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BOOK OF ABSTRACTS

Edited by
Mafalda Carmo



**International Conference on
Education and New Developments
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World Institute for Advanced Research and Science (WIARS), Portugal

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BRIEF CONTENTS

Foreword	v
Organizing and Scientific Committee	vii
Sponsor	xi
Keynote Lecture	xiii
Index of Contents	xv

FOREWORD

Dear Colleagues,

We are delighted to welcome you to the International Conference on Education and New Developments 2024 - END 2024, held in Porto, Portugal, from 15 to 17 of June 2024.

Education is a fundamental right that accompanies us from the very beginning of our lives. It encompasses every experience we encounter, influencing and shaping our thoughts, emotions, and actions. Whether we engage in formal education within classrooms or learn from the world around us, the process of acquiring knowledge plays a vital role in our personal growth and development. It equips us with the tools to navigate the complexities of life, broadens our perspectives, and empowers us to make informed decisions. This International Conference seeks to provide some answers and explore the processes, actions, challenges and outcomes of learning, teaching and human development. Our goal is to offer a worldwide connection between teachers, students, researchers and lecturers, from a wide range of academic fields, interested in exploring and giving their contribution in educational issues.

We are delighted to have successfully facilitated connections among academics, scholars, practitioners, and individuals who share a common interest in a field abundant with fresh perspectives, ideas, and knowledge. Our event has attracted a diverse range of contributors and presenters, enriching our understanding of human nature and behavior by showcasing the influence of their unique personal, academic, and cultural backgrounds. This diversity is a testament to the international reach of our conference, fostering multi-disciplinary collaborations and fostering intellectual growth and exchange.

END 2024 received 729 submissions, from more than 50 different countries, reviewed by a double-blind process. Submissions were prepared to take form of Oral Presentations, Posters, Virtual Presentations and Workshops. The conference accepted for presentation 284 submissions (39% acceptance rate).

The conference also includes one Keynote presentation by Dr. Ipek Kocoglu, Kean University, USA. We would like to express our gratitude to our invitee.

This volume is composed by the abstracts of the International Conference on Education and New Developments (END 2024), organized by the World Institute for Advanced Research and Science (W.I.A.R.S.). This conference addressed different categories inside the Education area and papers are expected to fit broadly into one of the named themes and sub-themes. To develop the conference program, we have chosen four main broad-ranging categories, which also covers different interest areas:

- In **TEACHERS AND STUDENTS**: Teachers and Staff training and education; Educational quality and standards; *Curriculum* and Pedagogy; Vocational education and Counselling; Ubiquitous and lifelong learning; Training programs and professional guidance; Teaching and learning relationship; Student affairs (learning, experiences and diversity; Extra-curricular activities; Assessment and measurements in Education.
- In **PROJECTS AND TRENDS**: Pedagogic innovations; Challenges and transformations in Education; Technology in teaching and learning; Distance Education and eLearning; Global and sustainable developments for Education; New learning and teaching models; Multicultural and (inter)cultural communications; Inclusive and Special Education; Rural and indigenous Education; Educational projects.
- In **TEACHING AND LEARNING**: Critical, Thinking; Educational foundations; Research and development methodologies; Early childhood and Primary Education; Secondary Education; Higher Education; Science and technology Education; Literacy, languages and Linguistics (TESL/TEFL); Health Education; Religious Education; Sports Education.

• In **ORGANIZATIONAL ISSUES**: Educational policy and leadership; Human Resources development; Educational environment; Business, Administration, and Management in Education; Economics in Education; Institutional accreditations and rankings; International Education and Exchange programs; Equity, social justice and social change; Ethics and values; Organizational learning and change, Corporate Education.

The abstracts of this book comprise the outcomes of research and development efforts undertaken by authors who have dedicated themselves to advancing research methods intertwined with teaching, learning, and practical applications in today's educational landscape. These abstracts showcase the different variety of contributors and presenters who will expand our understanding of educational matters by sharing their unique personal, academic, and cultural perspectives. Through their valuable insights and experiences, they enrich our exploration and contribute to the growth of educational discourse in our contemporary world.

We would like to express thanks to all the authors and participants, the members of the academic scientific committee, and of course, to our organizing and administration team for making and putting this conference together.

Hoping to continue the collaboration in the future.

Respectfully,

Mafalda Carmo
World Institute for Advanced Research and Science (WIARS), Portugal
Conference and Program Chair

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KEYNOTE LECTURE

“REVOLUTIONIZING LEARNING: THE IMPACT OF ARTIFICIAL INTELLIGENCE ON EDUCATIONAL PARADIGMS”

Dr. Ipek Kocoglu
Kean University, USA

Abstract

The integration of Artificial Intelligence (AI) in education is revolutionizing traditional teaching methods and curriculum development by facilitating personalized and adaptive learning experiences. This research paper explores the transformative role of AI in enhancing educational paradigms by optimizing learning outcomes tailored to individual needs. Drawing from a range of studies, the paper examines the effectiveness and challenges of AI applications within various educational settings. Our findings indicate that AI significantly boosts educational performance by adapting content delivery to match individual learning styles and needs, thus reshaping educational strategies and personalizing the learning experience. Furthermore, AI-driven adaptive learning systems not only customize educational content but also streamline administrative tasks for educators, enhancing overall efficiency. However, this technological advancement also introduces challenges, including ethical concerns and privacy issues that necessitate thorough scrutiny and careful implementation. The paper emphasizes the importance of comprehensive teacher training and ongoing ethical evaluation to ensure responsible use of AI in education. Through a nuanced understanding of AI's potential and limitations, this study provides actionable insights for educators and policymakers aiming to harness AI technologies to foster more dynamic and responsive educational environments.

Keywords: Artificial intelligence, adaptive learning, educational technology, curriculum development.

Biography

Dr. Ipek Kocoglu is an assistant professor of Strategy and Organization Theory in the Department of Management at Kean University. Following her doctoral studies in Management and Organization Theory, Dr. Kocoglu completed her post-doctoral research at Stevens Institute of Technology through a prestigious fellowship. She combined her background in industrial engineering and technology and innovation management to advance a framework that uses abductive research for new idea generation. Dr. Kocoglu's research focuses on gender diversity and sustainability. She has published in top-tier journals listed in the Financial Times 50 including the Academy of Management Review, The Leadership Quarterly, Management Decision, International Journal of Production Research, and Engineering Management Journal. Her research addresses critical issues like the effect of social context on women leaders' perceived competence, and the impact of extreme threats on organizational risk-taking. In her recent project Dr. Kocoglu develops a framework for digital sustainability solutions by leveraging Information Systems to mitigate the effects of climate change. Her contributions to academia have earned her numerous accolades, including the Excellence in Scholarship Award from Kean University and the Eschenbach Award for Best Paper from the American Society of Engineering Management. A recognized leader in open education, Dr. Kocoglu has been instrumental in pioneering the Open Education Resources (OER) conference at Kean University. She passionately advocates for using OER to close the educational equity gap for minorities and first-generation students. Dr. Kocoglu continues to inspire students in courses on entrepreneurship, organizational behavior, and strategic management. She is the author of a textbook on Organizational Theory and several influential book chapters on digital business models and strategies for developing digital government platforms. Beyond her academic achievements, Dr. Kocoglu serves as the Global Ambassador for inclusive research at the Diversity, Equity, and Inclusion Division of the Strategic Management Society. She is an active reviewer for esteemed journals, including Academy of Management Discoveries and Management Decision. Dr. Kocoglu's research has garnered over a thousand citations and has been featured in popular media such as Psychology Today, underscoring their impact on both academic and public spheres.

INDEX OF CONTENTS

ORAL PRESENTATIONS

Teachers and Students

Development of didactics and pedagogy in the Danish pedagogy program through craft activities	3
<i>Astrid Margrehe Hestbech, & Louise Hvitved Byskov</i>	
Pre-service teachers' knowledge base for teaching mathematics: The development of syntactic and substantive knowledge	3
<i>Natalia Karlsson, & Wiggo Kilborn</i>	
Critical thinking in learning process of math in grades 5-6 in Latvia	4
<i>Rima Rieksta</i>	
One won't fit all: Designing a collaborative writing model to promote L2 writing for low-level learners	4
<i>Ngan Leng Mak</i>	
Nurturing future educators: Exploring new frontiers of collaborative teacher training model	5
<i>Noam Topelberg</i>	
Adopting ChatGPT technology approaches in professional music training – The TUT experience	5
<i>Hua Hui Tseng</i>	
Future teachers' knowledge, attitudes and practice regarding sustainable development goals	6
<i>Alena Letina, & Marina Diković</i>	
Imaging future sexuality educators: Attitudes and opinions of student teachers at Sapienza towards sexuality education	6
<i>Valeria Bruno, Roberto Baiocco, & Jessica Pistella</i>	
The training of the socio-pedagogical professional educator: An overview of the European context	7
<i>Maria Grazia Rionero</i>	
Training the media-educational habitus: 21st century skills in digital didactic settings in teacher education	8
<i>Gudrun Marci-Boehncke, & Matthias O. Rath</i>	
The association between perceived discrimination profiles and career aspirations and expectations of high school students	8
<i>Sabrana Dorceus</i>	
Black learners' experiences of racism at historically white schools	9
<i>Anthony Mpsi, & Gregory Alexander</i>	
Drawing and writing about friendship as a way to support social inclusion in primary grades	9
<i>Tiiu Tammemäe, Egle Hollman, Mari-Liis Lind, & Helin Puksand</i>	

Teaching science through humanising pedagogies: The South African perspective <i>Tholani Tshuma</i>	10
Qualitative framework: An approach to the evaluation of student’s written outputs <i>Imelda Braganza-Valera</i>	10
Teaching fractions and the concept of inverse operations: Scientific concepts in pre-service teachers’ learning of mathematics for teaching purposes <i>Natalia Karlsson, & Wiggo Kilborn</i>	11
Gender and students’ mathematical literacy abilities <i>Eleni Nolka, & Chryssa Sofianopoulou</i>	11
Phonological-orthographic stimulation program for schoolchildren with learning difficulties <i>Livia Nascimento Bueno, & Simone Aparecida Capellini</i>	12
Facilitating flexible learning experiences <i>Raluca Gera</i>	12
Current and prevalent technologies in web curriculum <i>Ronald J. Glotzbach</i>	13
Unlocking creativity: Knots and Sona drawings in mathematics teacher professional development <i>Andreia Hall, Ana Breda, Paula Carvalho, & Sónia Pais</i>	13
Post-teaching observation feedback in the United Arab Emirates: College mentor and student-teacher perspectives <i>Sarah Hyde</i>	14
Argumentation, decision-making and environmental literacy <i>Rola Khishfe</i>	15
Importance of facilitating cross-cultural online discussion <i>Tricia Hudson-Matthew, & Shawn Worthy</i>	15
Peer mentoring in multidisciplinary final bachelor’s thesis of engineering studies <i>María González Alriols, Eneritz Onaindia, José David Nuñez, Isaac Barrio, Ainara Sánchez, & M. Mirari Antxustegi</i>	16
Preparing teachers to work with multilingual learners through distance learning <i>Silvana M. R. Watson, & Tara S. Donahue</i>	17
On scoring competence <i>Magne V. Aarset, & Stig Ytterstad</i>	17
The impact of a first-year orientation team-building event <i>John Smallwood, & Chris Allen</i>	18
Guess who's coming to dinner! The impact of (virtual) guest speakers in a business class: A student perspective <i>Ann Kirby, & Brian Turner</i>	18
Perceptual-visual-motor skills and speed and legibility of handwriting in mixed subtype dyslexia <i>Natália dos Santos, Monique Herrera Cardoso, Ilaria D’Angelo, Noemi Bianco, Catia Giaconi, & Simone Aparecida Capellini</i>	19

The contribution of a collaborative approach in understanding resistance factors when implementing change	19
<i>Marie Brûlé, Chantal Viens, Julie Larochelle-Audet, Andréanne Gélinas-Proulx, & Laurie Carlson Berg</i>	
Enhancing academic integrity through UDL designed authentic assessment: A case study	20
<i>Susan Gottlöber</i>	
Increasing geometric literacy skills of future mathematics teachers through 3D printing activities in GeoGebra environment	21
<i>Lilla Korenova, & Angelika Schmid</i>	
 <u>Projects and Trends</u>	
The values and legal issues of authentic data sources in computer education and research	22
<i>Júlia Csernoch, & Mária Csernoch</i>	
Perspectives of learners in making schools more inclusive spaces	22
<i>Thabo Makhalemele, Rachel Rirhandzu Mayimele, & Pateka Pamella Jama</i>	
Evaluating the impact of project-based learning on the development of digital competences among high school students	23
<i>Borislava Kirilova</i>	
Math's and special teacher collaboration to improve students' math skills using the smart balance board	23
<i>Baiba Blomniece-Jurāne, & Rima Rieksta</i>	
Providing experiential learning opportunities in mechatronics: Teleoperated robotic workcell research and development	24
<i>Aleksandr Sergeyev, Mark Kinney, Michael Masters, Scott Kuhl, Bester Mangisoni, & Vinh Nguyen</i>	
Teaching comic performance on the college level: A holistic approach	24
<i>Charlie Mitchell</i>	
Large language models in the engineering workplace and associated curricular implications: An exploratory study	25
<i>Jeroen Lievens</i>	
Intercultural translation - Achieving dynamic equivalence in translating specific terms of material and spiritual culture	25
<i>Darinka Marolova, Ana Vitanova Ringaceva, Dragana Kuzmanovska, & Biljana Ivanova</i>	
Sustainable leadership and innovative learning environments	26
<i>Mervi Varhelahti, & Maarit Laiho</i>	
Autism spectrum disorders and AI: Applications and areas of promise	26
<i>Eva N. Patrikakou</i>	
Digital subject integration: History turned into graphics	27
<i>Mária Csernoch, & Júlia Csernoch</i>	
Nurturing equality and collaborative learning: A case study of student volunteers and coordinators' relationship dynamics	27
<i>Nadja Čekolj, & Bojana Čulum Ilić</i>	

The 'encounter' between posthumanism, technology and education	28
<i>Valerija Vendramin</i>	
Transformation of marketing and sales roles in B2B companies: Implications for higher education	28
<i>Andreas Zehetner, & Daniela Zehetner-Hirtenlehner</i>	
When quantity fosters quality: B-learning as a way to achieve the higher education purpose	29
<i>Maria Cadilhe, Ana I. Rodrigues, Constança Dias, & Marta Santos</i>	
Classroom connections across continents: The intersection of instructional design, inclusion and global education	29
<i>Jay Woodward, Noelle Sweany, & Erinn Whiteside</i>	
Training and inclusion: The importance of preparation to use the Lego braille bricks kit in an inclusive classroom	30
<i>Elisa Tomoe Moriya Schlünzen, Cícera Aparecida Lima Malheiro, Daniela Jordão Garcia Perez, & Carmem Silvia de Souza Lima</i>	
What makes a good instructional video? Theoretical vs. empirical approach to understanding what students and teachers like about instructional videos	31
<i>Sissy Bücken, Hanna Höfer, & Gudrun Marci-Boehncke</i>	
The metaphor of the polyhedron: What do teachers think about the quality of education in Colombian rurality?	31
<i>Ruth Esperanza Quintero, & Carola Hernández</i>	
Ethics of generative AI use in higher education: A focus group study	32
<i>Shruthi Venkat</i>	
ChatGPT as tutor? A case study on competitive programming	32
<i>Juuso Ryttilahti, & Erno Lakkila</i>	
Is homeschooling detrimental to socioemotional development? An exploratory study with Spanish school-age children	33
<i>Marta Giménez-Dasí, Renata Sarmiento-Henrique, & Laura Quintanilla</i>	
Artificial Intelligence revolutionizing online education	33
<i>Sasa Arsovski, Wee Chuen Tan, Sanja Spanja, & Graeme Britton</i>	
Better than before: Building on experiences regarding school to home engagement in a post Covid-19 pandemic world	34
<i>Kathy R. Fox</i>	
Navigating polycrisis: The role of school pedagogues in Croatia	34
<i>Ivana Miočić</i>	
Generative AI-chatbots in higher education: Challenges and opportunities in student motivation and authentic assessments	35
<i>Patricia Brockmann, & Heidi Schuhbauer</i>	
Adapting a business plan implementation as an instructional method	35
<i>Luis Rodrigo Valencia Pérez, Gibrán Aguilar Rangel, & Martín Vivanco Vargas</i>	
The mathematics that the sea conceals - Connections for the teaching of mathematics	36
<i>Silvia Frade, Andreia Hall, & Sónia Pais</i>	

Collaborative networks of knowledge	36
<i>Raluca Gera, Mark Reith, D'Marie Bartolf, Simona Tick, & Akrati Saxena</i>	
International cooperation actions for the systematization of a sign language generator and publisher	37
<i>Klaus Schlünzen Junior, Cícera Aparecida Lima Malheiro, Mario Chacón Rivas, & José Roberto Barboza Junior</i>	
Art for everyone: Education to promote beauty in society	37
<i>Graeme Britton</i>	
Artificial Intelligence (AI) enhanced nexus learning approach as an example of student-centered learning	38
<i>Les M. Sztandera, & Katherine I. DiSantis</i>	
Towards intercultural communicative competence: Zoom exchange between U.S. and French university students	38
<i>Ana Fonseca Conboy</i>	
Exploring flipped classroom and continuous assessment – A case study involving generation Z undergraduate tourism students	39
<i>Sónia Pais, Andreia Hall, & Ana Elisa Sousa</i>	
Ads and monetization diminish web experiences	39
<i>Ronald J. Glotzbach</i>	
Agile learning: Use of Eduscrum in higher education	40
<i>Heidi Schuhbauer, Patricia Brockmann, & Sebastian Schötteler</i>	
Utilizing learning analytics in large online courses	40
<i>Erkki Kaila, Juuso Ryttilahti, & Erno Lokkila</i>	
SME responsibility and learning by developing pedagogy	41
<i>Suvi Sivén, & Taina Lintilä</i>	
Bridging the career readiness gap: Examining the promise of virtual internships	41
<i>Laura McNeill, & Mohammad Mohi Uddin</i>	
E-learning courses on sustainability: Tools, assessment and verification	42
<i>Marcin Fojcik, Anna Zaslona, & Gabriela Laskowska</i>	
Teacher wellbeing and retention: The impact of rapidly transforming learning and teaching with digital technologies	42
<i>Shaun Nykvist, Inger Langseth, & Christine Nykvist</i>	
S.T.E.A.M. and D.D.A.T.A.: A multisensory approach to music and development of skills among students with intellectual disabilities	43
<i>Ioannis Makris</i>	
Potential of haptic features in mobile learning: A case study based on a language learning app	43
<i>Sigrid Schefer-Wenzl, Igor Miladinovic, & Christina Muckenhumer</i>	
Ecodesign as a new possibility in teaching technical subjects in secondary schools	44
<i>Tetjana Tomášková, Daniel Duda, Jan Krotký, & Jarmila Honzиковá</i>	
Collaborative learning in computer science: A case study of cross-university interdisciplinary hackathons	44
<i>Heimo Hirner, Leon Freudenthaler, Bernhard Taufner, Sigrid Schefer-Wenzl, Igor Miladinovic, & Nikolaus Forgó</i>	

Pedagogic innovation for epistemic access in multicultural and multilingual contexts in Southern Africa	45
<i>Maryna Reyneke, Kotie Kaiser, Rosemary Wildsmith-Cromarty, & Dolly Dlavane</i>	
Mechanics and the human body: Hands on and simulation approach to measure deltoid force	45
<i>Hashini Mohottala, Joseph Lothamer, Dan Martin, & Agnieszka Machowski</i>	
Understanding the impact of intercultural project-based learning on students, staff and higher education institutions	46
<i>Manfred Meyer</i>	
Learner empowerment: The case for teachers deploying democratic leadership	46
<i>Sanjay K. Nanwani</i>	
Creativity in education: Bite-size video's impact on student engagement and satisfaction	47
<i>Hassiba Fadli</i>	
The impact of digital literacy developed during the pandemic on teachers' post-pandemic beliefs	47
<i>Janaina Cardoso</i>	
Short active-learning workshops for graduate students have a long-term impact in STEM teaching	48
<i>Marcos Nahmad</i>	
Navigating the hybrid Ph.D. experience: New insights from student voices	48
<i>Laura McNeill, Bernadette Beavers-Forrest, Margaret Rice, Angela Benson, & Stephen Abu</i>	
Serious fun with maths: Games that engage and teach	49
<i>Andreia Hall, Sónia Pais, Paola Morando, & Maria Luisa Sonia Spreafico</i>	
Bridging play and inclusion: A qualitative investigation into accessibility challenges and innovations in board game design	49
<i>Joana Barros, Carla Sousa, & Filipe Luz</i>	
Learning videos from a student's perspective	50
<i>Bjarte Pollen, Joar Sande, Lars Kyte, Per Eilif Thorvaldsen, Sven-Olai Høyland, & Marcin Fojeik</i>	
Digital technologies in active and self-directed learning	50
<i>Ester Aflalo</i>	
Metaverse education: Immersive VR exploration of mountain heritage and culture	51
<i>Carlotta Bin, Margherita Cassis, & Anna Osello</i>	
Unleashing personalized education using large language models in online collaborative settings	51
<i>Jose Ochoa-Luna, & Manfred Meyer</i>	
Collaborative problem solving and the challenge of assessing transversal skills	52
<i>Patricio Cabello, Alessandra Díaz, Macarena Salas, Pía Barahona, Patricio Felmer, & Armin Jentsch</i>	
Language comprehension of first graders in inclusive classrooms – Survey and implications for teacher professionalization	52
<i>Anne-Katrin Swoboda</i>	

“Flipped communities before flipped classrooms”: Context and content as barriers of flipped classroom approaches in South African universities	53
<i>Thuthukani Dlamini</i>	
Multiculturalism and multilingualism in ethnic Romanian communities in historical provinces	53
<i>Georgiana Ciobotaru</i>	
Barriers to learning Romanian by ethnic Gagauz and Bulgarians from the autonomous territorial unit of Gagauzian, Republic of Moldova	54
<i>Gina Aurora Necula</i>	
<u>Teaching and Learning</u>	
“Opening minds”: The impact of a culturally and linguistically immersive teaching experience for pre-service teachers	55
<i>Cory A. Bennett, Wendy Ruchti, & Mona Nelson</i>	
Socio-economic status and students’ mathematical literacy abilities	55
<i>Eleni Nolka, & Chryssa Sofianopoulou</i>	
Giving thanks is the key to transform things that happened into good things and positive emotions	56
<i>Wei-Yu Liu</i>	
An empirical research to re-contextualise the idea of care in preschool education	56
<i>Ilaria Mussini</i>	
Early marriage as a huge problem against education and career development	57
<i>Melano Beridze, & Nano Patchkoria</i>	
Generative Artificial Intelligence (AI) in education: A cross-national survey on university teachers’ perceptions on the use of ChatGPT	57
<i>Kavita Karan, & Wellars Bakina</i>	
Which is more difficult, listening or reading?	58
<i>Helin Puksand, Tiiu Tammemäe, Kerli Haav, & Erika Klettenberg</i>	
Rethinking the landscape of higher education in the brave new world of our times	58
<i>Teresa Toldy, & Susana Teixeira</i>	
A digital tool to help work-oriented project studies in higher education institutions	59
<i>Taina Lintilä, Tuija Marstio, & Suvi Sivén</i>	
Integrating the arts into kindergarten curriculum: A case study with children in Croatia	59
<i>Zlata Tomljenović, Aleksandra Smolić Batelić, & Svetlana Novaković</i>	
Zoonym phraseological units as hate speech in youth vocabulary	60
<i>Ana Vitanova Ringaceva, Darinka Marolova, Dragana Kuzmanovska, & Biljana Ivanova</i>	
Vernacular and dominant literate practices in Latin American scientific literature	60
<i>David Alberto Londoño-Vásquez, & Alvaro Ramírez-Botero</i>	
Qualitative exploration of higher education students' approaches reflecting their executive functions in challenging study tasks	61
<i>Diane M. Manuhuwa, Simone M. Hanegraaff, Johanna Schönrock-Adema, Sjoerd J. De Vries, Jan Willem de Graaf, & Joke Fleer</i>	

Discovering statistical misconceptions as students create notes for tests! <i>Anne D'Arcy-Warmington</i>	61
Effective Teams Workshop: A case study in higher education to teach teamwork competency <i>Liliana Maritza Melo Ramos, Carola Hernández, & Marco Antonio Azuero Isaza</i>	62
Games and calculus <i>Maria Paula Oliveira</i>	63
A web and simple clicks to understand chemical concepts <i>Albert Poater</i>	63
Interactive project-based teaching – Meeting the challenges of the coming generations of students <i>John Lindgren, & Anna Isaksson</i>	64
Co-constructing and evaluating an endocrine disruptor education program for teenagers in schools: The COPE-ADOS program <i>Véronique Regnier Denois, Laetitia Marcucci, Camille Lassalle, Clarisse Russias, & Julien Masson</i>	64
Fostering inclusive early childhood education through the pedagogy of play <i>Marinda Neethling</i>	65
 <u>Organizational Issues</u>	
What data and data tools are most necessary to make policy and programmatic decisions? <i>Dawn Thomas, Ricardo Covarrubias Carreño, & Keith Hollenkamp</i>	66
The open recruitment system for principals in Korea <i>Yueh-Chun Huang, & Ru-Jer Wang</i>	66
Incrementa Atque Decrementa ... Managing the university research centres: Three cases and a common management issue <i>Cezar Scarlat</i>	67
From underperforming to well-performing historically disadvantaged secondary schools: Lessons from four self-initiated turnaround success cases <i>Mgadla Isaac Xaba, & Lloyd Conley</i>	67
Racial diversity plans in K-12 schools: How litigation continues to shape policy <i>Suzanne Eckes</i>	68
Facilis Descensus Averno or interactions of doctoral research projects with university's other projects <i>Cezar Scarlat</i>	69
Teachers as creators of scientific school culture <i>Agnese Davidstone, & Vineta Silkane</i>	69
How to increase faculty skills for a new approach to transformative evaluation in universities <i>Laura Mion</i>	70

POSTERS

Teachers and Students

- Factorial structure validation of the Entrepreneurship Qualities Questionnaire 2.0** 73
Eric Yergeau, Mathieu Busque-Carrier, Marcelle Gingras, & Frédérique Lépine
- Development of an assessment method for individual grading of a group project work** 73
Göran Fafner, & Valentina Haralanova
- Domain of cognitive-linguistic, reading and writing skills of Brazilian students in the initial literacy phase in the post-pandemic context** 74
Caroline Fernandes Brasil, Stephany Schunemann, Patrícia Mendes Comassio, & Simone Aparecida Capellini
- Exploring interactive online script creation as a novel assessment method in higher education** 74
Tobias Baumeister, Sascha Hofmann, Thomas Kob, & Dietmar Fey
- Perceptions of competencies among in-service socio-pedagogical professional educators: A nationwide exploratory survey** 75
Maria Grazia Rionero, Patrizia Sposetti, & Giordana Szpunar
- Assessment of numerical cognition in preschoolers: Pilot study to verify the applicability of the developed instrument** 75
Silvia Cristina de Freitas Feldberg, Rita dos Santos de Carvalho Picinini, & Simone Aparecida Capellini
- Project based learning in mechanical engineering education** 76
Valentina Haralanova, Samir Khoshaba, & Göran Fafner
- FLU-EM – Assessment of handwriting fluency: Development through criteria and agreement among judges** 76
Monique Herrera Cardoso, Priscila Biaggi Alves de Alencar, & Simone Aparecida Capellini
- The role of authentic experiences in foreign language learning: Road trips as a way to grasp the soul of a target language** 77
Alexandra-Monica Toma

Projects and Trends

- Impacts of arts-based Ecopedagogy in sustainable residential food waste management** 78
Joseph Harding
- An innovative model for higher education** 78
Ivan Katrencik, & Monika Zatrochova
- VIBE – Virtual Reality in STEM education** 79
Joana Carrilho, Daniela Melo, Margarida Borges, Luis Midão, Matuz Andras, & Elisio Costa
- Assessing skills transfer from computer gaming to academic learning: An experimental design** 79
Björn Sjödén, & Michael Trotter

Demonstration of time-symmetry breaking in a jet flow	80
<i>Daniel Duda, Tetjana Tomášková, Vitalii Yanovych, Jan Krotký, & Václav Uruba</i>	
Life cycle assessment of a product from 3D printer as a new tool for school	80
<i>Tetjana Tomášková, Daniel Duda, Jan Krotký, & Jarmila Honzиковá</i>	
Definitions matter! How one state is attempting to standardize data definitions	81
<i>Dawn Thomas, Kevin Dolan, & Keith Hollenkamp</i>	
School experiences of a multilingual elementary student on the autism spectrum – A case study	81
<i>Christina Sophia Gilhuber</i>	
Development of time management as generic competence in an engineering degree: First results	82
<i>Francisco David Trujillo-Aguilera, & Elidia Beatriz Blazquez-Parra</i>	
Telerehabilitation: Current status from the perspective of two Erasmus+ projects	82
<i>Elena Taina Avramescu, & Mariya Hristova Monova-Zheleva</i>	
Metaphonological stimulation, alphabet knowledge and vocabulary program (PEMAV) for preschoolers: Elaboration and pilot study	83
<i>Denise Corrêa Barreto Tirapelli, & Simone Aparecida Capellini</i>	
Mobile information technologies as a key factor of modern learning policies	83
<i>Irena Peteva, Elisaveta Tsvetkova, & Stoyan Denchev</i>	
Developing educational tools for effective teaching industrial robotics in two- and four-year degree institutions	84
<i>Mason Petersen, Prarthana Hedge, Ravi Thakur, Brendon Lakenen, & Aleksandr Sergeev</i>	
Post-Covid-19 pandemic online education in Latin America: A systematic review of literature	84
<i>Salvador Antelmo Casanova-Valencia, Arcadio González-Samaniego, Marco Alberto Valenzo-Jiménez, & Bertha Molina-Quintana</i>	
Challenges and opportunities in faculty training on active learning to deliver critical thinking for undergraduate biology students	85
<i>Marcos Nahmad, Marco Carballo-Ontiveros, & América Castañeda-Sortibrán</i>	
Readiness to implement education for sustainable development: Student teachers' perspective	85
<i>Nena Vukelic</i>	
Integrating innovative technologies and pedagogies in higher education: Enhancing problem-solving abilities	86
<i>Boguslawa Lightbody</i>	
Diversity and inclusion: Transformations and perspectives of physical education as an integral part of the contemporary educational portfolio	86
<i>Gheoghe Braniste</i>	
Reforming the higher education system in the Republic of Moldova. Overview of physical education and sport under the imperative of the EU candidacy	87
<i>Viorel Dorgan</i>	

Teaching and Learning

- Empowering elementary school teachers through interdisciplinary place-based curriculum in Taiwan** 88
Huei Lee, & Chia-Ling Chiang
- Fostering critical thinking: Aligning assessment with educational expectations** 88
Kathleen A. Siren
- ‘Get me involved and i will learn it’. Service-learning case of study at university** 89
Tamara Robledo Carranza, & Jorge Martín Dominguez
- Adopting consensual behaviours: A lesson plan** 89
Eleni Varlami, Konstantinos Papakostas, Petros Karampet, Petros Christakopoulos, & Lefkothea-Vasiliki Andreou
- Behavioral rating scale for internalizing and externalizing problems in academic skills in Brazilian schoolchildren** 90
Graziele Kerges-Alcantara, & Simone Aparecida Capellini
- Screening for difficulties in mathematical learning: Elaboration and pilot study** 90
Rita dos Santos de Carvalho Picinini, Simone Aparecida Capellini, & Giseli Donadon Germano
- How corpus linguistics can help promote health education: The case of schizophrenia** 90
James Balfour
- Challenges of online science teaching in primary schools during the Covid-19 pandemic** 91
Chia-Ling Chiang, & Huei Lee
- Good practices in teaching cognitive neuroscience to biology students in higher education** 91
Eleftheria Katsarou, Angeliki Boulala, Petros Karampet, & Lefkothea-Vasiliki Andreou
- Health and social care placements in today’s changing work environments: A grounded theory study** 92
Anna Fiorentino
- What do the learning diaries tell us about the language learning experience based on peer-teaching?** 92
Maarika Teral, & Raili Pool
- Listening to children’s perspective on their wellbeing in early childhood settings** 93
Anna Katharina Jacobsson

Organizational Issues

- Developing the early childhood participation data set** 94
Karla Andrew, Bryan Preston, & Kevin Dolan
- Generative mechanism in school improvement – A process study** 94
Anna Katharina Jacobsson
- Identifying knowledge gaps in managing premature children: A parental perspective study** 95
Ourania S. Kotsiou, Konstantinos I. Gourgoulianis, Livia Nagy Bonnard, Asta Speicyte Radzeviciene, Mandy Daly, Georgia Rapti, Dimitrios G. Raptis, Ioanna V. Papathanasiou, & Marie-Claude Esculier

'For the horse is drawn by the cart': The dividing line between academic process and regulation

95

Marc Alexander, & Jane Broad

VIRTUAL PRESENTATIONS

Teachers and Students

Investigating the impact of Gamma-Tutor on the development of technological Pedagogical Content Knowledge in chemistry teaching for science teachers	99
<i>Muthandwa Chinamhora Sincuba, Sakyiwaa Boateng, & Limkani Sincuba</i>	
The role of educators in service-learning pathways for student participation and teacher professional development	99
<i>Lorenza Orlandini, Patrizia Lotti, Chiara Giunti, & Massimiliano Naldini</i>	
Emotional regulation – A training program for teachers	100
<i>Eva Vancu, & Zuzana Hlinková</i>	
Putting theory and practice together in preservice teacher training courses. Is it possible?	100
<i>Teresa Lewin, Dina Ben Yaish, Barbara Shapir, Sofia Ben-Yair, & Samar Aldinah</i>	
Meeting students' expectations: Cultural insights for enhanced educational program management	101
<i>Anastasios Athanasiadis</i>	
Evaluation of learning outcomes in masters degree. The perception of the coordinators	101
<i>Joaquín-Lorenzo Burguera, María-del-Henar Pérez-Herrero, Marta Virgós-Sánchez, José Miguel Arias-Blanco, & Natalia Rodríguez-Muñiz</i>	
Early detection of STEM skills during secondary education. A weak signals approach	102
<i>Florentina Alina Grigorescu (Pîrvu), & Cezar Scarlat</i>	
Comparison of visual and phonological skills in dyslexia subtypes	102
<i>Giseli Donadon Germano, & Simone Aparecida Capellini</i>	
Absence/presence in 'green' imaginings of Indian schoolscapes	103
<i>Tanaya Vyas</i>	
Navigating the teachers' and the subject's identity: A case of social sciences	103
<i>Nokuthula Diborah Nkosi, Sheri Hamilton, & Valencia Tshinompheni Mabalane</i>	
The management of university social responsibility based on an appropriate policy on stakeholders	104
<i>Dolores Gallardo-Vázquez, & Cristina Nuevo-Gallardo</i>	
Custom-made course administration spreadsheets as an electronic gradebook alternative	104
<i>Brian G. Rubrecht</i>	
Dramatic arts' role in sustaining impactful education for community development amid 4IR challenges: A teacher's perspective	105
<i>Limkani Sincuba</i>	
Enhancing foreign language translation pedagogy through topology-imagery cognitive approaches	105
<i>Junwen Jia</i>	
Faculty development for emergency online teaching and learning: A case study	106
<i>Ashley Salter, & Shelly Wyatt</i>	

Expression of dialogue as an effective indicator of education quality in Lithuanian educational institutions	106
<i>Inesa Vietienė, & Zita Malcienė</i>	
The contribution of self-efficacy, emotion management, and mental resilience to fostering the educational climate among teachers in schools from Arab society in Israel	107
<i>Sehrab Masri, & Nayif Awad</i>	
Equity in the classroom for every child	107
<i>Delia Robinson Richards</i>	
Exploring pedagogical practices: Integrating ICT tools in grade 10 life sciences education	108
<i>Sam Ramaila</i>	
The role of the geography preservice teachers' service-learning in the development of map literacy	108
<i>Nokuthula Diborah Nkosi, & Memoona Mahomed</i>	
Exploring the existence of mathematics-sciences anxious-endemic equilibrium among pre-service physical sciences teachers: A pathway to building resilience among STEM students	109
<i>Sakyiwaa Boateng</i>	
Approaching sustainable development from a financial accounting perspective	109
<i>Dolores Gallardo-Vázquez, & Juan Vega-Cervera</i>	
Career management skills for vulnerable youth. A career guidance and vocational training point of view	110
<i>Natalia Rodriguez-Muñiz, Marta Virgós-Sánchez, María-del-Henar Pérez-Herrero, & Joaquín-Lorenzo Burguera</i>	
Pre-service teachers' understandings of how social values can be integrated in life sciences teaching and learning	110
<i>Eyitayo Julius Ajayi, & Lydia Mavuru</i>	
Parent's active role and specific involvement in child education: A South African teacher's perspective	111
<i>Limkani Sincuba, & Andrea Mqondiso Buka</i>	
Guiding first-year student teachers in the application of the skill of set induction in micro-teaching	112
<i>Ndoyisile Moses Majola, & Paseka Patric Mollo</i>	
Stabilising the link between secondary and higher education through lifelong learning programmes	112
<i>Vanya Dobрева, & Boriana Buzhashka</i>	
Facing the future: VET skills for today and tomorrow	113
<i>Denitsa Dimitrova, & Kamelia Nusheva</i>	
Impact of physical activity on the health status and quality of life of children and school adolescents	113
<i>Snezana Stavreva Veselinovska, Sonja Petrovska, & Despina Sivevska</i>	
The study of English listening problems of Thai EFL university students	114
<i>Waraporn Khampool</i>	
Learning through peer assessment: Student perceptions before and after participation	114
<i>Jonna Käpylä</i>	

Inclusive education and training during a pandemic and beyond - The new normal (identifying good practices)	115
<i>Kamelia Nusheva, & Boryana Yankova-Hadzhieva</i>	
Teachers' views on infusing IK into chemistry teaching at the junior secondary of Omusati region	115
<i>Tomas Asino, Kgomotsego Samuel, & Washington Dudu</i>	
Reminiscing training and special needs children	116
<i>Giulia Amorotti, Laura Guidotti, & Paola Corsano</i>	
Life sciences teachers' understandings of integration of indigenous knowledge when teaching biodiversity of plants	116
<i>Khetha Xolani Makhunga, & Lydia Mavuru</i>	
Teacher's views on challenges with the fostering of self-regulated learning skills and support from school management teams	117
<i>Keneilwe Agbenyegah, & Bernadette Geduld</i>	
Leveraging ICT tools for teaching and learning in the domain of physical sciences	118
<i>Sam Ramaila</i>	
Transforming the learning environment through interactive pedagogies	118
<i>Lydia Mavuru</i>	
Exploring the ontological boundary of metacognitive awareness of pre-service educators	119
<i>Matthews Makunye, Divan Jagals, & Julialet Rens</i>	
Creating safe spaces to teach and learn: The polyvagal theory in action	119
<i>Lynn Preston</i>	
Specific competencies of student teachers: Identification of professional educational needs	120
<i>Lucija Tomac, Renata Čepić, & Petra Pejić Papak</i>	
 <u>Projects and Trends</u>	
Framing family diversity in early years: An inquiry-based intervention on approaching same-sex parenting through picturebooks	121
<i>Christina Kalaitzi</i>	
Augmented reality glasses in class – Blessing or curse	121
<i>Verena Schmuck, Teresa Spiess, & Christian Ploder</i>	
Transformative family roles in child advocacy: Amplifying rights through awareness raising and capacity building in Lesotho	122
<i>Sonia Mairos Ferreira & Kimanzi Muthengi</i>	
Exploring the applicability of the question-prompting chatbot in PBL: Practitioner insights on goal setting and reflection	122
<i>Akiko Kai, Yuriko Ishida, & Ryuichi Matsuba</i>	
Enhancing academic writing in higher education: A mixed-methods study on student interactions with ChatGPT	123
<i>Christine Savvidou, & Katarzyna Alexander</i>	

How to develop scientific thinking in primary students by investigative environment <i>Caterina Bembich, & Valentina Bologna</i>	123
A synergetic design project to fortify the university-company collaboration <i>Xiaozhu Lin, & Matteo Oreste Ingaramo</i>	124
Pedagogical model for teaching sustainability in higher education: Engaging head, hands and heart <i>Jonna Käpylä, & Hannele Auvinen</i>	124
Learning traditional Hawaiian open-ocean navigation through immersive virtual reality storytelling <i>Dean Lodes</i>	125
Investigating students' perspectives and attitudes towards mobile learning at a Nigerian university <i>Victoria Olubola Adeyele, & Ayodele Abosedo Ogegbo</i>	125
Students 21st century skill challenges: Zimbabwean higher education <i>Doris Chasokela, & Charles S. Masoabi</i>	126
The role of interactive applications – Discussion about flexibility in modern learning environments <i>Seppo Johan Sirkemaa</i>	126
Initial teacher education and the emotional development of teachers <i>Paula Escobedo Peiro, Rosa Mateu Pérez, & María Luisa García Baldán</i>	127
Machine learning prediction of academic performance of Latin American university students. A review <i>Dayana Barrera, Carlos Fresneda-Portillo, & Ana María Pacheco-Martínez</i>	127
Education as a path to cultural cohesion (historical aspects of the development of the Bulgarian diaspora in the Balkans) <i>Vanya Dobрева, Boriana Buzhashka, Stoyan Denchev, Ivanka Yankova, & Kamelia Nusheva</i>	128
Media and audio-visual technologies for teaching artistic creativity: A course for preschool and primary school teachers <i>Lorenzo Denicolai, & Giacomo Albert</i>	128
Nouvelles Cartes Portugaises: A gamified pedagogical approach to promote Portuguese cultural and visual heritage <i>Ana Catarina Silva, & Pedro Amado</i>	129
Educational equality and pedagogical technological transformation of rural South African secondary schools <i>Andrea Mngondiso Buka, & Limkani Sincuba</i>	129
Education, development and global citizenship: A proposal for transformation, an experience of (co)social responsibility in polytechnic higher education <i>Marta Uva, Leonor Teixeira, Isabel Piscalho, & Susana Colaço</i>	130
Fostering gender equality and inclusivity among Lesotho's youth and men: Lessons learnt and recommendations from UNICEF evaluations (2018-2023) <i>Sonia Mairos Ferreira, & Kimanzi Muthengi</i>	131
Shaping the teacher's role: Navigating diverse responses to digital transformation in Austrian middle schools <i>Marina Müller, Teresa Spieß, & Christian Ploder</i>	131

