com vista ao desenolvimento de habilidades de PC de forma intencional em sala de aula, o qual constituirá a parte empirica de uma tese de mestrado a desenvolver no próximo ano letivo.

Keywords: Pensamento Computacional, Currículo, Aprendizagens Essenciais, Matemática, 1º ciclo

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The Project "Líderes Digitais" (Digital Leaders) and education for digital citizenship

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Abstract. This communication aims to present the Digital Leaders Project, regarding the activities carried out in the academic year 2021/2022, when the ICT Competence Centres of the University of Aveiro and IPS/ESE of Setúbal became an integral part of the project coordination, jointly with the national responsible the Directorate-General for Education through the SeguraNet Awareness Centre which integrates the Portuguese Safer Internet Centre.

This project has existed for a few years, having first been called "Painel de Jovens", (Youth Panel), but it started to become a more comprehensive project in the last 7 years. Groups of young people who want to become digital leaders, challenge a teacher to join them and, together, they prepare initiatives that are disseminated in their school, in other classes, in the school cluster where they belong and even in other school clusters and organizations.

It should be noted that the several groups are composed of children and adolescents from the 1st and 2nd learning cycles (from 1st to 6th grade), the Benjamins Digital Leaders and young students from the 3rd and Secondary learning cycles (from the 7th to the 12th grade), the Digital Leaders. Among them, there are Digital Leaders who stand out for the quality and originality of their work, as well as for their communication skills, and they represent their region and/or country in national or international forums, such as the Youth Panel from the Portuguese Safer Internet Centre and the European Youth Panel from Better Internet for Kids (Insafe and Inhope networks).As for the work carried out this year, the sessions with teachers in charge of accompanying the groups in schools participating in the initiative, were composed of an introduction, explanation, and training sessions within the scope of the theme, Education for Digital Citizenship, under the form of Short-Term Training, always with the presence of Digital Leaders and specialists in the field.

As far as the work developed is concerned, there were also separated working sessions with the Benjamin's Digital Leaders and the Digital Leaders, adapted to the age groups of the learners, all of them coordinated and moderated by more experienced Digital Leaders. In the last session, the groups presented the work developed throughout the year and it was enlightening to see the work carried out in schools and listening to the statements of these young people, in the first person, about their participation in the project. In fact, we were able to witness all kinds of awareness campaigns and works for a "SAFER INTERNET": theatre, rap and other types of songs, dance and staging, posters, TV news, interviews... showing a high level of creativity and spirit of initiative. Besides a greater awareness on online life, the development of other skills among the participating students is also notorious.

We highlight the ability to work as a team, to expose oneself, to explain the work they develop, in a clear, structured, and attractive way with great presence and sense of responsibility.
Now the initiative is in the phase of elaborating the activity reports of the participating schools/groups that will lead to the general report of the project for this school year. Another remarkable note concerns the academic study that will be carried out by a higher education professor, who is expected to be on sabbatical leave for this purpose, recognizing the importance of initiatives like this for the students' education, regarding the values and the citizenship, more specifically digital citizenship.

Keywords: Digital Leaders, Digital Citizenship, Citizenship

A community of practice of primary school teachers – 2nd year of implementation

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Abstract. This primary school teachers' (1st CEB) community of practice started its activity in the school year 2020/2021, as an integrated project of the ICT Competence Centre of the School of Education of the Polytechnic Institute of Setúbal (CCTIC-ESE/IPS), being organized around three main concerns: i) the idea that technologies appear beyond the curriculum and make it difficult to be accomplished; ii) teachers' lack of experience in the pedagogical use of digital technologies (DT) and iii) the difficulties that teachers face when working with digital technologies (DT) in their classroom, a consequence of the lack of experience in the use of DT with students.

In its first year, the community of practice was implemented exclusively in a virtual model (Virtual Community of Practice – VcoP), where teachers from different geographical points of the country met to discuss ideas and reflect on their teaching and learning processes, using Digital Technologies (ten synchronous sessions were organised throughout the school year). In some of these sessions, reflections were held on different themes: the community goals; the role of ICT in school; teaching methodologies using ICT; evaluation, and Milage Learning Platform +. In these sessions, we invited guests from outside the VCoP, such as expert teachers in the different topics discussed in the sessions, students and parents. In the remaining five working sessions, the work of the community focused on the planning of activities in which DT had a relevant role, through a planning model previously discussed within the community.

After this first year of implementation and after the evaluation of all the work developed, it was decided that the community should continue in the school year 2021/22, extending its scope to teachers that belong to the area of influence of the ICT Competence Centre of the University of Aveiro (CCTIC/UA). During the academic year 2021/22, the community was attended by most of the teachers who have participated in the 1st year, plus 7 teachers who joined for the first time, in a total of 14.

We know that, in recent times, there has been a large increase of CoP, since they are made up of people who share the same interests or passions, who voluntarily interact regularly, exchange information and knowledge and share learning. On the

other hand, there has been a significant increase in the use of digital technologies, which has allowed new and more frequent forms of interaction (synchronous and asynchronous) without additional costs and reducing geographical barriers.

We live in a digital world, where technology has been transforming the way we relate, how we work, learn and communicate with others. So, CoP can assume an even more prominent role as they open new spaces that contribute to a positive environment for knowledge creation, application and problem solving (Dias, 2008).

Considering: i) the teacher training plan, integrated in the scope of the Action Plan for Digital Transition (Ministers' Council Resolution no. 30/2020 of 21st of April) and ii) the Action Plans for Schools' Digital Development (PADDE), integrated in the Schools' Digitalization Programme (Ministers' Council Resolution no. 30/2020 of 21st of April), it is clear the importance given to the teachers' involvement in communities of practice supported by cooperative and interdisciplinary work, stimulating reflection and sharing, regarding the critical use of digital technologies and resources in an educational context.

Thus, after the second year of implementation, it is necessary to understand how the work was developed, the strongest points and the ones that need to be improved, regarding the work that must be carried out in the 2022/23 school year.

To do so, we sought to understand the community members' opinions about the work developed through a participatory action-research (Borda, 2001) with a mixed paradigm (quantitative and qualitative). So, data were collected through direct observation, which will have a qualitative and interpretative analysis, and a questionnaire, with closed-ended questions (of a quantitative nature) and open-ended questions, structured in 5 parts: characterization of the teachers; Participation in the Community; Evolution of the community; Participation of the resident and guest trainers and Goal achievement.

The initial analysis already carried out reveals many positive aspects of the work developed, namely in terms of cooperation, doubt clarification, the exchange of experiences, asking questions without fear of making mistakes, among others.

As aspects to be improved, we highlight the planning of more activities or the existence of more face-to-face meetings.

Keywords: Virtual Community of Practice, Primary school teachers, Professional and digital competences, Continuous professional development

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Europeana na aula de Espanhol

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Abstract. Pioneers é um excelente recurso (exposição) da Europenana que celebra a contribuição histórica de oito mulheres inovadoras de destaque para o conhecimento humano e a cultura.
Neste sentido, desenhou-se um cenário de aprendizagem que se pretende apresentar neste Congresso.
Neste cenário de aprendizagem, estudantes e professores aprenderam sobre a Europeana e o seu valor acrescentado, explorando a plataforma. Os estudantes foram convidados a visitar e trabalhar em colaboração e digitalmente na exposição "Pioneiras". Desenvolveram biografias e outros produtos relacionados com a exposição Europenana sobre mulheres pioneiras e, mais tarde, sobre mulheres pioneiras de nacionalidade espanhola. Os alunos realizaram tarefas na área da comunicação (compreensão escrita, compreensão oral e audiovisual, produção escrita e interação oral), competências estratégicas e interculturais e desenvolveram liderança, pensamento crítico, colaboração, comunicação e competências digitais.
Este cenário de aprendizagem baseou-se no Decreto-Lei n.º 55/2018, de 6 de Julho, no Perfil dos Alunos à Saída da Escolaridade Obrigatória, Despacho n.º 6478/2017, de 26 de Julho, nas Aprendizagens Essenciais Espanhol - Nível de Continuação - 10º ano, Despacho n.º 6605-A/2021, de 6 de Julho, e no Quadro Europeu Comum de Referência para as Línguas - QECR.
O cenário de aprendizagem foi dividido em três fases: primeiro, os estudantes e professores envolvidos entraram em contacto com a plataforma, esclareceram conceitos e exploraram a exposição "Pioneiras". Numa segunda fase, os alunos realizaram, em colaboração, tarefas de mediação e produção escrita sobre as mulheres apresentadas na exposição, construindo uma apresentação comum. Posteriormente, os alunos pesquisaram, selecionaram e construíram um livro colaborativo sobre as mulheres pioneiras espanholas. Todas as tarefas e atividades de aprendizagem e avaliação foram negociadas com os estudantes. Numa fase posterior, como trabalho suplementar, os estudantes criaram diferentes produtos a serem incorporados numa carteira de aulas.
O livro colaborativo e a apresentação interativa estão à disposição de toda a comunidade escolar. Professores e alunos redigiram também uma notícia a ser divulgada nos meios de comunicação social da escola.
Durante a implementação recorreu-se à avaliação formativa utilizando ferramentas digitais tais como Mentimeter, MSForms para autoavaliação e coavaliação, e listas de verificação. Para a avaliação do produto final foi utilizada uma rubrica de avaliação e autoavaliação para a avaliação formativa e sumativa (texto em duas fases - primeira versão e versão melhorada após feedback do professor).

Limitações: a professora teve de assegurar que todos os alunos tinham recursos tecnológicos e acesso à Internet, sem comprometer o desenvolvimento das atividades.
Benefícios: Concretização e operacionalização de ideias; os desafios de aprendizagem foram enfrentados, indo além da zona de conforto; ferramentas e recursos digitais utilizados com criatividade e imaginação; o envolvimento dos estudantes foi reforçado; a autonomia dos estudantes foi promovida; as equipas criaram trabalhos diferentes a partir da mesma ideia inicial; foi promovida a partilha e a crítica construtiva entre as diferentes equipas; práticas de avaliação pedagógica.

Keywords: Pioneiros, Espanhol, Pensamento crítico, Colaboração, Comunicação, Europeana

Inovação pedagógica com tecnologia digital: o que é e o que implica? Uma revisão integrativa de literatura

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Abstract. Esta revisão de literatura foi realizada no âmbito do Programa Doutoral em Educação e será parte integrante do estudo "Inovação pedagógica e tecnologia digital: o papel dos professores de Informática", para o qual é importante saber o que se entende por inovação pedagógica com tecnologia digital.

As tecnologias digitais têm influenciado os sistemas educativos, exigindo inovação nos espaços de ensino e aprendizagem. A inovação é entendida como uma atividade intencional, deliberada de mudança, que depende sobretudo das práticas dos professores.

Para Kampylis et al (2012), o conceito de inovação, frequentemente ligado ao conceito de criatividade, pode ser analisado a partir de diferentes perspetivas. De uma forma geral, podemos encarar a inovação como algo que nunca foi feito ou que vai ser feito pela primeira vez. Assim, a inovação pedagógica é a mudança que se procura para melhorar aprendizagens.

Os professores têm um importante papel na transformação da escola, mas de que forma podem eles, utilizando tecnologia digital, inovar pedagogicamente?

Segundo Hattie (2017), o ato de ensinar exige intervenções deliberadas para garantir que ocorram mudanças cognitivas no aluno. O professor deve estar consciente dos objetivos de aprendizagem, antevendo o que o aluno precisa para os atingir: exigindo a compreensão prévia dos alunos para fornecer-lhe experiências significativas e desafiadoras para que ocorra algum tipo de desenvolvimento progressivo que o estimule a aprender.

Para Lucas & Moreira (2018), as tecnologias digitais podem melhorar as estratégias de ensino e aprendizagem de muitas maneiras diferentes. A competência digital específica do educador reside em orquestrar efetivamente a utilização de tecnologias digitais nas diferentes fases e configurações do processo de aprendizagem.

De acordo com Lemos (2020), as tecnologias nos ambientes de ensino e aprendizagem ganham novos contornos, já que atualmente a possibilidade de acesso às informações e a diferentes formas de as consumir garante uma interação humano/máquina totalmente diferente.

Tal como refere Cruz et al. (2020), os alunos estão imersos na tecnologia, seja por meio da internet, smartphones, tablets ou pelos jogos eletrónicos que fazem parte das suas vidas. A utilização destas tecnologias, os jogos e outras abordagens digitais podem despertar sentimentos de alegria nos alunos, fornecer altos níveis de concentração e torná-los seres mais ativos, sendo por isso promotoras de inovações pedagógicas.

As pedagogias digitais inovadoras dependem do caracter pessoal e criativo do professor, mas o que é, de facto, inovar pedagogicamente com tecnologia digital?

Partindo desta questão, o presente estudo pretende responder a dois objetivos: i) definir os conceitos de "inovação pedagógica com tecnologia digital", ii) listar exemplos de práticas pedagógicas que congreguem esses conceitos.

Keywords: inovação, tecnologia digital, práticas pedagógicas inovadoras, revisão integrativa de literatura.