Comparative analysis of robotics and virtual reality in the enhancement of social skills in autistic students	132
<i>Gonzalo Lorenzo, Juan Antonio López-Núñez, José María Romero-Rodríguez, Ángel Rodríguez-Quevedo, María Teresa Bejarano-Franco, & Isabel Gómez Barreto</i>	
Navigating the provision of support to learners with special needs in rural mainstream schools: teachers' challenges	132
<i>Omphile Tshepo Cooperate Madiba, & Appolina Masunungure</i>	
Self-knowledge in the initial education of future teachers through mindfulness and self-compassion	133
<i>María Luisa García Baldán, Paula Escobedo Peiro, & Rosa Mateu Pérez</i>	
Education for sustainable development in future Spanish education professionals	133
<i>Juana M. Ortega-Tudela, Elena M. Díaz-Pareja, & África M. Cámara-Estrella</i>	
Traitors, reality show turned instructional strategy	134
<i>Samantha F. Junkin</i>	
Development of intercultural literacy in higher educational institutions: Challenges and possibilities	134
<i>Rasa Poceviciene</i>	
Inclusive policies and practices in the field of continuing vocational education and training	135
<i>Denitsa Dimitrova, Ivanka Yankova, & Kamelia Nusheva</i>	
Analysis of long-term learning through gamification in engineering courses	135
<i>Salvador Bueno, Luis Pérez-Villarejo, Dolores Eliche-Quesada, M. Dolores La Rubia, Sergio Martínez-Martínez, Juan Miguel Romero-García, Inmaculada Romero-Pulido, & Ángel Galán-Martín</i>	
Exploring preschool teachers' perspectives on the integration of technology-enhanced learning in basic science	136
<i>Victoria Olubola Adeyele</i>	
Examining pre-service teachers' use of coding and robotics during micro-lessons in the teaching of construction in technology through problem-based learning	136
<i>Patrick Thabo Makhubalo, Maglin Moodley, & Lydia Mavuru</i>	
Active methodologies and sustainability in initial teacher training: A commitment to teaching innovation	137
<i>Mercedes Llorent-Vaquero, M. Carmen Pegalajar-Palomino, & Estefanía Martínez-Valdivia</i>	
A conceptual model for evaluating the effectiveness and quality of inclusive education, training and lifelong learning	138
<i>Kamelia Nusheva, Boryana Yankova-Hadzhieva, & Denitsa Dimitrova</i>	
Exploring the support needs of teachers in inclusive schools	138
<i>Matabe Rosa Modiba, & Appolonia Masunungure</i>	
Teaching affine functions: Evaluating the use of games with automatic feedback in GeoGebra	139
<i>Celina Aparecida Almeida Pereira Abar, & Thiago Novaes Silva</i>	
Challenge based learning and sustainability: Zero waste programme applied to the university	139
<i>Maite Ruiz-Roqueñi, & Lidia García-Zambrano</i>	

Physical therapist student preference of a program-specific YouTube channel for instructional videos	140
<i>Kristin Mende</i>	
Learning community schools in the Alentejo – Analysis of inclusive education practices	140
<i>Joana Silva, Maria José D. Martins, Amélia Marchão, Teresa Oliveira, Luís Tinoca, & Ana Paula Caetano</i>	
 <u>Teaching and Learning</u>	
Collaborative mathematical problem-solving with children: An illustration of shared and self-regulation in initial teacher training	142
<i>Isabel Piscalho, & Susana Colaço</i>	
The nature of learning tasks from perspective of children from marginalised Roma communities	142
<i>Mária Hušlová Orságová, Katarína Vančíková, & Marián Trnka</i>	
The method for interpersonal communication enhancement and fostering of resilience and emotional regulation	143
<i>Eva Vancu</i>	
Exploring factors beyond phonological instruction in primary education	143
<i>Laura Hernández Sobrino, Eva Gutierrez-Sigut, & Virginia González Santamaría</i>	
Journey to global competence: Teaching through a sustainable development goals lens	144
<i>Chaonan Xu</i>	
Language usage among novice teachers in public schools: An analysis of interview contexts	144
<i>Eliseu Pichitelli, & Izumi Nozaki</i>	
Adapting the values engaged, educative evaluation framework to the evaluation of a community-based program	145
<i>Nuria Jaumot-Pascual</i>	
Considering automatic feedback in assessment for math learning	145
<i>Celina Aparecida Almeida Pereira Abar, José Manuel Dos Santos Dos Santos, & Marcio Vieira de Almeida</i>	
Working with pre-service teachers: Developing mathematics and science resilience while addressing maths and science anxiety levels in South African schools	146
<i>Sakyiwaa Boateng</i>	
Understanding the learning space, a reflection on blended learning in higher education: A bibliometric analysis	146
<i>Thoko Poppy Mahlangu</i>	
Reflecting on new public-school teachers' practices in the pandemic in Brazil	147
<i>Izumi Nozaki, & Eliseu Pichitelli</i>	
Level of physical activity among university students	147
<i>Rút Lenková, Gabriela Škrečková, & Eva Lukáčová</i>	
Teaching and learning practices in higher education institutions: Where has the theory gone?	148
<i>Gaby Probst, & Laura Zizka</i>	

Simulation modeling of a production system	148
<i>Chavdar Kostadinov, & Ivanka Peeva</i>	
The contribution of the picture book as an educational tool to prevent child abuse	149
<i>Marilene Rodrigues, Cátia Vidinhas, & Ana Catarina Silva</i>	
The current state of financial literacy among graduating students in connection with the effects of crises	149
<i>Anton Lisnik, Piotr Mazur, Miroslav Warhol, Milan Majerník, & Martina Kuperová</i>	
A problem-based learning approach to introduce the enzyme inhibitors blind screening to undergraduate biochemistry students	150
<i>Melissa García Caballero, Aurelio Moya García, José Antonio Torres Vargas, & Ana Rodríguez Quesada</i>	
Enhancing deep comprehension in high school students through the use of graphic organisers	150
<i>Maria Vittoria Battaglia, Ilaria Stragapede, & Alessandro Franceschini</i>	
Phonetics and audio-visual help to improve and strengthen the pronunciation of the English language	151
<i>Bertha Molina-Quintana, Marco Alberto Valenzo-Jiménez, Salvador Antelmo Casanova-Valencia, & Arcadio González-Samaniego</i>	
Skills development at the school subject of modern Greek language through debate	151
<i>Foteini Tsaliagkou, & Katerina Kasimatis</i>	
Primary school teachers' training needs to meet the challenges of 21st century science education	152
<i>Monica Tombolato</i>	
Effect of belief adherence and argumentation on belief flexibility during childhood, adolescence and young adulthood	152
<i>Marie Bousquet, Roger Fontaine, & Valerie Pennequin</i>	
An analysis of generative artificial intelligence tools usage to adapt and enrich software development courses	153
<i>Branko Mihaljević, Aleksander Radovan, & Martin Žagar</i>	
Analyzing drug compositions in a problem-based learning experiment to stimulate undergraduate students' autonomy	154
<i>Ana González Moreno, Luisa M. Cabalín Robles, Antonio Heredia Bayona, & Ana Rodríguez Quesada</i>	
Pedagogical power of story-telling in high education to develop critical thinking	154
<i>Lela Abdushelishvili</i>	
 <u>Organizational Issues</u>	
Relevance of students' mental health and wellbeing in higher education: A comparative case study	156
<i>Rasa Pocevičienė & Rainer Rubira García</i>	
Mitigating the micro-political dimension of distributed leadership in educational leadership: An Ubuntu perspective	156
<i>Oluwasola Babatunde Sasere, & Martha Matashu</i>	

The concept of task and activity: An analysis of the interview context with beginning public school teachers	157
<i>Eliseu Pichitelli, & Izumi Nozaki</i>	
Urban landscapes as third educator: The case of Palazzo Miccichè as an educational platform for co-learning in nature	157
<i>Chiara Cadoni, Ermes Invernizzi, & Florinda Saieva</i>	
Beyond traditional metrics: Rethinking human capital in school leadership through emotional intelligence	158
<i>Oluwasola Babatunde Sasere, & Martha Matashu</i>	

WORKSHOPS

Projects and Trends

- Approaches to enhance teamwork in higher education** 161
Nirmani Wijenayake
- Shattering classroom walls: Fostering global understanding through visual literacy** 161
Hagit Evan-Rifinski
- Video education: Enhancing engagement and comprehension through collaborative multimedia learning** 162
Hassiba Fadli

Teaching and Learning

- Effects of critical thinking in literature education** 163
Gepco de Jong
- Lego® - Voices as a participatory, arts-based data generation tool** 163
Carolina Botha, & Elma Marais

Organizational Issues

- Free tools for using data to tell a story** 164
Ricardo Covarrubias Carreño, Karla Andrew, Geoff Boise, & Bryan Preston

-
- AUTHOR INDEX** 165

ORAL PRESENTATIONS



TEACHERS AND STUDENTS

DEVELOPMENT OF DIDACTICS AND PEDAGOGY IN THE DANISH PEDAGOGY PROGRAM THROUGH CRAFT ACTIVITIES

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Abstract

This research project has explored how craft activities can contribute to the learning of pedagogy students in their education and the subsequent impact of working with these activities on their practical experiences in schools and after-school care. Design-based research methodology is applied in this research project. The craft activities are aiming towards achieving two primary objectives: 1) To enhance students' learning capabilities. This proposition is formed, among other sources, such as prior research conducted by Dr. Anne Kirketerp, which has shown that craft activities involve repetitive movements conducive to training conscious focus on the present moment and strengthening attention these findings are supported by recent research in Craft Psychology (Kirketerp, 2020); 2) To strengthen pedagogy students' didactic and practical skills and competencies in conducting craft activities with children in school and leisure settings, ensuring that children have enjoyable and educational experiences with crafting.

Keywords: *Craft activities, pedagogy, student affairs.*

PRE-SERVICE TEACHERS' KNOWLEDGE BASE FOR TEACHING MATHEMATICS: THE DEVELOPMENT OF SYNTACTIC AND SUBSTANTIVE KNOWLEDGE

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Abstract

The purpose of this study is to analyze pre-service teachers' knowledge base in terms of their substantive subject matter knowledge and syntactic subject matter knowledge. The study involves 20 students from a program course for K-3 teachers, *Advanced Math Development* (Semester 6) and 25 from a program course for teachers in Grades 4-6, *Mathematics 4* (Semester 6). The data collection includes pre-service teachers' reflections upon their written analysis of teaching observations as mathematical content and written examples of how to implement a teaching moment (content) that they had created themselves. The crucial content for the study is algebraic patterns, rational numbers (fractions), proportionality, and combinatorics. The findings from the study identify and highlight areas to be developed, especially with respect to student teachers' knowledge base and what they need to explore concerning subject-specific content for teaching mathematics, as well as crucial relevant content (substantive knowledge) and how to apply this in teaching (syntactic knowledge). Generally speaking, the study highlights the challenges student teachers face in grappling with mathematical concepts when they describe their observations, as well as in their own construction of a teaching moment. This means that in teacher education for mathematics, more attention ought to be paid to developing a knowledge base founded on the transformation of substantive knowledge to syntactical knowledge and its impact on student teachers' learning of mathematics for teaching purposes. The study can also provide a deeper understanding of student teachers' learning process and challenges related to the knowledge base, e.g., its substantive and syntactic components.

Keywords: *Pre-service teachers, knowledge base, substantive subject matter knowledge, syntactic subject matter knowledge, mathematics for teaching.*

CRITICAL THINKING IN LEARNING PROCESS OF MATH IN GRADES 5-6 IN LATVIA

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Abstract

The study was carried out to investigate the ability of students in grades 5-6 to think critically and creatively, analyse, evaluate and reason when solving mathematics problems, contributing to the dynamics of learning outcomes. To develop mathematics tasks and suggestions for their design to improve critical and creative thinking skills. To develop support material and recommendations for teachers to implement critical thinking skills in solving mathematics tasks. Theoretical research on critical thinking is summarised, and a brief look at the history of the Latvian education system is given. Methods and approaches for the implementation of critical thinking in schools are summarised, based on the materials of the Latvian education reform and the latest scientific knowledge in modern pedagogy. The use of critical thinking tasks in mathematics for pupils in grades 5-6 is analysed and the results of the study are summarised. Research methods: analysis of scientific literature and documents, observation, survey and interviews. Results of the study: recommendations for teachers on the use of tasks that improve the critical thinking skills of pupils in grades 5-6. Applicability of the work: development of a support material for teachers to improve critical thinking and creativity skills in mathematics of pupils in grades 5-6. The material consists of sample tasks and methodological suggestions on how to modify the tasks found in pupils' textbooks so that they require critical thinking, reasoning and analysis from pupils.

Keywords: Critical thinking, analysis, competence, judgement, evaluation.

ONE WON'T FIT ALL: DESIGNING A COLLABORATIVE WRITING MODEL TO PROMOTE L2 WRITING FOR LOW-LEVEL LEARNERS

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Abstract

L2 writing has always been a challenge for language learners and even a stumbling block for low-level EFL learners. This situation is salient in Macau, China where L2 writing and teaching researches receive little attention and local college students' English writing performance is not satisfactory. Additionally, motivated by the fact that low-level EFL learners requires special-designed assistance to succeed in their English learning, and that collaborative writing (CW) has been practiced in language classroom for decades but provide no operational model or guidelines for and (or) imposed limited effect on the less capable EFL learners, the current mixed research adopts the design-based research paradigm to design a CW model for the low-levels to meet their needs and challenges during the co-writing process. A total of 46 low-level EFL learners were involved in the four iterations. The first 3 iterations required participants to finish several co-writing tasks with the proposed CW model, including pre-and post-interviews and post-questionnaire conducted before and after each iteration. The 3rd iteration observed possible significant improvement in the participants' English writing followed by the final round which distinguished itself by operating a control and experimental group to further examine the effectiveness of the CW model on the learners' writing performance. Results showed that 1) the prescriptive CW model has significant contribution to the English writing performance of low-level EFL learners in terms of organization and vocabulary, and 2) participants are positive to the CW model and feel more confident in English writing. Moreover, the study also arrived at further conclusions: the CW model could weaken the observed low-low effect between less able learners as well peer feedback should be skillfully applied to the low-levels as they reported limited appreciation on such practice.

Keywords: Collaborative writing, low-level EFL learners, design-based research.

NURTURING FUTURE EDUCATORS: EXPLORING NEW FRONTIERS OF COLLABORATIVE TEACHER TRAINING MODEL

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Abstract

In 2021, the Israeli Council for Higher Education introduced the Vadmani-Inbar framework, marking a pivotal shift in teacher training. This framework, which replaced the Ariav framework, prioritizes clinical training to bridge the inherent gap between theory and practice in teacher training. As academic coordinator of clinical training in the teacher certificate school of Bar-Ilan University's faculty of education, the author has been actively involved, over the last six years, in developing and assimilation of a clinical model for teacher's training that allows optimal implementation of the clinical core component of the new framework. Over the course of this period two fundamental processes were developed: the creation of a non-disciplinary mandatory course conducted within schools, promoting theory-practice alignment through observations, reflective discourse, and workshops; and the establishment of a specialized disciplinary clinical training track that ensures close coordination between the academia and the field. This clinical training model encompasses a diverse range of learning modalities, including face-to-face and individual instruction, as well as online learning facilitated by learning management system (LMS), and artificial intelligence (AI) tools. Through these academic routes, students are actively engaged in disciplinary and pedagogical content, working extensively within and outside the classroom. They are expected to generate new relevant knowledge and engage in continuous reflective dialogues in order to contribute to the development of a knowledge base that is continuously evolving. Formative and summative evaluations of each student are conducted collaboratively by teachers and academic coordinators, considering various Knowledge, Skills, and Abilities parameters (KSA). Collaboration with schools across diverse sectors in Israel offers students the opportunity to integrate into different educational settings, fostering discourse and cross-sector acquaintances. This study focuses on a research of this clinical training track, that won 2023's Council for Higher Education of Israel call for proposals under the category "experience-integrated academy". Analyzing qualitative interviews and a quantitative questionnaire allows us to examine how this process, led by academic leaders and mentoring teachers, contributes to fostering continuous collaborations of learning communities among students, educators, school personnel, and education professionals. The study provides insights into clinical training, both in terms of the transformative potential of Vadmani-Inbar's framework, as well as its potential to improve teacher education, thereby improving education quality.

Keywords: *Clinical teacher training, teachers training in Israel, theory and practice, Vadmani Inbar framework.*

ADOPTING CHATGPT TECHNOLOGY APPROACHES IN PROFESSIONAL MUSIC TRAINING – THE TUT EXPERIENCE

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Abstract

The Ministry of Education, Taiwan, is interested in knowing about the impact of ChatGPT on the higher education curricula of music education, how technology applications can serve as learning tools, and the implications of using such tools. What follows are some observations and reflections from the Tainan University of Technology (TUT), Taiwan, and its educators' experiences of teaching music, such as thesis writing. Notable benefits include research support, grading, and enhanced human-computer interaction. The idea put forward is that technology applications require an emergent sensibility in the educational sector, and this represents an opportunity for music educators to reconfigure and strengthen their pedagogical approaches. By recognizing the accessibility of new and varied forms of musicianship and acknowledging how course curricula continue to grow in their range of practices and necessary literacies with AI technologies, strategies can be developed to support teaching enhancements, aid research, increase student retention, and serve as useful experiences for music students.

Keywords: *ChatGPT, musician, online learning approaches.*

FUTURE TEACHERS' KNOWLEDGE, ATTITUDES AND PRACTICE REGARDING SUSTAINABLE DEVELOPMENT GOALS

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Abstract

Through their activities, future teachers demonstrate the values that children and young people should adopt to become active citizens who influence the ecological, economic, and social dimensions of sustainable development. Therefore, future teachers should exhibit pro-environmental behaviors and attitudes to effectively integrate education for sustainable development into their teaching. They should also have a high level of knowledge about the sustainable development goals to ensure the effective realization of learning outcomes in this field. Sustainable development was defined by the World Commission on Environment and Development in 1987 as development that "enables us to meet the needs of the present without compromising the ability of future generations to meet their needs as well". This idea is directly related to the *Sustainable Development Goals* (2016–2030). In accordance with these principles sustainable development competencies are based on knowledge, positive attitudes, and practical action toward sustainable development goals. The aim of this study is to investigate prospective teachers' knowledge, attitudes, and practices related to the sustainable development goals. The research was conducted on a sample of 275 students, future preschool and primary school teachers, from teacher education programs at universities in Rijeka, Pula and Zagreb. Data processing employed descriptive and inferential statistics (t-test and correlation analysis). A knowledge, attitudes, and practice questionnaire using a 5-point Likert scale was adapted from Afroz and Ilham (2020). The main research variables included future teachers' knowledge, attitudes, and practices related to the sustainable development goals. The results were compared in the context of study location, year of study, and study program (early and preschool education and teacher study). The results indicate that the respondents have a moderate level of knowledge and positive attitudes towards the sustainable development goals, but they showed a slightly lower performance in the practical application of these goals. Spearman's rho coefficient correlation revealed a positive correlation between students' knowledge and practices, and between their attitudes and practices related to the sustainable development goals. In terms of study location, study years, and study program, there were no statistically significant differences in the students' knowledge, attitudes and practices. Based on the obtained results, recommendations were provided for enhancing the initial education of future teachers in the field of sustainable development, as well as suggestions for improving professional training in this area.

Keywords: *Environmental sustainability, future teachers' knowledge, attitudes and practices, initial teacher education, sustainable behavior, sustainable development goals.*

IMAGING FUTURE SEXUALITY EDUCATORS: ATTITUDES AND OPINIONS OF STUDENT TEACHERS AT SAPIENZA TOWARDS SEXUALITY EDUCATION

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Abstract

Italy has no specific initial teacher training curriculum on Sexuality Education. In undergraduate programs for early childhood and primary school education, topics related to sexuality and its development within the framework of Comprehensive Sexuality Education (CSE) are rarely addressed. The Standards for Sexuality Education in Europe assert the need to address such issues within the 0-4 age group. It is considered crucial to provide young people with accurate, age-appropriate, and scientifically accurate information about sexuality and sexual health. This education should be comprehensive, covering various aspects of sexuality, such as families and relationships, respect, consent, bodily autonomy, anatomy, puberty, menstruation, contraception, pregnancy, sexually transmitted infections, social influences, sexual identity, gender equality, and human rights. In Italy, such training is provided through specific courses that individuals can voluntarily undertake outside university curricula. The main challenge is that these courses come with high costs, making them inaccessible to everyone. And still, to design adequate training, it is necessary to understand the needs of the future recipients. The research, therefore, arose from the question: What were the attitudes and opinions of future educators and teachers in early childhood and primary

schools regarding Sexuality Education, both in general and in terms of practical and methodological application within the Italian educational and school system? The objective was to investigate the participants' perspectives and identify training needs. Existing literature highlights numerous weaknesses in training educational personnel on Sexuality Education. Among the reasons for this lack is the educational responsibility being primarily entrusted to experts external to the school or family context and a still heterogeneous and resistant attitude towards these issues, mainly when addressed with children. In the considered undergraduate programs, there are young adults who, according to research and literature, still rely heavily on internet-based and self-directed learning. The research was an exploratory case study at the Sapienza University of Rome. The sample, expected to consist of at least 300 participants, was drawn from the reference population: 851 students enrolled in undergraduate education and training programs for early childhood and primary education. It involved administering a questionnaire based on international scientific literature concerning the educational needs of the student community and the training needs of teaching and academic staff. The questionnaire had close and open questions and aimed to understand pre-service educators' and teachers' perspectives toward Sexuality Education.

Keywords: *Sexuality education, student teachers, early childhood education, primary school education, attitudes.*

THE TRAINING OF THE SOCIO-PEDAGOGICAL PROFESSIONAL EDUCATOR: AN OVERVIEW OF THE EUROPEAN CONTEXT

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Abstract

In the European context, the training of socio-pedagogical professional educator is influenced by a holistic approach aiming to integrate social, cultural, and economic dimensions. The adoption of common standards at the European level contributes to ensuring coherence in skill acquisition. Training paths for professional educators in Europe are characterized by diversity, reflecting the variety of pedagogical, cultural, and social approaches present in different countries (Eurydice, 2019, 2023). The competencies to be trained are integrated into national or supranational educational frameworks, such as the European Qualifications Framework (EQF, 2017), which not only emphasizes efforts towards European harmonization but also facilitates professional mobility within the European Union. Despite variations in the regulation of education professionals and the structure of training and specialization courses across countries, some common features underscore the importance of training these professionals. Specifically, there is a strong emphasis in Europe on social and pedagogical education, preparing educators to promote social inclusion, individual empowerment, and the adoption of effective pedagogical methodologies. The promotion of interculturality and the management of diversity are cross-cutting themes reflecting a strong commitment to building inclusive and pluralistic societies. In terms of curriculum design and development, learning outcomes are at the forefront of educational change (EQF, 2017). Ensuring the quality of university education shared among European countries also means supporting educators in training to achieve the expected competencies at the end of their higher education journey. The training of socio-pedagogical professional educators in Europe is a dynamic process that adapts to contemporary challenges and the evolving needs of society, contributing to shaping professionals capable of addressing complex challenges related to the promotion of well-being and the harmonious development of individuals (ONU, 2015; ISTAT, 2018). Its significance in creating an inclusive, innovative, and future-oriented educational environment is fundamental to social and cultural progress in Europe. Socio-pedagogical educators represent essential pillars in the construction of educated, resilient, and socially responsible communities. The objective of this contribution is to present a reflection on the profile of the socio-pedagogical professional educator in Italy and within the European framework, with a specific focus on the required competencies.

Keywords: *Socio-pedagogical professional educator, training paths, competencies, Italy and Europe.*

TRAINING THE MEDIA-EDUCATIONAL HABITUS: 21ST CENTURY SKILLS IN DIGITAL DIDACTIC SETTINGS IN TEACHER EDUCATION

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Abstract

The educational policy demand for a reorientation of competencies towards more communication, future orientation, critical thinking, and collaboration - labeled "21st Century Skills" (Trilling & Fadel, 2012) – must have consequences for designing school and university teaching/learning situations. Previous university teacher education relied on individual work, individual examinations, the comprehension of existing positions, knowledge of tradition, and recognition and dominance of imparted content knowledge by teaching authorities. The central media of university teaching was printed matter. The pessimistic verdict of Clinton, Jenkins, and McWilliams from 2013 that we are training future teachers at universities "for an outdated world" has lost none of its relevance in Germany concerning media education and digital literacy. The media skepticism in teacher training and practical teaching in schools in Germany will be reflected in the first part of the talk. Therefore, in addition to subject-specific and curricular foundations and didactic design options, teachers need a peer-supported culture of meta-cognitive reflection that includes their expectations and beliefs in media. The second part of the talk presents a practice-relevant implementation in a cross-university, cross-state, and cross-subject didactic setting. It challenges and encourages students concerning their future didactic demands as teachers in producing a digital-online editable MOOC (Massive Open Online Course) as a peer-to-peer study offer.

Keywords: *Media-educational habitus, 21st Century Skills, digital didactic setting, teacher education, media skepticism.*

THE ASSOCIATION BETWEEN PERCEIVED DISCRIMINATION PROFILES AND CAREER ASPIRATIONS AND EXPECTATIONS OF HIGH SCHOOL STUDENTS

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Abstract

Career development literature suggests that perceived discrimination may influence the career choices of individuals from diverse backgrounds (e.g., racial minorities) (Swanson & Fouad, 2020). More specifically, perceptions of both overt and covert discrimination could lead to the elimination of career options (Poon, 2014; Schneider & Dimito, 2010), limiting perceptions regarding career opportunities (Conkel-Ziebell et al., 2019) and attenuated career expectations (Abrahamsen & Drange, 2015). However, perceptions of discrimination are rarely systematically measured in these studies and their association with individuals from diverse backgrounds' career choices seems to be overlooked. Therefore, the study aims to 1) identify profiles of perceptions of discrimination and 2) examine how profile membership relates to key sociodemographic characteristics as well as limiting perceptions regarding career plans, educational aspirations and expectations. Thus, a sample of 756 Canadian high school students (M = 16.3 years old; SD = 0.9) completed an online survey from May 2022 to February 2023. Among them, 52% identified as female, 46% identified as male and 2% identified differently. It is also important to note that the sample is made up of a majority of racialized students (72%) and over a third of immigrant students (38%). Latent profile analyses revealed three distinct perceived discrimination profiles, across which proportions of females, racial minorities and Indigenous people, as well as mean levels of limiting perceptions regarding career plans varied. The conclusion highlights appropriate courses of action to counter the potential adverse effects of perceived discrimination on career aspirations and expectations.

Keywords: *High school students, perceived discrimination, latent profiles, career aspirations, career expectations.*

BLACK LEARNERS' EXPERIENCES OF RACISM AT HISTORICALLY WHITE SCHOOLS

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Abstract

Former learners report on racism and inequitable practices experienced by Black learners at Historically White Schools (HWSs) in South Africa. It is worrying that after almost three decades of democracy, racism continues to exist in South African schools, particularly HWSs. Media and social media constantly report on incidents of racism levelled against Black learners in HWSs. This reflective paper uses content analysis as a qualitative research approach, and as a tool to gather anecdotal data from posts shared on the Instagram social media platform by both current and former, predominantly, Black learners concerning their views and lived experiences of racism in both private and public HWSs. Instagram posts were analysed, interpreted, and categorised according to common themes. The findings reveal that Black learners are subjected to racism and various discriminatory practices in several HWSs in South Africa. The media and social media postings seem to have forced some multicultural schools to effect honest change and to locate diversity at the helm of a transformed South African educational system. This study recommends that education authorities begin country-wide dialogues around anti-racism in HWSs and provide student teachers with skills to address racism.

Keywords: *Black learners, experiences, racism, Historically White Schools.*

DRAWING AND WRITING ABOUT FRIENDSHIP AS A WAY TO SUPPORT SOCIAL INCLUSION IN PRIMARY GRADES

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Abstract

When talking about inclusive education in our country, the focus is primarily on learners with lower abilities, but a person's social development is also of decisive importance for academic development, social inclusion and a successful transition to adulthood. Therefore, in addition to learning and teaching, the school must take care of the students' well-being and create a friendly, safe and bullying-free school environment where all students have an equal opportunity to participate in school life and have and express their opinion. Our school participated in the European Commission's project "Social inclusion through student participation" (SIPP). Within the project, in cooperation with partners from Italy, Denmark, Sweden and Switzerland, a friendship survey was conducted in the first grade of school in each country, where students had to draw a picture of friendship at school and write briefly what they think about it. This report presents the results of the survey conducted with the students of the partner school in our country. The sample included 26 girls and 22 boys. The article analyzes children's use of pictures and words and its connection with social inclusion in the school environment. The "draw and write" method was used, because young children can express their emotions most effectively in this way. The pictures drawn about friendship were divided into six thematic areas, which were defined in cooperation with international project partners: situations (16), emotions (10), symbols (10), classrooms (5), houses and homes (4) and mathematical visualization (3). The easiest way for children to handle the concept of friendship was through situational approach, as well as describing emotions and symbolism.

Keywords: *Social inclusion, student participation, inclusive education in the 1st grade, friendliness, drawing analysis.*

TEACHING SCIENCE THROUGH HUMANISING PEDAGOGIES: THE SOUTH AFRICAN PERSPECTIVE

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Abstract

This inquiry involved 60 Grade 11 biology students, and 3 teachers from different schools. The students were of Xhosa and Zulu origin in South Africa. After teaching the topic of carbohydrate fermentation to Grade 11 students over the years, two problematic issues recurred year in and year out. The different cohorts of students found this topic abstract as evidenced by their poor scores in given unit tests. The teachers also struggled to teach this topic in ways that are student engaging as they would just narrate the details of the topic and the students would take notes. In a quest to resolve this dilemmatic classroom scenario, two main research questions guided this inquiry: What is the impact of engaging humanising pedagogies in the teaching and learning of science content? How could science content be integrated with South African indigenous knowledge system for enhanced student understanding? A quasi-controlled experiment was used. The control group was taught through the broadcast method and the experimental group was taught through humanising pedagogies. It emerged that teaching and learning that entailed contextualising the content for teaching in the students' everyday knowledge, is a powerful tool for operationalising 'humanising pedagogies.' Engaging humanising pedagogies during teaching and learning decolonised the content for teaching by giving it a 'human face' and 'indigenous smile'. This did not only enhance student comprehension, but it also enhanced the teaching of abstract science concepts that are difficult content to teach. Recommendations are made.

Keywords: *Fermentation, humanising pedagogies, intervention, Indigenous games, home brew beer.*

QUALITATIVE FRAMEWORK: AN APPROACH TO THE EVALUATION OF STUDENT'S WRITTEN OUTPUTS

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Abstract

This paper sought to apply a qualitative framework using a directed approach to content analysis in the evaluation of learning. It addresses the need to establish standard indicators in evaluating students' written outputs such as assignments and exams. The written outputs of students in an online course on educational philosophy were analyzed to determine the manifestations of recalled knowledge, construction of knowledge and understanding, and levels of cognition with reference to Bloom's taxonomy of educational outcomes. The analysis includes a multi-step process. Initially, it involved the examination of words, phrases and sentences that were used to express key ideas and concepts related to the theories covered in class, as a way of determining the initial coding categories. Identified were statements that reveal the students' understanding of the course content as well as their interpretations. Marked or noted were reactions, insights, opinions, realizations and new learning, whether implicit and explicitly expressed. At this point, the analysis revealed the levels of cognition where construction of knowledge and understanding occurs, whether lower or higher order thinking. The next step involved a new set of codes that took cognizance of the process of relating newly acquired learning to existing knowledge that manifest students' point of view and active construction of knowledge. The inquiry revealed how students demonstrate levels of cognitive presence, meaning making, linking and associating, higher order thinking, use of principles, reflective learning, as well as change in individual perspectives. Formed were the standard features of the qualitative framework for evaluating student's written outputs in order to determine active construction of knowledge.

Keywords: *Qualitative framework, evaluation of written output, content analysis, knowledge construction.*

TEACHING FRACTIONS AND THE CONCEPT OF INVERSE OPERATIONS: SCIENTIFIC CONCEPTS IN PRE-SERVICE TEACHERS' LEARNING OF MATHEMATICS FOR TEACHING PURPOSES

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Abstract

The purpose of this project is to analyze how the scientific concept of inverse operations can be used as a “bottom-up” approach for teaching mathematical operations with whole and rational numbers. The primary aim of this analytical review is to provide support for student teachers in their learning of scientific mathematical concepts for the purposes of teaching. The theoretical approaches applied in this project are the theories of mathematical structures, especially the theory of inverse semigroups (Abelian groups), as well as relational thinking in comparison with instrumental thinking. The methodological approach is Vygotsky's Doctrine of Scientific Concepts. The presentation of the analytical findings is intended to illustrate a clear connection to mathematical structures, such as the concepts of inverse, as well as how these structures can support pre-service teachers' learning with regard to teaching mathematical operations in arithmetic and algebra. The development of a theoretical approach based on this study and its analytical findings is ongoing, but it is already being implemented in the teacher education programs for Grades K-3 and 4-6 at Södertörn University in Sweden.

Keywords: *Learning for teaching, mathematical structure, scientific concept, rational numbers, inverse operations.*

GENDER AND STUDENTS' MATHEMATICAL LITERACY ABILITIES

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Abstract

Gender is one of the most commonly considered factors in educational research since many years, to explain differences in mathematics achievement. Despite the stereotype that boys are better than girls in mathematics, the most recent results of the Programme for International Student assessment, PISA, showed that in a significant number of countries there was a reduction or even elimination of the gap between boys and girls in terms of their performance in mathematical literacy. More specific for Greece in 2003, according to PISA's data and results, the difference in students' mathematical literacy performance between the boys and girls measured 19 points, with boys outperforming girls, while fifteen years later in PISA 2018, this difference has been reduced to zero points. This current study aims to investigate the abilities of boys and girls in mathematical literacy upon completing their compulsory education, which in more words means to evaluate in terms of the functional use of their mathematical knowledge when solving real-life math problems. Moreover, it aims to answer to the research question, if there is a statistically significant difference in mathematical literacy performance between boys and girls? The research was carried out in 650 students from all over Greece who were completing 9th grade or were at the beginning of the 10th grade and their schools were selected based on the degree of urbanization of the area where the respective school was located (large urban center, small urban center, rural area). The findings of the research showed that there are no significant differences in the average performance in mathematical literacy between boys and girls.

Keywords: *Gender, Greece, mathematical literacy, compulsory education.*

PHONOLOGICAL-ORTHOGRAPHIC STIMULATION PROGRAM FOR SCHOOLCHILDREN WITH LEARNING DIFFICULTIES

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Abstract

Objectives: This study aimed to develop a phonological-orthographic stimulation program for schoolchildren with learning difficulties from the 3rd to 5th year of Elementary School and compare the performance of schoolchildren in a pre- and post-testing situation in the phonological-orthographic stimulation program. This study will be developed in two phases, phase 1 aims to develop the phonological-orthographic stimulation program based on literature review, in order to verify which studies used stimulation programs with the phonological-orthographic stimulation. In this phase 2, 30 schoolchildren with learning difficulties, both sexes, aged between 8 years and 4 months and 12 years and 3 months participated, who attended 3rd to the 5th year of Elementary School. The schoolchildren were divided into two groups: group I (GI): composed of 15 schoolchildren with learning difficulties submitted to application of the Phonological-Orthographic Stimulation Program, group II (GII): composed by 15 schoolchildren with learning difficulties not submitted to application of the Phonological-Orthographic Stimulation Program. All schoolchildren were submitted in the application Pro-Ortography Assessment in pre- and post- testing situation. The program developed was composed of a module with strategies with oral vowel phonemes and a module with strategies with nasal vowel phonemes. The phonological-orthographic stimulation was ro-Ortography (pre-testing), twelve sessions for applying the developed program and the final three sessions being used for apply to Pro-Ortography (pos-testing). **Results:** It was possible to verify that there was a significant difference in the GI students, submitted to the stimulation program developed in this study, in pre- and post-testing situations. In GII, there was no change in the classification of performance in the Pro-Ortography subtests, nor in the classification of performance according to the semiology of errors, demonstrating the effectiveness of the stimulation program to GI. **Conclusion:** In phase I, it was possible to develop a Phonological-Orthographic Stimulation Program for students with learning difficulties for students in the 3rd to 5th year of Elementary School. In phase II it was possible to verify the effectiveness and applicability of the program developed in phase I and it was possible to conclude that the strategies selected for the stimulation program are effective and can be applied to students from the 3rd to the 5th year of Elementary School I with learning difficulties both in the clinical context and in the educational context, assisting in the teaching-learning process.

Keywords: *Orthographic writing, learning, intervention studies.*

FACILITATING FLEXIBLE LEARNING EXPERIENCES

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Abstract

Digital mediums provide opportunities to create a cohesive environment to support learners' education, by bringing together instructors, learners, and course resources in a way that fosters a sense of community while enabling easy access to course materials. One effective way to achieve this cohesion is to set up the course environment to meaningfully curate and manage resources and interactions, supporting learners' navigation and engagement with the resources, as well as instructors and their peers. We present a digital environment that facilitate such curation by providing a vision that allows instructors to organize and structure their courses comprehensively. We provide an interactive and collaborative learning environment for students with Microsoft Teams to support student communication, collaboration, digital annotation, note-taking, and file sharing. This approach supports personalized knowledge acquisition, learning and study in a structured and moderated environment for learners to attain differentiated educational goals.

Keywords: *Educational quality and standards engagement, cohesive digital learning experiences, automated curated learning, collaborative learning environments, meaningfully curated courses.*

CURRENT AND PREVALENT TECHNOLOGIES IN WEB CURRICULUM

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Abstract

The Web Programming and Design major at Purdue University utilizes a variety of technologies within the curriculum to educate students in current and future web trends. This paper will investigate current and prevalent web development technologies that could enhance the program. Web development technologies are numerous, with each technology playing a critical role in building robust and interactive websites. At the core of every web page are HTML, CSS, and JavaScript, which combine to structure content, manage presentation, and create dynamic interactions. HTML (Hypertext Markup Language) provides the foundational structure, CSS (Cascading Style Sheets) handles styling, or the look and feel of the website, and JavaScript provides interactivity. Together, they collectively form the backbone of web development. PHP (Hypertext Preprocessor) remains a common and powerful technology used in server-side scripting, contributing significantly to back-end development. PHP is embedded within HTML code and executes on the server, delivering dynamic content to the client, and is known for its ease of use. WordPress, one of the most popular content management systems, relies heavily on PHP for its core functionality, showcasing the enduring relevance of this scripting language in web development. Front-end libraries and frameworks such as jQuery, React, and Angular have gained prominence for enhancing the user interface and experience. The jQuery library offers developers an easier means of altering CSS and handling events as the page is used. React, developed by Facebook, facilitates the creation of reusable components for building efficient user interfaces, while Angular, a comprehensive framework by Google, offers a structured approach for dynamic web applications. Node.js has become a popular technology for server-side scripting, enabling developers to use JavaScript for server-side development and the creation of scalable and high-performance applications. Database technologies, the backbone of data storage and retrieval, include MySQL and MongoDB among many others. MySQL, a relational database management system, is renowned for its reliability and scalability, making it a preferred choice for data-driven applications. MongoDB, a NoSQL database, excels in handling unstructured data, providing flexibility and scalability for applications dealing with large datasets. The web development arena has a plethora of technologies that can perform similar tasks, each contributing to the creation of modern, scalable, and interactive web experiences. The combined effect of these technologies enables developers to deliver impactful and meaningful web solutions. Through the implementation of these technologies within the curriculum, students will be better prepared for the employment opportunities that lie ahead.

Keywords: *Curriculum, web technologies, web pedagogy.*

UNLOCKING CREATIVITY: KNOTS AND SONA DRAWINGS IN MATHEMATICS TEACHER PROFESSIONAL DEVELOPMENT

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Abstract

Art and mathematics, clearly distinct domains, converge in a fascinating exploration that transcends conventional boundaries. The essence of art lies in producing profound, individualistic responses, inspiring a search for coherence in the visual and emotional tapestry it weaves. Simultaneously, mathematics, conventionally confined to analytical rigor, reveals an unexpected facet as an incentive for creativity. This synergy forms the background for an enriching journey into the interplay of mathematics, art, and ethnomathematics. Within ethnomathematics, the bridge connecting mathematical practices and diverse cultural heritages emerges as a powerful tool for educators to generate a multifaceted understanding of both subjects. The core of a 2023 professional development course for mathematics teachers at the University of Aveiro was the fusion of mathematics, art, and ethnomathematics. Targeting grades 5 to 12, the chosen topics were knots and Sona designs. Knots, essential in everyday life, hold a particular place in mathematics through the theory of knots. The introductory concepts of this theory can be linked to the teaching of several

mathematical school topics and provide a powerful tool for 3D visualization and reasoning. Sona designs and geometric sand drawings serve as memory aids in the Chokwe people's oral storytelling tradition in south-central Africa, among other African communities. These drawings have mathematical properties related to symmetry, graphs, and knots. The course unfolded in two phases: an exploration of mathematical concepts and their artistic applications, followed by the conception and execution of a project where participants translated some of these concepts into individual artistic creations, using ceramics for the Sona drawings and textile art for the knots. This study explores mathematics teachers' perceptions of an interdisciplinary approach connecting art and mathematics and its potential integration into teaching practices. The research question focuses on whether incorporating art in mathematics teaching enhances comprehension, facilitates interdisciplinary learning, promotes collaborative teaching experiences, and fosters a more positive attitude toward mathematics among students. Employing a mixed case study design, the research combines quantitative and qualitative methods, including direct observation, document collection, a final questionnaire, and field notes for a comprehensive data analysis. Findings are presented through artworks and analysis of questionnaire responses and field notes. In conclusion, the study underscores that infusing artistic contexts within an interdisciplinary framework strengthens and reshapes mathematical concepts. This approach establishes meaningful connections across diverse knowledge domains, nurtures collaborative and engaging teaching and learning environments, and facilitates the design of classroom activities fostering a positive attitude toward mathematics.

Keywords: *Mathematics education, interdisciplinarity, art, ethnomathematics, knots, Sona drawings, professional development.*

POST-TEACHING OBSERVATION FEEDBACK IN THE UNITED ARAB EMIRATES: COLLEGE MENTOR AND STUDENT-TEACHER PERSPECTIVES

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Abstract

School-based practice has long been considered an integral component of effective initial teacher education programmes. During school-based practice, mentor feedback is generally perceived as fundamental to student-teacher development. Post-teaching observation feedback (PTOF), given when mentors meet with mentees to discuss recently observed teaching, is the focus of this action research study. This study was conducted at an Emirati female initial teacher education institution in the United Arab Emirates. It explores, develops, and improves PTOF practice from the perspectives of Emirati and expatriate college mentors and female Emirati student-teachers. Cycle 1 explored college mentor and student-teacher perspectives on PTOF practice using qualitative questionnaires and focus group interviews. Cycle 1's findings informed a series of professional development sessions during which new practice guidelines were collaboratively developed with college mentors. Cycle 2 evaluated the effectiveness of the professional development and practice following implementation of the new practice guidelines. Cycle 2 data were collected through interviews and focus group interviews. Thematic analysis was used to analyse data from both cycles. Cycle 1's findings revealed an overall lack of consistency to PTOF practice. College mentors mostly implemented either directive or collaborative theoretical approaches to mentoring and PTOF. This resulted in confusion and differing levels of developmental support for student-teachers. The Covid-19 pandemic meant that Cycle 2 evaluated the implementation of the new practice guidelines while school-based practice and PTOF occurred online. Cycle 2's findings indicated a more consistent, structured approach to PTOF. A transition towards collaborative approaches to mentoring and PTOF was evidenced, although challenges to their implementation were apparent. Reflective practice was perceived as predominately descriptive. The online delivery mode revealed challenges specific to female Emiratis. More time, along with contextual developmental support, is recommended to improve future PTOF.

Keywords: *Initial teacher education, lesson observation feedback, mentoring, reflective practice, Emirati student-teachers.*

ARGUMENTATION, DECISION-MAKING AND ENVIRONMENTAL LITERACY

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Environmental issues include managing natural resources, waste management, global warming, deforestation... Such environmental issues can be classified as socioscientific issues (SSI), which are social science-based real-world problems that have an influence on the public and social life of citizens. The purpose of the study was to explore the environmental literacy of undergraduate students in the lens of argumentation and decision making related to socioscientific issues. Participants were undergraduate students from different disciplines at a private university in Lebanon. They responded to an open-ended questionnaire to explore their environmental literacy related to environmental SSI. The questionnaire had three scenarios addressing environmental issues as water fluoridation, global warming, and genetically modified food. A selected sample of students were selected for individual semi-structured interviews. Students' responses were analyzed in terms of the argumentation components according to an established rubric. Results showed that undergraduate students have limited argumentation skills, which sometimes varied across the different environmental contexts represented in the questionnaire. That indicates that students have naïve environmental literacy making argumentation and taking decisions in environmental issues. Based on that, it is viewed that engaging students in argumentation and decision making related to environmental SSI enhances students' environmental literacy. As such, it is recommended to develop a course focused on argumentation and decision making related to environmental problems affecting Lebanon and the region.

Keywords: *Argumentation, decision-making, environmental literacy.*

IMPORTANCE OF FACILITATING CROSS-CULTURAL ONLINE DISCUSSION

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Abstract

This study investigates the significance of facilitating cross-cultural online discussions to bolster cultural competence and communication skills among students, particularly within the context of a master's practicum counseling class. Employing a mixed-methods approach, the study integrated qualitative analysis of online discussion board interactions with quantitative assessments of students' perceptions and learning outcomes. The online discussion boards were structured using culturally and linguistically responsive strategies, aiming to create an inclusive environment conducive to cross-cultural engagement. Key findings underscore the transformative impact of culturally and linguistically responsive online discussions on students' cultural competence, communication skills, and ability to effectively engage with diverse populations. Qualitative analysis revealed themes emphasizing the exposure to diverse perspectives, experiences, and communication styles as pivotal in enriching students' cultural competence. Furthermore, students demonstrated significant improvements in communication skills, including active listening, empathy, and adeptness in expressing ideas across cultural boundaries. This suggests that engaging in cross-cultural online discussions facilitated the development of nuanced communication skills essential for effective counseling practice. Quantitative assessments corroborated these qualitative findings, with students reporting heightened confidence and readiness to engage with diverse populations in their counseling practice. This was attributed to the meaningful interactions and insights garnered from cross-cultural online discussions. Such experiences not only broadened students' cultural awareness but also equipped them with practical skills vital for navigating cultural complexities in their professional endeavors. Considering these findings, several recommendations for practice emerge. Educators are encouraged to implement culturally responsive facilitation techniques, fostering inclusivity and respect for diverse perspectives within online discussion settings. Active participation from students of varied cultural backgrounds should be promoted to maximize the benefits of cross-cultural exchange. Additionally, ongoing training and support for educators in facilitating cross-cultural online discussions are essential, ensuring the continued enhancement of students' cultural competence and communication skills within the evolving landscape of online education.

Keywords: *Online course design, online pedagogy, social justice education, cultural.*

PEER MENTORING IN MULTIDISCIPLINARY FINAL BACHELOR'S THESIS OF ENGINEERING STUDIES

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Abstract

This work presents the results of implementing near-peer mentoring as a tool to facilitate the guiding of students developing their bachelor's thesis (BT) in the field of engineering studies. This strategy was found to be necessary as the BT were developed within a multidisciplinary research project in which it was important to ensure project's continuity and quality. Bachelor's Thesis (BT), typically done during the last semester of the final course of engineering studies, needs to be defined as a practical activity, as closer as possible to actual engineering professional practice. The possibility of developing the BT in a complex, collaborative, transdisciplinary, and practical project marks a difference in the skills acquired by students during its development. Initiative, autonomy, creativity, work organization, critical thinking, abilities for teamwork, and project management skills are valuable tools highly valorised in engineering professional practice. Therefore, involving students in ongoing complex practical projects as part of their BT is an optimum way to ensure the acquisition of learning goals in engineering studies while they acquire a valuable working experience. Nevertheless, it is difficult to combine the schedule of a 6 months' long work, as BTs are, with longer research projects, and the organization of both tasks is often demanding and complex. It is particularly important to keep a continuity in the process' development, so that results and valuable acquired knowledge is not lost in the transition from on student to the other one. For this purpose, peer mentoring can be a valuable tool, to reinforce the student guiding, learning, motivation, and empowerment towards a successful completion of the attributed work tasks. Results showed that peer mentoring was a useful strategy to help students not feeling lost during the developments of the practical tasks associated to the project to move in a more fluent way through the transdisciplinary contents. Students felt that the combination of peer and academic staff's guidance was important for an efficient transition between consecutive BT works without losing performance in the global project. Mentors reported to feel an extra workload related to the challenge of guiding peers, but, at the same time, they positively valued the implied motivation, the feeling of a sense of community, and the establishment of peer-mentoring relationships. Mentees highlighted the emotional support and the value of interdisciplinary collaboration for academic outcomes.

Keywords: *Peer learning, engineering studies, bachelor's thesis, transdisciplinary projects.*

PREPARING TEACHERS TO WORK WITH MULTILINGUAL LEARNERS THROUGH DISTANCE LEARNING

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Abstract

To address the needs of the state's elementary schools, we developed a year-long professional development for teachers delivered in a hybrid distance-learning format. The schools with high enrollment of multilingual learners (MLs) with and without disabilities are in the north and west of the state. However, the university that provided the professional development is in the south of the state. There is no doubt that distance was a critical problem. We had to deliver the curriculum in a distance-learning format to 40 teachers. We met through Zoom every other week, and during the weeks we did not meet as a class, the teachers had assignments to complete which included watching videos, listening to podcasts, and reading from textbooks and/or articles. Teachers showed their knowledge of the materials by creating presentations and guides for their schools, interviewing parents and students, planning events to engage the parents of multilingual learners, creating student profiles, and answering written questions. Using a longitudinal quasi-experimental approach, the effectiveness of the project was assessed through pre/post surveys, focus groups, family engagement events, and course performance. Results will be presented showing a significant difference between the pre-and post-surveys.

Keywords: *Distance learning, multilingual learners, professional development, disabilities.*

ON SCORING COMPETENCE

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Abstract

The overall objective of any learning process is (at least) threefold; to increase a learner's competence, confidence, and learning ability. The totality of the learning process should improve the learner's social ability to learn from the whole process on how to be able to have stylistic flexibility and, by that, use her learning preferences to handle a test optimally, so her learning preferences make the best fit to the test. Here, we are focusing on introducing scoring techniques to assess a learner's competence concerning a specific subject from responses to multiple-choice tests, thereby being able to provide autonomous adapted feedback within the constraints of increasing learner awareness of own learning style and thereby strengthen confidence and learning ability. How a learner decides to act is essential for acquiring and maintaining satisfactory situational and learning style awareness. Therefore, information of the test and evaluation design is mandatory during the learning process. Feedback to the learner should ideally include the history characterizing the learning process so far, an estimate of the current state of the learning process, and a forecast of both the expected, an optimistic and for some learners, maybe even a worst-case scenario of the learning outcome. Feedback should be formed to strengthen the learner's situational awareness regarding her learning style, thereby reducing the probability of human failure, motivating the learner (e.g., by experiencing mastery), and suggesting beneficial learning strategies.

Keywords: *Assessments in education, scoring competence, multiple-choice tests.*

THE IMPACT OF A FIRST-YEAR ORIENTATION TEAM-BUILDING EVENT

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Abstract

Students' post-intervention perceptions of an event provide insight relative to their understanding and appreciation of the intervention, as well as the impact thereof. Experience and anecdotal evidence indicate that first-year construction management students experience challenges in terms of adapting to the first year of study at a South African university where the study was conducted. The purpose of the study was to determine the impact of a one-day orientation seven-activity team building event (TBE) directed at enhancing first-year students' ability to manage themselves, work as a team, interface with each other, strategise, plan, evolve tactics, and take action that would lead to their team winning the 'amazing race' style event. A thirteen-question questionnaire was used to determine the students' perceptions. Twelve questions were close-ended, and one was open-ended. All close-ended questions were Likert scale type questions. Twenty-two students attended the event and completed the self-administered questionnaire survey. Findings include that the TBE activities contributed to: enhancing participants' skills, emotional intelligence, and ability to communicate with their peers; built confidence in their abilities including that of completing a task, and enhanced participants' alternative thought processes, ability to be creative, strategise, evolve tactics, take action, and plan. The students benefited from, enjoyed the TBE activities and believed it contributed to improving their time management skills. Conclusions include that the TBE had the desired impact in terms of the development of the first-year students' skills, abilities, and emotional intelligence. Recommendations include that the TBE should continue to be undertaken on an annual basis, and the impact on participants should be assessed. Furthermore, the study should evolve into a longitudinal study and be reported on in that context to determine any trends.

Keywords: *Construction management, event, orientation, students, team building.*

GUESS WHO'S COMING TO DINNER! THE IMPACT OF (VIRTUAL) GUEST SPEAKERS IN A BUSINESS CLASS: A STUDENT PERSPECTIVE

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Abstract

This research explores students' perceptions and expectations of the impact of guest speakers on their educational experience. This approach identifies the benefits and contributions made to students' learning experience. The rationale for this research is to examine and identify the impact of guest speakers on student learning and understand how this experience can act as a portal to a deeper understanding of how students learn. The inclusion of guest speakers is important as it integrates the universal design for learning framework with different teaching approaches appealing to the phenomenon of multiple intelligences. From January to May 2022 and 2023, guest speakers presented to postgraduate students in the module EC6622: Global Business Strategy and Business Relationships. A mixed methods approach was adopted to incorporate both quantitative and qualitative elements within the survey. Results suggest that 59.1% think they "always or often" benefit from attending guest speaker presentations. Just over 10% reported that having guest speakers present in the module was very "relevant and useful". Finally, the thematic approach revealed that some of the students found it beneficial to have in-person guest speakers as they were "more valuable and interactive". They reported they felt it was "easier to ask a question" as opposed to delivering the presentation virtually. Findings suggest that students see guest speakers in the classroom as beneficial but do not always see the relevance of their presentations to the module material. This suggests that, while guest speakers lead to a more rounded learning experience, more work may be needed to link the speakers' content to the taught material.

Keywords: *Educational experience, multiple intelligences, mixed methods.*

PERCEPTUAL-VISUAL-MOTOR SKILLS AND SPEED AND LEGIBILITY OF HANDWRITING IN MIXED SUBTYPE DYSLEXIA

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Abstract

For handwriting to be acquired, it is necessary to combine coordination of visual-motor skills to the motor planning, cognitive planning and to the perceptual skills. A study showed that all students with Dyslexia of the Mixed subtype have lower performance in writing quality and visual-motor perceptual ability. This study aimed to present a case study on the relationship between the perceptual-visual-motor skills, the speed and legibility of handwriting in schoolchildren with mixed dyslexia. Ten schoolchildren of both sexes, aged between 9 years and 13 years and 1 month with an interdisciplinary diagnosis of mixed subtype dyslexia participated in this study. The translated and adapted Brazilian Portuguese version of the Detailed Assessment of Speed of Handwriting (DASH) and the Visual Perception Development Test 3 (DTVP 3) were applied. DASH consists of five tasks: best copy, alphabet writing, quick copy of a sentence, quick graphic and free writing. DTVP 3 consists of subtests with reduced motor skills, general visual perception and visual-motor integration. For the study of the relationship between the variables in this study, a correlation analysis was performed for variables with non-parametric distributions, using the Spearman coefficient, in order to measure the degree of association between two quantitative variables of interest. The results revealed relationships between the skills of general visual perception, reduced motor skills and visio-motor integration with the speed and legibility of handwriting, showing that the altered visual component present in mixed subtype dyslexia may be responsible for the visio-motor alterations that compromise speed and legibility of the handwriting of these students. The findings of this study allowed us to conclude that the better the hand-eye coordination, the greater the number of written words and the number of readable words and that the greater the use of automaticity for writing letters of the alphabet and number of words written, the lesser the use of figure-ground visual ability.

Keywords: Handwriting, assessment, dyslexia.

THE CONTRIBUTION OF A COLLABORATIVE APPROACH IN UNDERSTANDING RESISTANCE FACTORS WHEN IMPLEMENTING CHANGE

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Abstract

Students' wellbeing and their educational success are playing an increasingly important role in the policies, decisions, and actions of educational administrators. Therefore, the desire to meet students' needs is the driving force behind changes in the school environment, which can lead to a degree of resistance from educational staff who do not always see the merits of the proposed actions. The aim of this development research is to equip educational administrators with a better understanding of the resistance factors, concerns, reactions, and obstacles encountered when implementing change to promote educational success and well-being in a context of diversity. This development research, carried out with partners representing five francophone schools and community organizations involved with youth in four Canadian provinces, members of the RÉVERBÈRE research network. The research resulted in a preliminary report with the aim of developing a questionnaire to determine the presence of resistance, concerns, and organizational obstacles to change. The questionnaire then developed will be used by educational administrators to demystify and better understand the presence and the types of resistance in their institutions with the

objective of establishing an initial portrait of their context reality in order to better support their staff members. This tool will consider current changes with a view to well-being, inclusion, and openness to diversity. In this communication, we most of all highlight the contribution of the development research process to the co-construction of the items in the preliminary report and the accumulation of evidence firstly based on research based knowledge, and then, during activities carried out with our partners. Validating items with partners in the field adds relevance to this report and enriches it with concrete examples from their respective environments where changes are taking place. In a context of major change, we will also highlight the benefits of a partnership approach, i.e., research and development, to encourage collaboration between members of the research and practice communities with a view to better understanding the factors of resistance to change in educational context.

Keywords: *Educational change, resistance, development research, inclusion, diversity.*

ENHANCING ACADEMIC INTEGRITY THROUGH UDL DESIGNED AUTHENTIC ASSESSMENT: A CASE STUDY

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This paper presents the findings of a study that investigated the potential of using Universal Design for Learning (UDL) principles in assessment design as counter measure for academic misconduct with on focus Arts and Humanities students. By focusing on the different students' perspective derived from a combination of survey, focus groups, and interviews, the case study aimed at investigating if the reasons why students may be tempted to conduct academic misconduct (as identified in the literature) can be countered not only by using authentic assessment but using UDL principles in designing it. This paper will: 1) present the basic findings; 2) present key insights drawn from these, and 3) suggest next steps. Findings indicated students perceived UDL-designed authentic assessments as effective deterrents to academic misconduct, particularly in addressing stress, the primary motivator for misconduct. Increased flexibility and accommodation of diverse learning styles were seen to contribute to the meaningfulness of assignments, which in turn influences students' decisions to abstain from misconduct. Most importantly three primary factors were identified to influence students' decisions against engaging in academic misconduct: self-efficacy, moral standards, and confidence, points that so far have received insufficient attention in literature. Additionally, the themes of flexibility, meaningfulness, and coping with pressure emerged as crucial considerations in promoting ethical behavior among students. The study underscored the need for a nuanced approach to addressing academic misconduct, highlighting the limitations of current discourse and motivations surrounding misconduct beyond assignments as the majority of students did not deem the term "integrity" meaningful beyond their university assignments. It also provided insights as to why writing assignments for other students out of a desire to help them was seen as the problematic form of academic misconduct. Drawing on literature emphasizing the importance of self-efficacy in preventing cheating, the paper proposes actionable steps for assessment design aimed at reducing incentives for academic misconduct.

Keywords: *Authentic assessment, UDL, academic misconduct, self-efficacy.*

INCREASING GEOMETRIC LITERACY SKILLS OF FUTURE MATHEMATICS TEACHERS THROUGH 3D PRINTING ACTIVITIES IN GEOGEBRA ENVIRONMENT

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Abstract

Integrating digital technologies into education, particularly in the area of geometric literacy, is transformative. GeoGebra's dynamic mathematics software facilitates interactive learning of geometry and algebra that is consistent with constructivism's principles. Utilizing 3D printing further enriches the experience; it allows for a hands-on approach to understanding geometric concepts combined with manipulative activities and activities aimed at understanding mathematical concepts. Geometry became more tangible and engaging when students used GeoGebra to design three-dimensional representations of geometric figures. These designs were then brought to life through 3D printing, allowing students to interact with their geometric creations physically. At the same time, it allowed for removing formalism from mathematics education. Since visualization is a key component in developing the ability to interpret and understand geometric shapes, manipulating these 3D models enhanced the learning experience. In our research, we presented a series of activities that both enhance spatial understanding and geometric reasoning and promote creativity and personal expression. Such activities were particularly beneficial for our students - future mathematics teachers. In addition to providing valuable technology skills, including 3D printing activities in the geometry curriculum helps prepare teachers to use this innovative tool in their future teaching, thus improving their students' geometry education. Our observations support the suitability of 3D printing as a tool to promote geometric literacy and demonstrate its potential to improve spatial perception and understanding in geometry.

Keywords: *3D printing, GeoGebra, geometric literacy.*

PROJECTS AND TRENDS

THE VALUES AND LEGAL ISSUES OF AUTHENTIC DATA SOURCES IN COMPUTER EDUCATION AND RESEARCH

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Abstract

Data management, especially text management is a dubious issue in computing education (CE). Some claim that it is only digital literacy. Others, on the contrary, emphasize that text management is part of CE. Our research reveals that not data management, but the approaches meant to handle the subject are responsible for its displacement, where the issue of meaningless formatting and tools are in the focus. To handle data management with standard software tools, we must give up the widely accepted decontextualized approaches, instead, authentic digital sources must be introduced in classes. To teach and research text management, find and reveal errors, and guide student show to avoid them, readymade but editable documents must be collected with real content. The internet, without question, is the largest source of authentic documents, and teachers must give students access to these documents for analysis, treatment and/or interpretation. However, teaching effective, efficient, and sustainable text management with authentic sources, legal issues arise (e.g., copyright, protection of personal data, freedom of expression). For this reason, documents from various internet sources must be considered as lawfully accessible (three-step test, art. 5 (5) InfoSoc Directive). The present paper details the purpose of using authentic data in teaching data management, analysing various documents closely connected to the subject, and provides examples where law allows, while others block their use.

Keywords: *Authentic document, lawful access, legal issues, copyright, text management.*

PERSPECTIVES OF LEARNERS IN MAKING SCHOOLS MORE INCLUSIVE SPACES

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Abstract

Inclusive education has gained prominence as an essential educational approach throughout the world. In South African, inclusive policies recommend the active participation of learners in the education process to develop and extend their potential as equal members of society. This study explores the perceptions of learners regarding inclusive education and its potential to improve teaching practices. This participatory action research study using transformative learning theory as a lens will employ photo voices and narratives. The participants were 25 full-service school learners in Gauteng and North West provinces of South Africa. Thematic data analysis was used to analyse the data. The study findings revealed that learners do not have a voice in the implementation of inclusive policies; only teachers are privileged to influence inclusive teaching, while learners are only expected to be recipients. Although the study has found that learners are disadvantaged in contributing to inclusive practices, it recommends an integrated approach among teachers, learners, and education policy developers to ensure that learners' voices are heard in schools to improve inclusive teaching practices.

Keywords: *Inclusive education, learners voice, full-service school, photo voice, inclusive teaching.*

EVALUATING THE IMPACT OF PROJECT-BASED LEARNING ON THE DEVELOPMENT OF DIGITAL COMPETENCES AMONG HIGH SCHOOL STUDENTS

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Abstract

The explored component of this paper investigates the impact of Project-Based Learning (PBL) on the development of digital competencies in 118 students from American College of Sofia (ACS). The research methodology employed includes an investigation based on an online Digital Skills Accelerator (DSA) self-assessment tool for digital skills aligned with the DigComp 2.2 Framework. DSA is a result of collaborative effort involving five organizations from Poland, Belgium, Spain, the UK, and Ireland. Digital competence encompasses a range of abilities, including information and data literacy, communication and collaboration, digital content creation, and safety – all essential for a workforce that must operate effectively in a knowledge-driven society. Therefore, when considering strategies to foster these competences, it is equally essential to develop specific methods and tools for precisely assessing particular aspects of digital competence. The study is divided into two research stages: (i) gathering data on students' performance and progress in relation to the targeted digital competences, and (ii) analyzing the collected data to ascertain whether there is evidence of improvement in these before-mentioned skills. The results suggest that PBL can effectively assist students in enhancing their digital competencies by employing technology for the acquisition, organization, storage, presentation, and communication of information. It is worth noting that assessing digital competences using existing evaluation tools, which establish the initial scales for their measurement, remains a significant challenge for the author. It means that curricula are tailored to develop digital competencies in each of the areas separately, but there is a noticeable gap in students' preparedness to effectively assess their level of each skill proficiency through interdisciplinary projects.

Keywords: *Project-Based learning, digital competencies, digital literacy, DigComp 2.2 framework, digital skills accelerator.*

MATH'S AND SPECIAL TEACHER COLLABORATION TO IMPROVE STUDENTS' MATH SKILLS USING THE SMART BALANCE BOARD

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Abstract

In recent years, there has been a significant decline in the results of diagnostic mathematics tests and exams in Latvia, which the authors attribute to a decline in pupils' attention span and critical thinking skills, especially after the COVID-19 pandemic. Many studies worldwide show the positive effects of motor coordination and balance on learning achievement, including in mathematics. The authors of this article aim to investigate how the Smart Balance Board, which provides movement coordination and balance engagement, affects mathematics achievement in ages 9-10. The authors suggest that collaboration between a mathematics teacher and a special educator can be a successful tool for the development of students' mathematical skills by designing integrated tasks according to students' age. The first results of a study in Latvia and South Africa confirm the authors' hypothesis that students aged 9-10 years, after pedagogical intervention with the Smart Balance Board, show higher levels of concentration and multiplication on repeated tests. The methodology used in the study was- the multiplication test, Wechsler's attention subtest - Encryption. Pedagogical intervention - balance board with integrated multiplication tasks.

Keywords: *Mathematic skills, attention, motor coordination, balance, learning success.*

PROVIDING EXPERIENTIAL LEARNING OPPORTUNITIES IN MECHATRONICS: TELEOPERATED ROBOTIC WORKCELL RESEARCH AND DEVELOPMENT

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Abstract

The emerging technology field of Mechatronics focuses on developing and implementing advanced automation for industrial applications. Thus, Mechatronics encompasses advanced fields, including robotics, Artificial Intelligence (AI), and cybersecurity. Though the demand for Mechatronics expertise is growing, available experiential workforce development opportunities in Mechatronics are limited. This project will research and develop educational materials and tools and provide project participants with experiential opportunities through an online Mechatronics Education Portal (MEP), experiential Mechatronics Practice (MP) initiatives, and a Mechatronics Industry Pathways Rotation. The MEP and MP modules are focused on the five Mechatronics pillars of Robotics, Mechanics, Electronics/Controls, Cybersecurity, and Artificial Intelligence. This project leverages partnerships among Michigan Technological University, West Shore Community College, Gogebic Community College, three nonprofit organizations, and nine regional industry collaborators. The main project objectives are to improve interdisciplinary Mechatronics training through experiential learning opportunities; develop a flexible and comprehensive program to promote a diverse and inclusive STEM workforce; and facilitate sustainable collaboration amongst project partners centered on Mechatronic workforce preparation and placement. As part of the project research and development of the Mechatronics Educational Portal, the Teleoperated Robotics Workcell (TRW) allowing for remote robot manipulation and programming is being developed. The TRW consists of a Fanuc collaborative robot, three cameras for real-time feedback to the user and a computer server to host the developed software. The interface for the client will consist of the virtual teach pendant with an overlaid display screen of the real teach pendant and two display windows showing the robot from different angles transmitted by the cameras installed in the physical robotic workcell. The TRW will enable remote access to the robot by users from anywhere in the world via the internet in a safe environment. In this paper, the authors provide details of the research and development stages of the TRW.

Keywords: *Robotic, mechatronics, Fanuc, STEM, workforce.*

TEACHING COMIC PERFORMANCE ON THE COLLEGE LEVEL: A HOLISTIC APPROACH

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Abstract

In the United States, it has become increasingly difficult to prepare student performers for an eclectic post-graduation job market. Previous generations relied solely on gaining the notice and acceptance of casting agents to provide them with opportunities. However, the internet has complicated the landscape and now, rather than seeking out talent, many media gate keepers simply browse the web for those who have already established a presence and a following. In order to help students become more successful, it has now become incumbent upon educators to help student performers become content creators in addition to interpreters. As a teacher of improvisation, I was able to use the art form's pedagogy and philosophy to create a course called Comedy Practice which I have been refining for the past five years. This paper will outline the means by which I have challenged students in this class to apply theories of incongruity, superiority, and laughter as social emotion to the mechanics of joke writing, stand-up, and sketch comedy. In doing so, I will show how there are elements that each practice shares, helping students find their comic voice and enabling them to create spaces that will get them noticed in the entertainment world.

Keywords: *Performance, pedagogy, comedy, higher education.*

LARGE LANGUAGE MODELS IN THE ENGINEERING WORKPLACE AND ASSOCIATED CURRICULAR IMPLICATIONS: AN EXPLORATORY STUDY

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Abstract

The disruptive appearance of ChatGPT in November '22 has spurred considerable debate and research on student use of Large Language Models (LLMs) in higher education. Although divergent viewpoints exist, many institutions of higher education have gravitated towards a policy that can be succinctly characterized as “informed and responsible use”. A categorical ban on generative AI tools would fail to adequately prepare students for the future workplace where such tools are anticipated to be harnessed for their productivity enhancement, so the argument goes. Conversely, an all too uncritical embrace would undermine indispensable learning objectives of higher education curricula. This exploratory research paper seeks to identify the extent - and purposes - to which professional engineers are currently using LLMs and to examine associated curricular and pedagogical implications. In a student-driven action research project, engineering students of the second bachelor of the industrial engineering technology program at University of Leuven (Belgium) surveyed 249 engineers in October 2023. Results show that about half of respondents do not make use of LLMs for professional purposes and have no immediate intention of doing so, with some engineers referring to prohibitive corporate policies. About one-third of respondents are currently not employing LLMs, but they state the intention to explore their potential in the (near) future. The remaining respondents state that they already make use of LLMs for professional purposes, with over half using them for content generation. Other common modes of usage are instructing an LLM to revise a self-written text to optimize phrasing, spelling and grammar or to repurpose it for different audiences or media; to summarize texts; to write computer code; to explain technical concepts; to provide references or sources; and as a search engine. It is worth noting that several of these types of usage do not fit within the commonly accepted boundaries of “informed and responsible use”, underscoring the need for didactic interventions in higher education that raise student awareness of how LLMs actually function, what their inherent limitations are and which ethical concerns they entail. This paper describes how such interventions can be designed and integrated within an engineering program. Furthermore, it suggests ways in which higher education programs can monitor the fast-evolving landscape of AI workplace practices to ensure students are well-prepared to navigate the opportunities but also the challenges presented by LLMs.

Keywords: *Engineering education, large language models (LLMs), generative ai, ChatGPT.*

INTERCULTURAL TRANSLATION - ACHIEVING DYNAMIC EQUIVALENCE IN TRANSLATING SPECIFIC TERMS OF MATERIAL AND SPIRITUAL CULTURE

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Abstract

A text is shaped not only by the author's individual style but also by his culture, because each text is always produced in a situation and this situation is embedded in a culture. The context of culture includes everyday traditions, values, norms, perspectives, etc. What the author chooses as the topic, what guiding motives he weaves into the text, what characteristics he assigns to his characters, how he structures the text, even more how this text is understood by its recipients, depend on the cultural context. This cultural context is also present at the micro level, i.e., in individual words, syntagms or sentences, and it causes translation problems, particularly where there are no exact equivalents for the elements in the target language. Translating such culture-specific elements is quite difficult because translating them literally could not produce the same effect on the recipient in the target culture. As a solution to such a seemingly insoluble problem, the American linguist Nida, an important representative of the communicative translation theory, offers the creation of the so-called 'dynamic equivalence'. We conduct this research in order to see how applicable this kind of equivalence for translating specific terms of material and spiritual culture is.

Keywords: *Culture, translation, culture-specific term, realia, equivalence.*

SUSTAINABLE LEADERSHIP AND INNOVATIVE LEARNING ENVIRONMENTS

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Abstract

After the pandemic, work environments and social cultures have changed, requiring new insights into leadership. Sustainable leadership competencies, in particular self-leadership and resilience have also been highlighted. Leadership development initiatives are widely researched however evidence of their effectiveness is lacking. The sustainable leadership competencies of the leaders can be improved using innovative learning environments. In this study, innovative environments include nature, equine-assisted environments, colleagueship networks, and technology. The present study aimed to develop and pilot sustainable leadership training for leaders to develop their self-leadership and resilience competencies. Two training pilots were carried out between Feb23-Jun23 and 10 participants in leader positions from diverse fields were selected for each pilot. The training pilots made use of innovative learning environments, such as the nature environment and horses (also in virtual settings), which are known to provide a trustful environment for the training of self-leadership, interaction, and practicing emotional intelligence. The leaders also worked in multidisciplinary small groups applying colleagueship practices. To answer the research question, how different learning environments are perceived in the context of training pilots, the effectiveness of the training and innovative learning environments on participants' self-leadership and resilience competencies were measured twice through questionnaires including both Likert scale statements and open-ended questions. The participants (N=19) were asked to respond using their diary reflections and smart ring data (a device that measures electrical conductivity and reflects emotional states and stress levels). Also, a qualitative co-creation workshop provided data for this study. The results showed that all participants highlighted working with horses as a great experience during the training. Working with horses was inspiring and left a strong emotional impression. Being in nature was natural and pleasant, the environment made the participants relax. The training discussions were seen as good and in-depth. Colleagueship was perceived as important. The support of networking with people in the same position and life situation was very useful and it was felt that hearing and understanding different perspectives and opinions contributed to a deeper identification of one's own role and support for different leadership situations in everyday life. The smart ring divided opinions. Some participants found the smart ring clumsy and cumbersome and its functionality lacking, although at the same time, it helped them to understand their strengths.

Keywords: *Self-leadership, resilience, sustainable leadership, training, innovative learning environments.*

AUTISM SPECTRUM DISORDERS AND AI: APPLICATIONS AND AREAS OF PROMISE

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Abstract

Autism spectrum disorder (ASD) is a complex neurodevelopmental condition characterized by challenges in social communication and repetitive behaviors. The spectrum is broad, with individuals exhibiting a wide range of strengths and difficulties that affect their daily functioning and learning. The World Health Organization estimates 1 in 100 children globally having been diagnosed with ASD, whereas the United States Center for Disease Control and Prevention reports 1 in 36 children with ASD diagnosis in the U.S.A. Artificial Intelligence (AI) has shown promise in both assessing and supporting interventions for individuals with ASD. The present article reviews the multifaceted relationship between ASD and AI, including assessment, emotional recognition and regulation, social skills training. Concerns regarding accessibility, ethical use, and oversight are discussed.

Keywords: *Autism Spectrum Disorder, artificial intelligence, assessment, intervention.*

DIGITAL SUBJECT INTEGRATION: HISTORY TURNED INTO GRAPHICS

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Abstract

In education, digital subject integration is one of the major issues of our time. The primary questions are how digital education (informatics, computer sciences) and other school subjects, sciences and the different fields of informatics are connected. It is observed that digital education mainly focuses on hardware and software tools, tries to build up huge knowledge inventories, prefers fictitious data to real world problems, emphasizes theory to practice, in general developing computational thinking skills is reduced to coding and interface navigation. We are convinced that to make digital education effective and efficient, we should expand it to end-user computing, it should be socially sanctioned intellectual advances for everyone, and embedded in rich cognitive context. Considering all these requirements, a novel approach to subject integration is presented, where a digital interpretation of a triband is detailed. For the present paper a short paragraph of a history course book is selected which explains (writes about) the colors of a flag. It is found that with our solution the text-based paragraph can be converted into a graphical product, where different digital subject areas and classical school subjects are involved (e.g., searching the internet, analyzing data, arguing, checking correctness and reliability, designing and creating a presentation, handling graphical digital objects, understanding coordinates, RGB codes, etc.). Furthermore, the paper emphasizes the various skills and competencies (primarily digital but not exclusively) which can be developed during the problem-solving process.

Keywords: *Computational thinking, subject integration, searching, reading comprehension, graphics.*

NURTURING EQUALITY AND COLLABORATIVE LEARNING: A CASE STUDY OF STUDENT VOLUNTEERS AND COORDINATORS' RELATIONSHIP DYNAMICS

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Abstract

School volunteer programmes (SVP) facilitate students' community engagement, their personal growth and contribute to positive social change (Medlobi et al., 2021). Within the Croatian educational system, SVPs are integrated into school curriculum as extracurricular volunteering clubs, operating on the tenets of tolerance, solidarity, justice, inclusivity, and sustainable development. However, they facilitate a meaningful connection between students and teachers who coordinate SVP, as well. Such a relationship is defined by structured, continuous, and enduring students' engagement in volunteering endeavours within and beyond school's confines (Kamenko Mayer et al., 2019). This paper explores the dynamics of the relationship between student volunteers and coordinators of SVPs. A qualitative case study involving six focus groups with 38 student volunteers was conducted to describe and better understand such relationships. The thematic analysis reveals that coordinators foster a supportive, inclusive, and safe community. They cultivate quality relationships on mutual understanding, acceptance, respect, and equality. Students portray coordinators as inspiring figures who don't convey strict hierarchical settings and treat young people with high respect. These relationships play a pivotal role in dispelling preconceptions about hierarchical dynamics between students and teachers, thus promoting equality and democratic interactions. These interactions and experiences also lay a foundation for effective collaboration, teamwork, creative expression, and collaborative learning. The SVPs thrive in a relaxed and informal atmosphere, and are characterised by close, nurturing, and collaborative relationships. Trust is created between student's volunteers and teacher-coordinators, with the relationship being portrayed as warm-hearted and affectionate to that of a 'maternal figure'.

Keywords: *School volunteer programmes, student - teacher relationship, secondary school, sustainability citizenship, qualitative case study.*

THE 'ENCOUNTER' BETWEEN POSTHUMANISM, TECHNOLOGY AND EDUCATION

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Abstract

The starting point is a definition of posthumanism as a critical theory in humanities that deals with the question is what it means to be a human in the present conditions of globalization, technoscience, and climate change. There is the prospect of opening up new possibilities of how to be a human and what kind of a human. This does not mean that the end of humanity is near, but rather the end of a certain conception, a conception which at best was considered to refer to "a fraction of humanity that had wealth, power, and enough leisure to conceptualize itself as autonomous beings fulfilling their will through individual action and choice" (Hayles, 1999). The prefix "post-" in posthumanism, therefore, does not mean a complete break with that main part of the term, but rather is a sign of the ongoing deconstruction of what it "prefixes". It is a kind of "conceptual parasite that inhabits humanism itself and tries to get it to address its own contradictions" (Herbrechter, 2018b). Through this conceptualization of posthumanism, the author reflects on the relation between technology and education, and the understanding of the influence and use of digital technology in school. Does the latter enable education to be "better" (more effective, more available to everyone)? Following will be the reflection on the relationship between the conceptualizations of new technologies within a given theory of education and the kind of subject that is envisaged as the outcome of such education. Is technology purely a tool or perhaps it changes the outcomes and conceptualization of education? What kinds of changes are happening in schools in this regard? The changes, as it seems, are not (only) educationally-based, but are economically induced too.

Keywords: *Posthumanism, education, knowledge, technology, digitalization.*

TRANSFORMATION OF MARKETING AND SALES ROLES IN B2B COMPANIES: IMPLICATIONS FOR HIGHER EDUCATION

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Abstract

The evolving landscape of B2B marketing and sales faces multifaceted challenges spurred by digital transformation, AI integration, efficiency measures, and the pandemic's shift from personal to virtual interactions. These changes prompt a reevaluation of departmental functions and collaboration between marketing and sales, impacting the education of future managers. This study delves into the roles of marketing and sales in technical B2B companies and their implications for higher education. Three investigations were conducted: analysis of 150 job ads, four focus groups, and a quantitative survey (N=114), exploring marketing-sales interfaces. Findings stress the need for enhanced digital skills and customer-centricity in marketing education. Marketing and sales professionals require heightened analytical prowess for managing extensive customer data. Evolving job titles like customer relationship manager and omnichannel marketing manager denote a growing fusion between departments, focusing on individual customers rather than on target groups as suggested by classic marketing textbooks. Lead generation, once exclusive to sales, now spans both realms, yet disparities in perceptions lead to potential conflicts. Curricula should emphasize direct customer interaction for marketers and analytical depth for sales, enabling effective digital negotiations while preserving customer relations. Lastly, educational institutions should reconsider the traditional division between marketing and sales in curricula, fostering a more cohesive and collaborative mindset among future managers.