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Reflexões sobre cursos de verão Scratch: perspetivas dos formadores

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Abstract. O projeto GEN10S Portugal decorreu entre 2017 e 2022 e resultou de uma colaboração entre a Google.org, a associação espanhola Ayuda en Acción, a Instituição Particular de Solidariedade Social SIC Esperança e o Centro de Competência TIC da Escola Superior de Educação do Instituto Politécnico de Setúbal (CCTIC-ESE/IPS). Com o objetivo de ensinar programação a crianças, promovendo a igualdade de oportunidades na área digital, reduzindo barreiras socioeconómicas e de género (Gen10s PT, sem data) teve como suporte à aprendizagem a linguagem por blocos Scratch considerada acessível a uma grande diversidade de população, incluindo faixas etárias mais baixas (Resnick, 2008).

O projeto foi desenhado para funcionar presencialmente, mas parte do tempo a ele destinado coincidiu com os confinamentos provocados pela pandemia Covid-19, o que conduziu à ideia de experimentar formação online, com princípios semelhantes aos utilizados presencialmente.

Assim, foram convidados alguns professores Scratch experientes para lecionar 11 turmas constituídas por alunos de 5.º e 6.º ano de escolaridade. A cada turma foram lecionadas 12 horas da formação online, distribuídas ao longo de uma semana, com aulas síncronas de 2 horas diárias. Conscientes de que o ensino remoto de emergência contribuiu para a alteração do cenário educativo (Osman, 2020), houve cuidados particulares nas estratégias a serem usadas na formação de modo a proporcionar ambientes leves e motivadores do trabalho de grupo e da interação formador/aluno e aluno/aluno (Pais & Candeias, 2020, p.3)

Terminadas as ocorrências do curso parece-nos necessário perceber se um curso exclusivamente online, destinado a crianças de 5.º e 6.º ano de escolaridade, que não se conheciam entre si nem aos formadores, foi bem-sucedido e que aspetos podem ser valorizados ou reformulados. Assim, procuramos perceber as perspetivas dos formadores sobre o sucesso da formação, numa investigação de caracter qualitativo, com características de estudo de caso (Ponte, 2006; Yin, 2018). Os dados foram recolhidos por via de um focus group onde se pretendeu refletir sobre a globalidade de funcionamento dos cursos, as estratégias de ensino utilizadas, a relação estabelecida entre alunos e destes com o formador, o processo de

aprendizagem com eventuais sucessos ou dificuldades e eventualmente outros aspetos que tomassem relevância ao longo do desenrolar do Focus Group.
Com a análise de dados pretende-se uma descrição e reflexão sobre os cursos e, para tal, foram construídas categorias de análise com base no guião do Focus Group e enriquecidas ao longo da análise dos próprios dados (Bardin, 2004).
A análise prévia já efetuada revela muitos aspetos positivos da formação, nomeadamente a participação e a motivação dos alunos para as tarefas, a relação estabelecida entre os formadores e os alunos, e mesmo aspetos relacionados com a aprendizagem. Quanto a aspetos menos conseguidos, destaca-se a vontade expressa da formação poder ser mais longa.

Keywords: Scratch, Online teaching, Online course, Remote teaching.

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Parallel Session 5

Moderation by Daniela Pedrosa[1]

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Authors and presentations titles:

1. **Daniela Pedrosa** - Co-regulated learning in initial teacher education: Strategies adopted by students during the development of ICT integration projects in Basic Education

2. **Csaba Komló** - Learning Management Systems Prior to and After the Covid Pandemic

3. **Ana Marcela Montenegro-Sánchez and Roberto Rojas-Alfaro** - Discussing a Concept for an Online Learning Platform with Rural Sixth-Grade Students in Mind: Evidence-Based Guidelines for Designers, Teachers, and Policy Change

4. **Maia Lust and Mart Laanpere** - Redefining Creative Digital Project for 8th Grade in Estonian Schools

5. **Chih-Hsiung Tu, Patricia J. Peterson, Cherng-Jyh Yen, Hoda Harati, Catharyn Shelton and Laura Sujo-Montes** - Using Data-Informed Learning Design to support Teacher to Understand Students' Learning Sentiment via Journal Entries

6. **Robert Doyle** - Anatomy of Flipped Classrooms

Co-regulated learning in initial teacher education: Strategies adopted by students during the development of ICT integration projects in Basic Education

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Abstract. There is a growing importance on the use of digital resources and media in the daily practice of teachers. Future teachers are required to be digitally competent in being able to: integrate and manage technical aspects of ICT in pedagogical practice and make critical decisions regarding their use in the teaching and learning process.

The integration of Information and Communication Technologies (ICT) is recognized as an essential component in the initial teacher education (ITE). There is a need to professional development of digital skills in student teachers, preparing them to be able to integrate ICT in their pedagogical practices, and to develop essential skills such as: creativity, collaboration and problem solving.

In addition, self-regulation learning (SRL) skills are considered important for active teacher learning. The co-regulation of learning (CRL) is seen as a facilitator and social support for the development of these SRL skills, allowing the achievement of a significant level of learning. Thus, ITE must provide learning opportunities that allow future teachers to develop self- and co-regulation of learning strategies (SCRLs).

However, more research is needed on initial teacher education under this lens: how to prepare students teachers to use ITC in their practices, including studies that focus on self- and co-regulation learning strategies (SCRLs).

This exploratory study took place in a bachelor programme in Education Basic from Portuguese Higher Education Institution, specifically in ICT and Education Basic ("TIC e EB", Portuguese-language acronym) optional course a in the 2021/2022 academic year.

TIC e EB took place in b-learning mode and project-based learning (PBL) was adopted over five phases, where the students in teamwork must develop an educational integration project of ICT with a curriculum content of Basic Education or Preschool Education. The aim is the students to apply and develop digital skills in combination with their pedagogical skills. In each phase, the teams presented the status of the project, sent part of the final report, and sent metacognitive challenges (Author, 2021, 2022).

In this work, qualitative methodology was adopted with research goals: 1) Identify which ICT were integrate by students in their projects and understand for what educational purposes; 2) Identify and understand which co-regulated learning strategies were adopted by students during the PBL phases and ICT integration; 3) Identify the difficulties experienced by students in this integration and understand

how they overcame them, and 4) Verify the students' perception of TIC e EB and their contribution to their ITE.
Thematic analysis was carried out the final report (n=5) and metacognitive challenges (n=25). Content analysis matrices were built based on the SRL strategies of Zimmerman (2013) adapted by Author (2017, 2019) to CRL strategies.
It was observed that students actively explored and integrated a diversity of ICT (n=35) in their projects, in particular, tools and applications available on the web, such as: Websites (Wix) to provide and aggregate content and pedagogical activities produced; platforms for creating educational activities and games (e.g. Educaplay, Wordwall); platforms for creating educational content and dynamic presentations (e.g. Canva, Genially); platforms that allow develop interactive and gamified activities (e.g. Kahoot, Mentimeter); and others.
The teams mentioned different types of CRL strategies that they adjusted throughout the project's development phases. The main strategies reported were those of organizing, planning, transforming, seeking information and co-evaluation. In terms of organizing, the strategies of division of tasks and team meetings were predominant; and in the seeking information, the exploration of ICT strategies was more evident; in transforming focused essentially on the production of educational resources and materials. Planning strategies with a focus on pedagogical activities plans were rarely mentioned. Taking notes/records, monitoring, environmental physical structuring, environmental psychological structuring, co-consequences, reviewing records and memorization strategies were not mentioned by teams.
The difficulties reported by the teams were varied throughout the phases. In the initial phases, they focused on the definition of goals and skills to be explored in the project (planning); in the later stages, they related with the practical use of tools/applications and their limitations. To overcome the difficulties, the strategies adopted were the exploration of new tools/applications, seeking help from the teacher and seeking information.
The teams mentioned that the “TIC e EB” was an asset in their academic path and professional future, a challenging and triggered to “think outside the box”. It also allowed them to contact, learn and explore new tools and applications, integrate, and apply knowledge in other courses, and develop skills, such as: critical thinking, creativity, problem solving and collaborative work.
It is concluded that “TIC e EB” contribute to the development of essential skills of future teachers: digital, critical thinking, creativity, and SCRL. However, some strategies of co-regulation of learning were not evidenced related to the elaboration of pedagogical plans. In future research, it is important to analyse and reflect on how digital skills and self- and co-regulation of learning influence each other.

Keywords: Co-regulation learning, Higher Education, Digital Competence, ICT, Student-teachers

Learning Management Systems Prior to and After the Covid Pandemic

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Abstract. The various challenges related to the Covid pandemic substantially increased the expectations of the Council of the European Union published in the first decade of the new Millennium. Such directives called for the renewal of the training systems of European higher education institutions. Consequently, a lot has been said about such distance-learning and hybrid courses which were optimally based on sound pedagogical methodology and utilized modern ICT devices. The rising popularity of the respective training schemes resulted in a greater demand for electronically published educational materials and learning management systems facilitating the sharing of such materials and the arrangement of digital instruction. e-Learning standards promoting the problem-free sharing of learning management systems and electronic educational materials have regulated e-Learning and blended instruction programs since the turn of the century. Such learning management systems incorporate all actors of the educational process (students, instructors, organisers), the respective educational material, and the means of monitoring knowledge acquisition (home assignments tests) into one platform. e-Learning and blended learning programs of higher education institutions have made good use of the integrating capability of learning management systems and the related experiences provided crucial help when full time schemes were shifted onto an e-Learning basis as a result of the elimination of face-to-face instruction at the onset of the Covid pandemic.

In the middle of the second decade of the 21st century learning management systems seemed to have played a decreasing role in digitalization-based knowledge transmission. A potential reason was that while traditional learning management systems could provide access to educational materials according to the respective role played in the instruction process while offering a communication surface for other services, in most cases changing or updating the given content was rather difficult primarily due to the unique content production and publication requirements. Furthermore, education-related digital content and services have become accessible from other, often more interesting and motivating sources as well. Moreover, educational materials accessible within instructional systems are regulated with such standards (i.e. SCORM), which by now have become obsolete. These standards tend to restrict the options for the effective use of such materials including the monitoring of user activity and visual representation.

My presentation focuses on the legitimacy of or potential justification for currently deployed learning management systems and standards along with presenting supporting and opposing arguments with potential alternatives for effective educational use. I will also describe the advantages and disadvantages of the application of learning management systems and shed light at a few trends, which

can have a significant impact on the e-Learning systems of higher education institutions in the post-Covid era.

Keywords: learning management systems, elearning standards, hybrid learning

Discussing a Concept for an Online Learning Platform with Rural Sixth-Grade Students in Mind: Evidence-Based Guidelines for Designers, Teachers, and Policy Change

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Abstract. This study is a branch of a larger research project on the design process of PURA VIDAREADING, an online learning platform, co-designed with English language teachers (ELTs), that promotes linguistic and sociocultural learning among sixth-grade English language learners (ELLs) from rural communities in Costa Rica. This paper sheds light on the necessity to follow human-centered design guidelines to create instructional materials in an online learning platform. Human-centered design—an approach where "human values are primary and should guide the world that people collectively create (Zachry, M., & Spyridakis, J. H., 2016, p. 394)—is central to this study. Through that lens, we analyze participants' insights and suggestions for the improvement of an existing model in priority areas such as inclusivity, representation, and language learning. Likewise, it is core to contextualize instructional materials and available technologies given the demographic characteristics of school children. Specifically, we stress that rurality plays a major role in the ways teaching, materials development, and curricular decisions are made.

Theoretical Background

Social justice is a tenet that envisions "a world in which the distribution of resources is equitable and ecologically sustainable, with all members of society physically and psychologically safe and secure as well as recognized and treated with respect" (Nijdam, E., 2020, p. 192). This tenet can provide the base to build a framework where pedagogical work seeks to address issues of diversity and cultural identity as well as innovation and inclusiveness if possible. Such a framework would consider social justice education (SJE)—defined as a "conscious and reflexive blend of content and process intended to enhance equity across multiple social identity groups, foster critical perspectives, and promote social action" (Carlisle et al., p. 57)—at its core. Under SJE, principles derived from applied educational developments in gamification for second language learning (e.g., García, O., 2020), comics for social justice (Akesson, B., & Oba, O., 2017), and translanguaging with bilingual readers (García, O., 2020) can help address the above-mentioned issues and provide the tools for pedagogical work tailored to priority populations such as students in rural communities (Pini et al., 2015).

Methodology

This qualitative study featured a group interview (Creswell, J. W., 2009) with two national English advisers in charge of providing guidance and support to regional English advisers and schoolteachers across Costa Rica. In mid-Spring 2022, we conducted two online two-hour group interviews using Zoom to introduce participants to a model promoting digital bilingual (English and Spanish) storybooks for grade 1 to 6 students. Storybooks highlighted social justice issues, portrayed diverse identity groups, and implemented translanguaging for bilingual literacy development. All participants had verbally consented to participate in the study. A week prior, the researchers shared the presentation materials with participants via a Google Drive link and the Zoom link via email. During the session, participants discussed several questions which the following are analyzed in this paper:

RQ1: How can teaching materials such as digital storybooks featuring social justice issues help school-age children learn about diversity, inclusion, and equity?

RQ2: What role would play a social justice education framework in materials development for grade 1 to 6 school students in rural communities?