Keywords: *Marketing education, sales and marketing functions, marketing-sales integration, marketing curricula, sales education.*

WHEN QUANTITY FOSTERS QUALITY: B-LEARNING AS A WAY TO ACHIEVE THE HIGHER EDUCATION PURPOSE

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Abstract

It is fundamental to create conditions in Higher Education (HE) to support all students in promoting autonomy and the power to act concerning their employability, as job transitions are becoming more frequent, impacting individual trajectories. As an answer to this context, the aim was to create a training programme that proved relevant and accessible to a large number of participants. Likewise, there was a focus on promoting a secure and challenging context to apply the programme's contents and the development of tools that would be useful both during and after its conclusion. A Curricular Unit (CU) was designed in a B-learning format targeting HE students. This CU combines a remote (asynchronous and synchronous) and presential format. The components are organized in steps, which allow students to reflect on their past, their future, and the labour market, and to have an autonomous role in the construction of their learning by selecting the activities they consider most relevant. A monitoring and impact evaluation model for this CU was also constructed. The development process of this CU started with the auscultation of students and companies, combined with a bibliographic review regarding employability. This led to the first design of the CU, which was applied to a pilot edition composed of 32 Bachelor and Master Engineering students, between February and July of 2021. Since then, this CU has been implemented for four semesters, involving over 1200 students. The results of the monitorization and impact evaluation showed that on a scale of 1 to 5, the students attributed an average of between 4.1 and 4.7 to the relevance of the CU's contents and tools. Regarding the future utility of these materials, the students attributed an average classification of between 4.1 and 4.7. The applicability of the CU's resources was also verified through an increase between 15.2% and 20.9% in the actions taken by the students regarding their employability in pre and post-test results. These results remained stable independently of the number of enrolled students. This study appears to show that the auscultation of relevant agents combined with a bibliographic review promotes high content relevance and future utility. Simultaneously, creating a safe context for experimentation during the CU facilitated the students' implementation of a set of actions. Lastly, this study demonstrates that it is possible to involve up to 500 students per semester in a CU without compromising the quality of their learning or their singularity.

Keywords: *B-learning, higher education, lifelong employability, training.*

CLASSROOM CONNECTIONS ACROSS CONTINENTS: THE INTERSECTION OF INSTRUCTIONAL DESIGN, INCLUSION AND GLOBAL EDUCATION

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Abstract

In this presentation, the design of unique course assignments aimed at eliciting transformational learning before, during, or upon return of study abroad experiences will be highlighted. Colleagues at a large research university in the United States have led multiple 10-day study abroad field trips embedded within larger, 15-week courses. Only a subset of students in the course choose to travel abroad. The challenge was to create a set of assignments that would immerse the non-traveling students in the sights, sounds, and experiences of the host country as well as to contextualize the global experience of the traveling students within their own cultural norms and practices prior to traveling as well as upon return. As Kegan (2009) asserts, only when the form itself is at the risk of change then true transformational learning can occur. Using the tenants of this notion as a guide, this session will expand upon a revolutionary approach to global education that initially debuted at the 2021 END conference. In 2022, a follow-up presentation highlighted the structuring and sequencing of a virtual study abroad experience. Now that traditional global education initiatives have been re-initiated, this *current* presentation will highlight how the intersection of class format, student cohort, and study abroad destination were used to inform assignment development and creation. Artifacts from **four continents** worth of study abroad experiences will be covered, highlighting pedagogical elements that were universal along with contextual elements that were specifically adopted

with the host countries (Peru, New Zealand, India, and Antarctica) and student cohorts in mind. A demonstration of key instructional strategies developed during this time to support remote instruction and continued interaction between traveling students and individuals from the host countries will be profiled. The design of the assignments incorporating these strategies intended to enhance engagement and encourage collaboration and communication from a diversity of learners will be demonstrated, including; cross-cultural assignment sharing, empirical and quantitative data analysis, partner-based reciprocal teaching, video-creation, TEDtalks, and reflective writing assignments. Examples from traditional face-to-face courses that range from large core-curriculum offerings to smaller specialized offerings will be profiled alongside examples from fully online, asynchronous courses. Participants who would benefit from this session are faculty, administrators, and instructional designers who are interested in exploring new pedagogies in their classrooms or expanding the reach of global education on their campuses.

Keywords: *Global education, instructional design, high impact practices, study abroad, transformational learning.*

TRAINING AND INCLUSION: THE IMPORTANCE OF PREPARATION TO USE THE LEGO BRAILLE BRICKS KIT IN AN INCLUSIVE CLASSROOM

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Abstract

There are approximately 18.6 million people with disabilities in Brazil, representing 8.9% of the population (IBGE, 2023), with 1.5 million students enrolled in Basic Education (INEP, 2023). The Dorina Nowill Foundation for the Blind (DNFB), a leading organization in the rehabilitation of people with visual disabilities (VD), conceived the Lego Braille Bricks (LBB) kit, a pedagogical resource including Lego pieces representing the Braille alphabet and its respective letters. This resource is suitable for both people with VD and sighted individuals, facilitating the development of inclusive activities. The LBB kit is produced and distributed globally by the Lego Foundation in Denmark to schools serving students with VD. DNFB has already distributed to 91 municipalities in Brazil, significantly contributing to the literacy process of children with VD. Considering its nationwide impact, this article aims to describe the foundations underpinning the Educators' Training Program for the use of LEGO Braille Brick (ETPLBB) for education professionals to utilize the LBB resource in school practices. The ETPLBB is an online program offered via the Virtual Learning Environment of the Center for Promotion of Digital, School, and Social Inclusion. Since its inauguration in 2018, the program has trained over 4,000 education professionals in 12 Brazilian states. The ETPLBB consists of three modules that include the development and application of an inclusive strategic intervention plan in an inclusive environment for children with and without VD. The ETPLBB utilizes the Constructionist, Contextualized, and Meaningful (CCM) pedagogical approach (Schlünzen, 2000; 2015), drawing on educational theories of Dewey, Ausubel, Papert, Vygotsky, and Freire. The CCM approach emphasizes: the importance of solving real-world problems (Dewey, 1938); knowledge construction through the use of technology (Papert, 1985); the significance of connecting new information with existing knowledge (Ausubel, 1963); the role of social and cultural contexts in learning (Vygotsky, 1998; 1993); student autonomy (Freire, 1997). Through this approach, the ETPLBB aims to create a dynamic and constructive educational environment, where education professionals can develop and reflect on their teaching methods, and students can actively participate in their learning process (Schlünzen, 2000; 2015). This holistic approach to education is integral to the development of literacy skills in children with or without VD, promoting a specialized and inclusive learning environment.

Keywords: *Lego braille bricks, constructionist contextualized and meaningful approach, inclusive education, training program.*

WHAT MAKES A GOOD INSTRUCTIONAL VIDEO? THEORETICAL VS. EMPIRICAL APPROACH TO UNDERSTANDING WHAT STUDENTS AND TEACHERS LIKE ABOUT INSTRUCTIONAL VIDEOS

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Abstract

Although there is a heightened awareness of reading promotion in schools, the results of the IEA study PIRLS are not developing positively in Germany: The number of children who need to achieve sufficient reading competence in elementary school to transfer to secondary school is increasing. However, the popularity of reading in leisure time has slightly increased for primary school children since 2012. So, purely motivational issues are not driving the poor results. Instead, there is a significant increase in the use of online videos and their creation. If we ask what incentive videos offer, a connection to Comenius' and Pestalozzi's ideas of didactics that make everything accessible to all with all senses up to modern cognitive psychology becomes possible, which suggests based on the theory of dual coding to use different sensory channels for the provision of information simultaneously. Data from media use studies illustrate that students' reception practices and preferences have changed toward multimodality in convergent media. To understand the object of reading strategies, we conducted an exploratory study with a secondary school to ask how students and teachers evaluate the quality and effectiveness of instructional "explainer videos" on the SQ5R method. Therefore, we first evaluated the criteria of research for good educational videos and transferred them into a semi-standardized questionnaire on three selected explainer videos that were examined according to these criteria by content analysis. Afterward, the students evaluated the videos. Three qualitative interviews with German teachers about the teacher's criteria complement the view of the school perspective. The results of the explorative study show, that even serious, offered explainer videos by no means satisfy all relevant criteria themselves and that aesthetic categories and exemplary foundation seem to be essential for the students. Furthermore, it becomes clear that teachers need more theoretical knowledge to be responsible for the fact that freely available multimedia offers beyond those provided by textbook publishers can be insufficiently assessed from a professional point of view. Therefore, teachers tend to stick to written text-based formats or videos provided by textbook publishers. Given the increasing use of *Open Educational Resources* (OER), this theoretical deficit is glaring and reinforces the remoteness of schools from the real world, measured against the students' learning conditions.

Keywords: *Digital mediatization, open educational resources, educational videos, reading literacy, theoretical knowledge of teachers.*

THE METAPHOR OF THE POLYHEDRON: WHAT DO TEACHERS THINK ABOUT THE QUALITY OF EDUCATION IN COLOMBIAN RURALITY?

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Abstract

Quality education must be understood as a fundamental right that enables many other globally agreed goals to be achieved. In Colombia, measuring quality education through students' performance in standardized tests is a tradition. However, both the association of quality education with students' performance in tests and its implementation in the Colombian rural context is problematic. Since, from the actor's perspective, in this case the teachers, quality education is much more than a grade. Quality education beliefs of Colombian teachers in the rural context is explored in this qualitative study. As per grounded theory logic, the way in which quality education dimensions are shaped from the teachers' beliefs is identified, their scope scaffolding and the strategies for the social construction of the concept.

Keywords: *Quality education, rural education, teachers' beliefs, Colombia.*

ETHICS OF GENERATIVE AI USE IN HIGHER EDUCATION: A FOCUS GROUP STUDY

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Abstract

Generative Artificial Intelligence (GenAI) tools like ChatGPT and DALL-E are increasingly impacting all aspects of our lives, including education. Educators and students are trying to adapt and learn with this disruptive technology. The objective of this study was to understand and critically evaluate the ethics behind GenAI when used in university settings. We conducted a focus group discussion at a public research university in the Netherlands to understand the challenges and concerns that arise with using GenAI in education. The topics for the focus group discussion were defined based on existing literature on ethical principles of AI in education. The use of GenAI was analyzed from five different perspectives: responsibility, trust, learning, inclusion, and its role in higher education. Participants could choose one of the topics based on their motivations and interests. This was also recorded in a template later to analyze their personal motivations and connection to the topics. Each group had an expert facilitator who helped guide the conversation and observed the discussions. The participants (n=31) were a mix of students, educators, and non-teaching staff. There were two methods through which data was collected. One was from the template that the participants filled in and the second was the notes recorded by the facilitators during the discussions. The study's findings can be categorized as challenges, opportunities, and solutions for better implementation of GenAI in higher education. The responses are currently being evaluated and will have concrete ideas that will be detailed in the final paper. The final paper will shed light on approaches to resolve and address ethical considerations in the use of GenAI.

Keywords: *Generative AI, ethics of AI, higher education, AI literacy.*

CHATGPT AS TUTOR? A CASE STUDY ON COMPETITIVE PROGRAMMING

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Abstract

In this paper, we present a case study on how students utilize ChatGPT as a tutor for a short competitive programming course. The students were divided into two groups, one led by a teacher, and the other tutored by ChatGPT. The course was an intensive five-day course and both groups studied concurrently. Students could freely choose which group they participated in. The ChatGPT group was provided a guide on the basics of prompting, including approaches on how to generate the study material. Both groups were allowed to use any learning material, and only the teacher-led group excluded the use of generative AI tools. *Research questions:* In this study, we focus on the following questions: (1) How did students approach using ChatGPT as a tutor?; (2) Are there significant differences between students led by a teacher or by ChatGPT?; (3) How did students in both groups experience the teaching and did it correlate to the achieved learning results (exam)? *Methodology:* The data consists of survey data, and final exam given to students (N=11). We also collected the discussion history of the ChatGPT group. The discussion history was divided into prompt-message pairs (N=340) and analyzed. The data was analyzed using mixed methods. The discussion history was analyzed using grounded theory. Statistical methods were used to find any correlation between initial skill level and learning as well as the tag distribution of the ChatGPT discussions. *Results:* Differences were found between the two groups. Those with a higher initial skill level seemed to favor the ChatGPT group, whereas the less experienced chose the in-person teaching. Analysis of the ChatGPT discussion history showed mostly similar usage patterns across students. We present the distribution of tags used by the ChatGPT group. Additionally, we give insight on how to approach similar research settings in the future. *Impact:* All around the world, students are already utilizing ChatGPT as a substitute for a teacher or a tutor. Our pilot study provides insight into how students approach utilizing ChatGPT as a tutor in a programming teaching setting. These preliminary results can be used to guide future research settings.

Keywords: *ChatGPT, programming education, case study, AI in education.*

IS HOMESCHOOLING DETRIMENTAL TO SOCIOEMOTIONAL DEVELOPMENT? AN EXPLORATORY STUDY WITH SPANISH SCHOOL-AGE CHILDREN

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Abstract

In recent decades families that decide to homeschool their children have increased significantly. The situation of these families is very different depending on the country of residence. For instance, in Europe, most countries recognize homeschooling (HS) as a legal right. However, existing regulations vary in a wide range of situations, ranging from rather lax regulations (Austria, France, Belgium) to quite restrictive ones (Italy, Norway, Portugal) (Blok et al., 2017). These differences in regulation highlight the lack of consensus about the benefits and consequences of HS. The issue of social and emotional adjustment is closely associated with socialization, which is a key issue in HS. The HS advocates appeal to the authoritarian, uncritical and competitive environment of the educational system, to the possible situations of mistreatment and/or discrimination between peers or to the difficulty in maintaining social status as variables of the school context that can harm the social development of children (Dalaimo, 1996; Farris & Woodfrud, 2000; Medlin, 2000; Meighan, 1995; Murphy, 2014; Taylor, 1986). Detractors of HS consider that the school context is critical in learning social norms, values, and social interaction skills and that, therefore, reducing it to the family context can result in isolation and poor social and emotional development (Farris & Woodfrud, 2000; Medlin, 2000; Murphy, 2014; Romanowsky, 2001; Shyers, 1992). The objective of this work is to analyze the impact that homeschooling has on the socioemotional development of school-age children. The participants were 205 families with children between 6 and 11 years old. 124 of these families school their children in public schools and 84 are homeschooled. An ex post facto design has been used in which the psychological adjustment of the participants has been compared through two measures: on the one hand, self-report of the Child and Adolescent Evaluation System Questionnaire (SENA, Fernández-Pinto et al., 2015) and, on the other hand, hetero-report of the same instrument completed by the family. Preliminary results suggest that there are no significant differences in the socioemotional development of school-age children depending on the type of schooling. The implications of these findings will be discussed.

Keywords: *Homeschooling, socioemotional development, school-age children, social adjustment.*

ARTIFICIAL INTELLIGENCE REVOLUTIONIZING ONLINE EDUCATION

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Abstract

The recent COVID-19 pandemic forced universities to move to online education, many of which would not have considered online courses without that impetus. Subsequently there has been a surge in online courses. Online courses take a long time to prepare and frequently the delivery and execution is of low quality. One way to overcome both limitations is to use the powerful paradigm of Artificial Intelligence, especially Large Language Models, to develop and deliver online courses. In this paper, we introduce “AI Lecturer”, an innovative solution powered by a Large Language Model that is designed to improve the quality and delivery of lessons in educational institutions. The paper discusses related work in online course delivery and locates our solution in this space. The AI Lecturer functionality is presented and includes AI-powered automated lesson preparation, interactive teaching through AI avatars, and personalized homework generation and evaluation. A survey was carried out to evaluate student satisfaction and learning using AI Lecturer. The survey results will be presented. Respondents expressed a high degree of satisfaction with the user interface and overall experience, found the lifelike avatars engaging, and indicated they would recommend the platform to others. Finally, we will discuss the advantages and disadvantages of our platform and the challenges students faced when using it.

Keywords: *AI lecturer, online education, interactive teaching avatars, automated personalized homework.*

BETTER THAN BEFORE: BUILDING ON EXPERIENCES REGARDING SCHOOL TO HOME ENGAGEMENT IN A POST COVID-19 PANDEMIC WORLD

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Abstract

Working with pre and inservice teachers, one can see an ongoing disconnect between stated beliefs and actions regarding the significance of families and caregivers in a child's academic development. Teacher beliefs regarding the importance of school-home engagement were often limited to what teachers knew from a few school-based encounters. These were typically teacher led, such as parent-teacher conferences, meetings regarding behavior and academic concerns, and other discussions regarding school issues. Home-visits and other more personal encounters were not common-place or expected in many schools. While teachers might voice the adage "parents are the child's first teachers", methods to engage with parents to build on these practices were often neglected. Much of this could be attributed to a deficit perspective, as languages and cultures unknown to the teacher could be undervalued and misunderstood. Globally, the COVID-19 pandemic's effect on public spaces caused the rapid pivot to alternative forms of teaching. A much more home-based approach to schooling was embraced by school administrations. This included virtual teaching across ages, geographic regions, and economic levels. Teachers worked with children virtually in kitchens, living rooms, and other personal spaces. Teachers were often dependent on parents and siblings to initiate and even interpret the content of lessons in the home context. With an insider's view, teachers taught across a screen, with windows into sometimes more than 20 homes—thus families-- at a time. Did a more positive belief and understanding about parent engagement develop or did misconceptions regarding parenting—including language and cultural deficits--persist? This paper presents findings regarding teachers' beliefs about working with parents in 2023, the third year of the COVID-19 pandemic's effect on schools. Information from studies in six countries will be presented, with findings and emerging trends in parent engagement examined. Traditional school-based programs are explored, such as Family Math and "shared book experiences," made new with technology and electronic communication. Implications for how teachers and families can acknowledge and make use of practices in both settings will be presented.

Keywords: *Technology, school-home engagement, family literacies.*

NAVIGATING POLYCRISIS: THE ROLE OF SCHOOL PEDAGOGUES IN CROATIA

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Abstract

In the present era, there is increased awareness that we are navigating a time of *polycrisis*, which refers to the simultaneous interaction of different crises (e.g., the Covid-19 pandemic, war crisis, climate crisis, weakening democracy, inflation, social inequality, etc.). All these issues intertwine, generating instability, complexity, and uncertainty in entirely unpredictable ways (O'Regan, 2023). A state like this notably shapes the dynamics of the education system and all individuals participating in it (educational workers, students, parents, etc.). This research is initiated with the aim of gaining insights into whether schools are prepared, and in what manner, for operating in such complex circumstances and confronting various crisis situations. More precisely, the research is focused on the experiences of school pedagogues, as educational specialists in Croatian schools. The main objective is to examine their experiences in dealing with different crisis situations at schools, as well as their resilience and preparedness for effectively coping with potential crises that may arise in the future. In this paper, the intention is to present the results of the qualitative survey, which aims to examine school pedagogues' experiences regarding their resilience and preparedness in various crisis situations within elementary and secondary schools. This paper aims to present preliminary research findings based on a review of relevant literature in the field and focus groups with school pedagogues. Understanding of this topic can contribute to establishing an empirical foundation for the development of a more resilient educational environment.

Keywords: *Croatian educational system, polycrisis, school pedagogues, qualitative study.*

GENERATIVE AI-CHATBOTS IN HIGHER EDUCATION: CHALLENGES AND OPPORTUNITIES IN STUDENT MOTIVATION AND AUTHENTIC ASSESSMENTS

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Abstract

The rapid pace of development in generative artificial intelligence (AI) has resulted in the introduction of extremely advanced chatbots, such as ChatGPT, Google Bard and Copilot. These chatbots are capable of simulating human behavior quite successfully, because they have been trained on huge data sets with large language models (LLM). New avenues for application of generative AI-chatbots have arisen not only in industry, science and medicine, but also in education. The consideration of social and ethical consequences of this new technology has not kept pace with the speed of its development. This paper explores challenges and opportunities which have arisen in higher education with the emergence of generative AI-chatbots. For university students, the temptation to use chatbots to complete their assignments may seem like a good way to save time and effort. The disadvantage is that they may not learn anything by simply copying answers from a chatbot. Inexperienced students may trust the validity of answers which are incorrect, especially if they do not have prerequisite knowledge to evaluate the output of a chatbot. For educators, however, it can be extremely difficult to determine whether students have completed their assignments themselves, or whether they have submitted the output from a chatbot. Instructors have the responsibility to teach university students to avoid plagiarism by judiciously citing the sources used. Furthermore, competencies taught at the university level should go beyond mere reproduction of facts. The development of analytical capabilities and critical thinking often require hard work to learn from mistakes, so-called “productive failure”. Creative teaching methods, such as gamification, may help to motivate students to engage with learning materials. A number of questions which have arisen from these challenges will be addressed in this paper. (1) Can educators determine whether student submissions are original or were written by a chatbot?; (2) Should students be allowed to use generative AI-chatbots to work on assessments? If so, how?; (3) Can creative teaching methods, such as gamification, motivate students to engage in learning?; (4) What kinds of assessments can help to evaluate whether students have achieved learning goals? Challenges encountered in exploring these questions when teaching undergraduate university courses will be presented. Opportunities to increase student engagement and design of authentic assessments will be discussed.

Keywords: *Artificial intelligence, chatbots, motivation, gamification, assessment.*

ADAPTING A BUSINESS PLAN IMPLEMENTATION AS AN INSTRUCTIONAL METHOD

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Abstract

This paper addresses the disconnect between classroom learning and real-life applicability, particularly in the context of master's degree programs. It explores the effectiveness of using business plans developed collaboratively with professors and local government branches or businesses as case studies in graduate business school courses to bridge this gap and enhance student learning outcomes. In order to test this a business plan was developed by university teachers working together with a local government branch, afterwards that business plan was turned into a case study for a business graduate course. The student feedback as well as their performance on assignments indicated a higher degree of satisfaction with this type of case study, it also improved the actual business plan, allowing students to impact on the case study in real time.

Keywords: *Business plan, case study, instructional method.*

THE MATHEMATICS THAT THE SEA CONCEALS - CONNECTIONS FOR THE TEACHING OF MATHEMATICS

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Abstract

Exploring mathematical connections with relevant current issues is an important support for learning in a world where reality and its problems are becoming increasingly global, multidimensional and complex. The first author of this paper has developed, from scratch, a set of 17 worksheets relating mathematics with the sea, driven by the cause of ocean sustainability. The tasks are intended for middle school mathematics, grades 7 to 9, and address all the main topics of the syllabus (algebra, geometry, statistics, computational thinking). Most of the tasks are contextualised in the history and livelihood of Cascais, the Portuguese municipality where the author teaches, focusing on aspects such as marine pollution, fishing, oceanographic exploration, surfing, navigation, lighthouses, among others. During the academic year 2022-23, a didactic experiment was carried out, by assigning some of the tasks to middle school students, collecting data and conducting a survey afterwards. From the results of the didactic experiment, the following aspects stand out: the established connections enabled the students to recognise the relevance of mathematics, thus leading them to understand it is part of reality and not merely an isolated school subject; the students got involved with curiosity and commitment in carrying out the tasks; they detected incorrect resolution strategies and self-corrected them; they developed transversal mathematical skills and deepened other areas of knowledge, going beyond learning specific mathematical contents. The tasks provided the students moments for reflection and the sharing of experiences of active citizenship in favour of the ocean, proving that mathematics classes can contribute to raising awareness of the importance of ocean sustainability and benefit from this connection. This work culminates with the challenge of putting into practice or adapting these tasks in other Portuguese schools and municipalities, thus reinforcing the students' learning process in a country with a maritime dimension such as Portugal.

Keywords: *Middle school mathematics, mathematical connections, sea, ocean sustainability, Cascais.*

COLLABORATIVE NETWORKS OF KNOWLEDGE

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Abstract

Numerous learning systems have emerged over the past two decades promising novel approaches to improve education and training. However, they use a learning process based on exposure to information and practice, which does not guarantee the internalization of the concepts and changes in behavior required to improve education and training. This paper proposes a learning process that aims to address this concern. It consists of five steps: modeling the learner, motivating, guiding, assessing, and attesting the learner. We present each of these steps and discuss how leveraging innovative knowledge structures from network science and existing and emerging technology and AI can support the proposed learning process in a learning system that engages learners in their learning journey. Our discussion is supported by a theoretical framework developed based on data on student learning and on student and faculty experiences with two learning systems where we piloted steps of the proposed learning process. Each learning system has endured the scrutiny of student and faculty usage over several years and their feedback has shaped our goals and expectations.

Keywords: *Network of knowledge, individual learning pathways, personalized education, micro-learning.*

INTERNATIONAL COOPERATION ACTIONS FOR THE SYSTEMATIZATION OF A SIGN LANGUAGE GENERATOR AND PUBLISHER

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Abstract

This text describes the process of systematizing a study and developing a pilot technology aimed at the Brazilian Sign Language (Libras), a result of a collaboration between Brazil and Costa Rica. The Technological Institute of Costa Rica created the International Platform for Sign Language Editing (PIELS) to support the editing and learning of Costa Rican Sign Language (LESCO). PIELS emerged with the goal of finding technological solutions for the graphic representation of content in Sign Language, utilizing graphic and interaction libraries, programming languages, and a web server, with data stored locally in a lightweight and accessible format. The study in question involved creating 60 signs in Libras, starting from signs already existing in PIELS, which initially only included LESCO. Indicators for the tool's use were also analyzed, aiming to promote effective communication and mutual understanding between the teams from both countries. The process included meetings with a multidisciplinary team, composed of Libras interpreters, deaf individuals invited for the validation of the signs, and experts in programming and information technology. Topics covered in the meetings included: introduction to PIELS technology, technology studies in Sign Language, deaf culture in Costa Rica, morphology, phonology, syntax, and discourse in PIELS, dictionary and proximity, and Libras grammar. For the creation of the pilot systematization, six main categories of signs were selected, covering days of the week, months, colors, numbers from 1 to 10, greetings, and family context, chosen for their relevance and frequency of use in everyday life. The result was a library of common signs in LESCO and Libras. Regarding PIELS, the proposal is to include technologies that allow an avatar to reproduce Libras signs stored in a database. The signs, created and stored based on Libras grammar, are facilitated by an editor that optimizes the creation of complex signs. The signs consist of Libras parameters and their transitions, trained in the avatar, with hand movements such as linear, curved, circular, sinusoidal, and spiral, configurable for different directions.

Keywords: *Brazilian sign language, platform for sign language, digital technology in education.*

ART FOR EVERYONE: EDUCATION TO PROMOTE BEAUTY IN SOCIETY

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Abstract

Today's universities have become commercialised. Programmes that cannot make a profit or have low career earning potential are shut down or not started. In this paper, I will argue that this is extremely damaging to societies because "Beauty" is demeaned and not considered important. Consequently, societies create human-made environments that are ugly, e.g., the concrete jungles of some cities. More importantly though, I will argue that the lack of beauty in our human-made environments de-sensitises everyone exposed to them, reducing their ability to appreciate beauty. This negative feedback loop is dehumanising humanity. Universities have a role to play to reverse this trend. The paper will present an approach "Art for Everyone" the author developed and promoted as President of a private university to overcome this problem. The underlying philosophy of my approach will be discussed, it is based on American pragmatism and environmental aesthetics. The approach was implemented in the Faculty of Arts and Design. Examples of student artworks will be presented to show what can be achieved.

Keywords: *Everyday art, art for everyone, environmental aesthetics, interactive art, art education.*

ARTIFICIAL INTELLIGENCE (AI) ENHANCED NEXUS LEARNING APPROACH AS AN EXAMPLE OF STUDENT-CENTERED LEARNING

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Abstract

This paper reports on student-centered learning, dubbed Nexus Learning. It covers pedagogy related to academia-industry collaborations in the development of product opportunities while utilizing Artificial Intelligence (AI) capabilities. It focuses on putting students in an industry project situation where their combined contribution is required to achieve the final goal. Thus, it aims to develop clear sense of the requirements of a graduate for the future workplace. This teaching approach requires students to construct knowledge by engaging collaboratively with industry partners, and has proved more effective than traditional didactic approaches in developing innovative thinking, knowledge creation capacity, and professional skills. It meets the emerging needs of industry to develop managers, designers, and engineers into more accomplished practitioners in the global economy. With Nexus Learning, students learn by designing and constructing actual solutions to real-life problems. In this paper optimization of the food system distribution in Pottstown, Commonwealth of Pennsylvania in the United States, is considered. It has been noted in literature that effective project learning has five key characteristics: Project outcomes are tied to curriculum and learning goals; Driving questions and problems lead students to the central concepts or principles of the topic or subject area; Learners' investigations and research involve enquiry and knowledge building; Learners are responsible for designing and managing much of their learning; and Projects are based on authentic real-world problems proposed by industry partners that students care about. Industry sponsored projects are ideal instructional approaches for meeting the objectives of Nexus Learning, because they employ the 4Cs Principle – critical thinking, communication, collaboration and creativity with learning structured in real world contexts. Researching across subject boundaries, managing different parts of the projects, critiquing each other's work, and creating a professional, quality product opportunities, helps develop real-world problem-solving skills. In addition, motivating learners to utilize the power of Artificial Intelligence, manage their own time and efforts, and present and defend their work, equips them with valuable skills for their workplace.

Keywords: *Higher education, artificial nexus learning, student-centered learning, industry sponsored student projects.*

TOWARDS INTERCULTURAL COMMUNICATIVE COMPETENCE: ZOOM EXCHANGE BETWEEN U.S. AND FRENCH UNIVERSITY STUDENTS

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Abstract

In the absence of an authentic immersive setting for language learning and exposure to the host cultures, virtual interactive exchanges have been demonstrated to be appropriate substitutes for such skill development (Conboy, Ugalde & Reuber, 2017). Learners of French at a U.S. university conducted virtual dual-immersion (VDI) interactive exchanges, over Zoom, with students of English at a French University. In each session, students spent 15 minutes speaking in French and 15 minutes speaking in English and answered questionnaires prior to and following each of the exchanges. Reported levels of student confidence improved. Self-reports indicate that, in the conversations, students learned new concepts, both linguistic and cultural. We address (a) advantages and disadvantages compared to the use of proprietary interactive exchanges; (b) assess the possibilities and challenges of setting up an independent VDI exchange and; (c) demonstrate that the use of VDI in the foreign language classroom enhances language learning and integrates 21st century skills and the guidelines of the American Council on the Teaching of Foreign Languages (ACTFL).

Keywords: *Intercultural communicative competence, VDI exchanges, French as a second language.*

EXPLORING FLIPPED CLASSROOM AND CONTINUOUS ASSESSMENT – A CASE STUDY INVOLVING GENERATION Z UNDERGRADUATE TOURISM STUDENTS

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Abstract

The flipped classroom is an active, student-centred teaching-learning methodology. It aims to increase the quality of time spent in the classroom. This approach quickly spread throughout the world and has attracted the attention of teachers and researchers from different areas. As Mathematics teachers, the authors are faced with students' lack of interest and consequent failure in the subjects in this area. In an attempt to increase students' interest and commitment, one of the authors decided to use the flipped classroom model in one of her courses. In an effort to further strengthen student commitment, a continuous class assessment methodology was also used. Students were aware that any and all activities carried out in the classroom could be considered for evaluation. To understand how these changes were perceived by the students, a quantitative survey was conducted. The participants in the study are undergraduate students from a Portuguese higher education institution enrolled in the course of Applied Statistics, from the 2nd year, 1st semester of Marketing for Tourism degree. The didactic approach adopted by the teacher and the activities developed made the learning process more interesting and promoted a more positive attitude towards Statistics.

Keywords: *Flipped classroom, pedagogical innovation, math education, continuous assessment, higher education, Generation Z.*

ADS AND MONETIZATION DIMINISH WEB EXPERIENCES

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Abstract

The nearly ubiquitous presence of marketing ads on websites has reached a point where it often detracts from the end-users' experience and compromises the intended purpose of the website. Online educational websites are not immune to this practice and often educational research is hindered by distracting marketing advertisements. Marketing ads are more pervasive than ever before and have become the basis for monetization of websites. As users navigate online spaces, they find themselves bombarded with intrusive advertisements that disrupt their ability to complete their original goal. Ads, whether inline with the body of the document or on a sidebar, autoplay videos that the user may not want to see, and excessive banners not only slow down page loading times, but also create an environment where the actual content takes a backseat to marketing content. When viewing some websites on a mobile platform, often an article can have so many advertisements inline with the story that it becomes nearly impossible to finish or even follow the article that was the user's intended purpose for the visit. This saturation of advertising elements can erode the overall appeal of websites, diminishing the quality of user engagement and user experience. From a business standpoint, striking a balance between revenue generation and user-friendly design is crucial for preserving the integrity of online platforms and ensuring a positive browsing experience. However, from an end-user perspective, it appears as though website content creators and companies view the monetization through marketing ads as immensely more important than the content itself. This paper will explore the perceptions and potential impacts of marketing advertisements on educational experiences using the web.

Keywords: *Ads, web-experience, diminished web quality.*

AGILE LEARNING: USE OF EDUSCRUM IN HIGHER EDUCATION

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Abstract

Eduscrum is a methodology that applies agile project management principles to the field of education. The Scrum methodology is an established approach in software development, where iterative product development is carried out by a small development team in work cycles. Originally, Scrum was an agile framework that originated in software development but has since been adapted to various industries, including education. The idea behind Eduscrum is to apply agile project management principles to education, aiming to be more flexible in addressing the needs of learners, fostering collaboration, and enabling continuous feedback. Eduscrum organizes the learning process into sprints, which are time-boxed periods typically lasting one to four weeks. During each sprint, students and teachers work collaboratively to achieve specific learning objectives. Scrum defines roles which are sometimes difficult to adapt to the educational context. The role of the product owner is often taken on by the teacher, who defines the learning goals and prioritizes the content. The Scrum master moderates the learning process, removes obstacles, and ensures that the Scrum framework is followed effectively. Students take on the role of the development team. Regular meetings, often referred to as "stand-ups" or "Scrum meetings," are held to discuss progress and challenges. These meetings provide a platform for students and teachers to collaborate, share insights, and identify any impediments. The Scrum process includes artifacts, like a backlog to prioritize tasks and charts which track the progress of the sprints. One of the key principles of Eduscrum is flexibility. It allows for adjustments based on student needs, enabling a dynamic and responsive learning environment. Eduscrum promotes regular feedback loops between students and teachers, fostering a culture of continuous improvement. Collaboration is a central theme in Eduscrum. Students work together on projects, share ideas, and contribute to the overall learning experience. The paper describes how the methodology is used in a master's level class for computer science. Content of the course subject is social network analysis. The students work together in small groups. They perform together a self-chosen project and write a research paper together. Every process step is accompanied by the professor and an assistant, in accordance with Eduscrum. Each project group gets constant feedback. The students are guided step by step through the whole process. In the course evaluation, the students state their high learning outcomes, but they find that the projects are a lot of work.

Keywords: Agile learning, Eduscrum, higher education, science education, social network analysis.

UTILIZING LEARNING ANALYTICS IN LARGE ONLINE COURSES

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Abstract

In courses with hundreds of students, online or hybrid implementation may become more practical than standard classroom teaching. However, it can be difficult for teachers to track student progress in all areas reliably in large courses. In this paper, we present a study where two large online computer science courses were analyzed. Detailed data about student performance in different types of exercises and assignments were collected. In addition, students' perceptions about their learning performance, and the quality and difficulty level of learning materials were collected during all seven weeks of the course. The performance data was analyzed to try to recognize the effectiveness and quality of different course areas. Moreover, we found out if the time usage or perceived difficulty level affected students' performance. The strong correlations between different types of exercises and exam scores indicate that the material is effective and the exam measures the learning properly. However, time usage and perceived difficulty level seem to have little effect on the result.

Keywords: Learning analytics, programming, online learning, feedback.

SME RESPONSIBILITY AND LEARNING BY DEVELOPING PEDAGOGY

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Abstract

In recent years, teaching related to environmental responsibility and biodiversity loss has been implemented in Finnish comprehensive schools and upper secondary schools, for example, through various tasks related to forests, nature, and urban environments. Corporate social responsibility (CSR) has been part of higher education studies since the early 2000s. Large companies actively communicate about their level of responsibility and actions. Sustainability communication is at different levels in SMEs, and practical, responsible business implementation is not seen as vital through SME communications. The practical implementation of responsibility in SMEs is essential to meet the goals and requirements outlined in the UN 2030 Agenda and the EU Corporate Responsibility Reporting Directive. Finnish universities of applied sciences have good opportunities to promote responsibility and support practical implementation in SMEs through close regional and corporate cooperation. Laurea University of Applied Sciences' Learning by Developing Pedagogy (LbD) creates opportunities to develop the performance of responsibility and combine education and the practical work of SMEs, strengthening the competence of SME personnel and the practical implementation of responsible business as well as responding to other stakeholder demands through training. The SME cooperation between Laurea University of Applied Sciences and LAB University of Applied Sciences' Green Responsibility project revealed room for improvement in the practical implementation of responsibility competence and responsible business in the SME sector. Based on the observations made in the Green Responsibility Project 2021-2023, Laurea and LAB Universities of Applied Sciences created a follow-up project to implement responsible business and competence development. This article provides an outlook in the follow-up project: SME personnel members can strengthen their responsibility competence while participating in their studies and, at the same time, produce development and implementation plans for their operating environment, thus promoting the implementation of corporate responsibility in the company and further value chains. The goals of the studies are formed by combining theory related to the topic, small-scale research focusing on the operating environment, and various development and implementation tasks based on LbD pedagogy and company practices. Through the studies offered and implemented, it is possible to combine the promotion of responsible business in practice, the competence development of SMEs, and the theoretical and guidance support provided by educational organizations to promote global responsibility.

Keywords: *LbD, pedagogy, responsibility, SME, sustainability.*

BRIDGING THE CAREER READINESS GAP: EXAMINING THE PROMISE OF VIRTUAL INTERNSHIPS

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Abstract

This mixed methods study explored the perspectives of 14 graduate students in a virtual instructional technology (IT) internship. Guided by the authentic learning framework, the research identified perceived value, support needs, preparation gaps, and improvement opportunities. Findings revealed interns valued applying knowledge to real projects, developing professional skills, and receiving mentorship. Participants desired pre-internship technology training and clear expectations. Proactively developing time management, organization, and communication abilities was crucial. Though limited to one program, the study provides insights for designing effective virtual internships aligned with authentic learning principles.

Keywords: *Virtual internships, instructional technology, authentic learning, work-integrated learning, online experiential learning, graduate education.*

E-LEARNING COURSES ON SUSTAINABILITY: TOOLS, ASSESSMENT AND VERIFICATION

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Abstract

E-learning courses on sustainability are essential for education in this field, encompassing various aspects of life and learning. This paper explores the significance of these courses, conducted at two universities in different countries, focusing on their creation, usage, and quality verification. Due to the subject's multifaceted nature, creating e-learning sustainability courses demands a holistic approach. To form a comprehensive educational program, it should integrate ecology, economics, society, and technology knowledge with didactic and pedagogical methods. The courses must be up-to-date, grounded in the latest scientific research, and tailored to meet the needs of a diverse audience, including students from various majors. A crucial aspect is the accessibility and flexibility of e-learning courses, enabling learning at any time and place. E-learning platforms should be user-friendly, fostering interaction and engagement through various activities such as hands-on exercises, online discussions, and progress tracking. A key component of e-learning sustainability courses is verifying content quality and teaching methodology. The verification process should assess the relevance of educational materials, the reliability of information sources, and the effectiveness of teaching methods. Furthermore, it is important to consider course participants' feedback through regular evaluations and surveys. Courses should be revised and enhanced if issues are identified or updates are required.

Keywords: *e-Learning, sustainable development, course assessment.*

TEACHER WELLBEING AND RETENTION: THE IMPACT OF RAPIDLY TRANSFORMING LEARNING AND TEACHING WITH DIGITAL TECHNOLOGIES

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Abstract

All students, worldwide, have the right to access high quality education. However, there are often many factors that can negatively impact on access to high quality education. In particular, many countries have reported the need for an increase in teachers to ensure that access to high quality educational learning experiences are maintained. This concern is reported in several studies across Europe and Australia where there is a growing concern focused on a shortage of teachers and an increased argument around the need for the retention of teachers once they are employed in schools. COVID-19 shed some light on education and the role of teachers, and often how resilient teachers were in transforming their existing teaching practices through the use of new and emerging digital technologies to better support students. This change was often referred to as emergency remote teaching and was witness to teachers needing to rapidly transform their learning and teaching with digital technologies. It is within this context that this paper explores the relationship between teacher wellbeing, the need for educators to rapidly learn new digital technologies and emergency remote teaching across six (6) European countries during Covid-19. This paper reports on the preliminary findings of a case study that involves a survey of 27 teachers and semi-structured interviews with three teachers, to capture the rich description of each of the participants. A qualitative thematic analysis of the data was conducted with two main themes emerging. These two themes were (1) time and workload, and (2) leadership and support. While the nature of the study is quite small, it still has the potential to contribute to current literature pertaining to teacher wellbeing and teacher retention within schools. As educational institutions continue to look towards new digital pedagogies and digitally transform current practices, further emphasis needs to be placed on the notion of teacher wellbeing and retention.

Keywords: *Teacher wellbeing, digital transformation, digital technology, leadership, emergency remote teaching.*

S.T.E.A.M. AND D.D.A.T.A.: A MULTISENSORY APPROACH TO MUSIC AND DEVELOPMENT OF SKILLS AMONG STUDENTS WITH INTELLECTUAL DISABILITIES

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Abstract

The Differentiated Didactic Approach to Teaching the Arts (D.D.A.T.A.) is a contemporary pedagogical method which proved thoroughly successful when applied to almost 300 students with intellectual disabilities, in five Special Needs schools and a private, Special Education unit. The learning facilities were located in two cities of Greece and the D.D.A.T.A. method was applied within the framework of those schools' music lessons. Combining the principles of D.D.A.T.A. with those of the Science, Technology, Engineering, Math and the Arts (S.T.E.A.M.) method, and learning Music from a multisensory pedagogical angle is an altogether new approach in international literature. By means of a series of sensors and controllers, multisensory learning can help people with intellectual disabilities to play music notes and generate music by touching conductive objects (S.T.E.A.M.). By using a computer under the guidance of a controller, and through a source of visual signals (D.D.A.T.A.) provided by the teacher, learners can arrive at the musical composition desired. In that manner, persons with intellectual disabilities can participate inclusively in an ordinary musical ensemble. The present work aims at recording the multisensory approach to Music via a combination of D.D.A.T.A. and S.T.E.A.M. Its purpose is to help learners with intellectual disabilities to develop their musical skills. The research was based on a methodology that relied on systematic observation within the framework of applying the above multisensory approach of teaching (D.D.A.T.A. & S.T.E.A.M.) to a group of middle school learners during the school music lessons, for a period of three months (Autumn 2023). In terms of both psychology and pedagogy, results were as spectacular as they were significant. The multisensory approach to Music through the use of D.D.A.T.A. and S.T.E.A.M. encourages learners to participate and improve their self-confidence, bolsters their self-expression skills, and helps them communicate and socialize. At the same time, learners acquire a range of kinetic and cognitive skills such as focusing their attention, and honing their perception, memory, and thinking.

Keywords: *S.T.E.A.M., D.D.A.T.A multisensory, music, intellectual disabilities.*

POTENTIAL OF HAPTIC FEATURES IN MOBILE LEARNING: A CASE STUDY BASED ON A LANGUAGE LEARNING APP

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Abstract

The landscape of mobile language learning has expanded significantly, fostering global connectivity through the widespread use of mobile apps. However, despite the increasing integration of haptic features into mobile devices and applications, their potential within mobile language learning apps remains largely unexplored. This paper aims to bridge this gap by investigating the impact of haptic features on language learning outcomes and designing respective exercises. In particular, the goal of this paper is to explore the integration of haptic feedback into an Android-based language learning app, considering its implications for improved learning outcomes, engagement, reinforcement of learning, skill acquisition, and inclusivity in app design. To achieve this, we designed and implemented a language learning app featuring three haptic exercises for vocabulary training: vibration-based repetition, clicking for memory exercises, and drag-and-drop interactions. These exercises are discussed in relation to their practicality using the Jetpack Compose library in Android and relevant literature.

Keywords: *Mobile learning, interactive learning, language learning, haptic feedback.*

ECODESIGN AS A NEW POSSIBILITY IN TEACHING TECHNICAL SUBJECTS IN SECONDARY SCHOOLS

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Abstract

The article's main goal is to provide a new tool for teaching technical subjects in secondary schools. Specifically, it is ecodesign as a systematic process of designing and developing a product, which, in addition to features such as functionality, safety, technical feasibility, etc., places great emphasis on achieving a minimal negative impact of the product on the environment, mainly from the point of view of the life cycle. Life cycle assessment (LCA) evaluates the environmental impacts of production, services and technologies. The LCA method is internationally recognised and can be applied in all spheres of human activity. LCA is used when comparing products and services, when planning processes in the field of the company's environmental policy, and when creating strategic plans in various industries. One of the fundamental and recognised factors that negatively affect our planet is global climate change, affecting not only stable global ecosystems but also human communities. The article uses studies prepared according to the international standard ISO 14040 Environmental management requirements. In the article's introduction, the product's production process is described as a system that is managed with respect to the environment. A manufacturing company must manage aspects not only of its own production and non-production processes but also aspects related to the impacts of its products throughout the entire life cycle of a specific product. In addition to the production phase, the life cycle also includes aspects of extraction of raw materials, purchase or production of materials, transport, distribution, logistics and the phase of product use, including preventive maintenance and subsequent disposal or recycling. The next part of the article summarises the theory on the integration of environmental aspects into the product design process using the ecodesign methodology. In conclusion, the article compares metal and plastic 3D printed products and considers the usual requirements for product properties such as functionality, quality, safety, price and appearance. The connection of ecodesign and environmental management systems is an effective implementation of a preventive approach to the identification of risks of products, activities and services and the subsequent setting of preventive measures, which will clearly show the students the importance of Ecodesign as a tool.

Keywords: *Ecodesign, sustainable development, life cycle assessment, recycling, 3D print.*

COLLABORATIVE LEARNING IN COMPUTER SCIENCE: A CASE STUDY OF CROSS-UNIVERSITY INTERDISCIPLINARY HACKATHONS

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Abstract

Interdisciplinarity as understanding of methods, objectives, and needs of representatives from other domains is increasingly expected from graduates in both computer science and legal professions. To promote these skills, a cross-university course concept in the field of Legal Tech was developed at the University of Vienna and the University of Applied Sciences FH Campus Vienna. Within the framework of the "Legal Tech Hackathon," law students from the University of Vienna and computer science students from FH Campus Vienna work in interdisciplinary teams on cross-disciplinary issues, supervised by academic experts and experts from the private sector. In this context, digital solutions for legal problems are collaboratively developed. Feedback and outcomes from this course reveal significant student engagement and satisfaction across both universities, with several startups emerging as a direct result. The course was also awarded with the highest national education award in Austria (Ars Docendi 2023). Furthermore, the success of this course concept has prompted its adoption in other educational settings, illustrating its potential to reshape professional development in the intersecting fields with technology.

Keywords: *Collaborative learning, computer science, hackathon, higher education, legal tech.*

PEDAGOGIC INNOVATION FOR EPISTEMIC ACCESS IN MULTICULTURAL AND MULTILINGUAL CONTEXTS IN SOUTHERN AFRICA

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Abstract

The quest in public higher education in South Africa to elevate the academic status of indigenous languages resulted in the real challenge for university lecturers to reflect on and interrogate their views on the role and function of students' various mother tongues in the teaching and learning space. At the North-West University where most of the 11 indigenous languages of the country are represented, the following needs were identified: to raise awareness of language as a right and a resource (Ruiz, 1984) in multicultural settings, and to provide training to lecturers in utilizing multilingual pedagogies as innovative pedagogies to promote epistemic access and academic success by tapping into students' diverse linguistic repertoires. To address these needs, the researchers (who will present this paper) took on the responsibility to design a short learning programme (SLP) on multilingual pedagogies for lecturers across 8 faculties and three distinct campuses while simultaneously kicking off a research project aimed at gathering data on SLP participants' views and understanding of indigenous languages and multilingualism in teaching and learning, innovative pedagogies such as multilingual pedagogies, expectations of the SLP, related challenges in teaching, learning and assessment, their experiences while participating in the SLP, and reflections on completing the SLP. Within interpretive research design we will share data from participants' perspectives and reflections, as well as instructions, assignments, and communication with participants in the course spanning 2020-2023. There are highlights of lecturers' design and implementation of pedagogic innovation in this specific space. Finally, we will report on how feedback from participants and co-course designers changed our views on instruction, modelling and scaffolding and ultimately led to the improved design of our online course that is available to academics working in multilingual contexts in higher education across the globe.

Keywords: *Pedagogic innovation, multilingual pedagogies.*

MECHANICS AND THE HUMAN BODY: HANDS ON AND SIMULATION APPROACH TO MEASURE DELTOID FORCE

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Abstract

We report the combined use of hands-on activities and the effective use of simulations in physics education. The importance of this work is more significant than other research done in the past as this is focused on mechanics and the human body, a less explored field in college-level physics courses. While physics and mechanics typically find more prominent applications in well-established areas like engineering, they play a crucial role in elucidating the physics governing human body motion. Nevertheless, interactive physical models of the human body that help in physics education are not widely available. Our long-term goal is to create less sophisticated, more accessible demonstrations and dynamic animations to fill this gap in pedagogical tools relating to the human body. This study focused on forces applied to the deltoid muscle when lifting a load. We examined these forces in static equilibrium by combining animations and a life-sized model arm. The model was printed out mainly using PLA in a 3D printer. Given the intricate nature of the human arm, we made necessary approximations to understand the associated torque and rotational dynamics around the shoulder joint. Our study involved measuring the response force of the deltoid muscle as a function of the load force. In order to validate our experimental data, we created an animation using GeoGebra. The link to the animation was shared with the students, and they were encouraged to explore the simulation by changing the parameters: length of the arm, the weight of the person, and the weight of the lifting load. In a two-semester study with control groups, we evaluated the effectiveness of the physical arm model and the animation on students' understanding of torque. Positive user feedback and successful results were obtained from classes where both tools were tested.

Keywords: *Physics education, pedagogy, mechanics and human body, deltoid force.*

UNDERSTANDING THE IMPACT OF INTERCULTURAL PROJECT-BASED LEARNING ON STUDENTS, STAFF AND HIGHER EDUCATION INSTITUTIONS

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Abstract

This paper discusses the experiences of a distributed interdisciplinary project-based learning program for students across continents. For the years 2020 until 2023, we received seed-funding for four annual projects to engage students from Germany (Europe), Namibia (Africa), Indonesia (Asia), and Peru (Latin-America) to collaborate over one semester on interdisciplinary projects contributing to the solution of some real-life client's problems in the partner countries. During this period, more than 150 students embarked on these projects with 116 of them being selected for a scholarship for an international mobility. With the guidance and support by academics from all partner universities, the students successfully completed each project expressing deep appreciation for the learning opportunities while overcoming challenges of working across widespread time zones, different cultures, changing requirements, and various technical difficulties. While the primary aim of this distributed interdisciplinary and intercultural project-based learning program was to provide students with a truly Global Intercultural Project Experience (GIPE), in this paper we investigate on its impact in a broader sense as it was observed that this program also had a significant impact on both academic and administrative staff at all partner universities. Finally, we also reveal the impact of this four-year-program on the participating institutions themselves and conclude that the invaluable returns of such interdisciplinary project-based learning extend far beyond financial metrics. It encompasses enhanced student learning experiences, strengthened cooperation and mutual learning between academics and administrative staff, as well as institutional reputation, and societal impact.

Keywords: *Project-based learning, collaborative online international learning, intercultural collaboration, interdisciplinary students project.*

LEARNER EMPOWERMENT: THE CASE FOR TEACHERS DEPLOYING DEMOCRATIC LEADERSHIP

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Abstract

This paper is centred on how 5th grade teachers in schools in Cali, Colombia (Latin America) exercise power and authority in their classrooms. Findings from a multi-case study draw out the challenges and the complexity of cultivating democratic climates in primary school classrooms, and how teachers conceive of, and deploy, their power and authority through a range of mechanisms. This includes evangelical and heteronormative discourses, and authoritarianism and punitive discipline management, which do not support democratic classroom climates. In contrast, the study also sheds light on markedly different teacher practices based on the deployment of democratic leadership. This type of leadership, arguably rare, presents teachers substituting dialogue for dominance; cooperation and collegiality for hierarchy; and active learning and problem solving for passivity. In doing so, teachers succeed in constructing democratic classroom climates and spaces that enable learner empowerment.

Keywords: *Democratic leadership, learner empowerment, teachers.*

CREATIVITY IN EDUCATION: BITE-SIZE VIDEO'S IMPACT ON STUDENT ENGAGEMENT AND SATISFACTION

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Abstract

This paper explores the impact of creative methods within active learning frameworks on student engagement, knowledge acquisition, and satisfaction. It suggests that adopting creativity into course design can significantly enhance learning outcomes, particularly in complex subject areas such as Supply Chain Management. To support this claim, a survey of 300 students in a UK higher education institution received 160 responses. Furthermore, I analysed engagement metrics from the course's Canvas module page. The findings reveal that creative design strategies not only improve understanding but also increase student engagement and satisfaction. This paper will discuss specific creative techniques that can be easily adopted by educators across various disciplines, demonstrating creativity's role as a crucial component in enhancing educational effectiveness.

Keywords: Higher education, creativity, knowledge, engagement, satisfaction.

THE IMPACT OF DIGITAL LITERACY DEVELOPED DURING THE PANDEMIC ON TEACHERS' POST-PANDEMIC BELIEFS

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Abstract

This study attempts to verify the impact of digital literacy developed during the pandemic on university professors' beliefs. If before the pandemic most of my fellow university professors used digital technologies very little, with the pandemic this picture has completely changed. However, the pandemic made it clear that in addition to the digital exclusion on the part of students who did not have financial conditions to access technologies, there was also teachers' exclusion, as most of them did not know how to use these technologies in their practice. As there was no other form of communication during the time when we had to work from home, the university provided equipment for some learners. We also offered training on how to use a web conferencing platform and the institutional virtual learning environment (VLE). Now, after the pandemic, it is possible to notice a greater interest from colleagues in maintaining their spaces in the institutional VLE and a still frequent use of web conferencing platforms, especially for orientations, presentations, or events. This participatory action research seeks to understand whether there have really been changes in their professors' beliefs regarding the use of digital technology for teaching. To do so, a questionnaire was sent to all the institute professors. The theoretical background of the research includes topics such as beliefs, Emergency Remote Teaching, cyberculture, digital literacy, interactive classroom and multiliteracies. The results show that there has been a positive transformation in teachers' attitudes in relation to applying digital technologies to language teaching. Participants confirmed that before the pandemic, only a few colleagues used digital technology, while nowadays more teachers use virtual learning environments and web-conference platforms. However, they mentioned some important points to be considered, such as the lack of appropriate access to digital technology and the internet by learners and teachers at university, the importance of face-to-face classes for interaction and the importance of reflecting critically on their practice.

Keywords: Digital literacy, teachers' beliefs, post-pandemic, teacher development.

SHORT ACTIVE-LEARNING WORKSHOPS FOR GRADUATE STUDENTS HAVE A LONG-TERM IMPACT IN STEM TEACHING

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Abstract

A large body of evidence suggests that teaching with student-centered, active-learning methodologies improves student performance, reduces achievement gaps in underrepresented students, and enhance emotional health across science, technology, engineering and mathematics (STEM) disciplines in higher education. However, teacher-centered teaching prevails in most universities worldwide, even in spite of training programs for instructors that aim to change this paradigm. One challenge is the resistance of research professors to change their instruction methods. I identified this challenge at a leading science and technology research institute in Mexico where traditional lecturing remains as the main way of instruction. To overcome this challenge, we organized, since 2018, a once-a-year, week-long intensive active learning workshop for last-year PhD students in STEM fields, most of which were taught using traditional methods and end up holding teaching and research positions in Mexico or abroad. Skeptics of the program argued that the short duration of the program and the fact that graduate students are not teaching at the moment of the workshop will reduce the long-term impact of the program. After following up 4 generations of workshop participants, this work reports on the success of this short training program and its impact on STEM teaching in Mexico. In particular, through a qualitative analysis, we found that while most workshop participants did not know about active learning methodologies or their implementation before their workshop, most of them ended up implementing, several years after, the active tools such as case studies, peer-to-peer assignments, and interactive demonstrations which they learnt at the workshop. A follow-up study with some workshop participants also reports horizontal effects of their teaching in other colleagues' practices. We conclude that low-budget and short immersive programs that include evidence-based teaching tools, rather than concepts, can have a long-term impact in STEM teaching and higher education.

Keywords: *Active learning, higher education, professional development, graduate students, STEM.*

NAVIGATING THE HYBRID PH.D. EXPERIENCE: NEW INSIGHTS FROM STUDENT VOICES

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and Technology Studies, Tuscaloosa, AL (USA)*

Abstract

This qualitative study explored graduate students' experiences in a hybrid instructional technology Ph.D. program. Seventeen current and former students completed an open-ended survey informed by the Community of Inquiry (CoI) framework. Content analysis revealed four themes, each linked to a CoI element: (1) a flexible, accessible program supporting degree completion (Teaching Presence); (2) self-direction as crucial for the rigorous curriculum (Cognitive Presence); (3) a collaborative peer community enhancing motivation and progress (Social Presence); and (4) consistent faculty guidance as critical for meeting demands (Teaching Presence). Findings suggest prioritizing CoI elements in hybrid doctoral program design can effectively support learning, motivation, and success. Recommendations include developing a flexible curriculum, fostering community, supporting self-directed learning, and ensuring timely faculty guidance.

Keywords: *Hybrid learning, online learning, doctoral education, graduate students, student experience.*

SERIOUS FUN WITH MATHS: GAMES THAT ENGAGE AND TEACH

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Abstract

Play is a natural way to develop thinking and is part of children's daily lives in their early years. In this sense, the adoption of gamification strategies by pre- and primary school teachers has become increasingly common. Several studies highlight the positive impact of adopting this teaching/learning strategy. Recognizing the advantages of using games as a pedagogical strategy and understanding that children have a high predisposition to develop mathematical skills in their early years, the first author of this article organized a workshop intended for both pre-service and in-service pre- and primary school teachers. The workshop aimed to explore the use of non-digital games as educational tools for teaching and learning mathematics. Considering various research indicating that one of the reasons for gaps in mathematical knowledge is the lack of connection between formal learning and the child's informal and intuitive knowledge, which is especially harmful when informal knowledge is poorly developed, the games explored were designed to be used both in the classroom and at home with the family. Participants had the opportunity to experience a variety of games designed to make the teaching of mathematics more engaging, interactive, and enjoyable for children. The benefits of using games as a pedagogical strategy were also discussed. To assess how workshop participants perceived the use of gamification in the mathematics teaching-learning process, a survey was conducted. Our findings suggest that the participants recognized the potential of using games in the mathematics teaching-learning process and intend to incorporate this resource in their pedagogical practices.

Keywords: Educational games, game-based learning, non-digital games, gamification, mathematics education.

BRIDGING PLAY AND INCLUSION: A QUALITATIVE INVESTIGATION INTO ACCESSIBILITY CHALLENGES AND INNOVATIONS IN BOARD GAME DESIGN

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Abstract

Contemporary educational research increasingly emphasises the educational and learning potential of games, with a particular focus on board games, given their ability to promote meaningful experiences, including engagement, satisfaction, flexibility, or freedom of experimentation. Considering these potentialities, it becomes imperative to align the design of board games with the current needs and particularities of a more inclusive education. In this regard, the present study explores game design practices, focusing on the critical aspects of inclusivity, namely the players' and learners' specific accessibility needs. Through a qualitative approach, it engages with 26 board game designers, from various backgrounds and geographical locations, to understand their inclusive design views and attitudes. By employing content and critical discourse analysis, the research reports and contextualises multifaceted barriers and innovative solutions that designers employ to create inclusive gaming experiences. Key findings reveal that economic constraints significantly delay the pursuit of accessibility in board game design, requiring innovative solutions like supportive policies and cost-effective technologies. Moreover, designers are employing various strategies, such as digital aids and sensory adaptations, demonstrating the prevalence of a proactive approach to enhancing accessibility. Despite these efforts, challenges like sexism, racism, and accessibility issues persist, highlighting the need for ongoing education and awareness-raising initiatives within the community.

Keywords: Inclusive education, board games, game-based learning, accessibility.

LEARNING VIDEOS FROM A STUDENT'S PERSPECTIVE

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Abstract

Videos support different learning strategies. Numerous publications have explored the possibilities of using video, from short introductory clips to the flipped classroom approach, recorded descriptions of situations and activities, recordings of traditional classes, and remote, interactive teaching. Our objective is to understand how and why students use videos. We aim to determine their purpose and how they utilize the prepared videos. Some educators suggest that students use video primarily as a study tool before tests and exams and do not utilize the materials in other contexts. Some students prefer written materials and use video to a small extent. Other challenges relate to the technical aspects of using video, particularly in finding the expected information and using videos effectively. Addressing these issues can help in better and more effective preparation at the level of video creation. This article presents observations from teachers across different departments, literature reviews, and student survey results. The findings show that the students use mostly teacher-made videos in their learning and that the content is the most important, not the technical quality. The videos do not have to be short, and they do not have to be subtitled if the sound is satisfactory. Students do not wish to make videos themselves as hand-ins.

Keywords: *Flipped classroom, blended learning, instructional videos, video production.*

DIGITAL TECHNOLOGIES IN ACTIVE AND SELF-DIRECTED LEARNING

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Abstract

Digital technologies are increasingly recognized for their potential to significantly enhance both active and self-directed learning. However, the extent and manner in which educators in higher education harness these technologies to achieve such educational objectives is still in its nascent stages. This study investigates the techno-pedagogical of college educators, specifically focusing on their ability to facilitate active and self-directed learning through digital technologies. Additionally, it scrutinizes their insights into the role of digital technologies in fostering self-directed learning processes. The study encompasses a sample of 156 educators from a wide range of academic fields across five Israeli teaching colleges. Employing a hybrid research design that combines both quantitative and qualitative methodologies. An online questionnaire enabled educators to thoroughly evaluate their acquaintance with and application of digital technologies. The semi-structured interviews were conducted to gain deeper insights into the educators' perceptions of digital and self-directed learning. Findings from the study reveal that educators predominantly utilize digital technologies to augment their teaching practices and promote active learning and student collaboration. Notably, only a select group of educators demonstrated advanced techno-pedagogical skills necessary for actively endorsing self-directed learning through student engagement in the selection and adaptation of digital resources. Interviews highlighted a generally superficial understanding of self-directed learning among educators, who often failed to offer students meaningful choices in their learning journeys. Despite this, there was a consensus on the importance of group and collaborative learning within digital contexts. The study concludes that the integration of digital technologies into educational practices, aimed at fostering active and self-directed learning, is still in its infancy. There is a pressing need for educators to not only refine their technological proficiency but also to cultivate a pedagogical appreciation for actively involving learners in the selection and utilization of digital tools tailored to their educational pursuits. Embracing this dual-faceted approach is essential for advancing active and self-directed learning strategies in the realm of digital education.

Keywords: *Digital learning and teaching, active learning, self-directed learning, techno-pedagogical competencies.*

METaverse EDUCATION: IMMERSIVE VR EXPLORATION OF MOUNTAIN HERITAGE AND CULTURE

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Abstract

The rapid technological progress has led to a profound digital overhaul across sectors, notably in education. VR technologies and the metaverse offer novel avenues for disseminating knowledge, promising immersive, flexible, scalable, diverse, and interactive learning environments (Baynat & Lopez, 2020; López-Belmonte et al., 2022). Incorporating gamification within the metaverse enriches learning experiences, providing engaging content delivery methods (Khan et al., 2022). This study assesses the metaverse's potential in VR applications to enhance learning outcomes and user engagement, emphasizing content accessibility and immersive educational experiences through gamification. Authors created an open virtual platform within the metaverse, inviting users to explore a mountain area blending historical, cultural, and environmental elements. The experience unfolds within an interactive three-dimensional reconstruction of the valley, featuring a virtual mountain trail walk and a tour of a historic mountain village. Application development involved data acquisition for modeling and interaction design using Unity3D, with online deployment facilitated by the Spatial Creator Toolkit. For project evaluation, users complete a post-experience survey, providing quantitative data on engagement, motivation, content understanding, and interaction quality (López-Belmonte et al., 2022). Survey results indicate high engagement and positive feedback, implying enhanced accessibility via the metaverse. The project fosters real-time interaction, dialogue, and collaboration on educational topics, promoting community involvement. This dynamic virtual environment transcends traditional limits, allowing diverse users to actively interact, share knowledge, and engage.

Keywords: *Metaverse, gamification, Virtual Reality (VR), engagement, learning environments.*

UNLEASHING PERSONALIZED EDUCATION USING LARGE LANGUAGE MODELS IN ONLINE COLLABORATIVE SETTINGS

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Abstract

The Artificial Intelligence community has long pursued personalized education. Over the past decades, efforts have ranged from automated advisors to Intelligent Tutoring Systems, all aimed at tailoring learning experiences to students' individual needs and interests. Unfortunately, many of these endeavors remained largely theoretical or proposed solutions challenging to implement in real-world scenarios. However, we are now in the era of Large Language Models (LLMs) like ChatGPT, Mistral, or Claude, which exhibit promising capabilities with significant potential to impact personalized education. For instance, ChatGPT 4 can assist students in using the Socratic method in their learning process. Despite the immense possibilities these technologies offer, limited significant results are showcasing the impact of LLMs in educational settings. Therefore, this paper aims to present tools and strategies based on LLMs to address personalized education within online collaborative learning settings. To do so, we propose RAGs (Retrieval-Augmented Generation) agents that could be added to online collaborative learning platforms: a) the Oracle agent, capable of answering questions related to topics and materials uploaded to the platform.; b) the Summary agent, which can summarize and present content based on students' profiles.; c) the Socratic agent, , guiding students in learning topics through close interaction.; d) the Forum agent, analyzing students' forum posts to identify challenging topics and suggest ways to overcome difficulties or foster peer collaboration.; e) the Assessment agent, presenting personalized challenges based on students' needs. f) the Proactive agent, analyzing student activity and suggesting learning paths as needed. Importantly, each RAG agent can leverage historical student data to personalize the learning experience effectively. To assess the effectiveness of this personalized approach, we plan to evaluate the use of RAGs in online collaborative learning platforms compared to previous online learning courses conducted in previous years.

Keywords: *Personalized education, large language model, generative AI, collaborative learning.*

COLLABORATIVE PROBLEM SOLVING AND THE CHALLENGE OF ASSESSING TRANSVERSAL SKILLS

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Abstract

21st-century skills are one of the most mentioned topics in the discourse on education in recent years, gaining central relevance in the transformations of education systems at the global level, as it is defined as fundamental to face the challenges of the present and the near future (Trevisño et al., 2015; UNESCO, 2020). Hence, it is important to install educational processes that consider skills that allow for the global social scenario of the 21st century (Luna, 2015). In the Delors report, UNESCO states that the skills needed for the 21st century are learning to know, do, be, and live together. Carneiro and Draxler (2008) state that the skills contained in the Delors report "have a philosophical and pragmatic implication, which directs attention to the social role of education and the consequent balance between knowledge and action, between individual and social learning" (p.149). At the same time, this vision represents an alternative to the human capital view, where the main value of education lies in its capacity to generate returns on the investment made (Carneiro & Draxler, 2008). Within this framework, the Activating Collaborative Problem Solving in the Classroom (ARPA) program, implemented in Chile and other Latin American countries, has developed an intervention model using collaborative problem solving to develop skills in four areas: mathematics, science, history, and language. However, after 10 years of implementation, this program did not have a model for evaluating the skills developed. A mixed design research (qualitative and quantitative) was developed to meet the objective of having an evaluation model. In the first stage, the skills bibliography was triangulated with a consultation process with monitors with experience in the program. Then, problems were constructed for the four areas, and a pilot was implemented (n=170) in which the rubrics and coders/evaluators were validated. A final study was then implemented with a sample of Chilean public education (n=302). The results show that the skills mainly developed are Communication, Critical Thinking and Creativity. An analysis of correlations shows that these can be observed with certain transversality between areas where Communication and Critical Thinking appear most transversal.

Keywords: *Collaborative problem solving, 21st century skills, active learning.*

LANGUAGE COMPREHENSION OF FIRST GRADERS IN INCLUSIVE CLASSROOMS – SURVEY AND IMPLICATIONS FOR TEACHER PROFESSIONALIZATION

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Abstract

The hitherto neglected potential of teacher language is being focused with the objective to ensure learners' language comprehension in inclusive teaching contexts. As research data on language comprehension in inclusive learning settings is not yet available, the oral comprehension of words, sentences and texts by first-graders is being assessed using standardized test procedures. Based on the evidence, professionalization measures for teachers are being developed, tested and evaluated using videography and lesson diaries.

Keywords: *Speaking comprehension, oral comprehension, receptive language skills, language support in school, Specific Language Impairment (SLI).*

“FLIPPED COMMUNITIES BEFORE FLIPPED CLASSROOMS”: CONTEXT AND CONTENT AS BARRIERS OF FLIPPED CLASSROOM APPROACHES IN SOUTH AFRICAN UNIVERSITIES

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Abstract

The development of educational technology resulted in a shift in pedagogical methods and approaches to accommodate these technological advances in education. There are rapid changes in knowledge and technology, driving the development of education whilst considering innovative learning approaches (Akdemir, Bicer & Parmaksız, 2015; Ugras & Cil, 2014; Schaal, 2010). One such pedagogical method is that of the Flipped classroom approach which advocates that direct instruction is not the most effective use of class time. Instead, students encounter information before class, freeing class time for activities that involve higher-order thinking (Strayer, 2012) to allow for a more active learning environment in the classroom. While this is a productive initiative in addressing the time factor in the classroom, it takes little account of the context of the communities that students come from and the cognitive demand of content of modules, especially in the complex and diverse South African situation. This qualitative study aims at exploring the difficulty of implementing a Flipped classroom approach in the South African Higher Education environment. The case study design employs interviews and questionnaires to generate data on students in a South African university to establish the context of their communities. It further employs textual analysis on module content, together with semi-structured interviews with academics, to establish the cognitive demand and support required for a flipped classroom approach. The study showed that the contextual background of the communities situated around the university and the cognitive demand of the modules did not allow for an effective application of a flipped classroom approach. It recommended that Higher Education institutions in South Africa focus on community engagement projects that create conducive communal learning environments as well as university residence that have academic support structures and infrastructure.

Keywords: *Flipped classrooms, community, context, content.*

MULTICULTURALISM AND MULTILINGUALISM IN ETHNIC ROMANIAN COMMUNITIES IN HISTORICAL PROVINCES

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Abstract

Multilingualism and multiculturalism are two concepts that define the areas where ethnic Romanians live in the historical provinces alongside other nationalities such as Ukrainians, Bulgarians, Russians or Gagauzians. The two notions are often closely related to values such as tolerance, acceptance, respect for an Other different in culture, traditions, sometimes even religion or mentality. Multiculturalism presupposes the idea of diversity, thus, in areas of intersection of cultures, religions, mentalities, individuals can assert their individuality, the uniqueness of the group they belong to, but also establish a set of common values with all those communities they interact with on a daily basis. The present study aims to capture, over the course of one semester, the common elements, as well as the distinctive ones, of the 75 ethnic Romanians studying at the Communication, Multiculturality and Multilingualism master's program, in the first year, during the 2023-2024 academic year. These master's students, ethnic Romanians, come from mixed families made up of Moldovan, Ukrainian, Bulgarian or Gagauz citizens. The research methods used are the case study, the questionnaire, the interview, and the collected data will be analyzed both qualitatively and quantitatively, to reflect the specific elements of multilingualism and multiculturalism in the remote areas of the Republic of Moldova.

Keywords: *Culture, families, group, religion, values.*

**BARRIERS TO LEARNING ROMANIAN BY ETHNIC GAGAUZ
AND BULGARIANS FROM THE AUTONOMOUS TERRITORIAL UNIT
OF GAGAUZIA, REPUBLIC OF MOLDOVA**

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Abstract

The status of the Romanian language in areas with a majority Gagauz or Bulgarian population in the Republic of Moldova has fluctuated over the years, depending on social, economic and political imperatives. Starting from the linguistic debates around the various proposed names (such as: *state language*, *Moldovan language* or Romanian language) the official language of the Republic of Moldova has been the subject of contradictory discussions both in the media of the two neighboring states, the Republic of Moldova and Romania, and in the parliaments of these two countries. Alternating between rejection, tacit acceptance and official recognition, language policies in the Republic of Moldova have alternated according to the current socio-political climate over the past decade. Consequently, these fluctuations have also been reflected in educational reforms in the Republic of Moldova, with the curriculum itself generating dilemmas and confusion as long as it has accepted the dissemination of the artificially invented glottonym "Moldovan language" among the school population. Inconsistencies and inconsistencies in school reforms have led to low achievement in the acquisition of communicative Romanian language skills among communities with non-Romanian majority populations. Consequently, the present article aims to present the results of the educational projects that we have coordinated in partnership with the Directorate of Education ATU Gagauzia, which have allowed us to inventory the types of barriers that students face in learning Romanian as L2 or L3 and to identify the necessary measures to optimize the educational process.

Keywords: *Language skills, barriers, performance, linguistic policies.*

TEACHING AND LEARNING

“OPENING MINDS”: THE IMPACT OF A CULTURALLY AND LINGUISTICALLY IMMERSIVE TEACHING EXPERIENCE FOR PRE-SERVICE TEACHERS

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Abstract

Being an effective educator within culturally and linguistically diverse schools means having a rich understanding and broad perspective on attending to students from a wide variety of cultural and linguistic backgrounds. Historically, students from such backgrounds, and the ways in which to leverage their cultural identities and linguistic strengths, were not considered in teacher education programs as pre-service teachers learned to create learning experiences. Some pre-service teachers from more rural and remote communities have limited experiences to understand how to support students from diverse backgrounds as they come from more homogeneous communities. However, students in pre-service teachers' future classrooms will speak multiple languages, whose first language is not the same as the nation's official language, and the parents of these students could potentially have different cultural norms than the pre-service teacher. This means learning that the intersection of school, community, and families from different cultural perspectives is an important aspect in preparing pre-service teachers for the reality of teaching in a more global society. Thus, the purpose of this project was to provide unique and highly applicable experiences to learn first-hand about teaching all students from culturally and linguistically rich backgrounds as this will better prepare them for teaching careers.

Keywords: Pre-service teachers, cultural competency, international teaching.

SOCIO-ECONOMIC STATUS AND STUDENTS' MATHEMATICAL LITERACY ABILITIES

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Abstract

Socio-economic status is a comprehensive concept designed to reflect the financial, social, cultural and human resources available to students. Moreover, it is a factor which is strongly associated with students' performance in mathematical literacy. The present study aims to investigate the abilities of students in mathematical literacy upon completing their compulsory education and answer the research question, if there are statistically significant correlations between the students' performance in mathematical literacy and the variables shaping the students' socio-economic status. The variables which shaped the factor of socio-economic status which were investigated in the current study, were the parents' education, the parents' occupation and a number of household possessions that can be taken as proxies for material wealth or cultural capital, like the number of books at home or the number of several digital devices or other objects that belong to the family. The research was carried out in 650 students from all over Greece who were completing 9th grade or were at the beginning of the 10th grade and whose schools were selected based on the degree of urbanization of the area where the respective school was located (large urban center, small urban center, rural area). The findings of the research showed that there are statistically significant correlations in the average performance in mathematical literacy and the parents' education, the parents' occupation, the number of books and the number of laptops owned by the family.

Keywords: Socio-economic status, mathematical literacy, Greece, compulsory education.

GIVING THANKS IS THE KEY TO TRANSFORM THINGS THAT HAPPENED INTO GOOD THINGS AND POSITIVE EMOTIONS

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Abstract

Barbara L. Fredrickson (1998) posits that joy, interest, contentment, and love positive emotions serve to broaden an individual's momentary thought-action repertoire, which in turn has the effect of building that individual's physical, intellectual, and social resources. Experiences of certain positive emotions prompt individuals to discard time-tested or automatic (everyday) behavioral scripts and to pursue novel, creative, and often unscripted paths of thought and action. This study explored how to transform things that happened into good things. By inviting 24 participants to write weekly or bi-weekly "Something good happened" in my "Principles of Teaching" course for 8 weeks. PERMA was used to analyze all "something good happened" statements: positive emotion, engagement, relationships, meaning, and accomplishment. Words such as *thanks, fortunately, feeling good, happy, feeling warm, and relaxed* were classified as positive emotions. Words like "thanks" were further analyzed by what things happened to the participants. The result showed that "giving thanks" is the key to transforming things that happened into GOOD things and positive emotions. There might be routine or tough things happening. However, by giving thanks, things will turn into good things that we appreciate, and then produce positive emotions.

Keywords: *Giving thanks, grateful, positive emotion, tough thing, something good happened.*

AN EMPIRICAL RESEARCH TO RE-CONTEXTUALISE THE IDEA OF CARE IN PRESCHOOL EDUCATION

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Abstract

Care is an essential dimension of human life, but international educational policies in ECEC (Early Childhood Education and Care), especially where a neoliberal culture dominates, pay little attention to this paradigm, relegating care to a position of subalternity or interpreting it as a prerequisite to education. If education has the primary intent of favouring the full and integral development of all the dimensions of the person in order to allow each existence to realise its being in the world to the fullest, it is necessary to bring to the centre of pedagogical attention the paradigm of care that is little or scarcely conceptualised, in order to understand how schools, and in particular pre-schools, can be configured as contexts of concrete expression of care. The qualitative research at hand is situated within the ecological paradigm and a naturalistic epistemology, and is based on the generative question "What does a school of care consist of?". Answers to the first analytical question "What is caring?" has been provided by a scoping review analyzing the scientific literature aimed at identifying the scope of the concept of caring: the scoping review included 14 peer-reviewed, English language studies published between 2014 and 2022. The second sub-question "What are the behavioural indicators of caring?" is being investigated starting from a mapping of the behavioural indicators of caring traced in the literature, subsequently put into dialogue with the empirical phase of the research in order to allow for the capture of those indicators capable of defining the specificities of a caring-oriented educational action in early childhood education services through a phenomenological approach. The third question articulation of the research question, "How does the involvement of teachers help to promote the creation of care-oriented educational contexts?" has led to the elaboration, from the perspective of participatory research, of a 3-5 year old curriculum capable of supporting teachers in the creation of educational contexts oriented towards care paradigms. In ECEC, there is a need to move away from dichotomous visions in favour of integrated approaches. In order to do this, it is necessary to reconceptualize the idea of care in education and policy through the ethical and political perspective of care. The relationship that emerged between theoretical and empirical dimensions has allowed to increase the pedagogical knowledge and to qualify teachers' professionalism promoting the development of "schools of care".

Keywords: *Care, education, preschool, participatory approach, teachers training.*

EARLY MARRIAGE AS A HUGE PROBLEM AGAINST EDUCATION AND CAREER DEVELOPMENT

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Abstract

Early marriage is an official or unofficial union between two people, at least one of whom has not yet reached the age of 18. It is a complex phenomenon and many factors influence it, for example: financial situation, traditions, gender inequality, sense of insecurity and others. In Georgia, early marriage reduces access to education - therefore reducing employment opportunities. In the parliamentary report of 2012, we read that in 2011-2012, approximately 7,370 girls stopped receiving education before completing the basic level, one of the reasons for which is early marriage. It should be noted that a lot of time has passed since 2012 and the results are almost the same: in 2017, one of the non-governmental, research organizations in Georgia (Safar) conducted a study on "prevention of early marriage in Kvemo Kartli". During the prevention, it was revealed that there is an information vacuum in the villages about the defense mechanisms against early marriage, moreover, within the framework of this project, it was revealed that parents and students did not have information about the age of the majority, they did not know that early marriage is punishable by law, and many did not know who to contact in a critical situation. The target group of our research is the Georgian population. Specifically, those regions of Georgia, where the aforementioned is the most problematic. Within the framework of the study, we focus on the possibility of education and career advancement as a result of early marriage. The selection, methodology, and relevance of the issue increase the value of this research to society and inform us that it is necessary to focus on early marriage as an acute problem that opposes education and career development. The aim of our research is to study the impact of early marriage on education and career development. The research task is to determine: · What is the attitude of young Georgians who are in early marriage towards getting an education; · What attitudes, beliefs, social norms and practices exist in the community itself around early/childhood marriage and how does it affect their education? · What risks and protection factors exist in the country regarding this type of social practice?. One of the methods of qualitative sociological research - A biographical-narrative interview- will be used to obtain primary sociological data. More specifically, by using a Biographical-narrative interview, direct interaction with respondents, it will be possible to observe non-verbal communication, clarify respondents' answers and ask additional questions.

Keywords: *Early marriage, education, career development, social norms, risks.*

GENERATIVE ARTIFICIAL INTELLIGENCE (AI) IN EDUCATION: A CROSS-NATIONAL SURVEY ON UNIVERSITY TEACHERS' PERCEPTIONS ON THE USE OF CHATGPT

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Abstract

In November 2022, Open Artificial Intelligence (AI) launched the controversial generative AI tool named ChatGBT-plus or ChatGPT-4 (Chat Generative Pretrained Transformer) which has been available to users via the website in February 2023. Since then, its use in the classroom environment has been debated. Various scholars, especially in the field of computer sciences, provided insights into its functioning and genesis on its possible negative use and impact particularly in the education sector. Therefore, there is a need for teachers' and students' insights vis-a-vis this robot with a global perspective. This exploratory study on 236 university educators based in India revealed mixed perceptions of using ChatGPT as a learning and teaching tool. Surveyed educators are aware of it and its acceptance as teaching tool is still limited. In the conclusion, the study proposed potential research avenues about the use OpenAI in education.

Keywords: *ChatGPT, India, quality education, global south, OpenAI.*

WHICH IS MORE DIFFICULT, LISTENING OR READING?

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Abstract

In today's world, there are many texts we read or listen to. Regardless of how texts are presented, listening, and reading skills are equally important in everyday life. More attention is paid to developing reading skills, less to listening skills. There has been little comparative research on reading and listening comprehension of L1 texts. Children's listening skills in L1 develop before school, but reading skills are mainly developed at school. Previous studies shows that listening comprehension is better until the age of 13-14, and only then do both skills reach the same level. Therefore, special education teachers recommend that children with reading difficulties should listen to long texts rather than read them. In any case, teachers must pay attention to the development of both skills at school. The objective of our study was to find out whether 4th-graders understand the meaning of texts better by reading or listening to it, and if one skill is better or worse developed, what is the level of the other.