Data collection consisted of researcher field notes collected during the meetings and transcription of the audio portion of the Zoom meeting videos. We utilized an interpretive case study model, building from this study's rich, thick, and descriptive data, to "develop conceptual categories (…) to illustrate, support, or challenge theoretical assumptions held prior to the data gathering" (Merriam, S. B., 1998, p. 38). We revisited the field notes and group interview transcriptions several times before coding. Next, each of us coded the group interview transcriptions and field notes individually. Later, we met via Zoom to discuss our analysis and check for agreement. Our multiple data sources afforded triangulation as they confirmed or enabled greater consistency among our interpretations (Carspecken, P. F., 1996).

Results

Findings reveal both strengths and needed improvements of a proposed model for bilingual literacy development on the ways storybooks are created and introduced to school-age children in rural Costa Rica. Three specific areas are addressed: (1) translanguaging as an innovative and inclusive teaching and learning strategy, (2) social justice as a tenet and educational policy in the school curriculum, and (3) the urgency of co-creating teaching materials for cognitive and emotional engagement with a local emphasis.

Discussion

Following human-centered design (Sims, M., 2022; Styes, A., 2020), several evidence-based guidelines are offered. Guidelines are intended to provide instructional designers and teachers with practical ideas to develop teaching materials for students in rural and similar contexts.

Implications

We put forward the need to seek educational policy change on teaching and curricular decisions for developing and implementing instructional materials with social justice education at its core. Likewise, further research in collaboration with teachers and instructional designers is desirable to supplement current efforts via educational research and development projects with rural students in mind.

Keywords: Social Justice Education, Translanguaging, Rurality, Materials Development

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Redefining Creative Digital Project for 8th Grade in Estonian Schools

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Abstract. Estonian National Curriculum for Basic Schools (MoER, 2011) introduced a compulsory creative project in Key Stage III, without specifying details on the content, format and assessment of this learning activity that should last for several months. As Estonian schools have traditionally enjoyed a high level of autonomy regarding the content and methods of instructions, many alternative approaches to implementing this project-based learning activity have emerged during the last 10 years. However, the majority of schools follow a similar model, where every student selects a topic for their individual project in September, then chooses a supervisor who'll facilitate the process throughout the next 7 months and prepare the student for a public presentation in front of the committee in April or May. Somehow this process and format resemble the way Bachelor's and Master's theses are conducted in universities. As a result, many student projects end up being far from Project-Based Learning and focus mainly on a simple literature review. It is a pity, as the original idea of the creative project was to teach students creativity, collaboration and entrepreneurship, which are all in the top of the list of the future skills desired by employers today, according to recent research (OSKA, 2016).
Recently the national curriculum committee for school informatics suggested redefining the creative project in line with the following principles:

- it should be a project-based collaborative learning activity, where learners solve a real-life problem identified by themselves
- learners are invited to use in their project either simple digital media (web development, animation) or emerging technologies (robotics, coding, cybersecurity, Internet of Things, Virtual/Augmented reality)
- heterogeneous groups are formed by the students with different skill sets, every team should have a programmer, a designer, an artist, a communication specialist
- during the creative project, each member could acquire personalised learning
- outcomes depending on his/her role in the creative design project
- to scaffold the project-based learning, templates, demos, tutorials and inspirational examples will be provided to learners and their mentors
- the project work will be conducted and monitored on a platform that resembles those used by agile software development teams (Jira, Kanban, Scrum)
- the final solution of the creative project should be presented to the commission in schools in the form of a presentation, poster or elevator pitch.

This paper presents the process and the results of a design-based research that aimed at prototyping and piloting a set of learning resources (templates, tutorials, examples etc) for the redefined, collaborative creative project. The study was guided by the following research questions:
RQ1: Which online platform is the most suitable for the new digital creative project?
RQ2: What types of learning resources will provide sufficient support to participants of a digital creative project on a chosen online environment?
RQ3: How to ensure the adaptability and reusability of the learning resources?
RQ4: How to design just-in-time information to students for scaffolding their problem-based collaborative learning activities?
The first phase of the study resulted with comparison of various open-source online collaboration platforms and selecting the most suitable one for the digital creative project: Taiga. The second phase involved a group of expert teachers in a participatory design process to define the design guidelines and requirements for learning resources. The third phase resulted with a set of adaptable and reusable learning resources based on the guidelines defined earlier. The follow-up study that will start in September will involve more than 100 students in ten schools in piloting the new digital creative project during seven months

Keywords: Computational Thinking, Project-Based Learning, Agile Prototyping, Scaffolding.

Using Data-Informed Learning Design to support Teacher to Understand Students' Learning Sentiment via Journal Entries

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Abstract. COVID-19 has emphasized the importance of holistic education with fostering students' multiple intelligences through effective social and emotional learning (SEL). Understanding students' SEL not only supportsstudents' learning performance, it's also beneficial to inform teachers to provide more adequate social-communicative, metacognitive, and affective learning. This study examined: How does Data-Informed Learning Design (DILD) support online teaching on students' social and emotional learning? The study concluded that DILD is an effective design model to support teachers to probe students' socio-communicative, metacognitive, and affective learnings. The findings inform the educators to set high expectations for teaching and provide appropriate personal, social, data, and instructional support to enable teachers to regulate and support students to achieve ideal social and emotional learning.

Keywords: Data-informed learning, Sentiment analysis, Digital journal, Social learning analytics, Data-decision making

Anatomy of Flipped Classrooms

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Abstract. The flipped classroom approach is also described by many as a form of blended learning and a learner-centered methodology. A professor or instructor prepares a recorded video of a lecture in advance of a scheduled course meeting. Students view the video online prior to when the course meets. They gather in a classroom that is set in a style of six to ten chairs around a table. In many cases, as students enter the room they either receive a table assignment verbally or electronically. An electronic system is more efficient as it can randomly and swiftly assign students in an array that avoids sending the same coterie of students to the same tables during each course meeting. During the live course meeting, students discuss the online video lecture. In one example, the professor traverses around the room listening to the student discussions. Some professors utilize the first half of the meeting time in that exercise and then use the second half to expand upon the video lecture and to correct any common misconceptions that were expressed by the students. In addition, questions will develop within each group, and they have immediate access to the professor to whom they can pose their questions. The flipped classroom approach increases the level of student engagement. Because the professor learns about misunderstandings and clarifies during class time, students quickly correct their errors before they become long-term. Our discussion will also include videos of a professor using a learning glass unit, an electronic table assignment system, and examples of a flipped course meeting.

Parallel Session 6

Moderation by Filipe T. Moreira

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Authors and presentations titles:

1. **Ricardo Cruz** - An active language learning scenario in a multicultural and multilingual environment with the support of educational technology

2. **Paula Carolei and Lina Morgado** - From planning to project: contribution of Educational Design approaches to teacher training research

3. **Marisa Correia and Bento Cavadas** - Innovative Learning Environments: a learning experience with in-service teachers

4. **Ana Oliveira and David Oliveira** - Perceptions of future basic education teachers about the potential of programming in the educational context

5. **Ana Paiva and António Quintas-Mendes** - Participatory Culture And Knowledge Sharing Among Teachers And Researchers

6. **Filipe T. Moreira, Mário Vairinhos and Fernando Ramos** - Teachers' perceptions about IoT technologies in school activities

An active language learning scenario in a multicultural and multilingual environment with the support of educational technology

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Abstract. An active learning paradigm improves students' learning and provides a mean to acquired knowledge (Bonwell & Eison, 1991). Students combine new information with their perceived conceptions of the world, knowledge, and experiences, building new knowledge (Cherney, 2011) according to their sociocultural and geographical matrix (Martins et al., 2017), favoring the building-up of a contextualized input (Leite, 2012), and setting ground to meaningful learning contexts (Perrenoud, 2005). Active learning is also directly correlated to a learner-centered classroom environment (Cherney, 2011), in opposition to a teacher-centered paradigm (Pedersen & Liu, 2003). Furthermore, by keeping students engaged in learning activities, they achieve high cognitive levels or higher-order thinking (Anderson et al., 2001; Armstrong, n.d.; Engelhart, 1956) which promotes long-term knowledge retention (Strobel & van Barneveld, 2009).

The active learning scenario described in this study is one where Portuguese is learned as L2 in a Portuguese high school, and it is characterized by a remarkable linguistic diversity in the classroom, opening an opportunity to pedagogical activities that take advantage of L1 spoken by students (Hélot, 2012).

Besides the linguistic diversity, the multicultural environment provides a multicultural education framework (MCE) as a favorable setting for L2 learning (Parker, 2019), thus promoting a positive school environment, where equity and diversity drive pedagogy in the classroom. School environment in this context includes school policy and politics; school culture and hidden curriculum; teaching styles and strategies; the languages used in school; community input; the formal curricula; assessment procedures; instructional materials (including textbooks) and the attitudes, perceptions beliefs and actions of the school staff (Banks, 2019). MCE is characterized by the value given to students' culture of origin, promotion of inclusion, diversity, equity and democracy (Parker, 2019), content integration, promoting a multiple perspective on a specific theme, and most importantly, the setting of an intercultural citizenship (Byram, 2019; Wagner & Byram, 2017) as well as the development of an intercultural communicate competence (Byram, 2020), which includes two dimensions: intercultural communicative competence, encompassing linguistic competence, sociolinguistic competence and discourse competence, and intercultural competence, which comprehends skills of interpreting and relating, an attitude of curiosity and openness, a critical cultural awareness, cultural knowledge and skills of discovery and interaction.

Furthermore, the Portuguese Education Office national curricula of the school subject where this active learning scenario took place – Português Língua Não Materna (PLNM) – define the establishment of intercultural relations between the culture of origin and the Portuguese culture. One specific dimension is cultural interaction where classroom activities and students' outcomes must integrate

elements of the students' culture of origin as well as other cultures present in classroom and school, as well as de Portuguese culture. Similarities and contrasts are expected to be noted, considering the respect for different ways of interpreting the world (Ministério da Educação, 2018).

Students of PLNM, during the school year of 2021 / 2022 at Escola Secundária da Moita, in Portugal, created a school newspaper where they wrote texts in Portuguese about different aspects of their culture. The support where students created their texts is computer-based – Padlet (written texts) and Anchor (oral texts). Recent reviews confirm even more that information technology motivates students and provides a mean for cognitive engagement (Schindler et al., 2017). There is also a strong correlation between educational technology (EdTech) and active learning environments (Laird & Kuh, 2005). As far creating different texts with specific didactic purposes, Padlet promotes the active construction of knowledge, students' autonomy, and easiness of use (Fisher, 2017; Park, 2013). It also provides a channel for creating culture-related texts in L2, and even foster some sort of cultural self-analysis (Godwin-Jones, 2016). As for oral interaction, the software Anchor was used to create a podcast channel with students-generated content.

The language-learning paradigm used in this learning environment was the natural approach (Krashen & Terrell, 1983), favoring students' input with a communicative purpose and prioritizing language acquisition – an unconscious development of the target language by using the language for real communication – under the communicative approach perspective (Richards & Rodgers, 2001). A total of 42 articles were produced by students in class (text and audio) and submitted to the Padlet platform under 6 different previously defined categories.

Finally, the evaluation of the impact of this project was indirectly determined by the analysis of students' output in a controlled environment (written assessment tests) and by an anonymous form filled by students, where they contributed with their perspective on the classroom activities carried out during the school year.

Keywords: active learning; multilingualism; multicultural education; foreign language education, PLNM

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Parallel Session 7

Moderation by Ana Loureiro[1]

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Authors and presentations titles:

1. **Catarina Araújo, António Osório and Ana Paula Martins** - Dilema: Escrevem com ou sem recurso às TIC? – Perceções dos alunos

2. **Paula Fonseca, Maria de Lurdes Martins and José Pereira** - Photography and Digital Storytelling in the English for Tourism Classroom

3. **Catarina Araújo, Cecília Aguiar and Lígia Monteiro** - Media Literacy in Early Education: European Policies and curricular differentiation

4. **Maria de Lurdes Martins and Paula Fonseca** - Gastrodiplomatic virtual exchange project in an English for Tourism class

5. **Sofía Martín Rodriguez, Marcial Francisco Parrilla Socas, Víctor Álvarez García, Juan Ramón Pérez Pérez, María del Mar Fernández Álvarez and Rubén Martín Payo** - Assessment of preclinical learning using virtual reality based education for nursing students

Dilema: Escrevem com ou sem recurso às TIC? – Perceções dos alunos

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Abstract. A perceção dos alunos pode influenciar o seu desempenho na escrita. Nesse sentido procedeu-se ao levantamento e comparação das perceções de alunos quanto ao conhecimento, atitudes e autoeficácia na escrita com e sem recurso às tecnologias de informação e comunicação. A análise descritiva da perceção de 172 alunos do 4.º ano de agrupamentos de escola do distrito de Braga, através de escalas de Likert que avaliam este constructo. Observou-se, em termos gerais, perceções mais positivas dos alunos relativamente às atitudes e autoeficácia de escrita com recurso às TIC do que sem recurso a estas ferramentas. Muito embora as perceções dos alunos possam ser distintas do desempenho revela-se importante que os professores conheçam as perceções dos seus alunos no sentido de melhor ajustar as suas práticas pedagógicas em sala de aula e selecionar as ferramentas pedagógicas param cada fase do processo de escrita.

Keywords: Escrita com TIC; perceção; conhecimento; atitudes; autoeficácia.

Photography and Digital Storytelling in the English for Tourism Classroom

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Abstract. The present study describes a digital storytelling project about promoting a tourist destination using photographs taken by students in an English for tourism course taught in a Portuguese higher education institute. This work aims to explain how a digital storytelling project was used to enrich students' knowledge of the English language while recycling content from their core degree subjects and enhance their 21st century skills. The stories created were based on students' viewpoints of the city where they study and live enabling them to convey their emotions and opinions to promote it as tourist destination from a unique perspective. The results indicated that learner generated content positively impacted the students' engagement in their English foreign language learning process. It was through the use of art and creativity that this project gave students the opportunity to also build on their communication, collaborative and critical thinking skills, all need-ed to succeed in the professional world in tourism.

Keywords: Digital Storytelling, English for Tourism, Photography.

Media Literacy in Early Education: European Policies and curricular differentiation

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Abstract. This article is the result of work carried out within the scope Erasmus+ project Kit@: Media competency training for professionals in day-care centres and comparable institutions in rural areas of Europe. Its main objective is to describe ECE systems, curriculum guidelines, pre-service teacher training curricula and teacher profiles related to media education and ICT use in ECE across the Europe project partners from Bulgaria, Germany, Greece, Portugal, and Slovakia. Data collection was carried out by documentary consultation of the curriculum guidelines of each country involved and a questionnaire on ICT use and media education in ECE, specifically developed for this purpose, answered by partners from the five countries participating in the Kit@ project, and through consultation of official international reports (e.g. OECD, EURYDICE, UNESCO), who collected the data between January and July, 2018. Findings indicated there is a pedagogical area, in all countries, where the use of ICT and media education is referred to directly or indirectly in the ECE curriculum, however in most countries there are no guidelines for media education in earl education. Also, the training of professionals and costs in ECE are very different. Findings are discussed in terms of implications for media literacy practices in kindergarten across the Europe.

Keywords: Media Literacy, Early Childhood Education, Curriculum, European policies

Gastrodiplomatic virtual exchange project in an English for Tourism class

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Abstract. Food plays an important part of culture and brings people together, therefore many tourists want to take part in culinary experiences to learn more about a destination and its people. But food is much more than a bonding experience, it emotionally connects people through an interaction of all the senses, contributing to the deconstruction of cultural preconceptions, or, in other words, "gastrodiplomacy" (Rockower, 2012; Wilson, 2011).

However, when traveling is not an option, as we have recently witnessed due to a pandemic, alternative means need to be found to provide this cultural culinary experience in your own country. It is within this context that a gastrodiplomatic virtual exchange project was implemented with tourism and hospitality undergraduate students from two higher education institutions in Portugal and Finland learning English as a foreign language. Although these countries are far apart from each other in Europe, their economies rely on tourism.

Virtual exchange projects have experienced dramatic growth in foreign language learning given that they can bring together people from different cultural backgrounds. According to Baroni et al. (2019), virtual exchange "is based on student-centered, international, and collaborative approaches to learning where knowledge and understanding are constructed through interaction and negotiation with students from other cultures" (pp.8-9). Several studies have documented how virtual exchange experiences can be implemented between institutions and how they can positively impact foreign language learning (Brautlacht et al., 2022; Fonseca et al., 2021; O'Dowd, 2020). Virtual exchange programs can last several weeks, months, or even years, but they can also be fast and compact experiences or encounters offering microlearning opportunities (Leask & Green, 2020). Microlearning (Buchem & Hamelmann, 2010; Hug, 2005; Liao & Zhu, 2012) does not involve many changes or alternations and this concept can also be applied to virtual exchange projects by offering micro encounters that are flexible, and easily embedded in existing workflows and independent of institutional or country-specific requirements.

The aim of this micro virtual exchange project was to have students promote campaigns to introduce their own local cuisine, filled with cultural traditions, in order to promote their country as a food tourism destination. Even though the project was one semester long, running from September 2021 to January 2022, students from both institutions only interacted synchronously online once. The project involved 9 students from each country, organized into three groups related to the different sections of a menu: starters, main courses, and desserts. During this period, they had to complete six tasks. First, students familiarized themselves with the project guidelines and then conducted research about tourism in their partners'

country as well as food habits and culture, namely typical food, main influences, ingredients, cooking methods and flavors. Next, participants were required to choose a representative Portuguese / Finnish dish according to their topic and write a storyboard to help them create a video promoting their typical dish. As soon as the videos were shared on the joint platform, all participants could watch each other's videos and prepare some questions for an online meeting with all the students dealing with each topic. The purpose of this micro virtual encounter was to compare and reflect on similarities, surprises, and interesting differences between both cultures as far as gastronomy is concerned. Afterwards, students presented the main findings and conclusions of this micro virtual exchange and, finally, conducted an online project evaluation.
Results indicate that students have not only learned about each other's gastronomy, which they knew nothing about but also deepened their understanding of their own culinary traditions while developing their English language skills. Therefore, this project allowed students to "break bread" virtually by enhancing a meaningful connection and cooperation between the Portuguese and the Finnish students.

Keywords: Gastrodiplomacy, Virtual exchange, English as a foreign language, Higher education, Food tourism, Microlearning

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Assessment of preclinical learning using virtual reality based education for nursing students

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Abstract. The Covid-19 pandemic has shifted the way society performs daily activities and has opened the door to new possibilities for the use of technologies. One of the most affected areas is education, where technology enhanced learning (TEL) has experienced a distinctive rise, dramatically changing teaching and learning strategies across the globe. In the "new normality" scenario, online learning is more solidly established and universities around the world are exploring remote teaching methods that feel less alienating than zoom calls or video learning.The use of VR as one of these innovations in remote education poses a great alternative, offering immersive scenarios and practical experiences. It has been proved to increase the students' engagement and
motivation to learn, thus making it suitable for evolving face-to-face learning in remote environments.

In this paper, a case study is presented to analyze the use of VR technologies to learn healthcare techniques in the first year of nursing school. A preclinical VR setting was developed using Unity and 3D modeling and animation, recreating the scene that mimics a real life scenario for nursing practices. This tool was used by 86 nursing school students of the nursing degree at the University of Oviedo after undergoing theoretical training on specific healthcare techniques.

Students were able to take home the VR sets and carry out the practical assignments with the non-presence of an instructor. In order to measure satisfaction, usability and learning factors the following strategies where used: the EUCS tool to asses End-User Computing satisfaction, a questionnaire to indicate the previous use of technology, a questionnaire and checklist to asses acquired knowledge following the WHO theoretical framework, and automatic user tracking to record the time of use and number of errors each student made while undergoing the practical assignments in the VR environment.

The prototype used in this study consists on a VR application the places the user in a scene which recreates a hospital room intended to emulate the real life scenarios that students will be faced with in their careers. The app offers a total of eight sanitary techniques and provides specific objects for their training, using a television screen to display the procedures of each technique from previously recorder videos. Before using this application, all 86 students received the same theoretical training on a disinfection sanitary technique as part of the non-surgical hand washing scenario. Teachers gave 50 minutes of theoretical sessions using

Microsoft Teams, following the “5 moments for hand hygiene” of the World Organization as the theoretical frame of
reference. Afterwards, the 12 students who belonged to the intervention group received the prototype for their mobile devices and a pair of Celeron VR glasses, with which they were assigned to visualize the practical technique three times. For the other 43 students that conformed the control group, traditional simulation was performed, where the teacher carried out the technique in front of the students for a total of three times. After all students visualized the practical procedures, they were asked to reproduce it, checking the number of errors.
Results show that errors before and after laboratory practices do not differ between traditional methodologies and the use of VR, with a significance level of 5%. The Mann-Whitney U test for independent samples in the pre-session is 178 (p-value 0.824) whereas in the post-session it is 183 (p-value 0.95), thus not rejecting the null hypotheses. Student satisfaction is 8.0116 out of 10, while learning acquired is 7.6395. A significant difference is experienced whether the user has had previous contact with VR technologies.
With all results provided, this study shows that VR is a valid approach for online distance learning which does not have a negative effect in the acquisition of knowledge by the students, although an initial training on VR usage might be useful to consider in future research.

Keywords: Virtual reality · Online learning · E-learning · Technology enhaced learning · Nursing · Education

Parallel Session 8

Moderation by Csaba Komló[1]

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Authors and presentations titles:

1. **Csaba Komló** - What Should We Know About the Educational Application of 3D Printing in 2022?

2. **Ana Raquel Carvalho, Laura Ferreira, Lara Gonçalves, Carlos Santos, João Almeida, Nuno Ribeiro, Miguel Filipe, João Brandão, Samuel Santos, Catarina Dionísio and Luis Pedro** - Developing a gamified digital platform to promote extracurricular activities in basic and secondary schools - preliminary findings

3. **Luís Neves, Clara Coutinho and Maria João Loureiro** - A research methodologies competence framework for PhD students enrolled in doctoral studies in education

4. **Francisco Regalado, João Almeida and Ana Isabel Veloso** - Social digital gaming trends of the Portuguese older adults: Preliminary results

5. **Fábio Machuqueiro and João Piedade** - Modern Board Games and Computational Thinking: Results of a Systematic Analysis Process

What Should We Know About the Educational Application of 3D Printing in 2022?

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Abstract. Digital devices tend to impact more and more aspects of our lives and such tools play a crucial role in education as well. Digitalization can make our lives easier and our activities more enjoyable. In case of schools digital devices are expected to facilitate experience-based instruction. One of the negative side effects of the surrounding virtual environment unleashing myriads of data, information, and stimuli on the user is that students become used to the onslaught of information in a continuously new, interesting and visually attractive form. As the education sphere has to respond to this challenge the integration of technological devices and methodological solutions capable of arousing and maintaining the interest and attention of students offers a potential answer. While in the 1990s this function was fulfilled by multimedia, later the Internet, then the Web 2.0 followed by social networks and mobile applications, today 3D devices, especially 3D printers, are in the centre of attention.

Although 3D printing is considered one of the cornerstones of the Industry 4.0 phenomenon, it has an over forty year history (Thorsteinsson, Page, 2018). Accordingly, a three dimensional object is produced from a digital file by the help of a 3D printer. The process is based on additive production technology. The term "additive" originates from Latin and means adding to or summarising. The expression refers to the fact that unlike in machine cutting, which implies the removal of "unnecessary or surplus" content, during additive production the actual product is created by the combination of very thin layers while gradually increasing the size of the given object.

3D printing entails a variety of printing principles (Photopolymerization, Material Extrusion, Injection of Binder etc.) while utilizing different basic materials (Polylactic Acid, Acrylonitrile Butadiene Styrene, Polyethylene Perephthalate Glycol etc.) corresponding to the respective methods.

The educational application of 3D printing can provide several advantages, among them, arousing the curiosity of students, promoting creativity, and fostering critical thinking. The procedure is ideal to be integrated into project-oriented teaching as well. Furthermore, 3D printing directly facilitates problem identification, the search for potential solutions and the selection of the seemingly most appropriate approach, and the implementation and evaluation of the respective solution. An additional advantage is that the correctness of the chosen solution can be immediately ascertained while potential failure urges the reconsideration of the respective task along with identifying novel and better solutions. Thus, contrary to in-class tests concluding with summative evaluation students can gain a partial control over the learning process. Additionally, becoming familiar with the

perspective and methodology pertaining to 3D printing can help students to meet the expectations and demands of the 21st century labour market.
My presentation introduces the most important phases in the educational use of 3D printing including planning, slicing, and printing. I will describe the basic features of the various 3D printing procedures and present an overview of the objectives related to the application of such technology in schools.

Keywords: 3D printing, experience-based instruction, 3D Fabrication for Learning

Developing a gamified digital platform to promote extracurricular activities in basic and secondary schools - preliminary findings

Ana Raquel Carvalho, Laura Ferreira, Lara Gonçalves, Carlos Santos, João Almeida, Nuno Ribeiro, Miguel Filipe, João Brandão, Samuel Santos, Catarina Dionísio and Luis Pedro

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Abstract. Learning and collaborative technologies play a fundamental role in facilitating the deployment of active learning practices, and promoting more authentic, meaningful, and memorable learning experiences (OECD, 2021). Considering that learning in the Digital era is strongly connected with a new relationship with knowledge (Ehlers, 2020), according to which individuals are expected to have a proactive attitude all over their lives and develop key competences like "sophisticated thinking, flexible problem solving, and collaboration and communication skills" (Binkley et al., 2012, p. 32), digital technologies can improve such experiences by enabling self-directed, ubiquitous learning (Chayko, 2014), and connectedness (Ito et al., 2013), providing teachers and learners with opportunities to share ideas, collaborate with each other, and to create and enroll in communities of practice (Sharples, 2016). Erstad et al. (2021) highlight the strengths of digital connectedness and transformative agency to promote teachers and learners' sense of belonging, among other things by engaging in projects aimed at solving real-world problems, and by improving learners' ability to work collaboratively in teams, for the benefits of relational agency (Bender & Peppler, 2019). According to Agbo et al., (2021, p. 5816), "a learning environment is considered smart when it provides a high level of immersion, interactivity, personalization, and engagement to adapt to learners' needs and provide intelligent feedback based on learners' characteristics and learning progress." Digital learning platforms, especially if enhanced by gamifica-tion strategies, can be an example of it. However, more research is needed as for deeply understanding how people learn in gamified environments, when it occurs, and what conditions are required so that effective learning results from it (Cavalcante-Pimentel et al., 2022). Simultaneously, it is also essential that the process of platform design takes end-users' needs into account and involve them in co-design practices.