Keywords: *Text comprehension, listening skills, reading skills.*

RETHINKING THE LANDSCAPE OF HIGHER EDUCATION IN THE BRAVE NEW WORLD OF OUR TIMES

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Abstract

We are living in dark times, marked by (re)emergencies of local conflicts with global impact and wounded by uncertainty about the sustainability of the planet. In the aftermath of a pandemic, insecurity and emotional and historical illiteracy are more visible, while memories are being rewritten, manipulated and erased. At the same time, knowledge is in danger of being totally converted into a fascination with technology that transports existence into the virtual world, like an "allegory of the cave" inside out, with the shadows perceived as unquestionable realities. Nowadays, the major challenge consists of preserving the essence of our humanity through education, developing critical thinking and planting the seeds for tolerance, for compassionate cities and neighborhoods, within the boundaries of an ethics of responsibility. Moreover, educating and learning today is also a challenge for sustainable development that takes into account the need to "ensure access to inclusive, quality and equitable education" (SDG 4): all learners should be able to acquire the knowledge and skills necessary to promote sustainable development, including sustainable lifestyles, respect for the human rights and the promotion of a culture of peace. Our assumption is that emotional and historical literacy are the pillars for the promotion of a culture of peace and sustainability, and this should be the role of universities and higher education institutions. Aiming to propose a framework for a person-centered approach in Higher Education, we have searched for input from experts in different fields. We have held three focus groups with 15 participants, including 4 senior lecturers and 4 junior lecturers from Arts and Humanities and the Biomedical fields; one expert in educational science; one philosopher, one anthropologist, one political scientist, an ethicist, an artist and a writer. The approach to thematic analysis was inductive or "bottom-up", with themes being identified on the basis of the raw data, without a coding system or prior theoretical framework (Braun & Clarke, 2006). The transcribed narratives were read several times by the two authors, who coded the text together until the final themes and thematic tables were defined. The analysis of the narratives collected from these focus groups will be the first step for a longer and more thorough work before the final version of the framework can be presented. An interdisciplinary approach to education requires the involvement of interdisciplinary voices in rethinking the landscape of teaching and learning "in the brave new world" of our times.

Keywords: *Literacy, emotions, history, tolerance, SDG.*

A DIGITAL TOOL TO HELP WORK-ORIENTED PROJECT STUDIES IN HIGHER EDUCATION INSTITUTIONS

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Abstract

Development-oriented learning combines many things, such as project learning, problem-based learning, learning by development, learning by doing, experiential learning, and research. One perspective behind developing the Learning by Developing (LbD) Action Model has been the development of higher education students' future working life skills during their studies and the opportunity to network with companies. Through business cooperation, students can more easily find a job after graduation. The LbD was developed at Laurea University of Applied Sciences (Laurea) in the early 2000s and has been used as a pedagogical method for almost 20 years. The LbD pedagogy must be constantly developed and renewed to stay up-to-date and as a valid pedagogical method in a changing society. This article describes a digital tool in the design phase that would facilitate working-life-oriented project studies in higher education institutions. The starting point for the tool's design has been research conducted in three higher education institutions between 2019 and 2022 and practical teaching and learning experiences at Laurea according to the LbD model.

Keywords: *Learning by developing, higher education studies, students' experiences, project-based studies.*

INTEGRATING THE ARTS INTO KINDERGARTEN CURRICULUM: A CASE STUDY WITH CHILDREN IN CROATIA

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Abstract

Art in general and various art forms are woven into the everyday lives of children in kindergartens. Arts education contributes to activating brain areas associated with cognitive, social, and observational skills, motivation, empathy, and attitudes related to non-artistic learning (Ishiguro, Ishihara, & Morita, 2023; Russel & Zembylas, 2007). Artistic expression is an important form of communication for preschool children, while verbal expression is not yet (sufficiently) developed. Croatian kindergartens cultivate the artistic fields of music, dance, theater, literature and visual arts, which are complementary and intertwined in an integrated approach to preschool children's learning. As two distinct art forms, music and visual arts share many structural elements and processes and allow for meaningful integration opportunities that create natural synergies. When working with children, however, it is not enough to listen to music, sing, or paint, i.e. to use art only for entertainment, for the free development of the child, or the development of artistic skills. Preschool teachers should know what they want to achieve with these activities and be aware of contemporary approaches to learning and teaching to create the necessary conditions for children to acquire knowledge and skills through their experiences. This type of learning finds strong support in constructivist learning theories, which emphasize that children need to be actively involved in restructuring their prior cognitive concepts by questioning their thought processes and beliefs, asking new questions and reconstructing their existing understanding. The article presents a part of the project carried out in the kindergarten "Lišnjak" in Pićan, Croatia, in 2024. Using empirical examples, the innovative methods of using art to create new knowledge and skills based on the children's experiences are presented. The part of the project that included integrated artistic research activities in the field of music and visual arts is described, with a special focus on the concept of sound sculpture (sound art). The children were confronted with situations that challenged their way of experiencing, thinking, feeling, and expressing themselves. The process of carrying out the activities is described and examples of the children's learning are given. The results of the study show the positive effect of the activities carried out on the children's motivation, creative thinking, and artistic expression.

Keywords: *Constructivist learning theories, early and preschool education, music, project approach, visual arts.*

ZOONYM PHRASEOLOGICAL UNITS AS HATE SPEECH IN YOUTH VOCABULARY

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Abstract

Phrasemes with a zoonymic component represent a very significant segment in the phraseological fund of a language. The term zoonym is actually a general noun that is used to name an animal. However, zoonyms as lexical components have the ability to connect with another lexeme within the phraseme. When such linking takes place, the zoonym loses its basic lexical meaning. With that, the zoonym no longer denotes a specific animal, but acquires a new function. The zoonym becomes a metaphor, the breakdown of which leads to the discovery of certain character traits, mental characteristics, external characteristics, or emotional states that relate to man. Such properties of zoonyms speak of their high productivity in the formation of phraseological units. Zoonyms very easily become an integral part of young people's speech, especially in everyday colloquial communication. Following these, we detected several phraseological compositions in which a zoonym is used, with the aim of indicating some characteristic of the one to whom the phraseological unit is addressed. The use of zoonyms in phrasemes often initiates direct or indirect speech in which hate can be recognized. Being aware that hate speech is becoming a common occurrence in language communication (oral or written), we did research involving students. The research gave solid results that in the future can be an impetus for deeper research on this topic.

Keywords: *Zoonyms, phraseological units, young people, hate speech.*

VERNACULAR AND DOMINANT LITERATE PRACTICES IN LATIN AMERICAN SCIENTIFIC LITERATURE

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Abstract

This text focus on the results of a documentary, qualitative, and hermeneutical-comprehensive research whose objective was the categorization of the theoretical and conceptual repertoires that support the proposals for understanding and textual production in social spheres, cultural, and school. Initially, the search parameters for articles in Scopus were defined. The formula focused on publications that had the descriptors “practical”, “literary” and their plurals, initially obtaining 79 documents in three languages (Spanish, English and Portuguese). In addition, only research articles published in Latin American open access journals between 2018 and 2023 were selected. The unit of analysis was delimited through Rayyan (<https://www.rayyan.ai/>), a free-to-use collaborative web application, which allowed automated duplicate elimination processes to be carried out. Two of the researchers carried out the review of the titles and abstracts of the 79 documents, independently and blindly evaluating compliance with the inclusion criteria. Subsequently, the selected articles were read in full. Any discrepancies that arose during this process were resolved by consensus, with a third researcher. Once this sequence was completed, a unit of 36 articles was obtained. Subsequently, the rubric and the completion protocol were designed, which were validated by experts (two thematic and one methodological). The rubric allowed each article to be reviewed in three aspects: bibliometric, conceptual, and discursive. The completion protocol allowed the 36 articles to be distributed among the researchers, standardizing the evaluation process and the collection of information. As a conclusion, theoretical trends and conceptual constructions were diversified geographically and epistemologically centered, with some political influence on the academicians.

Keywords: *Legitimate publications, literate practices, state of art, text production fields.*

QUALITATIVE EXPLORATION OF HIGHER EDUCATION STUDENTS' APPROACHES REFLECTING THEIR EXECUTIVE FUNCTIONS IN CHALLENGING STUDY TASKS

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Abstract

Entering higher education presents students with numerous challenges, necessitating the effective utilization of executive functions (EF) to navigate academic demands. EF are advanced cognitive processes that regulate thinking, behavior, and emotions in the service of adaptive and goal-directed actions. Optimizing EF can be supported by employing teachable strategies, which positively impact learning and study success. However, in addition to learned strategies, individuals might develop additional approaches, such as routines or habits, supporting their EF in managing challenging study tasks. The research focuses mainly on strategy use, particularly among children and adolescents, but not young adults in higher education. This study explores the approaches higher education students actually employ broadly, reflecting their EF in managing challenging study tasks. A purposive sampling strategy was employed at a Dutch University of Applied Sciences to select participants aged between 17 and 26. Data collection involved semi-structured interviews conducted individually and in small groups, followed by transcription of the interviews. Subsequently, the data were analyzed using inductive thematic analysis to identify clusters of approaches, followed by a deductive interpretation through the lens of EF. In 2021, 23 students were interviewed individually or in small focus groups, with interviews averaging approximately 85 minutes. A total of 189 approaches were identified from 869 student quotations, clustered into 93 distinct types of approaches with 27 overarching themes describing the clusters of approaches. For instance, the theme 'brain arousal regulation' encompasses the cluster of approaches 'taking breaks,' where students report going out for a walk, playing games, or meditation. Subsequently, three experts attributed the 93 types of approaches to ten EF, such as working memory, inhibition, and planning. For instance, some students reported playing background music while studying to help them stay focused, which could support their working memory when learning new information. On the other hand, some students prefer no music (or other sounds) when learning, which could help their inhibition ability because they do not have to inhibit the noise distractions. This study explored students' approaches to managing challenging study tasks, reflecting their EF. The findings reveal various approaches students utilize, encompassing behaviors beyond strategies alone and which could serve a specific EF. For instance, meticulously planning suggests a strategic approach, whereas always tidying up your workplace suggests a routine approach. Despite qualitative research limitations, these findings enhance understanding and provide insights into educational practices. Future research could broaden perspectives or investigate the effectiveness of the approaches.

Keywords: *Executive functions, higher education, strategies, students, thematic analysis.*

DISCOVERING STATISTICAL MISCONCEPTIONS AS STUDENTS CREATE NOTES FOR TESTS!

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Abstract

Educators are often left guessing how, when, and where misconceptions develop in mathematics and statistics. Students will leave many blank spaces on test papers, which is little or no help to educators as to why they could not complete the question. Stress and nervousness play a part in assessments, and students will not remember why they wrote a particular solution or why they left a blank space. Educators have tried

to alleviate this situation by allowing students to create their own notes to use during tests and examinations. As educators, do we ever provide specific instructions on how to create useful notes to help in assessments? This question was posed to students attending Curtin College, who responded with an overwhelming “no.” Curtin College is an alternative pathway college that provides courses for students who have not obtained enough points for university entrance or overseas qualifications that are not recognised in Australia. A new format has been adopted for the revision class in the hope that it will improve their skills in creating notes for tests. Students arrive at the classroom expecting to complete questions on the whiteboards about probability, specifically Venn and Tree Diagrams, Tables, and Symbolic Formulae. Most classes during trimester are interactive, but this week, unlike other weeks, students will drive the content seeking to generate the perfect set of notes for the assessment. Students working in small groups will write on the whiteboards information they believe will help solve the problems in the assessment. This simple practice has the ability to reveal misconceptions that are hidden from both students and educators. In the relaxed atmosphere of the classroom, students embark on a journey of “saying, listening, and writing” that hopefully will create new memories of correct concepts. Combining these three language modalities, such as saying information aloud while listening and writing it down, can further enhance memory encoding and retention. The educator is provided with the opportunity to observe, correct, and settle arguments between students, when necessary, through questioning the notes, removing the spotlight from individuals by concentrating on the written notes thus reducing academic pressure. Misconceptions are revealed by the combination of curiosity, openness to new experiences, and being in the right place at the right time. There are many benefits for both students and educators. Not only can you see how time-consuming writing notes can be for the student, but for the educator, you can see the origin of misunderstandings and failure to recognise key points. It is hoped that this simple experience may help students provide better notes in all disciplines. The qualitative paper will elaborate on this experience in the classroom setting and how it has evolved.

Keywords: *Misconceptions, notes creation, collaboration.*

EFFECTIVE TEAMS WORKSHOP: A CASE STUDY IN HIGHER EDUCATION TO TEACH TEAMWORK COMPETENCY

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Abstract

The needs of the globalized world and the transformations that different organizations undergo make being competent in teamwork a necessity. Therefore, the educational sector must give it the appropriate relevance and concern itself with how to develop this particular competence in higher education. In a Colombian university, particularly in its administration faculty, some steps have been taken in this direction. This text presents a case study that seeks to identify the learning outcomes related to teamwork in the course Effective Teams Workshop. To achieve this, six months after the course was conducted, qualitative information was collected through surveys with students, semi-structured interviews with professors, and the products created during the course. This information was analyzed through predetermined categories based on the course objectives, allowing for the emergence of additional categories. The information analysis reveals a pedagogical design with an experiential methodology for the course, where teams are formed to carry out assignments, facing challenges in each class session. This approach enables students to practice what is intended to be taught, aligning with what is learned and assessed. Students who participated in this course acknowledge learning that commitment and effective communication are fundamental parts of a successful team. This result aligns with the professors' proposal to understand and apply strategies for configuring effective teams. Still, it does not demonstrate the achievement of the second objective regarding the identification of team members' roles and their importance for team performance.

Keywords: *Teamwork, collaborative learning, university education, teamwork competency, qualitative research.*

GAMES AND CALCULUS

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Abstract

Every 1st semester of an academic year we have around 500 engineering students enrolled in a Calculus 1 course. Involving students in the learning process is a concern for any teacher, thus making us think of strategies to achieve this goal. This academic year we decided to introduce board games in some classes, to encourage mathematical communication and teamwork. In addition, the four weekly contact hours were divided into blocks, and one hour each week was dedicated to solving group tasks which, at the end of the lesson, were submitted on the Moodle platform and made available to all the students in the class. Each group had a different task, so that a wide range of solutions was available to everyone. The performance in these tasks was considered in the course's final grade. Moodle's peer assessment tool was also used, making students actively participate in the curricular unit's assessment process. The groups were randomly created (each student participated in three different groups along the semester) and the students evaluated their performance, as well as their peers' contribution in the group work, twice. Although the percentage of successful students did not improve significantly compared to previous years, the number of students who underwent assessment increased considerably and the attendance rate was also higher. Our university has a quality assurance system and, at the end of the semester, the students evaluate the courses they have taken and the teachers who have taught them. In their perspective, this methodology was useful, with minor corrections. In this paper we'll illustrate some of the games used, describe in more detail how the course worked and reflect on the learning results obtained.

Keywords: *Calculus, games, peer assessment.*

A WEB AND SIMPLE CLICKS TO UNDERSTAND CHEMICAL CONCEPTS

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Abstract

In the new era of machine learning and artificial intelligence, the project is designed to impart knowledge about ligands, substituents, and elements bonded to or surrounding a metal in a catalytic context. Leveraging successful web servers in the research field, the project enables researchers, irrespective of their computer chemistry expertise, to access pertinent information effortlessly. The methodology involves using a steric index, $\%V_{\text{Bur}}$, which gauges the occupancy in the metal's first sphere to reveal the catalytic performance of the corresponding catalyst. The web server, available at <https://www.aocdweb.com/OMtools/sambvca2.1/index.html>, facilitates the calculation of steric hindrance for any ligand (Poater et al., 2009; Falivene, 2016; Falivene et al., 2019; Liu, Montgomery, & Houk, 2011). For students in the Master in Advanced Catalysis and Molecular Modeling (MACMoM) program at the University of Girona, the project becomes an inspiring exercise. Through experimental and computational approaches, students correlate catalytic reaction pathway yields with the $\%V_{\text{Bur}}$ steric index. The exercise entails delving into past experimental results, manipulating xyz coordinates from X-Ray data, and employing linear and multilinear regressions. Importantly, each student in the class tackles a unique problem, fostering collaboration as solutions are shared within the group. This collaborative aspect not only aids in unraveling complex systems but also enhances the collective understanding of the intricacies involved. Emphasizing self-directed learning, the project encourages students to connect theory with results, promoting a deeper comprehension of the impact of specific groups.

Keywords: *Chemistry, educational exercise, ligand, steric hindrance, project-based learning.*

INTERACTIVE PROJECT-BASED TEACHING – MEETING THE CHALLENGES OF THE COMING GENERATIONS OF STUDENTS

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Abstract

Experiences from the authors' teaching indicate that students are becoming less focused on educational exploration and critical thinking. In parallel, Broo, Kaynak, and Sait (2022) highlight that future engineers must be fluent in different technologies, methods, and methodologies. Hence, the fast changes that take place require a highly dynamic capability among the workforce of tomorrow, which is opposite to many students' behavior in teaching and courses. This sheds light on Project Based Learning, in its essence, student-centred and with a dynamic approach to teaching where students study real-world problems and challenges (Kokotsaki, Menzies, et al. 2016). Similarities exist with Problem-based learning, where complex real-world problems are also at the centre to promote student learning. Both these concepts can promote the development of critical thinking skills, problem-solving abilities, communication skills, and the possibility of working in groups (see, for example, De Graaf and Kolmos, 2003). This research report documented experiences involved in moving from a more traditional teaching approach into a more project-based approach regarding a course in construction management, undertaken four times with a new structure in which a problem-based approach was developed. One of the key issues at hand with the course was to develop it and stimulate students interest in the course subject, i.e., intrinsic motivation (Entwistle, 2009), motivation that comes from “*interest in what is being learned and feelings of pleasure derived from it*” (pp 20), and not from external rewards (extrinsic motivation). Based on previous experiences from project-based learning, course material has been developed in four rounds, where each course provided feedback to develop the course further. The course focused on an already conducted construction project, which was modified for each round so the students could create new frames for the project. Feedback was received during the course, and individually, students at the end of the course provided feedback to coming rounds. The results from this development show interesting challenges in teaching regarding the balance between showing results from the actual project vs. stimulation of creativity among students, with a clear conclusion that age, and work experience positively affect how the students execute the projects. It also directly shows the significance of the course framing and the variation of project set-ups in the course. Our findings also show values in PBL for students' ability to handle changes in a world with many insecure influences.

Keywords: *Problem-based learning, project-based learning, intrinsic motivation, flexible learning.*

CO-CONSTRUCTING AND EVALUATING AN ENDOCRINE DISRUPTOR EDUCATION PROGRAM FOR TEENAGERS IN SCHOOLS: THE COPE-ADOS PROGRAM

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Abstract

Some Endocrine Disruptors (EDs) are suspected to cause deleterious effects on the reproductive system, developmental abnormalities and hormone-dependent cancers (breast, uterus, prostate, testis). The public's perceptions of these chemicals are poorly understood. The period of adolescence is a critical time when exposure to ED could have long-term health consequences. As part of the third axis of France's second national strategy on endocrine disruptors (SNPE 2) 2019-2022, the COPE ADOS project aims to offer an education and information program on endocrine disruptors for teenagers in schools. The COPE ADOS project is divided into 4 steps: 1) documenting the knowledge, representations and skills of high school

students on the subject of endocrine disruptors; 2) co-constructing with teachers an educational device aimed at students and their educational supervisors; 3) building a specific tool to evaluate the program; 4) implementing the program and carrying out its evaluation. The communication will describe the implementation of the project and the results associated to its different steps: **1-** A qualitative study (23 focus groups – N=275) has been carried out among high school students in order to collect knowledge and social representations. The sample includes general and professional high schools, including hairdressing and automobile, whose professions are more exposed to ED. **2-** Based on the results of this qualitative survey, the consortium of researchers - (public health, education sciences) and teachers jointly developed 6 educational objectives. The objectives were then declined into 14 educational tools made available to teachers on a digital platform. **3-** The project has been supported by academic authorities, and 10 schools are currently involved in the program trial. The first intervention phase will involve 218 high school students; 493 high school students have been included in the control group. **4-** An evaluation questionnaire was drawn up in line with the objectives. The questionnaire measures high-school students' skills and knowledge relating to endocrine disruptors, using a 60-point score. Data were collected for all high school students (intervention and control) in September 2023 (T0) and after 4 months of intervention in January 2024 (T1). These questionnaires are currently being entered into the EPIDATA software for statistical analysis. At the same time, a process evaluation will be carried out by interviewing teachers. This will provide data on the program's acceptability and the use of the tools offered on the digital platform.

Keywords: *Health education, endocrine disruptors, co-creation, evaluation.*

FOSTERING INCLUSIVE EARLY CHILDHOOD EDUCATION THROUGH THE PEDAGOGY OF PLAY

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Abstract

This paper presents the findings of a collaborative study among early childhood care and education (ECCE) practitioners to foster early childhood inclusion within development programmes. The study leveraged the pedagogy of play and integrated the African Reggio Emilia Approach (AREA) to cultivate values of acceptance, empathy and respect in young children. This endeavour is in alignment with the United Nations Sustainable Development Target Four (SDG4) underscoring the importance of offering inclusive, equitable education and lifelong learning opportunities to all, thereby contributing to the cultivation of a more inclusive society. In the context of the research, both the ECCE lecturer and practitioners actively participated as co-researchers within a community of practice (CoP). This collaborative engagement was situated within an established Participatory Action Learning and Action Research (PALAR) project. This study emerged from the recognition of a collective need when the practitioners expressed their awareness of lacking comprehensive guidance and practical knowledge regarding the seamless integration of early childhood inclusion in ECCE centres while ensuring its sustainability. Through this collaborative effort, the study aimed to address these gaps and provide actionable insights for creating an inclusive and sustainable educational environment for children.

Keywords: *Early childhood inclusion, participatory action learning and action research, SDGs, pedagogy of play.*

ORGANIZATIONAL ISSUES

WHAT DATA AND DATA TOOLS ARE MOST NECESSARY TO MAKE POLICY AND PROGRAMMATIC DECISIONS?

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Abstract

What do early childhood administrators, policymakers, and advocates want in a data tool? It is easy to simply provide them with multiple datasets, geographic regions from which to choose, and lots of demographic data describing young children, their families, and communities. But is that what the early childhood community needs or wants? Working with other stakeholders across the state, this early childhood data hub interviewed key stakeholders, held focus groups, and investigated what the statewide community wanted in their data and data tools. As a result, existing data tools have been renovated and developed with the early childhood community in mind. This project considered the needs of stakeholders and users based on their data literacy. How does a data tool and its datasets bridge the divide that may exist between participants and users with differing capacity, interest, and knowledge of data? How do we build a foundation from which to develop higher capacity in using data, more confidence in using data tools, and better understanding of effective uses of data in reports, programming decisions, and changing policy? This presentation will provide an overview of the findings of this investigation and the tools that have been refurbished or developed based on those findings. The authors will explore the most necessary data, the quality of those data, and elements in a data tool that provide the user with the type and amount of data needed to make evidence-based decisions and answer specific research questions.

Keywords: *Data, data tools, policy, early childhood.*

THE OPEN RECRUITMENT SYSTEM FOR PRINCIPALS IN KOREA

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Abstract

The research analyzes South Korea's open recruitment system for principals and compares it with the traditional parallel system. It aims to explore the factors that led to the formation of the open recruitment system, analyze its policy implementation process, and assess its effectiveness. The study utilizes document analysis, interviews, and comparative research methods. The findings reveal that the open recruitment system for principals emerged due to efforts to promote social democratization and liberalization in education. However, there are challenges in attracting enthusiastic participation from potential principal candidates, leading to limited implementation of the system and unmet goals. Certain regions need more candidates and require increased publicity and talent attraction strategies. Implementing the open recruitment system also poses challenges due to varying promotion situations across different areas and the absolute decision-making power of education supervisors, which has sparked controversy. It is crucial to ensure a fair and transparent selection process, emphasizing the need for objective, transparent, and professional reviews to maintain impartiality and professionalism. Overall, this research comprehensively analyzes South Korea's open recruitment system for principals and offers insights for improvement. It is a valuable reference for South Korea and other countries seeking to enhance their principal recruitment processes. By addressing the identified challenges and incorporating the research's recommendations, countries can strive for a more effective and inclusive system that attracts qualified candidates and promotes educational success.

Keywords: *Principal, open recruitment system, Korea.*

**INCREMENTA ATQUE DECREMENTA ...
MANAGING THE UNIVERSITY RESEARCH CENTRES: THREE CASES
AND A COMMON MANAGEMENT ISSUE**

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Abstract

The aim of this paper is to raise, amid several decision process issues, a major question: Is there any common reason behind failure in some cases encountered in higher education research centres or laboratories? If so, is it a matter of lacking professionalism or management skills; human nature or local culture; or environment pressure? This seems to be a rhetorical question – as the cause could be any or a mix of them, in addition to scores of others – depending on particular environments. However, the main purpose of this paper is to launch a discussion about possible administrative and management causes behind the research centre's failure, and management conflicts eventually – both inside and outside university – yet related to the management of research units within universities. As methodology, the study largely relies on directly observed and/or personally experienced particular instances in the Romanian university environment – over a relatively long period of time (1980s–2000s). Secondary literature survey complements this primary research under scrutiny – illustrating the matter under investigation. There are three cases of university research centres with different profiles and importance, all sharing one common feature: failures after successful start. The investigation approach is by the domain of research, from macro- to micro-level (organizational). The conclusions resulting from each case are assessed, highlighting similarities and differences. As the focus is on the management issues, a particular root-cause has emerged. In all instances, the abrupt change of positive course of the research centre was a common management issue. *Notably, the failure cases under scrutiny are particular instances, among plenty of successful stories.* The concluding remarks are focused on a set of recommendations centred on the main findings (proper, principle-based management of the research centre, careful environment monitoring, timely information, change and conflict management) – to be recommended to the stakeholders: higher education policy makers, administrators and research managers.

Keywords: *University research centre, university centre for excellence, research and didactic laboratory, university administration and management, management principles.*

**FROM UNDERPERFORMING TO WELL-PERFORMING HISTORICALLY
DISADVANTAGED SECONDARY SCHOOLS: LESSONS FROM
FOUR SELF-INITIATED TURNAROUND SUCCESS CASES**

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Abstract

In recent years, there have been improvement in the performance of secondary schools as measured through the National Senior Certificate (NSC) pass rates. However, there are schools still underperforming, mostly historically disadvantaged schools located in townships and rural areas. These areas are beset with challenges that test their capacity to perform amidst numerous factors mostly resultant from the apartheid legacies. In this paper, we explore how four underperforming, historically disadvantaged secondary schools in the Gauteng Province of South Africa underwent self-renewal processes and were thus turned around to being well-performing schools. A qualitative case study design using semi-structured interviews was used to gather data from four principals who were the drivers of the self-initiated turnaround processes. Data analysis was inductive and involved content analysis to explore data from different angles and entailed the analysis and interpretation trajectory involving organising, reading and rereading, coding, categorising and thematising, representing and reporting. Ethics were adhered to by ensuring among others, that participation and was voluntary and participants signed informed consent which detailed, among others, that participation was voluntary, and that confidentiality and anonymity would be ensured. The Ethics Committee of the North-West University granted ethical clearance (Ethics number: NWU-00636-18-A2) for the study. Findings indicate that the successful self-initiated turnarounds of these schools were due to

principals taking conscious decisions to look inward or self-evaluate their schools' challenges and develop solutions to challenges at their schools. The results of their efforts were sustainable turnarounds with structures and processes owned by school stakeholders as school-based assets. Principals' leadership strategies resonate with school turnaround literature and signify lessons that can be derived from the four success cases in this study. Principals had identified priority areas, such as among others, assessment plans, structures and systems for performance focusing on learning and academic success. They exhibited recognition of good work from staff and incentivising good performance, which were not only motivational, but created a sense of purpose and support, encouraging teamwork and creating environments of professionalism through collaborative problem-solving and decision-making. Furthermore, principals used evidence-based decision-making and problem-solving, especially in engaging parents in their children's work. There was also use of customized solutions for the unique circumstances of schools. This study, one of a few exploring underperforming schools' self-initiated turnarounds in secondary schools, contributes to the discourse of change in performance of high poverty township schools in South Africa without external interventionist programmes. The findings of the study indicate that underperforming secondary schools can be turned around by school communities' own efforts that take into consideration, the assets in the form of, inter alia, internal skills, expertise and resources as well as external resources customised into turnaround strategies suited the schools' needs.

Keywords: *School turnaround, self-initiated turnaround, underperforming schools, asset-based approach, needs-based approach, interventionist strategies, historically disadvantaged schools, township schools.*

RACIAL DIVERSITY PLANS IN K-12 SCHOOLS: HOW LITIGATION CONTINUES TO SHAPE POLICY

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J.D., Ph.D.

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Abstract

In 2023, the United States Supreme Court ruled in *Students for Fair Admissions, Inc. v. President* (“*SFFA*”) that the race-conscious admissions programs, also referred to as affirmative action programs, at Harvard University and the University of North Carolina were unconstitutional. These two universities considered race as one factor in their holistic admissions process in order to achieve a more diverse student body. The student plaintiffs in this case alleged that the admissions policies for these universities discriminated against Asian American applicants who had better SAT scores and higher-grade point averages than applicants from other racial and ethnic groups. With its decision in *SFFA*, the Court reversed over 40 years of precedent, finding that race can no longer be explicitly considered as one of many factors in university admission programs because doing so violated both the Equal Protection Clause of the Fourteenth Amendment (with respect to UNC as a public university) and Title VI of Civil Rights Act of 1964 (with respect to UNC and Harvard). Although the U.S. Supreme Court struck down the explicit consideration of race in admissions programs, it did not rule on the constitutionality of race-neutral programs. Shortly after the *SFFA* decision, the Fourth Circuit Court of Appeals rendered an opinion involving a public high school near Washington D.C. that had adopted a race-neutral admissions policy to achieve greater student body diversity. The policy was challenged, and the school was accused of using race-based proxies in its admissions program. School officials argued that it was attempting to allow for greater access to the selective school, while the plaintiffs contended that school officials impermissibly used race-neutral admissions criteria to change the racial balance of the school's population. This case was appealed to the U.S. Supreme Court in August 2023. If *certiorari* is granted, this case might allow the Supreme Court to consider the scope of its earlier ruling in *SFFA*. To be certain, this would be another consequential ruling because it has the potential to further limit K-12 schools' student body diversity policies. The researcher will highlight how laws in other countries (e.g., Brazil, Spain, and France) consider educational equity and diversity.

Keywords: *Equity, diversity, access, legal research, education.*

***FACILIS DESCENSUS AVERNO* OR INTERACTIONS OF DOCTORAL RESEARCH PROJECTS WITH UNIVERSITY'S OTHER PROJECTS**

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Abstract

This piece of work is focused on higher education research, in particular PhD research projects in a large university, aiming to analyze the effects of interactions between doctoral research projects and other organizational (university's) projects. Assuming that objectives of doctoral research projects are aligned to the organization (university's) strategic objectives, there were a few research questions, specific to this pilot, explorative study: How could the effects of interactions be measured? Are the effects of interactions always positive? If the effects of interactions are negative, then which might be the reasons behind them? Ultimately, are there any solutions to avoid the negatives or, at least, to mitigate them? As methodology, the study includes both secondary research (literature survey) and primary research. Since the literature on this topic is rather scarce, this study relies mainly on primary research methods: directly observed and personally experienced doctoral projects in a Romanian university environment under scrutiny, completed with semi-structured interviews with doctoral students. Besides the approach of this narrow research area and associated methodology, this piece of work reveals novel types of inter-project conflicts within higher education institutions. The results are not definitive; however, they allow the formulation of several concrete, core-recommendations centred on better coordination between PhD research projects and other projects run by the university, mainly at the strategic level. The findings are *critically important to doctoral schools and PhD supervisors in particular* as well as to major stakeholders: higher education leaders and strategists, policy and decision makers, administrators and research managers.

Keywords: *PhD project interactions, doctoral research projects, higher education and research, organization versus project, organization management versus project management.*

TEACHERS AS CREATORS OF SCIENTIFIC SCHOOL CULTURE

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Abstract

Teachers are among the most important actors who shape the scientific culture in schools (Barth, 2006). Teachers' own scientific literacy, epistemic beliefs, perceived curriculum hierarchy (Bleazby, 2015) and many other factors influence teachers' pedagogical practice and have implications on the formation of school scientific culture. In this study, we aim to examine teachers' perceptions of scientific literacy, perceived scientific value of different school subjects, and their practices of developing science literacy in students. As part of the research project "Scientific school culture for sustainable society", we conducted semi-structured interviews with 46 teachers and surveyed 579 secondary school teachers about the scientific value of different subjects included in the secondary school curriculum. The survey instrument was developed, based on the analysis of the results of the interviews. The study was conducted in Latvia. Our results indicate that teachers understand the concept of scientific literacy quite narrowly, and also do not perceive themselves as highly scientifically literate for a variety of reasons. In judging the perceived scientific value of different school subjects, teachers' views correspond to the traditional curriculum hierarchy which puts STEM subjects above the others, and this trend is observed in the entire sample, independent of the subject thought. In their teaching practice, teachers prefer instructional activities and methods that are aimed at ensuring good students' results in national competitions (school subject olympiads) and final exams. Based on our results, we discuss the complex interplay between various teacher-level individual factors that are crucial for a development of a thriving school scientific culture. Trajectories for school leadership are proposed to initiate change and transformation.

Keywords: *Scientific school culture, scientific literacy, epistemic beliefs, curriculum hierarchy, secondary school teachers.*

HOW TO INCREASE FACULTY SKILLS FOR A NEW APPROACH TO TRANSFORMATIVE EVALUATION IN UNIVERSITIES

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Abstract

Quality assurance systems in higher education have developed over the last twenty years under the pressure of an international and national policy to promote the pursuit of common quality improvement objectives and which allow the comparability of qualifications between the various countries. Faced with this important turning point which has strongly marked the development of higher education, individual institutions have activated important internal changes in the effort to adapt to accreditation, self-assessment and evaluation models. The experience of countries that have long developed internal quality assurance systems, such as the Netherlands and the United Kingdom, demonstrates how the effectiveness of such systems owes much to the maturity of the system, which over time has therefore permeated processes, tools and skills in the culture of the organization. The culture of quality is an essential factor to enable the effectiveness of internal, but also external, improvement processes. The culture of quality is an essential factor to enable the effectiveness of internal, but also external, improvement processes. Through phenomenological research, it was possible to grasp the main elements - both organizational, managerial and of a value-based and cultural nature - which characterize a culture of quality in a university organizational context. It was also realized that many of these elements characterizing the organization's quality culture are directly correlated with the main points of Patton's theory of transformative evaluation (defining the evaluation question, reflexive function of the evaluator, usefulness and current use; link between leadership and evaluation; continuous evaluation). The objective of this research is now to outline, starting from the elements identified as foundational for the pursuit of quality and for the ability to generate a transformation of reality, how they can be developed by the people who work within the system of both internal and external QA, especially those responsible for carrying out the assessment. It is thus possible to define a competence profile of the evaluator and what knowledge, skills and competences he must have to carry out his work in the best possible way and how they can be transmitted, through a specific training curriculum that could be made available to the evaluators operating at international, national and local levels. Similar, albeit more limited, skills must be disseminated throughout the educational community of an institution in such a way as to increase the faculty's ability to know, understand and use the evaluation practice in a positive way, in order to better deal with the moment of "being evaluated" and recognizing the benefits in the correct use of the results of the evaluation from a transformative perspective.

Keywords: *Quality assurance, transformative evaluation, evaluator skills, higher education.*

POSTERS



TEACHERS AND STUDENTS

FACTORIAL STRUCTURE VALIDATION OF THE ENTREPRENEURSHIP QUALITIES QUESTIONNAIRE 2.0

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¹PhD, ²PhD cand.

Abstract

Entrepreneurs are more than ever very important economic actors in all societies. In many countries such as Canada, governments are mobilizing school curricula to include activities aimed to develop entrepreneurship competencies in high school students. However, there is no clear data on the actual level of these competencies among high school students and adults as well (Yergeau & Gingras, 2023). Accordingly, there is also few instruments intended to evaluate dimensions of entrepreneurship. This study examines the factorial solution of a modified version of an open online instrument aiming at measuring entrepreneurship qualities. The original Entrepreneurship Qualities Questionnaire (EQQ, L'Heureux et al., 2000) contains 59 items grouped in 6 continuous scales (Commitment, Motivation, Result-oriented, Creativity, Self-competition, Leadership) and a Total score. The EQQ 2.0 is an updated version based on previous work showing some items factor loadings were problematic in the original factorial solution (Yergeau, Busque-Carrier, Gingras & Lépine, 2023). A sample of 5527 high school students and n=5309 adults from the province of Québec have answered the EQQ between 2013 and 2023. An exploratory structural equation modeling within confirmatory factor analysis (EwC) was used to assess the second-order factor structure used by the EQQ 2.0. EwC mostly replicated the novel four first-order and one second-order factor structure. Results were validated with a subsample. Overall, these findings support the utility of the EQQ 2.0 to assess entrepreneurship qualities.

Keywords: *Entrepreneurship, factorial structure, construct validity, quantitative measure.*

DEVELOPMENT OF AN ASSESSMENT METHOD FOR INDIVIDUAL GRADING OF A GROUP PROJECT WORK

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Abstract

In engineering education, project-based learning (PBL) is irreplaceable for implementing active studies in applicable, engineering courses. The example of this paper is taken from a course Product design and development given for the third-year students at speciality Product development for mechanical engineers at Linnaeus University. The course is project-based and the projects are given by the industries where students work with an external collaboration partner. In the 15 ECTS course, done in one semester the students are trained in conceptual product design using different methods for problem solving and decision-making. They work in project teams of 3-4 students. The assessment and grading were done on the base of the grade of the report written during the project time. The individual knowledge and contribution to the project work was evaluated more in informal than in a formal way during the tutoring sessions and the seminars. This is where the authors have faced a big challenge to assess formally and individually the students when a group has done the work. The question was how fairly to evaluate the students' knowledge, skills and contribution to the group work. In this paper, the authors are presenting an attempt to answer this question and to propose a method for individual grading of a group project work. The method for assessing individually the students' performance is based on a Competence Advancement matrix with standardized criteria- production, perception, reflection, systematic approach and complexity.

Keywords: *Evaluation method, individual grading of a group work, higher education in engineering, project-based learnings.*

DOMAIN OF COGNITIVE-LINGUISTIC, READING AND WRITING SKILLS OF BRAZILIAN STUDENTS IN THE INITIAL LITERACY PHASE IN THE POST-PANDEMIC CONTEXT

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Abstract

Introduction: In the post-pandemic context, learning difficulties have increased and this can be attributed to social and school isolation, which significantly compromised the development of cognitive-linguistic, reading and writing skills. **Aim:** Verify the domain of cognitive-linguistic, reading and writing skills of Brazilian students in the initial literacy phase in the post-pandemic context. **Method:** 176 students from initial literacy phase of Elementary School participated in this study, distributed in two groups, GI composed by 78 students from the 1st year and GII composed by 98 students from the 2nd year. All students were submitted to the application of the Cognitive-Linguistic Skills Assessment Protocol for schoolchildren in the early phase of literacy. **Results:** students from GI and GII showed average performance for phonological awareness, reading, writing, processing speed. GI showed lower performance for the auditory and visual processing and GII showed only lower performance for the visual processing. **Discussion:** cognitive-linguistic skills are necessary for the full development of reading and writing in an alphabetic writing system such as Brazilian Portuguese. **Conclusion:** students in the 1st and 2nd grade showed lower performance in cognitive-linguistic skills in in the post-pandemic context, which could compromise the teaching-learning relationship in the classroom.

Keywords: *Literacy, post-pandemic, learning, child development, education.*

EXPLORING INTERACTIVE ONLINE SCRIPT CREATION AS A NOVEL ASSESSMENT METHOD IN HIGHER EDUCATION

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Abstract

This study presents a new assessment approach wherein students collaboratively develop interactive online scripts (text enriched by images, videos, and self-assessment quizzes) on course contents throughout the semester. The aim is for students to become subject matter experts, ensuring that the content is comprehensible for their peers. This method offers several advantages, including rapid integration of new contents into course material without a heavy workload for lecturers, who only need to produce in-class materials rather than exhaustive study guides. Moreover, students acquire valuable competencies and soft skills such as structuring of learning material as well as collaborative learning. It also aims to foster self-reflection on effective learning strategies. Results from a voluntary survey indicate that 17 out of 18 students found script creation beneficial for deepening their understanding of course contents. However, evaluation in a course of 57 participants yielded mixed results, with both exemplary and substandard submissions. The substandard results are difficult to deal with, as students then have no study material for these topics. Notable challenges include unclear assignment requirements, ineffective group dynamics, and a time-intensive nature of student tutoring by teaching assistants. Furthermore, despite defined assessment criteria, assessing script quality proved challenging due to strong homogeneity among submissions. Addressing these challenges requires enhanced training for teaching assistants providing feedback to the students, and strategies for managing gaps in script coverage. This study underscores the need for competent supervision and ongoing refinement of this assessment process to optimize learning outcomes in higher education settings.