Within the scope of design-based research and following the integrative learning design framework (ILDF) (Bannan, 2013), this study provides findings from the informed explo-ration stage of a project, related to the design of a digital learning platform to be used in Portuguese basic and secondary education. The ultimate purpose of this digital tool is to strengthen its users' sense of belonging to the corresponding educational com-munity by means of supporting the implementation of extracurricular projects, de-veloped at school, stimulate participation in those

projects and recognize it based on a reward system possibly including game-based elements such as digital badges. This study provides preliminary findings resulting from needs analysis, which comprised a digital survey by questionnaire publicly shared and targeted at Portuguese basic and secondary teachers, also with the support of different Teachers Associations. Data were collected in June 2022. 244 teachers answered the survey and a total of 215 valid responses was selected. The purpose of the survey was to provide better under-standing of the current technological reality of Portuguese basic and secondary schools and of teachers' relationship with digital technologies, so that the following question could be clarified: What do schools need / consider essential, so that they are willing to integrate another digital platform in their practices?
According to the study findings, the most institutionally supported digital tools dur-ing and after Covid-19 remote learning period were MS Teams, Escola Virtual, and G Classroom, which coincided with the tools teachers used the most in both periods. Based on teachers' input, it became clear that the integration of digital technologies did not decrease after the remote learning period, and that most of them welcome the inclusion of a new digital platform in the dynamics of their school. 60% of the teach-ers assumed they do not identify any digital platform that simultaneously promotes active learning practices enhanced by game-based elements and facilitates the recognition of learning outcomes, as well as of the competences developed by learn-ers within the scope of participation in extracurricular projects. According to the teachers, the integration of a tool with such features requires a strong marketing strat-egy aimed at motivating learners to use it and showing teachers the practicality and effectiveness of its functionalities. Challenges like technical problems (e.g., Internet connectivity), lack of digital devices, the persistence of a bureaucratic educational system and inconsistences in most teachers' digital literacy may hinder such integra-tion and should be carefully met, so that the integration of such a digital tool can happen successfully at schools.
Overall, study findings provide evidence that teachers recognize the potential of digital learning platforms to strengthen its users' sense of belonging to their education community, and that they are willing to collaborate with the integration of a new tool if that matches the purpose of their schools.

Keywords: digital platform, gamification, basic and secondary schools, co-design

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A research methodologies competence framework for PhD students enrolled in doctoral studies in education

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Abstract. Doctoral education has been witnessing an increasing development in recent years and concerns about the quality and the transferability of the produced knowledge are becoming more and more predominant. In the current context, the doctorate is ceasing to be a product, i.e., the contribution to the advancement of knowledge through an original research project, to be a process, i.e., a training that provides the necessary skills to become a qualified worker in a knowledge-based economy. The literature currently identifies an increase in commitment to the qualification of doctoral graduates with the necessary skills to work in academic and non-academic contexts, that requires collaborative and more agile processes. However, doctoral education also has its challenges. Doctoral education is a demanding, long and complex process in which dropout rates show that many students who started the process believing in themselves, find it too demanding and abandon it. Cumulatively, universities are already showing concerns about the need to develop research competences for doctoral degree in various areas, such as Education, at various stages, as at the end of the curricular year and during the research process in itself.

The literature have been reinforcing the relevance of studying the competences developed within the doctoral training, but there is still need for more attention in what concerns the area of research methodologies in Education. The lack of prior training in research methodologies requires a large investment of time, study and increased students' motivation at the beginning of doctoral training. The development of research methodologies competencies plays a structuring role in the development of doctoral students' research in Education, that can aldo support supervision activities and, cumulatively, project evaluators. We found in the literature several frameworks describing the competences that a doctoral student should develop during his/her journey, but there is a gap in what concerns the research methodologies competences. Considering the identified gap, this work aims to propose such a framework.

In order to develop the aimed reference framework a set of contributions was inferred from three different sources: the results of a consultation with experts, the analysis of three reference frameworks of competencies that doctoral students should develop in their training and a literature review process of a established reference books about research methodology in education. The proposed reference framework is divided in 9 competences: to define the nature of the study; to define the type of study; to define the constructs and the variables; to select the sources of data; to select the participants or sample; to select the data gathering techniques and

instruments; to define the data gathering procedures; to select the data analysis techniques; and, finally to define the strategies to confer validity, reliability, rigor and transferability of the produces knowledge. Each competence is characterized by descriptors divided and organized considering three approaches to research methodologies (quantitative, qualitative and mixed), although some of them are transversal.
The use of educational technologies to support the development of the competences related with research methodologies plays an essential role since several digital tools can facilitate the definitions of the research methodology and the framework can constitute a digital self-evaluative instrument that students can use for the operationalization and development of these competences. We belied that the proposed framework of research methodologies competencies in education, can be helpful and be used as an individual strategy that will allow the future researcher to develop their research project in a more independent, autonomous, sustainable and validated way and, thus, promote the quality of research in education.

Keywords: research methodology competence, framework, Education, doctoral students, postgraduation.

Social digital gaming trends of the Portuguese older adults: Preliminary results

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Abstract. The world is facing profound demographic changes over the last few years, ultimately driven by increasingly ageing populations [1, 2]. Similarly, the ubiquity of digital platforms [3, 4] brought to the forefront the discussion around design and evaluation of information and communication technologies for ageing audiences, which are often overlooked [5, 6]. Therefore, it becomes increasingly relevant to acknowledge the context, motivation, and needs of older adults when conceiving digital solutions.

In this vein, having identified a lack of available information in the Portuguese context, and within the scope of the Students@DigiMedia #01 initiative promoted by DigiMedia from the University of Aveiro – where students have the opportunity to get involved in ongoing research, a questionnaire was conceived to understand older adults' background regarding digital platforms, specifically on (social) digital games and online communities. In a first section, it is intended to demographically and technologically characterize the respondents. The second section, after identifying the gaming habits of digital or analog (social) games, is divided into two parts: (i) on the one hand, if one has no gaming habits, it is intended to understand the reasons behind it, and their considerations regarding games; and (ii) on the other hand, if one has gaming habits, it is aimed to deeper comprehend their habits, motivations, expectations, and considerations.

After implementing and validating it in a pilot session with 10 participants, with an average age of 75 years (SD: 5,06; Max: 81; Min: 66), from the 'Joga' (Playing games) sessions at the Laboratório do Envelhecimento (Ageing Laboratory), Ílhavo, Aveiro, Portugal, the following highlights from the preliminary results can be made. The smartphone/iPhone is the most owned technological device (N=6; 60%), followed by the personal computer (N=4; 40%). Not being able to use it (N=4; 40%), high cost (N=4; 40%), or fear of damage (N=3; 30%) are among the main reasons for enduring more extensive use of technological devices. Moreover, listening to music (N=5; 50%); browsing social media (N=5; 50%); reading newspapers and magazines (N=4; 40%); and playing games (N=3; 30%) are some of the most common activities performed on technological devices by respondents. After the demographic and technological characterization, questions from section two followed – i.e. characterization of the relationship with digital and analog (social) games. The results reveal that the majority (N=6; 60%) of respondents have played or play digital and analog games, while the remaining (N=4; 40%) have no gaming habits. From the latter, 75% (N=3) indicate having no skills as the main reason for not playing games, but they recognize this medium as facilitating

interpersonal communication (3 agree and 1 strongly agrees) and as a good learning tool (3 agree and 1 strongly agrees).
In a nutshell, it was possible to get a first glimpse of what the final results might be. Thus, a strong trend towards using games as a tool for mental stimulation, learning, and establishing contact with family and friends can be perceived – possibly indicating a good acceptance of social digital games. Lastly, the future work will focus on online mass distribution, national and internationally; in-depth quantitative data analysis; and the presentation and dissemination of the final results.

Keywords: Social Digital Games, Older Adults, Survey

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Modern Board Games and Computational Thinking: Results of a Systematic Analysis Process

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Abstract. The worldwide interest in including Computational Thinking (CT) in schools has been gradual. The most recent report from the European Commission, "Reviewing Computational Thinking in Compulsory Education" (Chioccariello et al., 2022), shows that 25 European countries already include different initiatives to introduce the development of CT in their basic education curricula, highlighting, among other motivations, the importance of fostering skills such as collaboration, problem-solving or logical reasoning. Among the various integration models, the creation of specific curricular components, the updating of already existing curricular programmes, mainly related to Information and Communication Technologies or even the transversal association of CT with other curricular areas, especially mathematics, stand out. Regardless of the option used, the introduction of CT in school contexts currently reveals several gaps and challenges (Fantinati & Rosa, 2021), as well as learning opportunities for teachers and students. Literature has highlighted the role of disconnected activities in CT development, where board games (BG) are included. Recently, new modern board games (MBG), have attracted the interest of researchers for their unique designs and mechanics (Woods, 2012), which unconsciously support many of the dimensions of PC (Scirea & Valente, 2020). In order to investigate the impact of these games on the development of PC in Primary School (PS) children, within the scope of a PhD project in education, we analyse in this article a wide list of MBG, in order to carefully identify those that seem to support CT-promoting mechanics. In this way we explore in this article mainly the spectrum of modern board games whose unique mechanics suggest an approach to several dimensions of CT, implicitly supporting its development. We look at these games as pedagogical resources of great potential, capable of being used in the classroom, especially by groups of students, to introduce, discuss and practice the various concepts associated with CT. We intend to outline the characteristics of these games, based on a protocol adapted from the previous studies by Berland and Lee (2011), Berland and Duncan (2016) and Scirea and Valente (2020). In this way, facing a clearly expanding industry with a huge volume of possible games to be analysed, whose annual growth rate until 2023 is expected to be around 17% (Sousa & Bernardo, 2019), only the MBG available in the catalogues of Portuguese publishers were first considered, as well as MBG published by international publishers with a direct presence in the Portuguese market. These were then ranked according to their position in the Boardgamegeek database, an internationally renowned reference considered to be the definitive source for analogue games, updated in real-time by a community of

over two million users worldwide. To the results of this first sample, some inclusion and exclusion criteria were then applied, such as the year of development, the number of players, the running time and the advised age. After applying these criteria, only modern board games that contained at least one of the following mechanics, previously defined by Scirea and Valente (2020), as favourable for the development of Computational Thinking were selected: 1) action queues; 2) simultaneous actions; 3) modular boards; 4) cooperation; 5) resource management/worker placement; 6) real-time; 7) turn-based; 8) simulation; 9) hand management; 10) pattern building; 11) and tile placement. As the last criterion, possible curricular articulations with the different subjects of the 1st cycle of basic education were defined, with the perspective of a transdisciplinary application of these activities. The final results of this research suggest the election of some games, present in the current Portuguese MBG market, considered ideal for the objectives of the doctoral research to be carried out. The present article also intends to discuss the existence of design patterns and mechanics present in the MBG selected for use in the empirical field, reflect on how they integrate, support or, more commonly, relate to CT development and discuss their implementation in educational contexts. Finally, the reported work, although limited to the Portuguese context and research purposes, suggests a practical and auspicious approach in the selection of CT-promoting MBG, relevant for teachers and other educational professionals with an interest in the application of board games in educational contexts.

Keywords: Computational Thinking, Game Mechanics, Modern Board Games

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Parallel Session 9

Moderation by Ana Oliveira[1]

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Authors and presentations titles:

1. **Isabel Cabo** - Inovando práticas pedagógicas no ensino superior com recurso a portefólios digitais

2. **Isabel Cabo** - Os Projetos eTwinning-Erasmus+ como ferramentas inclusivas e de transformação pedagógica

3. **Sara Martins and Filipe T. Moreira** - OH!Bug: Envolver as crianças na valorização do património natural

4. **Patrícia Christine Silva and Ana Valente Rodrigues** - Ciclo de desenvolvimento das atividades do PEEC: análise, desenho, implementação, avaliação e redesenho

5. **Maria Barbosa, Paula Santos and Maria João Loureiro** - Ribeira de Emoções: uma sequência didática sobre emoções com recurso às TIC para alunos do 1º CEB

6. **David Oliveira and Ana Oliveira** - Do M-Learning ao Learning Analytics

7. **Daniel Cláudio Mbandje, Maria João Loureiro and Margarida Lucas** - Digital competence and information literacy: clarifying concepts based on a literature review

Inovando práticas pedagógicas no ensino superior com recurso a portefólios digitais

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Abstract. Pretende-se com esta comunicação dar a conhecer uma investigação realizada na disciplina de espanhol, decorrida no âmbito do ensino superior em Portugal, que reflete sobre questões que afetam atualmente o contexto escolar, tanto ao nível da implementação de metodologias de ensino como de práticas de avaliação pedagógica, que tem como intenção constituir uma resposta para melhorar os níveis de assiduidade, participação e qualidade na aprendizagem e o intuito promover a aprendizagem dos estudantes universitários lusofalantes mais além do "portunhol".

Na experiência de avaliação pedagógica com recurso a equipamentos e ferramentas digitais são apresentadas as motivações que levaram a implementar a presente experiência educativa, é apresentado o perfil dos alunos que estudam espanhol como segunda ou terceira língua estrangeira (E/LE2/LE3) em Licenciaturas nas áreas de Secretariado e Administração bem como de Turismo, na Escola Superior de Tecnologia e Gestão de Lamego – Instituto Politécnico de Viseu, as suas perceções sobre as potencialidades da utilização de dispositivos móveis e as suas opiniões sobre o uso de portfólios digitais na aprendizagem e avaliação.

Os resultados revelam a relação dos aprendizes com seus dispositivos móveis, as suas perceções quanto ao seu possível uso em aulas de língua estrangeira, o potencial dos portfólios digitais na avaliação regular dos alunos, a rubrica de avaliação dos portfólios digitais e as conclusões da integração efetiva dos dispositivos móveis dos alunos e portfólios digitais no processo de ensino, aprendizagem e avaliação.

Esta intervenção tentará mostrar que a aprendizagem móvel também acrescenta valor às práticas de avaliação pedagógica, os telemóveis podem constitui-se como ferramentas "agradáveis" na construção da aprendizagem e avaliação de línguas e que os portfólios digitais representam um instrumento muito rico que reflete a aprendizagem dos alunos.

Organizarei o trabalho desta intervenção em cinco partes distintas. Começarei expondo o estado da arte do conceito de portfólio de aprendizagem, apresentando algumas definições; apresentarei algumas ferramentas gratuitas e gratuitas para criar portfólios digitais; farei uma reflexão sobre os principais aspetos positivos e negativos do uso de portefólios digitais. Além disso, compartilharei os resultados das pesquisas aplicadas aos alunos e compartilharei amostras de portfólios digitais de aprendizagem criados pelos alunos ao longo do ano letivo para a disciplina de espanhol como língua estrangeira. Por fim, traçarei algumas conclusões e linhas futuras sobre o uso de portfólios digitais na aprendizagem de línguas estrangeiras no ensino superior.

Keywords: Avaliação Pedagógica, Portefólios Digitais, Ensino Superior, Espanhol

Os Projetos eTwinning-Erasmus+ como ferramentas inclusivas e de transformação pedagógica

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Abstract. Na presente comunicação são apresentados projetos educativos e inclusivos que envolvem abordagens inovadoras no ensino-aprendizagem-avaliação do espanhol como língua estrangeira na Europa: os projetos eTwinning-Erasmus+.

De acordo com o Portal eTwinning, "eTwinning é a comunidade de escolas da Europa, oferece uma plataforma para os profissionais da educação que trabalham nas escolas dos países europeus envolvidos para comunicar, colaborar, desenvolver projetos e partilhar; em suma, para que se sintam e se tornem parte da comunidade de aprendizagem mais excitante da Europa. O eTwinning é cofinanciado pelo Erasmus+, um programa europeu no domínio da educação, formação, juventude e desporto".

Segundo a Comissão Europeia, "Erasmus+ é o programa da UE para apoiar a educação, formação, juventude e desporto na Europa. Tem um orçamento estimado de 26,2 bilhões de euros. Isso é quase o dobro do financiamento do programa que o precedeu no período 2014-2020. Para o período 2021-2027, o programa enfatiza a inclusão social, as transições verdes e digitais e o fomento da participação dos jovens na vida democrática."

O Perfil do Aluno, em articulação com as Aprendizagens Essenciais de Espanhol, aponta a "mudança das práticas pedagógicas e didáticas para adequar a globalidade da ação educativa aos objetivos do perfil de competências dos alunos". Esta comunicação visa divulgar "as ações relacionadas com a prática docente e que são decisivas para o desenvolvimento do Perfil do Aluno, dando a conhecer projetos, tarefas e estratégias ativas de aprendizagem, práticas de avaliação pedagógica, utilização de materiais autênticos no contexto da língua espanhola e cultura, de recursos e ferramentas digitais diversificados.

Com esta comunicação, será também anunciada uma comunidade de prática, onde poderá encontrar professores de espanhol ou que ensinam espanhol na Europa, que discutem as práticas pedagógicas à luz da legislação vigente, partilham experiências pedagógicas e promovem a inovação educativa.

Organizarei a comunicação em três seções. Começarei por fazer uma contextualização sobre os projetos eTwinning e dos Projetos Erasmus+; partilharei uma reflexão sobre as competências, conhecimentos e valores preconizados no documento Perfil dos Alunos; darei a conhecer cinco projetos eTwinning e Erasmus+ que foram implementados desde 2018 na disciplina de espanhol como língua estrangeira, no Agrupamento de Escolas Latino Coelho, Lamego. Por fim, traçarei algumas conclusões e linhas futuras sobre a utilização dos projetos eTwinning e Erasmus+ como ferramentas pedagógicas intencionais de elevado

potencial educativo com recurso a metodologias ativas no âmbito das línguas estrangeiras.

Keywords: Projetos eTwinning-Erasmus+, Metodologias Ativas, Transformação Pedagógica, Inclusão Educativa

OH!Bug: Envolver as crianças na valorização do património natural

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Abstract. Atualmente, 55% da população mundial vive em cidades (ONU, 2019), sendo que esta é uma tendência crescente, estimando-se que em 2050 esta percentagem alcance os 70%. Todavia, apesar desta concentração em áreas urbanas, tem-se também assistido ao aumento de áreas desflorestadas e de monoculturas, facto que contribui para a perda de biodiversidade animal e vegetal. Esta realidade tem contribuído para que nos afastemos de ambientes naturais e eventualmente para um desconhecimento sobre as espécies existentes no meio circundante. De tal modo que, este acontecimento torna-se evidente quando nos referimos a espécies vegetais, especialmente quando nos dirigimos a crianças, que tendem a possuir menos informação sobre as plantas do que sobre os animais (Martins, 2011).

O conhecimento, principalmente o conhecimento científico, é potenciador de respeito e valorização, daí a necessidade de se desenvolver a literacia ambiental e neste caso em particular a literacia sobre as plantas, de forma a se efetuar uma gestão mais sustentável das mesmas.

Considerando esta problemática, pensou-se numa estratégia que pudesse contribuir para uma aproximação dos mais jovens à realidade natural circundante, principalmente das plantas. Esta aproximação deveria proporcionar a construção de conhecimento sobre as plantas (principalmente as existentes no meio envolvente), nomeadamente as suas características, mas também momentos de reflexão sobre os espaços naturais existentes.

Assim surgiu a aplicação OH!Bug. Nesta aplicação, os utilizadores têm acesso a um mapa georreferenciado onde vão inserindo as plantas que identificam. A identificação das espécies é realizada através de um sistema de filtros por combinação de características – tipo de planta, tipo de folha, flor, fruto e habitat. Este método permite apresentar uma lista de resultados ao utilizador das plantas que se enquadram em cada padrão.

Este método diferencia-se das aplicações móveis que permitem uma identificação automática (ou parcialmente) de espécies vegetais com recurso à imagem e à Inteligência Artificial. O método de identificação por fotografia, por ser imediato, não leva o utilizador a necessitar de observar os detalhes da planta e a refletir sobre os mesmos. Daí que, com a aplicação móvel OH!Bug o utilizador é convidado a observar e analisar as características da planta por forma a criar uma réplica digital e assim aferir (descobrir) qual a planta que está à sua frente.

A aplicação permite a criação de contas individuais ou de turma (estas geridas pelo docente) em que à medida que o utilizador vai criando os seus mapas de plantas vai recebendo informação extra, nomeadamente sobre plantas protegidas ou historicamente relevantes, contribuindo assim para a literacia do utilizador sobre a

temática. Como forma de estímulo, foi inserida uma lógica de gamificação em que o utilizar vai recebendo pontos conforme vai identificando plantas e quantos mais pontos somar, terá acesso a novas funcionalidades e informação.
Considerando que a identificação das plantas é realizada pelos alunos, esta poderia ser realizada de forma errada. Todavia, após a identificação realizada pelo utilizador, esta será sempre validade pela equipa OH!Bug, havendo ainda a possibilidade de ser validada pelos pares ou até pelo docente no caso das contas de turma.
O público-alvo desta aplicação móvel são crianças a partir dos 8 anos de idade. Todavia, esta poderá ser utilizada por crianças mais novas, até porque a descrição de diferentes características das plantas vem sempre acompanhada de várias ilustrações.
Relativamente ao processo metodológico seguido para a criação da aplicação móvel, tratou-se de um processo cíclico e iterativo. Inicialmente, partindo das problemáticas elencadas no primeiro parágrafo, efetuou-se uma análise de mercado com o objetivo de aferir que tipo de recursos é que existiam e que permitissem uma abordagem à temática pretendida. Posteriormente, procedeu-se à análise dos programas curriculares portugueses com o objetivo de aferir quando e como é abordada a temática das plantas. De seguida procedeu-se ao desenho da aplicação móvel, considerando os aspetos que se pretendia abordar.
Ainda na fase de desenho da aplicação móvel, procedeu-se a um estudo piloto com crianças do 1º e 2º Ciclo do Ensino Básico (CEB), de forma a se aferir qual a reação às ilustrações das plantas e se conseguiam identificar e utilizar as funcionalidades definidas.
Com base nos resultados obtidos, procedeu-se ao desenvolvimento da versão Beta da aplicação móvel. Esta versão foi novamente testada com crianças do 1º e 2º CEB e os resultados daqui obtidos permitiram o aperfeiçoamento da aplicação móvel, com vista à obtenção de uma versão próxima da final.
Salienta-se que as plantas primeiramente inseridas na aplicação são as mais comuns nos espaços públicos das cidades portuguesas (previamente selecionadas) e que a OH!Bug está em constante atualização com a inserção de novas espécies.
Os próximos passos do projeto passarão pela realização de um estudo alargado com crianças do 1º e 2º CEB com vista à validação da versão atual e mais completa da aplicação móvel, de forma a ser obter as opiniões destes e dos docentes envolvidos.

Keywords: Alicação móvel, Plantas, Educação ambiental, Educação em Ciências, 1º e 2º CEB, Literacia científica, Património natural

Ciclo de desenvolvimento das atividades do PEEC: análise, desenho, implementação, avaliação e redesenho

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Abstract. O ensino das ciências deve ser para todos e deve ser iniciado logo nos primeiros anos de escolaridade (Harlen, 2018). É neste sentido que surge o desenvolvimento do Programa de Ensino Experimental das Ciências no 1.º CEB (PEEC) que engloba a conceção de: uma proposta curricular; atividades e recursos didáticos de apoio à operacionalização da proposta curricular; e atividades e instrumentos de avaliação das aprendizagens. Na presente comunicação pretende-se apresentar o ciclo de desenvolvimento do PEEC atividades numa metodologia Design-Based Research envolvendo vários ciclos iterativos, nomeadamente: análise, desenho, implementação, avaliação e redesenho (Romero-Ariza, 2014).

Na fase da análise foi possível constatar, nomeadamente, que as práticas de ensino das ciências no 1º CEB em Portugal ainda estão desfasadas da perspetiva Inquiry Based Science Education e das orientações Ciência, Tecnologia e Sociedade(Silva et al., 2020).

Na fase do desenho, tendo por base as aprendizagens definidas na proposta curricular, foram desenvolvidas cerca de 100 atividades práticas de ciências. Para a conceção destas atividades e respetivos recursos contou-se com uma equipa de especialistas de diversas áreas (biologia, física, geologia...) para a validação dos conteúdos. Para cada uma das atividades concebeu-se uma proposta de planificação com uma breve descrição de como poderá ser desenvolvida a atividade (Figura 1).

Produziram-se mais de 100 vídeos de contextualização (Figura 2) com o intuito de problematizar cada uma das atividades propostas. Estes vídeos, com a duração máxima de um minuto, retratam um problema do quotidiano de dois personagens a Cien e a Tista, fazem emergir a questão-problema, bem como despoletam a identificação de ideias prévias.

Para a maioria das atividades desenvolveram-se folhas de registo para as crianças (de grupo e individuais) com formato editável (Figura 3).

Conceberam-se vários vídeos denominados "À conversa com..." (Figura 4) que contam com a participação de vários profissionais de saúde (médicos, veterinários, dentistas...), cientistas e investigadores e comunidade em geral (grávidas...), que respondem a várias questões sobre um tema em particular.

Conceberam-se várias infografias estáticas (Figura 5) em formato de cartaz e folhetos informativos e infografias dinâmicas em formato de vídeo (Figura 6).

Desenvolveram-se vários jogos analógicos, como por exemplo jogos de cartas e tabuleiros (Figura 6). Também se desenvolveram jogos digitais (Figura 7).