Keywords: *Assessment, cooperative learning, online learning.*

PERCEPTIONS OF COMPETENCIES AMONG IN-SERVICE SOCIO-PEDAGOGICAL PROFESSIONAL EDUCATORS: A NATIONWIDE EXPLORATORY SURVEY

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Abstract

The definition of different professional roles and the competencies of professionals in educational care has been, and continues to be, a highly debated topic in the political, social, and academic realms on both national and international levels. The current socio-cultural context is marked by a proliferation of diverse and complex educational and training emergencies that encompass a wide range of special educational needs (ONU, 2015; ISTAT, 2018). The plurality of educational and training situations in the field requires functional pedagogical approaches and responses formulated through new knowledge, literacies, and competencies of educators (Gaspari, 2018) that adhere to the principles of inclusion and respect for diversity (UNESCO, 2009; ONU, 2015; ISTAT, 2018). Socio-pedagogical professional educators, in this sense, represent a necessary response to socio-cultural issues, and for this reason, a profound reflection on the role played by the essential set of competencies needed to address educational practice is essential (Sposetti et al., 2022; Boffo, 2021; Gaspari, 2018). Law No. 205 of 2017 establishes and defines the roles and functions of professional educators operating in socio-educational and training contexts. The direction set by the recognition of the professionalism and identity of socio-pedagogical educators brings to the forefront the issue of professional competencies that qualify educational and social interventions. The fields of intervention and educational design have highly complex and flexible characteristics, requiring competent professional figures attentive to the needs of the users. But what are the essential professional competencies for educational practice? And how do educators in service build their competencies? The exploratory investigation is aimed at socio-pedagogical professional educators in service throughout the national territory with the goal of exploring the theme of constructing professional profiles in real and diversified contexts. The study is formulated using mixed research methods and aims to understand which professional competencies educators recognize as fundamental for acting in socio-educational and training contexts, and to reflect on the formative experiences that contribute to the development of professionalism. The objective of this paper is to present the current state of research progress. In particular, will be presented the research design, the tools employed, and the initial results obtained, providing a comprehensive overview of the early stages of this study and anticipating the perspectives that emerge from analysis.

Keywords: *Socio-pedagogical professional educators, competencies, educational service, exploratory survey, national territory.*

ASSESSMENT OF NUMERICAL COGNITION IN PRESCHOOLERS: PILOT STUDY TO VERIFY THE APPLICABILITY OF THE DEVELOPED INSTRUMENT

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Abstract

During the preschool years, the main difficulty that can predict the risk of mathematical difficulties is the delay in the ability of magnitudes associated with number words and Arabic numerals. Understanding this process of mathematical learning, its difficulties and consequently academic failure is a challenge for all professionals linked to the area of education. Aim: to develop an assessment of numerical cognition for preschoolers, aged 2 years to 5 years and 11 months. Methods: From the literature review, mathematical skills were selected to compose the assessment of numerical cognition, including: subitizing, numeral knowledge, counting, one-to-one correspondence, perception of magnitude, cardinality, comparison, measurement and approximation and estimation. A pilot study was carried out to verify the applicability of the instrument developed in 74 Brazilian preschoolers at municipal public Kindergarten in the city of São Paulo, Brazil, distributed in the age groups of: Group I (GI): composed by 15 preschoolers, aged 2 years to 2 years and 11 months; Group II (GII): composed by 18 preschoolers, aged 3 years to 3 years and 11 months; (GIII): composed by 19 preschoolers, aged 4 years and 4 years to 11 months and (GIV): composed

by 22 preschoolers, aged 5 years and 5 years to 11 months. The numerical tasks were presented to the children in the form of games to keep their attention. The development of an instrument to assess numerical cognition in preschoolers can contribute to the development of logical-mathematical reasoning in these children, helping teachers in the development of activities and games that teach basic numerical, spatial, geometric, measurement and statistics, contributing to future gains in mathematics learning.

Keywords: *Numerosity, mathematical abilities, dyscalculia, early childhood, early childhood education.*

PROJECT BASED LEARNING IN MECHANICAL ENGINEERING EDUCATION

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Abstract

The final year of the three-year bachelor program in Mechanical engineering at Linnaeus University (LNU) consist of applicable, engineering, project based-courses – Machine design B, Product design and development course, and degree project course. Those project-based courses emphasize learning activities that are long-term, interdisciplinary, and student-centred. Project based learning (PBL), as a method that contributes to the active learning of the students; consist not only of learning activities and of understanding the theories delivered but also of working activities where the theory is applied for a problem solving. Students learn about the area of product design by working for an extended period, to investigate and respond to a complex question, challenge, or problem. The project-based courses consist not only of lectures and project but also of seminars, guest lectures and company visits. In this way the students have the impression about the real work at industries and how theories are applied. In this paper, the importance of PBL for mechanical engineering education is presented. The curriculum for the final year is explained and the project-based courses are viewed and compared in terms of implementing PBL together with different pedagogical approaches. The challenges in executing and assessing students work in project-based courses, where students work in project teams, are examined. As a conclusion, the different ways of applying PBL depending on the purpose of the course, will be discussed.

Keywords: *Project based learning, active student-centred learning, mechanical engineering education.*

FLU-EM – ASSESSMENT OF HANDWRITING FLUENCY: DEVELOPMENT THROUGH CRITERIA AND AGREEMENT AMONG JUDGES

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Abstract

Introduction: Difficulties in legibility and writing speed are associated with impairments in cognitive integration, motor planning, eye-hand impairment, visual perception, visual-motor integration, kinesthetic perception, sustained attention, and manipulation with the hands, thus causing changes in the writing fluency development manual. Aims: This study aimed to develop the items of an Assessment Protocol for the Handwriting Fluency (FLU-EM) for Brazilian students aged 9 to 16 years old and present the preliminary findings of its validity and reliability. Method: (a) elaboration of items and criteria; (b) validation by judgment of specialists; and (c) definition of the final shape of the instrument and its scoring. The assessment protocol was applied to 32 students, 16 females and 16 males, four from each age group from 9 to 16 years old. Results: The protocol elaborated was easy to apply, due to the students' acceptability and understanding of the proposed tasks, with no need for semantic adjustments. Conclusion: The Assessment Protocol for the Handwriting Fluency (FLU-EM) can be applied in the Brazilian population; however new studies are being developed with the objective of providing greater reliability and validity of the instrument.

Keywords: *Handwriting, assessment, measurement, learning, education.*

THE ROLE OF AUTHENTIC EXPERIENCES IN FOREIGN LANGUAGE LEARNING: ROAD TRIPS AS A WAY TO GRASP THE SOUL OF A TARGET LANGUAGE

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Abstract

This paper explores the significance of authentic experiences in enhancing foreign language learning, given that they immerse language learners in real-life situations, leading to deeper comprehension and retention of linguistic elements. Based upon the already widely debated criticism of language learning approaches, which argues against the extensive focus on form (*know what*) to the detriment of meaning (*know how*), the study analyses the progress made by students learning the Romanian language following participation in road trips. During such non-formal activities, learners get to engage with native speakers in spontaneous conversations, encountering colloquialisms and regional dialects that enrich their language repertoire. Furthermore, the journey itself becomes a catalyst for cultural exploration, as learners navigate diverse landscapes, interact with local communities, and partake in cultural events. This firsthand exposure deepens learners' cultural understanding, sensitizing them to the nuances of language use within its socio-cultural context. Such interactions provide invaluable opportunities for learners to refine their listening and speaking skills in authentic contexts, thereby bridging the gap between classroom instruction and real-world application. The students' immersion in authentic Romanian settings was evaluated through a blend of qualitative and quantitative analysis methodologies, which included the examination of teachers' observation sheets, as well as conducting in-depth semi-structured interviews with the participants. The research focused on the application of language theory in real-life situations, the development of listening and speaking skills, cooperative problem-solving, refinement of soft skills, increase of student self-confidence and motivation, and enhancement of cultural awareness. The study's findings indicate that practicing foreign languages in unconventional settings and through authentic interactions, with genuine communicative goals in mind, generates a significant improvement in communicative skills. This suggests that integrating road trips into language learning curricula holds significant potential for cultivating linguistic proficiency, cultural competence, and a passion for language acquisition.

Keywords: *Foreign language learning, non-formal education, listening and speaking skills, pragmatic skills, intercultural awareness.*

PROJECTS AND TRENDS

IMPACTS OF ARTS-BASED ECOPEDEGOGY IN SUSTAINABLE RESIDENTIAL FOOD WASTE MANAGEMENT

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Abstract

How can arts-based ecopedagogy impact sustainability in organic waste management? In Winnipeg, Canada (population 841,000), there is no publicly-funded program for the 34 million kilograms of Residential Food Waste produced annually, nor is there an industrious environmental education program to support it. The consequence of inaction is the increase of greenhouse gas emissions from untreated waste, further threatening global warming, especially an issue for the disadvantaged urban population, and those in multi-family dwellings such as condominiums/apartments. This paper outlines a research proposal set to commence in 2024/2025. A suitable framework model chosen for this critical environmental exploration was ecopedagogy, a transformative teaching in which researchers' problem-pose the politics of socio-environmental connections through local, global, and planetary lenses. Arts-Based and Participatory Action Research will follow ecopedagogy as an innovative and mutually supportive multidisciplinary and methodological approach to knowledge-building with the creative arts at its core; useful not just for inquiry and learning, but also to challenge dominant ideas, hegemony, oppression, and ideologies through a critical lens. A practical guide and example for the effective methods of Participatory Video under the framework of ecopedagogy will be displayed to enable research participants as active co-researchers. All humans have a right to live in a clean, healthy and sustainable environment, based on the resolution that was unanimously signed by the United Nations General Assembly, 28 July 2022. Is this creative approach of arts-based ecopedagogy right for you?

Keywords: *Arts-based research, ecopedagogy, participatory action research, sustainability, critical pedagogy.*

AN INNOVATIVE MODEL FOR HIGHER EDUCATION

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Abstract

As the landscape of education evolves in the 21st century, there is a pressing need for innovative models that can adapt to the dynamic demands of a rapidly changing world. This abstract introduces a model for higher education, designed to foster an enriched learning experience within university settings. The model combines interdisciplinary real-world elements with critical thinking and problem-solving skills. Furthermore, the model advocates for a flexible curriculum that adapts to the evolving needs of industries and society. By forging partnerships with industry leaders, the university can offer students opportunities for experiential learning, internships, and research projects that bridge the gap between academia and the professional world. The aim of the presented model was to suggest to the faculty a methodology for selecting courses so that the study programme contains subjects that will improve the graduate's position on the labour market. Preliminary assessments of the model on selected faculty (Faculty of Chemical and Food technology in Bratislava) reveal positive outcomes, including increased student engagement, improved academic performance, and enhanced readiness for the workforce. The innovative model for higher education presented in this abstract serve as a blueprint for universities seeking to innovate their educational approaches, ensuring graduates are equipped with the skills and knowledge needed to thrive in an ever-changing global landscape.

Keywords: *Education, innovation, study program, model for education, critical thinking.*

VIBE – VIRTUAL REALITY IN STEM EDUCATION

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Abstract

In the XXI century, information technology and, more recently, the Covid-19 crisis have reshaped our educational system. Distance learning has proven to be an effective, reliable, easily standardized and generally economical form of learning. Internationally recognized e-learning platforms have been widely used in education. However, the use of digital and virtual reality (VR)-based platforms is still not generally accepted, despite offering multiple advantages. The current challenge is not to invent new technologies, but to ensure that educators can develop effective ways to deliver curricula in high-quality VR environments. This immersive and innovative means of visualization, interaction and flexibility means that virtual reality systems are unrivalled in terms of engagement and motivation with education, and also provide a scalable platform and a relatively easy-to-share solution for massive online learning. At a European level, there is a demand for healthcare providers, scientists, qualified engineers and informatic technologies (IT) specialists. Employers are continually seeking a highly qualified workforce and lifelong learning is also essential for the development and progress of our society. This project aims to revolutionize and reshape medical and STEM education. The main objective of the V.I.B.E project is to enhance this digital transformation and develop the digital skills of participants and other stakeholders, using innovative VR-based IT methods and solutions, with the aim of establishing a link between medical and STEM skills.

Keywords: *Virtual Reality, STEM, biomedical skills, digital health, innovation.*

ASSESSING SKILLS TRANSFER FROM COMPUTER GAMING TO ACADEMIC LEARNING: AN EXPERIMENTAL DESIGN

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Abstract

The relationship between computer games and academic learning has been a topic for research and debate over decades. Here, we present an updated, theory-driven experimental design for assessing how specific skills that players train in commercial computer games may transfer and be subsequently applied to study-relevant tasks in a school context. As theoretical starting points, we posit that i) skills transfer from such seemingly disparate domains as gaming and studying can be better understood on the metacognitive level of self-regulation of one's progress towards a goal, and ii) what drives learning in both domains can be understood in terms of their "core mechanics", or means of interaction, towards this goal. Drawing from the evidence-based approaches described by Schwarz et al. (2016), we identified specific core mechanics for learning in the popular esports game *League of Legends (LoL)*. Whilst a multiplicity of learning mechanisms are present in computer gaming, we focus on *deliberate practice* as an overarching concept for the driving interactions for learning that can be empirically investigated. We describe how students' use of these learning mechanics can be assessed empirically by observing how students plan, perform and reflect upon a study task. Our hypothesis is that training these strategies from computer gaming can facilitate their application to studying, by means of skills transfer from one domain to the other. We present a tentative experimental design of how this can be assessed, and hence proper supports be developed, by observing how students engage in self-guided deliberate practice in the game (LoL) and in their academic studies, respectively.

Keywords: *Esport, computer gaming, transfer, learning, schoolification.*

DEMONSTRATION OF TIME-SYMMETRY BREAKING IN A JET FLOW

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Abstract

Although the Newton laws are time-reversible, we can observe lot of systems, which are irreversible in time. One of such a simple system is the fluid jet, i.e. a case, when a fluid flows into or out of a tank through an orifice (hole). In the case of flow out, the fluid approaches towards the hole from all directions symmetrically, the flow sustains laminar up to high pressure gradients and the fluid velocity decreases with second power of distance (in 3D, in 2D it does with first power). Thus the drag force decreases with 4th power of distance. On the other hand, if the fluid is pushed into this tank, then the fluid inertia conserves the direction creating a fluid structure known as jet – the column of moving fluid with a plume on its head. The boundaries of this moving column are home of the famous Kelvin-Helmholtz instability creating vortices, which spreads out into the entire jet and its surroundings. The turbulence soon fills the entire vessel and mix it powerfully. In total, a simple device consisting just of a tank and a syringe can show various effects from details of fluid mechanics up to philosophical problems of the universe. We would like to present this device in the END conference as a poster. Look at our YouTube video: <https://youtu.be/BiuOKTng8jE>

Keywords: Turbulence, rheoscopic fluid, demonstration experiment, jet, education.

LIFE CYCLE ASSESSMENT OF A PRODUCT FROM 3D PRINTER AS A NEW TOOL FOR SCHOOL

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Abstract

The article is devoted to life cycle assessment, specifically determining the carbon footprint of a product produced with the help of a 3D printer. The aim of the article is to help the LCA (Life Cycle Assessment) method used not only to show students and pupils places with a negative impact on the environment but also how to identify them and possibly eliminate or limit them. At the beginning of the article, mind maps are described that relate to a specific product printed on a 3D printer, which has clearly defined goals: to describe the individual phases of the product's life cycle; orientate yourself in concepts related to product quality; define product life cycle costs; assess the impact of various factors on product quality; to evaluate the impact of production using a 3D printer on the environment. The next part of the article is devoted to the creation of a carbon footprint calculator. There are various calculators for calculating emissions, which, after filling in, will evaluate the result. However, it is often impossible to look at how the process was calculated to know how a particular value arrived at. Therefore, a simple calculator was created in Microsoft Excel, in which the method of calculation is clear, and the sources of the coefficients can be found. At the end of the article, recommendations will be made on how to apply the sustainable development of active learning methods to teaching.

Keywords: Life Cycle Assessment, production process diagram, 3D printing, product quality, active learning methods.

DEFINITIONS MATTER! HOW ONE STATE IS ATTEMPTING TO STANDARDIZE DATA DEFINITIONS

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Abstract

As data collection and analyses proliferate our lives and raise expectations for what data can tell us, there are increasing demands for integrating data from several sources to get a wholistic view of the landscape of an area (e.g., a state), a population (e.g., young children), and/or field (e.g., early childhood education). This quest for data is particularly prominent in recent efforts to create more equitable educational systems. However, these initiatives are often hindered by different ways of collecting and defining data elements, such as age and race and ethnicity. The key to addressing this problem is identifying conflicting data definitions from different programs and agencies and working with all stakeholders involved to agree on common data collection and definitions.

Keywords: *Data definitions, longitudinal data systems, early childhood.*

SCHOOL EXPERIENCES OF A MULTILINGUAL ELEMENTARY STUDENT ON THE AUTISM SPECTRUM – A CASE STUDY

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Abstract

Estimates predict that up to a quarter of children on the autism spectrum may grow up speaking more than one language. However, there is a dearth of research on the school experiences of multilingual children on the autism spectrum. The current study aimed to address the lack of research including multilingual children on the autism spectrum and their school experiences by focusing on the following questions: What are characteristics of the school experiences of a multilingual elementary student on the autism spectrum in an inclusive, monolingual setting; What are stakeholders' perspectives on multilingualism in children on the autism spectrum and how are these perspectives reflected in their practices? A case study was undertaken to observe the school experiences of a multilingual student on the autism spectrum in an inclusive elementary school in Germany. The method included semi-structured interviews with the student, the student's mother, the primary classroom teacher, the education assistant, and the school principal. Interpretative phenomenological analysis was used to analyze the interviews. In addition, an ethnographically informed observation of the school experiences was conducted, and field notes were collected and analyzed. Interviews and observations showed a lack of knowledge about multilingualism and autism by school personnel. None of the interviewed stakeholders had received professional development related to supporting multilingual students on the autism spectrum. The student overall reflected positively on their school experiences. The student's mother discussed that communication with the school was often difficult due to language barriers. Overall, more research and professional development opportunities are needed.

Keywords: *Autism spectrum disorder, bilingualism, multilingualism, inclusion.*

DEVELOPMENT OF TIME MANAGEMENT AS GENERIC COMPETENCE IN AN ENGINEERING DEGREE: FIRST RESULTS

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Abstract

The experience has been implemented in two successive subjects in the third year of the Degree in Electronic Systems Engineering (University of Malaga) through the performance of the following activities: initial assessment of students' knowledge, outline a table of objectives at various time levels (first semester); keeping a record of the activities carried out during one week; attend a time management workshop; perform a strengths and weaknesses analysis; maintain a list of activities and an agenda for the rest of the subject; continue to deepen time management through the TRELLO© program free version (second semester); and a final evaluation of the development of the activity. The results show that there is a high dispersion of students' opinions initially. At the end of the second semester, a certain degree of improvement can be observed from the student's point of view. This experience was developed during the last academic year and is being carried out again with the same students in two fourth-year subjects with the idea that students improve their acquisition of this GC.

Keywords: *Time management, scheduling, engineering, generic competences.*

TELEREHABILITATION: CURRENT STATUS FROM THE PERSPECTIVE OF TWO ERASMUS+ PROJECTS

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Abstract

Online rehabilitation has gained popularity during the COVID-19 pandemic and due to many advantages for both the therapist and the patient, it seems to be accepted as a valid and widely implemented method, but most countries were found unprepared for the digital management of online medical services. The present paper presents new approaches for online rehabilitation in the framework of two Erasmus+ projects, particularly through building digital education readiness, development of digital competencies, and strong cooperation between the world of education, digital technology providers, and the world of work. This was achieved by the development of a theoretical course, case studies, a database of standard protocols for rehabilitation and prevention in different pathologies, and a virtual medical environment that functioned as an online rehabilitation clinic. The methodology for delivering project outputs was tailored to the target group's needs. The proposed adaptations were first tested by the project team and by a group of trainees and patients. We registered 511 users on the e-learning platform and 87% of the beneficiaries reported improved skills for telerehabilitation. The prophylaxis videos posted on the YouTube channel targeting patients, professionals, and the public at large reached 1355 views by the end of the project. Of the interviewed patients, 92,3% considered that the online rehabilitation protocols would be useful in daily life for the long term, 95% considered that the use of online protocols would decrease the number of visits to the doctor and 98% would like to benefit from protocols in the future. From the perspective of these projects, we can conclude that online rehabilitation services represent a contemporary problem-solving idea for physiotherapists' education and professional development.

Keywords: *Online rehabilitation, virtual clinic, physiotherapy education.*

METAPHONOLOGICAL STIMULATION, ALPHABET KNOWLEDGE AND VOCABULARY PROGRAM (PEMAV) FOR PRESCHOOLERS: ELABORATION AND PILOT STUDY

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Abstract

The importance of stimulating cognitive-linguistic skills, vocabulary and metaphonological skills associated with knowledge of the alphabet is described in international literature for subsequent success in learning to read and write, however there is a gap in studies in Brazil to stimulate these skills in early childhood education. Therefore, this study aimed to develop a metaphonological stimulation program, alphabet knowledge and vocabulary (PEMAV) and its applicability in a pilot study with preschoolers. Forty preschoolers aged 5 years and 5 years and 11 months participated in this study, who were divided into two groups, GI (20 preschoolers submitted to PEMA) and GII (20 preschoolers not submitted to PEMA). The results were analyzed using the wilcoxon and chi-square tests and demonstrated positive changes, with domain of cognitive-linguistic skills, knowledge of the alphabet and vocabulary in preschoolers in GI, when compared to GII.

Keywords: *Learning, stimulation studies, preschoolers, reading, literacy.*

MOBILE INFORMATION TECHNOLOGIES AS A KEY FACTOR OF MODERN LEARNING POLICIES

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Abstract

Over the past few decades, modern information and communication technologies, education and science have become tightly related. As a result of their symbiosis, numerous innovative forms and methods of learning, grading and teaching making active use of the new opportunities provided by contemporary mobile technological solutions have emerged. Mobile technologies and learning are the subject of the present paper introducing an „Information portal for mobile learning and mobile access to library services and resources“. The portal has been created as part of the completion of an eponymous research project financed by the National Science Fund of the Ministry of Education and Science in Bulgaria after winning a Competition for young scientists and postdocs' fundamental scientific research funding. The main aim of the project is to systematically analyze the issues of mobile learning and mobile access to library services and resources to achieve, assemble and present new scientific knowledge and products in a common information internet portal revealing and summarizing the positive changes brought about by information technologies in modern society. The following scientific methods have been used in order to fulfil the above-mentioned aim of the project and the tasks related to it: analysis and synthesis, systematization and summarization of document resources, comparison, modelling for the creation of the conceptual model of the information portal. Both the completed project and the present paper highlight that mobile technologies are of great significance for modern information and educational policies and contribute to promote awareness of their implementation in learning approaches.

Keywords: *Mobile digital libraries, mobile learning, mobile technologies, research project, education.*

DEVELOPING EDUCATIONAL TOOLS FOR EFFECTIVE TEACHING INDUSTRIAL ROBOTICS IN TWO- AND FOUR-YEAR DEGREE INSTITUTIONS

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Abstract

Experiential learning is a crucial component of effective education methodology, allowing students to apply theoretical knowledge gained in classrooms to real-world scenarios. The industrial robotics curriculum is very common in two- and four-year institutions due to the high demand for specialists in the field. However, due to the high cost of the hardware and limited options for prebuild end-effectors that can be implemented in the educational environment, custom solutions for various end-effectors must exist. Michigan Technological University has an advanced industrial robotics curriculum in the Mechatronics program. In this paper, the authors provide details on the design, development, and implementation of the custom vacuum end-effector developed for palletizing purposes.

Keywords: *Robotics, end-effector, experiential learning, mechatronics.*

POST-COVID-19 PANDEMIC ONLINE EDUCATION IN LATIN AMERICA: A SYSTEMATIC REVIEW OF LITERATURE

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Abstract

The COVID-19 pandemic has forced higher education institutions to implement virtual education activities without being prepared for it, which has represented a challenge for the traditional educational model. This has been exacerbated in higher education institutions in Latin America, as they do not have the adequate resources and infrastructure for this purpose. The objective of the study was to identify trends in research on online education in Latin America in the wake of the COVID-19 pandemic. To achieve the research objective, a systematic literature review was carried out. Documents published in the Scopus database between 2008-2023 were analyzed using the Biblioshiny and VOSviewer software. Forty-seven documents have been found, of which 40 were published in the period 2019-2023. The keywords have been analyzed according to their co-occurrence. Three hundred and seventy-six were found and forty-seven have been selected with a minimum of two co-occurrences. The documents have been associated into four clusters, which have been analyzed. The results have pointed out the impact on university education during and after the pandemic in Latin America. Online education has continued after the pandemic, which has allowed new forms of learning to be exploited. Distance learning has made it possible to access higher education to sectors of the population that traditionally could not join it, due to the geographical and economic characteristics of Latin American countries. Challenges are noted in the creation of infrastructures and processes that allow this teaching method to be promoted.

Keywords: *Online education, virtual education, e-learning, COVID-19, Latin America.*

CHALLENGES AND OPPORTUNITIES IN FACULTY TRAINING ON ACTIVE LEARNING TO DELIVER CRITICAL THINKING FOR UNDERGRADUATE BIOLOGY STUDENTS

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Abstract

Compared to traditional lecturing, active learning (AL) provides a more effective way to achieve higher cognitive levels in all areas of science, technology, engineering, and mathematics (STEM). Paradoxically, in many universities worldwide, training of faculty in STEM fields on AL is very limited or completely absent and lecturing remains as the most commonly used instruction method. We developed an unbiased training program for biology faculty on evidence-based AL tools and supervised the planning and implementation of activities to assess critical thinking in undergraduate biology students. We present preliminary data on faculty perceptions and expectations of this training program. Particularly, we report that 90% of faculty members involved in the training either did not know or did not have the tools to implement AL in their courses. Furthermore, we report on the challenges, obstacles, limitations, and strategies that faculty experience after participating in the program.

Keywords: Active learning, undergraduate education, STEM, faculty training.

READINESS TO IMPLEMENT EDUCATION FOR SUSTAINABLE DEVELOPMENT: STUDENT TEACHERS' PERSPECTIVE

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Abstract

Education for Sustainable Development (ESD) has become recognized as a societal tool necessary for achieving a shift from a point where we are today to a more sustainable future, while simultaneously becoming educational imperative of the teaching profession. Both policy documents and theoretical assumptions put considerable emphasis on (student) teachers, who are perceived as a potential agents of change needed for achieving sustainable development goals in the direction of sustainable future. Therefore, one of the key issues in ESD research is determining whether student teachers feel ready to implement ESD in their future professional life as well as identifying factors that influence their assessment. Recent literature often emphasizes the importance of higher education, i.e., teachers' initial education during their training and preparation for ESD. However, studies done so far show very inconsistent results. On the one hand, results of previous studies on student teachers point out that attending ESD course(s) at higher education level contributes towards positive outcomes (e.g., more positive attitudes towards SD, higher assessment of knowledge regarding sustainability topics as well as sustainable behaviour). On the other hand, certain authors indicate the lack of attending SD courses' contribution to either attitudes or knowledge about SD. Therefore, the aim of this study is to examine the contribution of teachers' initial training to their readiness to implement ESD. Based on the results of this study as well as their implications, several key guidelines for the improvement of teacher education study programmes in SD direction will be summarized.

Keywords: Education for sustainable development, student teachers, intention to implement ESD, SDG 4.

INTEGRATING INNOVATIVE TECHNOLOGIES AND PEDAGOGIES IN HIGHER EDUCATION: ENHANCING PROBLEM-SOLVING ABILITIES

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Abstract

In the contemporary educational landscape, integrating innovative technologies and pedagogical methodologies represents a promising approach to bolstering problem-solving abilities among higher-education students (Means et al., 2009; Dillenbourg, 1999). This presentation delves into the synergistic relationship between cutting-edge technologies and pedagogical strategies, aiming to cultivate critical thinking, analytical skills, and creative problem-solving capabilities among learners (Hmelo-Silver, 2004).

Keywords: Pedagogic innovations, technology in teaching and learning, challenges and transformations in education, critical thinking, higher education.

DIVERSITY AND INCLUSION: TRANSFORMATIONS AND PERSPECTIVES OF PHYSICAL EDUCATION AS AN INTEGRAL PART OF THE CONTEMPORARY EDUCATIONAL PORTFOLIO

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Abstract

In a constantly-changing world, Physical Education - as an integral part of the school curriculum - needs to meet and challenge the abilities and expectations of students in the 21st century. This article addresses the modern issues that define the current landscape of school physical education, highlighting trends and innovations that could transform this curricular item into a dynamic and motivating trigger towards learning and discipline. The article explores how school physical education is adapting to principles of diversity and inclusion to create an equitable and relevant educational environment for all students. It highlights significant changes in physical education programs and practices to respond to the individual needs and abilities of students. The impact of adapted physical education programs was assessed through a students and teachers survey that outlines those practices that are responsive to the needs and diversity of students. The student questionnaire revealed a significant appreciation for the diversification of physical activities offered by schools and universities; students expressing greater satisfaction and involvement in activities tailored to individual preferences, regardless of their level of physical ability. At the same time, teachers indicated that adapting physical education programs need to include a variety of activities able to improve teacher-student communication and create a more inclusive environment. Furthermore, they emphasized that the individualized approach stimulated active participation of all students, including those with special needs. The results of the survey suggest that the transformations in school physical education, focusing on diversity and inclusion, have generated a positive response from both students and teachers, reinforcing the idea that tailoring curricular activities to the specific needs of each pupil leads to a more equitable and beneficial educational environment for all. Another important theme addressed in the article is creating an inclusive environment that supports diversity of gender, ability and cultural background. Physical education teachers are encouraged to adopt practices and exercises that are tailored to the specific needs of each student, thus creating an environment where all students feel accepted and encouraged to participate. The article also highlights the importance of adapting programs to include students with special needs, giving them the support they need to enjoy the benefits of physical activity. This approach ensures that no student is excluded and all can enjoy the experience of physical education at school in a positive way. In conclusion, the article demonstrates how school physical education is evolving to become more inclusive and diverse based on the diversification of educational programs, reflecting a commitment to creating an educational environment that encourages active participation and promotes the benefits of physical activity for all students.

Keywords: Physical education, adapted programs, inclusion, individualized approach.

REFORMING THE HIGHER EDUCATION SYSTEM IN THE REPUBLIC OF MOLDOVA. OVERVIEW OF PHYSICAL EDUCATION AND SPORT UNDER THE IMPERATIVE OF THE EU CANDIDACY

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Abstract

The Republic of Moldova is a relatively young country, which gained its independence in 1990, the year of separation from the Soviet Union. Throughout the more than 30 years of independence, the educational system in the Republic of Moldova has undergone various transformations and reforms aimed at synchronizing the educational process with European systems. Accordingly, our paper aims to provide a broad vision of education, sport and welfare, seeking to incorporate both the discipline-specific knowledge of physical education and sport, while allowing the development of a broad educational framework alongside it. The transition from a teacher-centred educational process, following the canons of Soviet education, to a learner-centred one, following the European model, is all the more difficult now, in the context of Moldova's accession to the EU. The great challenge is, in fact, the transition from an educational system in which not much has been invested in technology, to one that is efficient and competitive at European level. This article is a summary of the reforms proposed and adopted in the Republic of Moldova on its pursue to EU integration, in particular, reforms aimed at sports education, which must be competitive both at European and global level in order to successfully promote the athletes trained in the Republic of Moldova.

Keywords: *Reforms, integration, sports performance, technology.*

TEACHING AND LEARNING

EMPOWERING ELEMENTARY SCHOOL TEACHERS THROUGH INTERDISCIPLINARY PLACE-BASED CURRICULUM IN TAIWAN

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Abstract

Since 2019, Taiwan has rolled out a new "Curriculum Guidelines of 12-Year Basic Education," emphasizing science and interdisciplinary concepts. However, the efficacy of this curriculum change remains untested. Research indicates that early exposure to interdisciplinary concepts can significantly enhance science and engineering comprehension. Rural students, who already face disadvantages in science and math, stand to benefit from a locally contextualized curriculum. Teachers are instrumental in this reform, but they require support in developing effective interdisciplinary teaching strategies. A three-year study employs both qualitative and quantitative methodologies. It involves teachers in the creation of place-based interdisciplinary curricula, which are tested in two fourth-grade classrooms. Diagnostic tools were developed to assess student learning in "Matter and Energy" and "Interactions" two instructional modules. Quantitative results reveal a significant improvement in post-test interdisciplinary concept comprehension ($p < 0.001$), highlighting the curriculum's effectiveness. Qualitative findings teachers face challenges like material selection, integrating local knowledge with textbooks, and navigating interdisciplinary concepts. Ambiguities in the Guidelines, including definitions, depth, and interdisciplinary concepts, pose recurring challenges. Collaboration and reflection clarify curriculum objectives. Teachers grapple with aligning Guidelines with methods and interpreting them in relation to core competencies. This study promotes interdisciplinary concepts through real-world issues, enhancing student engagement. The elementary science is not divided into subjects, and the implementation of interdisciplinary concepts faces little resistance. The key lies in the teachers' understanding of these concepts, and their rich teaching experience plays a crucial role in innovating the curriculum and overcoming challenges.

Keywords: *Interdisciplinary, place-based education, professional development, rural education.*

FOSTERING CRITICAL THINKING: ALIGNING ASSESSMENT WITH EDUCATIONAL EXPECTATIONS

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Abstract

Critical thinking is an often-discussed learning outcome in higher education. Critical thinking skills are viewed as important for student success in the classroom as well as for establishing a foundation of lifelong learning. Often, however, assessment measures, viewed as the ultimate test of learning, do not require students to utilize critical thinking skills in any practical or meaningful way. This sends a message to students that although critical thinking is espoused as important, it is not essential for success. Ideally, examinations should both assess and advance knowledge. Further, examination questions should test students' functional, applicable knowledge of concepts, rather than memorization and statements of facts. Examinations that allow student collaboration simulate real-world situations in which an individual's skills gathering, synthesizing, and applying information appropriately are essential. This paper presents data from an undergraduate course in speech acoustics taught over several semesters. During two of these semesters, the instructor utilized different collaborative assessment methods, allowing students to collaborate either before or after individual completion of the examination. Data from student surveys as well as examination scores demonstrate that rigorous take-home examinations with a planned opportunity for student collaboration can effectively assess student learning while also enhancing the learning opportunity for students by encouraging critical thinking skills and real-world problem-solving strategies.

Keywords: *Assessment, critical thinking, collaborative learning, higher education.*

‘GET ME INVOLVED AND I WILL LEARN IT’. SERVICE-LEARNING CASE OF STUDY AT UNIVERSITY

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Abstract

Schools cannot live in isolation from social realities. They are part of a wider community with diverse needs and interests. A preliminary study reveals that, in the field of English, primary school learners experience a decrease in motivation as they grow up, resulting in a number of difficulties in acquiring communicative competence in a foreign language. In response to this problem, we have designed an approach that links social reality with the school environment through the Service-Learning methodology. The aim is that our first-year students of the Primary Education degree at the University of Avila, through a service to the community based on the creation of English workshops for primary school students, acquire skills in the subjects of didactics and English at the same time as the primary school students foster their motivation and improve their competences in the foreign language. Our methodology is based on Service Learning, since it addresses a social need: the lack of motivation towards the foreign language and its application within a specific social context. It is a transversal and qualitative study in which university students undertake tasks of observation, design, development and evaluation of practical proposals. The results obtained through observation records, evaluation rubrics and open interviews confirm that learning by doing in community fosters the acquisition of competences and values of all the agents involved in the service. In conclusion, our study aims to ensure that our university students learn through community service and are capable of provoking positive changes in their environment.

Keywords: *Social reality, Service-Learning, lack of motivation in English language, qualitative study, students of the Primary Education degree.*

ADOPTING CONSENSUAL BEHAVIOURS: A LESSON PLAN

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Abstract

Consent entails the mutual agreement between individuals to engage in a particular activity or interaction. It serves as a cornerstone for developing and maintaining healthy relationships based on respect and communication. A common offensive behavior that characterizes many people, regardless of age or gender, is the invasive physical approach of a partner that might violate their somatic boundaries and self-determination. Here, we propose a lesson plan aimed at raising awareness about the significance of consent, as there is somewhat of a lack of related educational resources. It has been designed for an English for Academic Purposes course in Higher Education, to be held on the International Day of Consent (30th of November) and is intended for young adults. The present lesson plan comprises a three- fold approach: (1) In the first part, audiovisual materials are used to familiarize students with the meaning of consent and its verbal expression. (2) Subsequently, students explore the basis of such abusive behaviors, specifically focusing on the culture of romanticizing violence through kidnapping that is often promoted in films and other media. (3) Finally, students, after watching a video about physical theatre showcasing the non-verbal expression of consent, are encouraged to participate in theatrical exercises under the guidance of a specialist. This teaching micro-scenario is designed to promote empathy, communication skills, student initiative, and respect for others' boundaries.

Keywords: *Consent, higher education, physical theatre, English for Academic Purposes.*

BEHAVIORAL RATING SCALE FOR INTERNALIZING AND EXTERNALIZING PROBLEMS IN ACADEMIC SKILLS IN BRAZILIAN SCHOOLCHILDREN

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Abstract

Objectives: To develop a Behavioral Rating Scale of Internalizing and Externalizing Academic Skills for use by Elementary School Teachers and showcase its results concerning data corroboration. Method: The research was divided into three phases: 1) preparation of items and criteria for the scale; 2) data corroboration; and 3) internal consistency analysis. Conclusion: The rating scale was reliable enough for its application in forthcoming research regarding the identification of internalizing and externalizing behavioral issues among schoolchildren of Elementary School.

Keywords: *Problematic behavior, Behavioral Rating Scale, teachers, schoolchildren.*

SCREENING FOR DIFFICULTIES IN MATHEMATICAL LEARNING: ELABORATION AND PILOT STUDY

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Abstract

In Brazil, there are few studies describing early identification and intervention of difficulties in mathematical learning. Objectives: To develop a screening process to identify the difficulties in mathematical skills in students in early school grades and verify the applicability of a pilot plan. Methods: from a bibliographical survey, 8 mathematical skills were selected based on the Triple Code Model in order to create the screening process composed by number sense skills, number line, position value, addition, subtraction, multiplication, division and problem-solving. The screening process was elaborated to be applied in four 45-minute sessions, twice a week during class period collectively. 51 students in early school grades at a public school in Sao Paulo city, Brazil, took part in the pilot study. The study showed the necessity to reduce the number of skills to 5 numerical sense, numerical line, positional value, addition and subtraction. This reduction occurred due to the observation of the necessity to first develop the basic knowledge related to addition and subtraction in students in early school grades. Conclusion: The adjustments made based on the results of the pilot plan will enable the screening process application to identify the mathematical skills in students in early school grades.

Keywords: *Learning, tracking, skills.*

HOW CORPUS LINGUISTICS CAN HELP PROMOTE HEALTH EDUCATION: THE CASE OF SCHIZOPHRENIA

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Abstract

This paper explores findings from the largest scale linguistic study to date into representations of schizophrenia in the press. By examining a 15 million word corpus of all articles that refer to schizophrenia in the UK national press between 2000 and 2015, the paper identifies three dominant stereotypes: (1) people with schizophrenia are violent (2) schizophrenia is a multiple personality disorder and (3) schizophrenia is cause by illegal drug use. The paper concludes by identifying ways in which health campaigners can improve health literacy around the disorder.

Keywords: *Corpus linguistics, critical discourse analysis, mental health, health literacy.*

CHALLENGES OF ONLINE SCIENCE TEACHING IN PRIMARY SCHOOLS DURING THE COVID-19 PANDEMIC

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Abstract

Due to the COVID-19 pandemic, schools worldwide have adopted online teaching to ensure that learning continues while maintaining public health. However, online teaching poses several challenges, especially in science education. This study examines the specific challenges encountered during the period of online science education in elementary schools. To understand the actual situation and challenges of online science instruction in elementary schools, we conducted a survey of 32 elementary science teachers and interviewed three of them individually. The research findings indicate that, even when teachers and students possess sufficient digital literacy, the primary challenges in online education arise from the stability of students' home internet connections. Students within the same household often need to share information devices, and family interactions can interfere with students' concentration during online learning. Regarding science curricula, the most significant challenge in online instruction lies in the inability to conduct hands-on experimental activities, leading to a reliance on explanations and video demonstrations as substitutes. This poses significant difficulties in fostering students' inquiry skills. Furthermore, when comparing elementary school subjects, teachers perceive physical education, art, and science as the three subjects most challenging to implement effectively in an online teaching environment. This study sheds light on the unique obstacles encountered in online science education for elementary school students during the pandemic.

Keywords: *COVID-19 pandemic, elementary school education, online science teaching.*

GOOD PRACTICES IN TEACHING COGNITIVE NEUROSCIENCE TO BIOLOGY STUDENTS IN HIGHER EDUCATION

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Abstract

Cognitive Neuroscience refers to the scientific study of the mind and the brain, mainly by means of neuroimaging techniques and psychophysics. This field is considered rather complex, often posing learning challenges for students, especially in terms of the terminology and technical jargon used, as well as due to its interdisciplinary, STEM (science, technology, engineering, and mathematics) nature. To address this issue, an active learning approach was implemented. The present report describes a repertoire of targeted educational activities, developed in the context of a Cognitive Neuroscience course at a Biology Department in Higher Education. To approach consciousness, the theatre analogy for the Global Workspace Theory, developed by Bernard Baars, was used. This refers to a parallelism between elements of a theatrical production and consciousness. To this end, students attended a theatre performance and subsequently physically engaged in a series of onstage exercises. Next, a Science Spring Picnic was held to foster an informal dialogue on newly established knowledge, in a relaxed environment over food, beverages and kite flying. Finally, outreach activities were organized in the form of an art & science communication exhibition on visual illusions, at a major Science festival. Student feedback, by means of anonymous questionnaires, clearly denoted that the activities promoted motivation for learning, learning, and engagement beyond the classroom.