O ciclo de implementação ocorreu ao longo de dois anos letivos (2020-2021 e 2021-2022) com 12 turmas do 1.º CEB. Semanalmente cada turma realizava uma atividade em contexto de laboratório, orientada pelo professor titular de turma e/ou um professor coadjuvante. Assim, todas as semanas estavam em validação quatro

atividades do PEEC respeitantes a cada ano de escolaridade, tendo sido realizadas 366 implementações. No total foram validadas 81 propostas de atividades do PEEC. Nestes ciclos de implementação colaboraram 12 professores do 1.º CEB e respetivas turmas (cerca de 380 crianças), nove professores-coadjuvantes de um centro de ciência, e duas alunas de mestrado em contexto de estágio.
A recolha de dados para a avaliação das atividades e respetivos recursos realizou-se através: da resposta dos professores a um questionário desenvolvido especificamente para o efeito, dos registos provenientes das reuniões semanais com a investigadora e do grupo WhatsApp; do contributo para a aprendizagem das crianças. Foram avaliadas as aprendizagens das crianças, antes e após a realização das atividades, recorrendo-se aos instrumentos de registo de avaliação dos professores, às folhas de registo e atividades de avaliação das crianças, nomeadamente jogos digitais.
A sucessivas fases de avaliação e redesenho foram ocorrendo ao longo dos dois ciclos de implementação. Atualmente está em curso a avaliação e redesenho final no sentido de se disponibilizar online e gratuitamente o PEEC para todos os professores.
Uma análise preliminar aponta para uma avaliação global muito positiva dos recursos por parte dos professores participantes, realçando-se: a inovação, a adequação ao nível etário, a diversidade de estratégias inerente, e o seu contributo para promoção da literacia científica das crianças.

Keywords: Ensino das Ciências no 1.º CEB, Atividades de Ciências, Recursos didáticos de ciências

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Ribeira de Emoções: uma sequência didática sobre emoções com recurso às TIC para alunos do 1º CEB

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Abstract. A presenta proposta de comunicação visa apresentar um projeto de investigação-intervenção no domínio da Educação Emocional, integrando as Tecnologias de Informação e da Comunicação (TIC), entre outros, um robô e uma linguagem de programação, envolvendo crianças do 3.º ano de escolaridade. O projeto foi desenvolvido pela primeira autora, no âmbito da unidade curricular de Prática Pedagógica Supervisionada (PPS) e no Seminário de Orientação Educacional, do 2.º ano do Mestrado em Educação Pré-Escolar e Ensino no 1.º Ciclo do Ensino Básico (1.º CEB), da Universidade de Aveiro. Desenvolveu-se uma sequência didática tendo em vista procurar respostas para a questão de investigação: como promover conhecimentos sobre emoções num grupo de crianças do 3.º ano do 1.º CEB, com recurso às TIC?

Em termos metodológicos, optou-se por um estudo de investigação-intervenção, de natureza qualitativa. Recorreu-se a distintas técnicas e instrumentos de recolha de dados como a recolha das produções dos alunos, a observação participante, com registos em notas de campo, ou o inquérito, explorando grelhas de satisfação, que permitiram a apreciação das atividades por parte das crianças. Quanto às técnicas de análise dos resultados explorou-se a análise de conteúdo dos artefactos produzidos pelos alunos, a análise interna dos registos de observação, que possibilitaram a descrição das sessões, e a análise estatística descritiva dos dados das grelhas de satisfação.

Nas sessões objeto de análise as crianças i) fizeram corresponder imagens (QR-code) e a emoção adequada num tapete, explorando um robô, e produziram textos criativos, ii) fizeram pesquisa sobre uma emoção à sua escolha e apresentaram-na num PTT e iii) criaram uma animação usando o Ubbu com um diálogo sobre as emoções.

Da análise dos dados inferiu-se que a utilização das tecnologias teve um grande impacto na mobilização de conhecimentos das crianças sobre as emoções. A análise das grelhas de satisfação revelou que a sessão em que se explorou a robótica foi aquela que maior nível de satisfação gerou, seguida da sessão em que os alunos apresentaram uma emoção e, por último, da sessão em que se explorou o Ubbu, que se pode dever à sua maior complexidade. Para a análise dos artefactos produzidos pelos alunos (textos, apresentações, diálogos no Ubbu…), foi desenvolvido um sistema de categorias e subcategorias, tendo em conta o Referencial de Educação para a Saúde e a literatura consultada. Esta análise permitiu concluir que, no desenvolvimento das atividades, todas as crianças identificaram emoções primárias e secundárias, bem como emoções que geram bem-estar e desconforto. Acresce que as crianças exibiram evidências de Empatia, Cooperação e Partilha. O indicador

que apresentou piores resultados prende-se com a distinção entre as emoções que geram bem-estar ou desconforto, que se reflete na distinção entre emoções negativas e positivas.
O trabalho desenvolvido trás contributos relevantes para a área como a planificação das sessões e os recursos explorados, o sistema de categorias desenvolvido e, não menos importante, a constatação de que as atividades promoveram o desenvolvimento de conhecimento sobre as emoções. Refira-se ainda que se trata de um projeto inovador dado não termos encontrado na literatura consultada nenhum com objetivos similares.

Keywords: sequência didática, emoções, TIC, robótica, Ubbu.

Do M-Learning ao Learning Analytics

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Abstract. M-Learning é um dos "modelos" educacionais mais discutidos, que se caracteriza por permitir várias formas de aprendizagem através de dispositivos móveis. Neste modelo, os dispositivos móveis têm, assim, um papel fundamental nos processos de aprendizagem, onde se inclui a avaliação (Kljunić & Vukovac, 2015).

Estas tecnologias podem ser mobilizadas para diferentes tarefas (acesso a informação, comunicação, armazenamento e gestão de informação) com diferentes públicos académicos e em diversos contextos, sendo adaptável às necessidades individuais, capacidades e grau de proficiência dos estudantes. No entanto, para poder servir todas as potencialidades educativas, as tecnologias têm de corresponder a determinados critérios e devem ser adaptadas a esses critérios.

Tendo em conta o exposto, o M-Learning deve ser visto como uma forma diferente de encarar a aprendizagem, sendo, por isso, de vital importância que as instituições de ensino, em especial as de ensino superior, percebam de que forma é que os estudantes utilizam os dispositivos móveis nas suas tarefas académicas e letivas. Esta necessidade justifica-se pelo facto de se registar um crescimento de utilização de dispositivos móveis nas tarefas diárias dos estudantes, incluindo nas de aprendizagem (Oliveira et al., 2021), sendo que, por isso, estes esperam que estes dispositivos sejam integrados nas suas tarefas académicas. Neste sentido, se os estudantes já utilizam de forma diária de dispositivos móveis para aceder a informação e a conteúdos académicos, é pertinente que as instituições compreendam melhor esta utilização e as integrem na oferta formativa e no processo de ensino e de aprendizagem.

Considera-se, assim, fundamental identificar como é que os estudantes utilizam os seus dispositivos móveis em contexto académico, quais as finalidades dessa utilização, quantificando e qualificando essa utilização. Desta forma, os decisores das instituições podem identificar a melhor forma de integrar a utilização em situações de aprendizagem, para que a aprendizagem ocorra de forma mais significativa, até porque as instituições de ensino superior procuram ativamente desenvolver novas estratégias para repensar a forma de cumprirem essa missão (Alexander et al., 2019).

O Learning Analytics configura-se como a medição, recolha, análise e relatório de dados sobre os estudantes e os seus contextos, com a finalidade de compreender e otimizar a aprendizagem e os ambientes em que esta ocorre (Lucas & Moreira, 2018).

A utilização destes dados pode permitir antecipar potenciais problemas no percurso dos estudantes, nomeadamente a identificação de alunos com menores índices de aproveitamento, permitindo ainda recolher outras evidências com ganhos

significativos para apoiar o ensino e a aprendizagem. Por outro lado, estas técnicas de Learning Analytics permitem utilizar a análise computacional dos dados do processo de aprendizagem para melhor compreender e melhorar a aprendizagem. Uma componente chave do trabalho envolve o fornecimento de informação atempada aos intervenientes educativos (professores, estudantes, designers, administradores) para apoiar uma melhor tomada de decisões.

Torna-se, assim, relevante que os dados de utilização de dispositivos móveis sejam fornecidos em tempo real, permitindo perceber efetivamente que utilização os estudantes fazem dos seus dispositivos, e com estes dados, alterar as práticas letivas. Sendo possível recolher estes dados, tratá-los e fornecê-los em tempo real configurava-se como um elo de ligação entre o M-Learning e tecnologias de analytics que Alexander et al. (2019) referem como principais desenvolvimentos no uso da tecnologia no ensino superior.

Este artigo pretende perceber de que forma é que os dados recolhidos, quando utilizada uma abordagem centrada no M-Learning, podem ser analisados para que depois de implementadas melhorias, o processo de ensino e aprendizagem possa beneficiar. Desta forma, o artigo procurará identificar de que forma práticas de M-Learning podem fornecer dados para serem analisados, e transformados para posterior análise, e efetuar o levantamento de estudos que analisem a relação entre M-Learning e Learning Analytics, em particular no Ensino Superior.

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Digital competence and information literacy: clarifying concepts based on a literature review

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Abstract. In the current context of increasing use of ICT in the social, economic and research sectors, studies on digital competences (DC) and information literacy (IL) are becoming more and more frequent. At the research level, DC and IL are essential skills in postgraduate training. Several authors point to the need for the development of these skills at this level of education, as they facilitate the search, selection, processing and communication of scientific information. Literature also indicates that there is no consensus regarding the conceptualization of CD and IL due to their proximity and interrelationship, while recognising, at the same time, that they complement each other.

It is noted, however, that conceptual frameworks on CD are not specific for advanced training. For example, the DigComp Framework – the Digital Competence Framework for Citizens –, which encompasses several dimensions, including IL, is extensive for every European citizen. Notwithstanding, there is a lack of studies on IL for advanced levels of education. In view of the above, this study aims to analyse how the DC and IL that are currently expected from doctoral students are conceptualized. It aims to collect inputs for the definition of a framework for information literacy digital competences (ILDC) to be developed in the context of doctoral courses.

For the development of the present research, we adopted the systematic literature review methodology. The following steps were defined and carried out: i) preliminary readings to map the terms used in the literature related to DC and IL (digital competence, digital literacy, network literacy, media literacy, technological literacy, e-skills, Internet literacy, library literacy or bibliographic instruction, and information literacy) and to determine which ones are most commonly used; ii) the initial mapping allowed the definition of the search terms and their cross terms (AB "information literacy" or "digital competence" or "digital competencies" or "digital skills" or "digital literacy" AND AB "phd student" or "doctoral student" or "postgraduate research student") and their equivalent in Portuguese; iii) in a third step, we defined the inclusion and exclusion criteria (restricting the search to the last ten years, to articles published in scientific journals, written in English or Portuguese) and selected the databases/search aggregators (SCOPUS, Web of Science, B-on, EBSCO, SCIELO, and RCAAP); iv) then we searched the databases and obtained a total of 81 results; v) after excluding repeated articles (n=32), a table was organized to include authors and year of publication, titles, keywords, and the focus of the studies; then the abstracts were read; 19 articles were excluded because they did not focus on postgraduate students; vi) finally, 30 articles were read in full and those that explicitly addressed the conceptualization of CD and/or IL for doctoral students were selected (n=7). These articles constituted the corpus of the literature review.

Results show that the studies focus mostly on IL. The two concepts are addressed in only three articles although the problematic is more focused on IL. The

conceptualization of DC is more related to the domain of digital technological tools, namely resources for information search, such as the adequate use of databases, alert strategies or communication resources. It is inferred that the definition of CD is closer to the concept of digital skills or digital abilities, in Brazilian Portuguese.
IL requires the effective use of information and involves skills of searching, evaluating and using information. It is mentioned that the researcher/doctoral student should know what he/she intends to search for and aim to produce new knowledge, which can contribute to solving research problems. Nevertheless, the studies are more focused on the research dimension. In the course of this study, we had access to a doctoral thesis in which a referential of competences related to IL was developed, exploring Web 2.0 tools. In short, it was noticed that the definitions refer mostly to a technical approach, to knowing how to do and how to accompany technological development in such a way that it supports speeding up the search, evaluation, and use of information process.
It can be concluded that it is necessary to cross reference DigComp with the one developed in the mentioned thesis, to define the ILDC that doctoral students should develop. This is also the object of an ongoing doctoral project.

Keywords: Digital competence, information literacy, doctoral students, reference framework.

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WORKSHOPS

MOVING ON TOWARDS 'NEW NORMAL' IN EDUCATION

ICEM2022 CONFERENCE

BOOK OF ABSTRACTS

OCTOBER 2022

Workshops

Workshop A

Design Thinking Bootcamp

Facilitator: Otto Benavides

Workshop B

Augmented Reality with Wikitude and Unity

Facilitator: Víctor Álvarez

Workshop C

Emotional Methodologies

Facilitator: Marilene Garcia

Marilene Garcia

Workshop D

Methodological Analysis of Analogue Game Design for Educational Experiences

Facilitator: Micael Sousa

Workshop E

Pedagogic Video Design Principles

Facilitator: Jack Koumi

Workshop F

The State of Digitisation in the German Education Sector - An Overview

Facilitator: Johannes Schmied

Workshop G

AI Chatbot - Use and Design for Education

Facilitators: Huiyu Zhang, Linda Fang, and Ester Goh

Workshop A

Design Thinking Bootcamp

Facilitated by Otto Benavides

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Academic Senate California State University - Senator 2005-2017

Apple Distinguished Educator 1999

Adobe Education Leader 2009

Design thinking is an activity-based training course towards solving "real-world" problems rooted in human empathy and conducted by collaborative multidisciplinary teams. Based on the Stanford d.school model of design thinking, the class will help you with strategies and outcome-based solutions to implement in your current job. During the training, attendees will experience/cover the following:

» The opportunity to explore a complex ecosystem on a white board and online collaborative tools.

» Be given challenges to analyze how products or processes work.

» Work collaboratively to build prototypes to examine how a product or process works so it can be evolved and improved.

» Work on the design thinking process and become immersed into the design thinking experience.

» Identify and apply the design thinking process to real problems and provide solutions to those problems.

Workshop B

Augmented Reality with Wikitude and Unity

Facilitated by Víctor Álvarez

Dr. Victor Alvarez is currently a lecturer in human-computer interaction, virtual and augmented reality at the University of Oviedo (Spain). Previously, he held senior research positions at K.U Leuven (Belgium) and Murdoch University (Australia), and worked in collaboration with leading universities and research networks in Europe and Oceania.

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Rationale

Augmented Reality (AR) and Virtual Reality (VR) have garnered much attention in recent years due to the rapid adoption of wireless, mobile and wearable technologies. The characteristics of AR + VR are strongly related with first-hand experience and the senses of presence, immediacy and immersion. These features enable students to engage cognitively and affectively and enhance the impact of the training experience. Creating 3D visualisations where physical and digital objects co-exist and interact in real time is already contributing to reshape education and professional training. This workshop introduces two of the most popular tools to create augmented reality: Wikitude and Unity, and provides a hands-on space where participants can learn the basics to build their own augmented reality apps.

Workshop Outline

- Introduction to augmented reality in education
- Augmented reality with Wikitude *hands-on
- Introduction to Unity
- Installation, configuration and first steps with Unity *hands-on
- Augmented reality with Unity and Vuforia *hands-on

Audience and format

The participats in this workshop will gain understanding of augmented reality while being engaged in the construction of mobile apps. Programming code, graphics and animations for the exercises are provided or can be downloaded. The estimated time for completing the workshop is 2:30 to 3 hours. Maximum number of participants: 15.

In order to save download and installation time, it is highly recommended that participants already have Unity 2020.3.37f1 on their computers before attending the workshop. This can be done by either providing a room with PCs/laptops including Unity or sending attendees brief instructions on the days previous to the workshop.

Workshop C

Emotional methodologies

Facilitated by Marilene Garcia

Marilene S. S. Garcia graduated in Languages in German, Portuguese Linguistics at USP - University of São Paulo. She did her Bachelor's degree in Pedagogy (UNINTER), Master's degree at UNICAMP, Doctorate at USP and post-doctorate at PUC-SP-TIDD-Technologies of Digital Design Intelligence. She is currently doing another post-doctorate at the Universidade Aberta - Portugal - on social-emotional competences, management, methodologies and monitoring of learning. She is currently a pedagogical consultant for the Secretary of Education of the Municipality of São Paulo - Brazil. She is also the author of books in the area of education, articles and scientific chapters. Her most recent book is: Curadoria educacional- práticas pedagógicas.

More recent studies on social-emotional competences point to a re-signification of teaching processes that directly affect pedagogical dialogue, consequently modifying the ways of elaborating methodologies. In this case, we could speak of emotional methodologies, which associate conditions of well-being, comfort, relationships of belonging, to what is known about active methodologies, awakening new motivations and interests both for those who learn and those who teach.

How this workshop will be conducted: In a dynamic, interactive and creative way, starting from the analysis of small cases that imply teaching/learning proposals, the group of participants will be guided to formulate strategies integrating aspects such as: emotional literacy, self-awareness; self-management; empathy; social skills; "thinking" about consequences; interpersonal relationships when learning; good emotion and disturbing emotion; decision making, effort/distraction and well-being.

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Workshop D

Methodological Analysis of Analogue Game Design for Educational Experiences

Facilitated by Micael Sousa

Micael Sousa, civil engineer, master in Energy and Environment. Graduated in History, master in Heritage Studies. PhD candidate in spatial planning. Member of CITTA and ISAGA. Instructor and guest teacher of game design and serious games in various higher education institutions and training entities. Collaborator for research/action projects like UrbSecurity, FlavourGame, and Gym2beKind, among others. Developer, reviewer, and content creator for modern board games.

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Description

Modern analogue games are captivating growing audiences worldwide, resulting from continued design innovations and the unique experience of material tangibility (most in the last 30 years). Alternatively, mastering these games can also be used for prototyping new projects, either for new digital or hybrid platforms. In this workshop, participants will play several modern analogue games and apply the MACMEO experimental framework to identify the game systems and how they can be adapted to educational experiences. Through gameplay, participants will learn how to dissect game systems, experiential interactions and possible future applications for analogue and digital platforms. This workshop is a practical (hands-on) introduction to game design for purposes other than entertainment.

Goal

Introduction to game systems and serious games.

Workshop E

Pedagogic Video Design Principles

Facilitated by Jack Koumi

Jack Koumi has a degree in Mathematics, a degree in Psychology, and Graduate Certificates in Technology Based Distributive Learning and in Teaching English as a Foreign Language.

For 6 years he was a London University lecturer and teacher trainer.

For 23 years, until 1993, he worked at the BBC Open University Production Centre, producing audio, video and interactive multimedia in Mathematics, Science and Media Design. Also, over 10 years, he was the Senior Instructor in a three-month annual course for overseas producers of educational video.

Subsequently, as a freelance consultant, he has conducted over 60 workshops in 36 countries. He has also produced video/print and AV teacher training materials and trained producers of same in UK, Vietnam, China, Kenya and Nigeria.

He has published many papers and instructional texts, plus a book, Designing Video and Multimedia for Open and Flexible Learning, Routledge 2006, reprinted 2009.

Currently he is an Online Professor at University of the Philippines OU.

Origin of the Workshop

Based on the workshop facilitator's course, Scriptwriting for Effective Instructional Video, for the University of the Philippines OU. In that Course, two Lessons prepare students for their final Scriptwriting Project:

Lesson 1's six videos analyse 42 video clips (from existing instructional videos) that exemplify **34 Potent Pedagogic Roles/Techniques**, through which video can achieve **learning objectives** more effectively than other media:

1.Facilitate COGNITION	2. Provide EXPERIENCES, otherwise inaccessible	3. Nurture AFFECT	4. Show SKILLS
1 composite images 2 animated diagrams 3 visual representation analogy, metaphor 4 illustrating concepts 5 modelling 6 juxtaposition 7 condensing time 8 audio-track reinforce 9 narrative power	1 movement 2 viewpoints 3 places 4 3D 5 slow/fast motion 6 people/animals interact 7 chronological sequence 8 resource material 9 rare events 10 staged events	1 galvanize / spur 2 motivate a strategy 3 appetite to learn 4 change attitudes 5 alleviate isolation 6 reassure, self-efficacy 7 authentic abstractions 8 sense of importance	1 manual/craft 2 agility 3 reasoning 4 interpersonal 5 expressive 6 studying 7 technical

The workshop starts with a quick taste of these Roles/Techniques, but fuller coverage will be for Lesson 2, where a

further six videos analyse 39 clips that illustrate **31 Pedagogic Video Design Principles**:

1. HOOK (a. capture b. retain interest) a. Shock / surprise / delight b. Suspense, entertain, engross / appetise	5. **SENSITISE** a. Priming b. Reassure / build confidence c. Personalise the teacher d. Music style & timing by design e. Consistent style
2. SIGNPOST (what's coming) a. Set the scene b. Signpost: what's coming later c. Chapter Heading: what's next? d. Heads-up: what to look out for	6. **ELUCIDATE** a. Vary tempo to indicate syntax b. Enhance legibility/audibility c. Maximise Cognitive Clarity d. Control pace, depth, breadth
3. **STIMULATE COGNITIVE ENGAGEMENT** a. Pose questions b. Encourage prediction c. Students' personal relevance	7. **REINFORCE** a. Repetition (with a new angle) b. Re-exemplify c. Words-image synergy d. Compare / Contrast e. Key-Word Text
4. **ENABLE CONSTRUCTIVE LEARNING** a. Words NOT DUPLICATING pictures b. Analogy and Metaphor c. Scaffold construction of knowledge d. Let students see the context e. Concretise / Activate their knowledge	8. **CONSOLIDATE** a. Recapitulate b. Summarise key features c. Integrate associated materials

Now that video is “easy" to produce, there is a proliferation of teaching/learning videos, but very little attention is paid to whether video is the most appropriate medium to achieve the professed objectives (the focus of Lesson 1's distinctive video Roles/Techniques) – and MORE IMPORTANTLY very little attention is paid to Pedagogic Video Design Principles that are necessary to achieve the learning potential of the above Roles/Techniques. These are the **31 Principles, in the above 8 categories**.

How the Workshop will be conducted

Following the brief taste of Lesson 1, the workshop facilitator will play a selection of the six videos in Lesson 2 of the UPOU Course and stop after each video to ask and answer questions, and to initiate discussion – mimicking the interactivity in the UPOU Course.

The whole content cannot be presented within 90 minutes; however, a Handout will summarise the missing content.

Objectives

Workshop Participants will be able to implement design principles to achieve the pedagogic potential of video.

References

The UPOU Course, and the derived workshop above, update the central content of the author's book, Designing Video and Multimedia for Open and Flexible Learning, Routledge 2006/9.

Workshop F

The State of Digitisation in the German Education Sector - An Overview

Facilitated by Johannes Schmied

Johannes Schmied - heads the editorial department of MedienLB, the German market leader for digital, audiovisual and interactive teaching media

How the Workshop will be conducted

In an outlook, MedienLB's participation in the BIRD project of the Federal Ministry of Education and Research will be presented, as well as the vision of a European education platform.

The workshop gives an overview of the state of digitization in the German education landscape.

Main part of the Workshop is creating own interactive tasks with a very simple Program, called H5P.

Workshop G

AI Chatbot - Use and Design for Education

Facilitated by Dr Huiyu Zhang, Dr Linda Fang, and Ester Goh

Temasek Polytechnic, Singapore

Background

Chatbots, which are conversational interfaces that answer questions and guide users to execute simple tasks. Enterprises use them to support business needs to improve customer service 24/7. Some are more useful than others. Artificial Intelligence (AI) chatbots have begun to be used in education as well in the following ways:

- Teaching and Learning, to deliver course content, e.g. A Conversational Assistant on Mobile Devices for Primitive Learners of Computer Programming (Lin & Tsai, 2019)
- Admin: Deliver info related to academic processes, scholarship, tuition fee, etc, e.g. Intelligent assistants in higher-education environments: the FIT-EBot, a chatbot for administrative and learning support (Hien et al, 2018)
- Assessment: Administer quiz, collect results and send to tutors e.g. Co-design for a competency self-assessment chatbot and survey in science education (Durall & Kapros, 2020)
- Advisory: Deliver education & career guidance/ job trends e.g. Career Counselling Chatbot Using Cognitive Science and Artificial Intelligence (D'Silva et al, 2020)
- R and D: Deliver necessary guidelines towards a successful research output e.g. Enhancing the Academic Library Experience with Chatbots: An Exploration of Research and Implications for Practice (Mckie & Narayan, 2019)

However, are educational institutions ready for chatbots as effective learning tools? Are there chatbots that can reduce cognitive load demands, and improve student engagement and motivation? Are they

effective in supporting learning of large number of users while lessening a lecturer's workload at the same time? Not all chatbots work well; some are much beloved than others, while others simply fail miserably to connect with users.

Learning Outcomes

This workshop will introduce the purposes for using educational chatbots. It will briefly review the uses of AI chatbots in Temasek Polytechnic, Singapore that were trialed:

- EXCEL Bot: To learn Microsoft Excel (Skills) independently
- APA Bot: For correction of errors following APA style
- Social Media Analytics (SOMA) Bot: Supplementary content for appropriate software use
- Airline Management (ALMGT) Bot: Supporting project work (to run an airline).

Various features of the chatbot to support the various objectives would be highlighted. Participants will then begin by experiencing using one chatbot and discuss on how to integrate it into the classroom or use it for independent learning. They will examine the key design principles and a chatbot design model to promote learning anytime anywhere, using self-regulated learning strategies. Finally, participants will also engage in a hands-on practice on how to transform chatbot logs to gain insights of students' attempts at learning. All interactive activities will be conducted using online tools such as like ClassPoint and Padlet.

Who should attend

This workshop is open to educators who are interested to harness the power of AI Chatbot to provide focused, personalised, learner-control online learning. It does not matter whether the participant is a tutor, module leader or course leader. Any prior experience will be tapped upon throughout the workshop to illustrate concepts and connect techniques to their roles in education.

Keywords: Chatbot, Self-regulation, Technology-enhanced learning, Engaged learning, Motivation

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