Keywords: *Cognitive Neuroscience, good practices in education, higher education, active learning, science communication.*

HEALTH AND SOCIAL CARE PLACEMENTS IN TODAY'S CHANGING WORK ENVIRONMENTS: A GROUNDED THEORY STUDY

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MCAST, Malta's Government Vocational Education College (Malta)

Abstract

My research motivation as a lecturer at MCAST (Malta's state vocational education college) is to improve students' professional development, future-proof their vocational training, and explore better educational theory and practice in the light of fast-moving changes in the social care field. My initial research question is: "How can placements maintain efficacy in the changing context of Malta's culture and with increasing robotic and digital service provision?" Data is collected in Malta, a small island state, addressing technological change in provision of care and issues of culture arising from an increasingly diverse workforce and population. Using Grounded Theory methodology, with a constructivist approach, it builds conceptual knowledge directly from participant data. To mitigate bias arising from power relations between teacher-interviewer and student, and enrich data quality, focus groups are being used. Results emerging indicate the need for: More personalized learning environments and a pedagogy specifically fostering contemporary skill development; Improved communication between students and programme mentors; Closer working relationships between stakeholders and educational institutions. Also emerging is the complex issue of cultural difference between students, staff, and service users. Challenges include trust and respect for diverse attitudes and beliefs, and difficulties in communication and interpretation, all these potentially affecting care standards. The research asks how such challenges might be overcome and aims to propose new teaching strategies preparing graduates to be caring professionals who contribute to providers' business success.

Keywords: *Health & social care, placements, technology, culture, grounded theory.*

WHAT DO THE LEARNING DIARIES TELL US ABOUT THE LANGUAGE LEARNING EXPERIENCE BASED ON PEER-TEACHING?

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Abstract

This paper focuses on two language courses developed for learning Estonian: "Tandem Language Learning" and "Estonian Conversation Course". Compared to a traditional instructor-led activity-based course, these are based on peer-teaching of students and provide significant support for learner autonomy. The courses are part of the University of Tartu's humanities curricula, with the possibility of online participation for learners from universities outside Estonia. In both subjects, student pairs of Estonian language native and non-native speakers are formed, who plan and conduct their meetings related to the study of Estonian and, in the case of a tandem course, study of one other foreign language throughout the course. Both courses are based on a collaborative learning partnership: participants take control and responsibility for their own and their partner's language learning process. Participants complete a learning diary in which they analyse their work and receive feedback from their instructors. Analysis of the learning diaries shows that students value the opportunity to create the content of the language course based on their own and their partner's needs. According to the students, the use of a web environment for tandem work increases the flexibility of the study arrangements. In the teacher's role students feel responsibility with respect to their partners and emphasise that during the course their understanding of their native language increased. In the student's role participants point to the positive influence of partnership on the increase of their communication skills and vocabulary development in the language they are studying.

Keywords: *CALL, tandem language learning, autonomy of the learner, learning diaries, Estonian as a foreign language.*

LISTENING TO CHILDREN'S PERSPECTIVE ON THEIR WELLBEING IN EARLY CHILDHOOD SETTINGS

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Abstract

Early childhood education and Care (ECEC) are current interests in many countries following international studies that show the importance of children starting their early years within a high-quality education and caring environment. ECEC is of great value for their development and learning, which include health and well-being. Interest in children's well-being has been steadily increasing and it is centrally positioned within major international and local policy documents and frameworks regarding the quality of childhood. Research on children's own subjective opinions about their well-being has mainly been conducted among children over those from preschool age. Therefore, this study aims to highlight the voices of 4-6-year-old children and their experiences about their well-being at preschool, focusing on recovery. Qualitative data was collected through 18 Swedish 4-6-year-old children based on semistructured interviews. Children's input regarding well-being gave insights into how the environment and activities, both outside and inside the preschool, could be arranged to promote the environment at the preschools.

Keywords: *Early childhood, education, well-being, children's perspective.*

ORGANIZATIONAL ISSUES

DEVELOPING THE EARLY CHILDHOOD PARTICIPATION DATA SET

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Abstract

Because data are crucial to making effective decisions at every level (from the classroom to state policy), it is essential to see data as the connective pipeline running through family decisions about enrollment, programmatic decisions on service delivery, and statewide policy decisions. Our organization provides tools to present and understand early childhood services and demographics. Recently, our organization has been collaborating to design, manage, and implement a statewide longitudinal data system, which includes the Early Childhood Participation Dataset (ECPDS). The ECPDS tracks every child enrolled in several early childhood services, which allows administrators and policymakers to see how children's participation in different programs (childcare assistance to public preschool) and use of services (early intervention to special education) develop over time. It also allows analysis by geography, race/ethnicity, disability, gender, and financial status. In partnership with research groups at other universities, we are developing this system to improve decision-making in education through better data use. Our poster visualizes how the ECPDS will function while articulating specific challenges and advantages of this system.

Keywords: *Early childhood, longitudinal data, state systems, policy.*

GENERATIVE MECHANISM IN SCHOOL IMPROVEMENT – A PROCESS STUDY

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Abstract

This study aims to identify how planned organisational change processes can be combined with unpredictable emergent change processes and be used in the organisation to manage organisational change in school. A process study was conducted to understand better how two schools struggle with improvement work using a specific strategy for school improvement and leadership. The data consisted of interviews, observations, and documents, with 13 sequences of events and 46 episodes identified in the empirical material, analysed according to Van de Ven and Poole's four ideal types of process studies, each with different generative mechanisms driving the process. Narrative strategy, episodes, and graphic representation were used in the analysis process. The result shows that the various motors, seen as driving forces that support or challenge each other, operate in planned and emergent processes and create two different forms of result: development and change. The study concludes that with more knowledge about what hinders and supports different mechanisms—that stimulate different actions—improvement processes can be more controlled, underpinning the process constructively. Practical implications: Leaders and pedagogues can use the tools presented in the study to understand, stimulate, and steer improvement work in their organisations. The theoretical presentation of generative mechanisms and their practical impact on improvement work explains how actions and behaviour influence the change process

Keywords: *Change process, emergent change, generative mechanisms, planned change, school improvement.*

IDENTIFYING KNOWLEDGE GAPS IN MANAGING PREMATURE CHILDREN: A PARENTAL PERSPECTIVE STUDY

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³Right(s) beside your association - Hungary, EUPATI Fellow, EFCNI -ESCNH PPPAB member, NIDCAP Family Advisory Council member (Hungary)

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Abstract

Introduction: The study, conducted as part of the PreNat HUB ERASMUS+ program, aimed to identify the main knowledge gaps of parents due to the lack of information provided by professionals involved in the management of premature children. It focused on the experiences of parents in dealing with health, educational, and social aspects of prematurity from birth to adulthood. **Methods:** A comprehensive questionnaire was developed and distributed to 187 mothers from five European countries. This survey aimed to assess the information and support provided by various professional groups, including healthcare, education, and social services, and to identify the main areas where parents felt they lacked necessary knowledge. **Results:** The study identified significant knowledge gaps among parents of premature children, covering health, developmental issues, and educational challenges. Only 39.6% were informed about developmental disorders like attention deficit disorders. Notably, 47.6% of children faced unexpected learning problems, often uncommunicated to parents. Awareness about support systems was limited; 22.5% knew of psychological support groups, and 11.2% about medical groups for parents. In education, just 9.1% believed school nurses understood their child's needs, and 13.9% felt schools were aware of these needs. Furthermore, only 19.8% were informed about state benefits, showing a critical information gap. **Conclusions:** There is a critical need for better communication and information sharing between professionals and parents of premature children. Addressing knowledge gaps is vital for managing and supporting these children's development and well-being. An integrated approach involving health, education, and social services is essential to effectively support these families.

Keywords: *Development, education, health, prematurity, support.*

‘FOR THE HORSE IS DRAWN BY THE CART’: THE DIVIDING LINE BETWEEN ACADEMIC PROCESS AND REGULATION

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Abstract

Many key areas of university strategy sit within entrenched and fragmented structures. Following some past presentations on managing particular university processes, in this poster we will present reflections and practical recommendations for managing the substantial interconnectedness between formulating academic regulations and designing effective university-wide processes. In our experience, working in a large, ancient, and complex academic institution with high levels of devolved authority, some of the most significant challenges to enhancing the student and staff experience lie in gaining a holistic view of those challenges which require both strategic regulatory frameworks and realistic, effective implementation. This is common amongst many institutions worldwide. While our colleagues at the University of Glasgow work hard to overcome these structural issues, it often falls to those staff who collaborate across these structures

to develop means of bridging such divides. The poster presents three case studies: complex institutions, plain language, and process vs policy. In the first case study, we discuss the issues of defining policy-based problems in large, complex universities, and reiterate the importance of having joint ownership between the formulation and implementation of policy. In the second, we analyze the conflict between precision in regulations versus their clarity to students and staff of different levels of language competence, and discuss the clarity needed for future automated AI-driven regulation queries. Finally, we also present thoughts on to what extent should process requirements shape regulatory development, and the way in which process mapping can highlight where a policy framework creates a significant and unintentional administrative burden.

Keywords: *Academic regulations, educational policy and leadership, academic processes, policy development.*

VIRTUAL PRESENTATIONS



TEACHERS AND STUDENTS

INVESTIGATING THE IMPACT OF GAMMA-TUTOR ON THE DEVELOPMENT OF TECHNOLOGICAL PEDAGOGICAL CONTENT KNOWLEDGE IN CHEMISTRY TEACHING FOR SCIENCE TEACHERS

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Abstract

Numerous studies have examined teachers' Pedagogical Content Knowledge (PCK) at a topic level in various subjects, particularly in mathematics and science, drawing on frameworks like Shulman's PCK and Mishra and Koehler's TPACK. However, limited research addresses the professional development needs of physical science teachers regarding TSPCK development for post-COVID-19 teaching. This study focuses on South African curriculum reforms, emphasizing the integration of technology in teaching. It investigates the impact of Gamma-Tutor, an educational tool, on TPACK development among chemistry teachers, employing a mixed-methods approach with 20 participants. Quantitative assessments track changes in TPACK, while qualitative data from observations enrich understanding. Quantitative measures involve pre- and post-Cluster-Based professional development designed to gauge the baseline TPACK of participating teachers and track changes over the intervention period. Statistical analyses, including paired samples t-tests, are applied to discern patterns and trends in TPACK development. Concurrently, qualitative data is collected through classroom observations providing a deeper understanding of teachers' experiences, challenges, and perceptions related to Gamma-Tutor integration. Thematic analysis is utilized to extract key themes from the qualitative data, enriching the narrative. Results indicate improved pedagogical strategies and student engagement with Gamma-Tutor integration, suggesting its potential to enhance teaching practices and student achievement. This study underscores the importance of effective technology integration in enhancing pedagogical content knowledge, particularly in stoichiometry teaching, offering insights for educators and policymakers.

Keywords: *Gamma-tutor, technological pedagogical content knowledge, stoichiometry teaching, science teachers, cluster-based professional development.*

THE ROLE OF EDUCATORS IN SERVICE-LEARNING PATHWAYS FOR STUDENT PARTICIPATION AND TEACHER PROFESSIONAL DEVELOPMENT

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Indire National Institute of Documentation, Innovation and Educational Research (Italy)

Abstract

This paper presents the first outcomes of the research conducted by Indire (National Institute of Documentation, Innovation and Educational Research) in the context of Avanguardie Educative (AE), a cultural Movement whose goal is supporting schools in educational and organizational innovation. "Inside/Outside School - Service Learning" is one of the innovative paths proposed by AE to Italian schools. The aim of this research is to analyze the role of Third Sector educators in Service Learning (SL) pathways and in fostering students' leadership. The project transposes national and international recommendation that advocate strengthening the synergy between schools and other educational institutions aimed at transforming educational systems in response to the critical issues (educational poverty, learning loss, school dropout) emerged from Covid-19 pandemic.

Keywords: *Service learning, educational innovation, school-community relationship, interprofessional collaboration.*

EMOTIONAL REGULATION – A TRAINING PROGRAM FOR TEACHERS

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Abstract

The contribution is aimed at development of a training program for teachers focused on the adoption, implementation and evaluation methodology to improve interpersonal communication skills, the development of emotion regulation and resilience. In the theoretical section it explains the concepts of emotion, emotion regulation, social skills and communication, resilience, and their relevance to the profession of the educator. In the application section we have designed the training program. The plan is elaborated in detail according to the content of the topics of each hour. The overall scope of the program is 120 hours. The themes from the method are listed in the practical part of the program which is designed in a range of 48 hours. The training program is developed for the purpose of continuous training of educators in the form of presentational.

Keywords: *Emotion regulation, interpersonal competence, resilience, training of educators.*

PUTTING THEORY AND PRACTICE TOGETHER IN PRESERVICE TEACHER TRAINING COURSES. IS IT POSSIBLE?

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**Dr.*

Abstract

Practical training is an integral part of pre-service professional development and plays an important role in promoting awareness amongst preservice teachers, there is a realization as to the importance that theory plays in their practice. In the academic school year of 2022-2023, the Early Childhood Department at Kaye Academic College of Education in Israel created two innovative courses based on Theory and Practice (T&P) together. The courses are theoretical, based on a specific disciplinary topic, and include pedagogy practices that accompany the theory. The framework of the courses is composed of three parts; The first was theory-based lectures by college staff members that took place in the college, as synchronous and asynchronous classes. The second was an experimental component that consisted of mandatory tasks that were implemented in the preschools where practical training was performed. The third was in-service support and guidance by the lecturers of the courses while they worked with the preschoolers. The first course was a dialogue-based one, resting on the concept that it is the educator's responsibility to create classroom environments that will allow optimal and meaningful communication with children to meet their various developmental needs. Truly a challenging task since kindergarten teachers hold a traditional perception that dialogue is used to manage behavior and performance (Lyle, 2008). The second course dealt with early childhood geometry and promoted game-based teaching in length measurements, symmetry transformations, and bodies. The focus is on playing through experimentation, where meaningful learning is achieved while maximally adapting to the cognitive, social, and emotional developmental stages of the children including geometrical thinking (Van Hiele, 1986). We will present results from 12 thematic analyses done with second and third-year preservice teachers' when asked to describe their professional development during these courses. The preservice teachers' chosen were of different academic capabilities ranging from moderately low, moderately high, and very high. Our findings show that they all experienced significant learning and a sense of security knowing that they had close personal guidance by the lecturers while interacting with the children. The importance of this study is to demonstrate that the combination of theoretical knowledge with practical pedagogy led to meaningful pre-service teacher training. In addition, the T&P courses proved to enhance a deeper sense of understanding that play and dialogue open opportunities to learn about the way children think and act.

Keywords: *Training courses, theory and practice, game-based teaching, meaningful dialogue.*

MEETING STUDENTS' EXPECTATIONS: CULTURAL INSIGHTS FOR ENHANCED EDUCATIONAL PROGRAM MANAGEMENT

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Abstract

Meeting students' expectations is crucial for the success and effectiveness of educational programs, and incorporating cultural insights can significantly enhance program management. This research explores the relationship between cultural dimensions and the anticipated quality of educational services. The study, conducted in a specific educational program for prospective teachers by utilizing a non-probabilistic selection of 113 trainees, examines how various cultural dimensions impact their expectations regarding educational service quality. The main research hypothesis was that there is no relationship between the six EppekQual dimensions of educational service quality and Hofstede's five cultural dimensions in a specific training program for prospective teachers in Greece. Findings indicate significant correlations between specific cultural and educational service quality dimensions. Prospective teachers who prefer rejecting hierarchy exhibit elevated expectations, particularly in curriculum and learning outcomes, highlighting the need for personalized educational experiences. Those with a neutral stance on uncertainty and risk expect equal quality across all program dimensions, emphasizing the importance of a balance between clear guidelines and flexibility. Students with a realistic long-term orientation anticipate higher-quality learning outcomes, emphasizing cultivating future-oriented virtues. Surprisingly, an orientation toward feminine values positively influences service quality expectations, particularly in curriculum and learning outcomes. Collectivism also positively affects quality expectations, leading students to seek opportunities for personal development. These insights offer valuable managerial implications for educational program design targeting to optimize program quality and meet the expectations of prospective teachers.

Keywords: *EppekQual, education management, student expectations, cultural values, service quality.*

EVALUATION OF LEARNING OUTCOMES IN MASTERS DEGREE. THE PERCEPTION OF THE COORDINATORS

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Abstract

One of the main challenges that university professors have to face is evaluating the students' learning outcomes. The aim of this research is to identify different elements of the evaluation practices of the university master's degree in Social and Legal Sciences at the University of Oviedo (Spain) from the point of view of the people responsible for coordination. The research has been proposed as a survey study, through an in-depth and semi-structured individual interview, carried out through the Teams platform with seven coordinators of four master's degrees in Education and three in Economics. The qualitative analysis of the responses linked to the category analyzed in this communication, "evaluation", has followed an inductive procedure. 280 discursive fragments have been analyzed, emerging eleven subcategories: technology, participation, satisfaction, feedback, teacher training, coherence, coordinator training, purpose, means, evaluation tasks and instruments and tools. The results report that there is a lack of student participation in the evaluation processes in the master's subjects. Furthermore, the coordinators indicate that the feedback provided to students using technology is essential to contribute to their learning process. Likewise, they state that the evaluation is carried out through group work, which promotes skills linked to teamwork. All of them express the need for specific training on evaluation to be able to implement new strategies that improve the quality of evaluation practice. In conclusion, it should be noted that it is necessary to promote the participation of students in the evaluation processes to proceed with a paradigm shift that replaces the conception of evaluation as a verification of knowledge with the concept of evaluation as a tool for students to learn.

Keywords: *Learning outcomes, evaluation, coordinators, perception, master degree.*

EARLY DETECTION OF STEM SKILLS DURING SECONDARY EDUCATION. A WEAK SIGNALS APPROACH

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Abstract

Currently, the gap between students' professional preparation and employers' expectations is well known by both the academic and business communities. This gap could be bridged by early detection of fundamental STEM (Science, Technology, Engineering, Mathematics) skills, even before students reach university. The present study adopts a weak signals approach to identifying and analyzing a basic set of engineering skills (ES) and science and technology skills (STS). The present study started from the awareness of changes in the field of engineering and examines the difference between what universities offer and current industry requirements, emphasizing the importance of actions taken by educational institutions for the development of specific skills. This paper is composed of an extensive literature review, which addresses the topic of weak signals and early warning systems. The paper also investigates to what extent early identification of key competences can be an accurate indication of future career directions in engineering. Moreover, within this present paper, we aim to pinpoint certain tools for detecting weak signals. This study highlights the importance of fully understanding engineering roles and the skills essential for getting a job in this field. It also discusses the purpose and relevance of early detection of weak signals as a proactive strategy to adapt the curriculum to current engineering requirements. By identifying and assessing STEM skills in a comprehensive setting, the results of this study contribute to the enrichment of the literature. In addition, by highlighting the importance of integrating innovative methods such as serious games into secondary education, methods and strategies for strengthening engineering skills among students are presented. The results obtained from this study are relevant for teachers in secondary education, but also for university education, for employers and for decision-makers in the field of education, offering models and methods through which students can be educated so that they are prepared for the constantly changing requirements in the engineering field.

Keywords: *Weak signals, early detection, science and technology skills (STS), engineering skills (ES), science-technology-engineering-mathematics (STEM) skills/competences.*

COMPARISON OF VISUAL AND PHONOLOGICAL SKILLS IN DYSLEXIA SUBTYPES

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Abstract

The objectives of this study are to characterize and compare the visual, phonological and mixed subtypes of students with an interdisciplinary diagnosis of developmental dyslexia. A total of 122 students, aged between 8 years and 11 years and 11 months, from the 3rd to 5th year of Elementary School I in the public network, divided into groups, being GI (61 students with an interdisciplinary diagnosis of dyslexia); and GII (61 students with good academic performance), paired with GI in relation to the school year. All were submitted to Phonological Skills and Visual Perception Assessments. Factors were created for profile classification for GI, with dyslexics separated into phonological, visual and mixed profiles. The results indicated that there was significance for all comparisons between GI and GII. There was a significant difference between the GV and GPH groups; GPH and GM groups and Between GV and GM. The findings of this study allow us to conclude that students with dyslexia can present visual defects regardless of the phonological one. These findings have clinical and educational implications.

Keywords: *Phonological awareness, visual perception, learning, education, educational measurement.*

ABSENCE/PRESENCE IN 'GREEN' IMAGININGS OF INDIAN SCHOOLSCAPES

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Abstract

This paper traces how a modest 'tree' in school premises, previously unnoticed in the public eye, becomes an emblem of pride for a large number of spectators; and how its material erasure makes it present and relevant for diverse groups of people. Physical effacement gives birth to an enacted object, with a new value ascribed to it. The findings from this study offer an effective beginning for a reflection on the construction of pride-objects in schools. This paper follows the narratives of two urban government schools in Mumbai, India that bear images of trees in their schoolscapes in absence of actual trees in or around their compounds due to varying reasons. Through interviews and non-participant observations, the discussion focuses on how different school members have noticed the school spaces and their configurations with respect to the absent/present trees. Instances of absent presence and present presence as well as connections between them are traced to discuss school members' identity work. By way of the school members' participation in the network of events connected to making the absent trees present, emergent valuation of objects in their schoolscape becomes visible. Present presences are found in the way notions of 'green' permeate into classroom talk and exercises such as writing letters to the editor of a local newspaper explaining issues of deforestation and measures to curb it, recitations of quotes in the morning assembly, visual-textual content prepared for celebrations of days of national importance, displays on school walls, artistic interventions and allied activities in informal spaces. Absent presences include invigilation and assessment pressures, maintenance of school status, role of media toward image-making of the school-self, student expression, and local histories. This has implications for understanding questions of representation of green, good and happy schools; and orchestration of environmental (pro)activism as part of curriculum work.

Keywords: *Green school image, absent presence, pride objects, school self.*

NAVIGATING THE TEACHERS' AND THE SUBJECT'S IDENTITY: A CASE OF SOCIAL SCIENCES

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Abstract

This paper explores how out-of-the-field Social Sciences teachers negotiate the Social Sciences teacher's identity without the requisite professional training in the Social Sciences. Teachers' professional identities as subject experts are shaped and reshaped by their PCK, agency, and context. The placement and allocation of teachers with random subjects, regardless of their specialization areas, has ramifications for their identity as teachers and professional development. With the increasing educational inventions and developments emerging daily in the education realm, teachers must have a nuanced comprehension of who they are when teaching the subjects they have been assigned. While there is a plethora of studies on teacher identity, particularly that of novice teachers, it is equally important to comprehend how the out-of-the-field teachers (novice and experienced) negotiate their teacher's identity in relation to the subjects they are compelled to teach without professional training to do so. Accordingly, the paper explores the challenges encountered by out-of-the-field teachers teaching Social Sciences in negotiating a Social Sciences teacher's identity. The study used James Gee's concepts strands/perspectives on identity formation as a theoretical framework. Data was gathered through semi-structured interviews with participants and processed through a thematic data analysis approach. The findings revealed that out-of-the-field teachers face challenges with content knowledge, pedagogical content knowledge, interpretation of Social Sciences CAPs, and innovation in their Social Sciences classrooms. Thus, these factors have detrimental effects on the formation of a Social Sciences identity teacher, which is formed on the basis of strong content knowledge, as well as other factors. Instead, these teachers' identities are developed and sustained through the institutional identity.

Keywords: *Teacher's identity, out-of-the-field teachers, social sciences, social sciences CAPs.*

THE MANAGEMENT OF UNIVERSITY SOCIAL RESPONSIBILITY BASED ON AN APPROPRIATE POLICY ON STAKEHOLDERS

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Abstract

In the university context, the European Higher Education Area (EHEA) represented a learning orientation based on the scope of a diverse set of competences. Today we work on a comprehensive training of the student, based on the acquisition and development of skills, attitudes and values. On the other hand, progress has been made towards a socially responsible strategy, based on the exercise of its Social Responsibility (SR), known under the concept of University Social Responsibility (RSU). In this sense, the subjects must incorporate in their teaching plans a reference to competencies aimed at achieving capacities that seek sustainability and related aspects. Universities are making systematic changes towards sustainability. The University must guarantee not only its own and specific knowledge of a profession but also motivations, values, skills and personal resources that allow the student to perform with efficiency, autonomy, ethics and social commitment in different contexts. All this determines the important role of transversal competences (TC). The management of competence-based learning starts from the selection of differentiating elements of the performance or behavior in the performance of the students. University institution cannot remain on the sidelines of the path towards sustainability, so it will be necessary to carry out an adequate management towards this interest group. Given this, it must reorient all the processes in which it has participation, teaching, research, management, external projection, under sustainability criteria. The paper is focused on the Stakeholder Theory. More precisely, it aims to analyze the management of competencies in the interest group of students. The objective of the work is focused on a triple sense: first, to analyze the training in transversal competences of university students; second, evaluate the training in Social Responsibility carried out at the University; and thirdly, to determine the causal relationship with the student's expectations at the University, which will determine a better / worse management carried out. The study is carried out with the technique of structural equation models based on the Partial Least Squares (PLS) methodology.

Hypothesis:

H1: *Training in transversal competences will determine the expectations of students at the University.*

H2: *Training in transversal skills will influence training in Social Responsibility.*

H3: *Training in Social Responsibility will determine the expectations of students at the University.*

Keywords: *University Social Responsibility, competences, expectation, students.*

CUSTOM-MADE COURSE ADMINISTRATION SPREADSHEETS AS AN ELECTRONIC GRADEBOOK ALTERNATIVE

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Abstract

Instructors at all education levels are responsible for a variety of course-centric administrative duties. These typically include the taking of attendance, lesson planning, the marking of submitted homework and other assignments, and the calculating of students' final grades. Although many commercial and open-source electronic gradebooks are available to aid them with such duties, some may find such software intimidating or off-putting, as they may be time consuming to learn, expensive, inflexible, or lack certain desired features. While there is no one-size-fits-all electronic gradebook solution, one often overlooked alternative is the custom-made course administration spreadsheet. The current paper aims to introduce by explanation and example why and how such spreadsheets can provide instructors with robust and flexible ways to manage course-related administrative requirements.

Keywords: *Electronic gradebooks, spreadsheets, teacher administrative duties, tracking student progress and performance.*

DRAMATIC ARTS' ROLE IN SUSTAINING IMPACTFUL EDUCATION FOR COMMUNITY DEVELOPMENT AMID 4IR CHALLENGES: A TEACHER'S PERSPECTIVE

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Abstract

Like many nations, South Africa grapples with challenges stemming from the Fourth Industrial Revolution (4IR). The rapid evolution of technology and societal dynamics necessitates an education system that adapts and actively contributes to community growth. Against this backdrop, this study investigates the symbiotic relationship between dramatic arts and community development. It focuses on their interplay in the context of the evolving South African education system during the 4IR. Utilizing a qualitative research design allowed for an in-depth exploration of teachers' experiences, perceptions, and insights. Data collection was through interviews and surveys, providing a rich understanding of the subjective aspects involved in teaching dramatic arts. The research design employs purposeful sampling by specifically selecting Dramatic Arts teachers. This intentional selection ensures that the participants have direct experience in the subject matter, making their insights particularly relevant to the study. The research sample was made up of 15 Dramatic Arts teachers who were purposively selected as the researcher was teaching the subject. Themes were drawn from this study from the research questions. Social constructivism theory was adopted for this study. Literature was reviewed from Europe, Asia, Africa, and South Africa. The study advocated for a paradigm shift towards inclusive, participatory pedagogical methods that empower learners as active contributors possessing critical skills. The integration of technology in teaching dramatic arts was recommended, workshops for teachers and specialized training in rural areas. The findings were that the transformative potential of dramatic arts is scrutinized through their influence on cognitive development, emotional intelligence, and social cohesion. Relying on empirical evidence and case studies, the research suggests a compelling argument for the integration of dramatic arts into education. The study recognizes the unique qualities of dramatic arts – its ability to engage, inspire, and foster empathy – as essential components in nurturing a holistic and community-centric education. The study recommends facilitating and integrating technology in teaching dramatic arts. Provide training and resources to teachers to effectively incorporate digital tools, enhancing the engagement and relevance of dramatic arts in the modern educational system. Central to the research was the exploration of the role of community development in dramatic arts education. It was recommended that community engagement and dramatic arts emerge as a catalyst for positive social change. Successful collaborative models between educational institutions, artists, and communities are proposed to create dynamic learning environments extending beyond conventional classrooms.

Keywords: Curriculum, dramatic arts, fourth industrial revolution, transformative, impactful.

ENHANCING FOREIGN LANGUAGE TRANSLATION PEDAGOGY THROUGH TOPOLOGY-IMAGERY COGNITIVE APPROACHES

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Abstract

This study investigates the application of topology-imagery cognitive strategies in the realm of foreign language translation teaching, aiming to enhance proficiency. Focusing on the intricate aspects of translating lexical semantics and grammatical constructions, it employs a novel method that integrates theoretical insights with practical translation examples. This approach validates the feasibility and effectiveness of using imagery-topology techniques in translation instruction. Results indicate significant improvements in students' abilities to comprehend and translate complex linguistic structures. The application of imagery-topology not only strengthens translation teaching methods but also contributes to the broader field of cognitive development in language education, offering promising implications for future pedagogical strategies.

Keywords: Topology, translation, teaching, lexical meaning, grammar.

FACULTY DEVELOPMENT FOR EMERGENCY ONLINE TEACHING AND LEARNING: A CASE STUDY

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Abstract

The University of Central Florida transitioned to remote online instruction in the Spring of 2020, revealing a substantial gap in emergency response to faculty development online teaching needs. This study aimed to examine the response to faculty development needs during the COVID-19 pandemic determining how a large four-year public university leveraged its online pedagogy experiences, instructional designers, and resources to respond to COVID-19 with an emergent online faculty development program for online teaching, ensuring quality online instructional practices. Eight participants from the university participated in the study and semi-structured interviews were conducted in the Spring of 2022. The findings of this case study revealed that instructional designers felt a sense of connectedness and collaboration while working amongst colleagues, key factors of defining the purpose and intent of the training and use of material already in existence were the most important and influential elements of the design and development, and barriers that existed included an absence of leadership direction and limitation of faculty time commitments. Recommendations for further study include further exploration of the impacts of the faculty development programs and how effective the practices taught were for students and their learning outcomes and learning experiences.

Keywords: *Online learning, faculty development, pandemic.*

EXPRESSION OF DIALOGUE AS AN EFFECTIVE INDICATOR OF EDUCATION QUALITY IN LITHUANIAN EDUCATIONAL INSTITUTIONS

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Abstract

Lithuanian educational institutions provide public services (The Law on Education of the Republic of Lithuania, 2003; The National Education Strategies for 2013-2022; The Concept of the Good School, 2015), with the help of which the aim is to turn Lithuanian education into a sustainable basis for an energetic and independent person who responsibly creates his own and the country's future. The effective quality of education can be determined by its compliance with the social and economic conditions of the society, because the quality is closely related to the standard of living, the economic potential of the country. In today's society, when the education paradigm is changing, scientists, educational policy strategists and everyone who cares about the well-being of a young child and the quality of his education have no doubt that the bases of the successful future are laid in preschool childhood. From a social point of view, it is important that the provided educational services would meet the needs of parents and education politicians, as this is an important and significant indicator of the quality of education. In order to reveal the expression of dialogue in a preschool educational institution, a qualitative research was conducted. The data were collected through interviews method, and the research results were processed using the qualitative content analysis. During the empirical study, the tendencies of dialogue expression were evaluated, which help to develop a free and creative personality. The research results show that the dialogue is not a one-time activity, but a systematic and long-term process not only to achieve the desired level of quality, but also to maintain it continuously. According to the respondents, effective quality of education and long-term agreements between all representatives of the community of the educational institution can be achieved only with the help of dialogue.

Keywords: *Expression of dialogue, quality of education, educational institution, educational paradigm.*

THE CONTRIBUTION OF SELF-EFFICACY, EMOTION MANAGEMENT, AND MENTAL RESILIENCE TO FOSTERING THE EDUCATIONAL CLIMATE AMONG TEACHERS IN SCHOOLS FROM ARAB SOCIETY IN ISRAEL

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Abstract

The work of teachers is exceptionally challenging, as they must navigate complex issues at various levels, including students, parents, and the educational system, all while dealing with current events and emergency situations. Simultaneously, there are high expectations placed on teachers to ensure the optimal education of children. Therefore, teachers require effective tools and skills to excel in their profession. Teachers face multitude of challenges and must provide the best possible response to the diverse needs of students, sometimes under constraints and suboptimal conditions, such as during the COVID-19 pandemic. Occasionally, teachers confront difficulties on their own without adequate support. To address these challenges and establish an optimal educational climate, teachers must leverage available resources. Developing emotional and social skills is essential to better cope with challenges and create an ideal learning environment. Managing emotions and self-sufficiency are components of mental resilience, which play a crucial role in fostering an optimal climate. Participation in educational simulations as part of teacher training can enhance social and emotional skills. However, there is limited research exploring the connection between these variables, particularly within Arab society. This study aims to investigate how self-efficacy, emotional management, and the level of mental resilience among teachers contribute to the educational climate in schools within Arab society in Israel. A quantitative approach was employed in this study, involving 105 teachers. Various questionnaires, including demographic information, self-efficacy, mental resilience, school climate, and emotion management, were used. Key findings revealed statistically significant relationships between self-efficacy, mental resilience, emotional management, and classroom climate. Furthermore, self-efficacy and emotional management, even without mental resilience, were able to predict 55.4% of the variability in classroom climate. In conclusion, an optimal and positive classroom climate is not formed in a vacuum. Instead, it is contingent on two vital factors with high explanatory power: a teacher's self-efficacy and their ability to manage and regulate their emotions, particularly in their interactions with students. Without a high level of personal capacity, coupled with effective emotion management, the realization of an optimal classroom climate, which is the foundation for significant teaching and learning processes, remains uncertain. Educational institutions, as learning organizations, cannot facilitate meaningful teaching and learning without the existence of a highly positive classroom climate. Achieving this ideal climate largely depends on a considerable level of self-efficacy and effective emotion management by teachers.

***Keywords:** Self-efficacy, emotion management, mental resilience, educational climate.*

EQUITY IN THE CLASSROOM FOR EVERY CHILD

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Abstract

This is a description of one kind of supplement to Equity in the Classroom book/presentation. The four-year old teachers (it can be done with any preschool teacher) can actually implement the first five templates in the Appendix of the book. This qualitative research project can demonstrate how teachers can make changes to include diverse learners and impact their curriculum by incorporating the core values that have been cited in the book.

***Keywords:** Equity, core values, diverse learners.*

EXPLORING PEDAGOGICAL PRACTICES: INTEGRATING ICT TOOLS IN GRADE 10 LIFE SCIENCES EDUCATION

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Abstract

This paper investigates the diverse pedagogical practices employed by Grade 10 Life Sciences teachers in integrating Information and Communication Technology (ICT) tools into their teaching methodologies. With the increasing integration of technology in education, understanding how teachers utilize ICT tools in the context of Life Sciences education becomes imperative. Drawing upon qualitative research methods, including interviews, observations, and document analysis, this study explores the strategies, challenges, and outcomes associated with the incorporation of ICT tools in teaching and learning processes. The findings shed light on the multifaceted approaches adopted by teachers, ranging from interactive multimedia presentations to virtual simulations and collaborative online platforms. Furthermore, the study illuminates the barriers faced by educators, such as technological constraints and pedagogical adaptation, while also highlighting the transformative potentials of ICT integration in enhancing student engagement, understanding, and critical thinking skills within the Life Sciences curriculum. Ultimately, this research contributes to the ongoing discourse on effective pedagogical practices in technology-enhanced learning environments, offering insights for educators, policymakers, and curriculum developers seeking to optimize ICT integration in science education at the secondary level.

Keywords: *Pedagogical practices, ICT tools, technology integration, teaching and learning.*

THE ROLE OF THE GEOGRAPHY PRESERVICE TEACHERS’ SERVICE-LEARNING IN THE DEVELOPMENT OF MAP LITERACY

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Abstract

This article draws insights from the experiences of Geography preservice teachers gained from the mandatory mapwork service-learning for Geography learners in grades 10, 11, and 12. Map work is considered an essential element of Geography, yet acquiring map skills remains problematic for many South African Geography learners. There is a consistency in the outcry of the learner’s lack of map literacy, regardless of the robust strategies emphasized for the effective teaching of map skills and the emergence of technologies. Considering that the issue of map literacy has been persistent in South Africa, it is imperative to explore every possible alternative that would contribute towards equipping learners with map skills and other competencies required for mapwork. Therefore, the article explores the challenges, strategies, and resources used by Geography preservice teachers to tutor map work in grades 10,11 and 12 during service-learning. Accordingly, the article argues that mandatory mapwork service-learning could contribute to reducing some of the challenges around mapwork. Empirical data was collected through an in-depth analysis of twenty teachers’ structured reflections that were administered at the end of the preservice teachers’ service-learning. The analysis of these reflections followed a content and qualitative analysis approach. The findings indicate that the preservice students had a positive and developmental experience during the service-learning. Different teaching strategies and resources were repurposed for tutoring. Although met with some learners’ challenges, the processes employed in implementing the strategies helped develop learners with basic map skills, which the data indicated was a major challenge before the mandatory mapwork service-learning.

Keywords: *Geography preservice teachers, mapwork, tutoring, service-learning.*

EXPLORING THE EXISTENCE OF MATHEMATICS-SCIENCES ANXIOUS-ENDEMIC EQUILIBRIUM AMONG PRE-SERVICE PHYSICAL SCIENCES TEACHERS: A PATHWAY TO BUILDING RESILIENCE AMONG STEM STUDENTS

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Abstract

This study is part of a larger project that delves into the intricate dynamics surrounding the existence of Mathematics-Sciences Anxious-Endemic Equilibrium (MSAEE) among pre-service physical sciences teachers and its potential impact on fostering resilience among students pursuing STEM disciplines in South African universities. The South African international performance in mathematics and sciences has been of concern over the years. South Africa's maths and science learners have come to the international spotlight since it started participating in the Trends in International Mathematics and Science Study (TIMSS) for grades 4 and 8 learners in 1999 and 2003 and with grade 4 and 9 learners from 2011 to 2019. Notably, South African learners' performance at TIMSS for both mathematics and science has been very poor. Evidence from research indicates that a significant number of learners/students experience fear and exhibit subpar academic achievement in mathematics and science. While the origins of maths/science anxiety are still being debated, reducing math anxiety has been shown to enhance attainment and improvement in mathematical and science proficiency. Hence, there is a need to address these anxieties to improve learner performance in STEM subjects. The study utilised a mixed-methods approach, incorporating both quantitative surveys and qualitative interviews, to investigate the prevalence and features of MSAEE in pre-service physical sciences teacher education programmes. Statistical and thematic analyses were employed to identify patterns and relationships within the data. The findings indicated that the majority of respondents acknowledged experiencing some degree of maths/sciences anxiety. Another noteworthy characteristic was the phobia of mathematics/science examinations and the inclination to recoil when the moment arrived to attend a maths/science lecture, however, over time, participants developed an interest in these courses and shared their self-efficacies in the subjects as they build resilience in maths and science. Findings from the research contribute to the understanding of the complex interplay between mathematics and science anxiety, and the preparation of pre-service teachers to provide insights for educators, policymakers, and researchers interested in enhancing the quality of STEM education.

Keywords: *Anxiety, mathematics, pre-service teacher, resilience, science.*

APPROACHING SUSTAINABLE DEVELOPMENT FROM A FINANCIAL ACCOUNTING PERSPECTIVE

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Abstract

The importance of keeping the 2030 Agenda in mind to achieve sustainable development must also be incorporated into university teaching. Higher education entities are aware of their important role in the formation of knowledge, but they also observe the need for the training to be oriented towards sustainability. The objective of this work is to achieve, from our teaching subject, Financial Accounting, an approach to sustainable development. We have used a combined qualitative and quantitative methodology. The results show the interest shown in the study, as well as the need to continue working to raise the level and interest in achieving this approach. These results would be useful to researchers as they have observed several benefits, focused on increasing the training of students, incorporating sustainability, improving skills and competencies, as well as the general satisfaction of this group.

Keywords: *Sustainable development goals, sustainability, transversal competencies, higher education.*

CAREER MANAGEMENT SKILLS FOR VULNERABLE YOUTH. A CAREER GUIDANCE AND VOCATIONAL TRAINING POINT OF VIEW

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Abstract

Access to quality guidance services, among other objectives, should enable individuals to acquire the skills to manage their careers and direct their life and career paths. These competencies are necessary to cope with decision-making processes, especially in times of change and transition. By focusing on young people who are vulnerable due to adverse, social, family and economic conditions, the analysis can be approached from the perspective of equity and social justice. Promoting the acquisition and development of these skills by these young people has been one of the main concerns of European governmental authorities and entities, which has led to the implementation of different educational measures. These include access to specific vocational training programs aimed at preventing dropouts and achieving social and professional inclusion. This research is part of a wider project, funded by the “Severo Ochoa” Grant Program for Training in Research and Teaching of the Government of Principado de Asturias (Spain), grant number PA-22-BP21-202, which aims to know what research has been done on career guidance in vocational training programs for at-risk youth. Documentary analysis and literature review were used as a method, analyzing twenty-two scientific documents and guidance actions integrated in thirty-six European vocational training programs. The results of the analysis of the scientific papers, in terms of the process of acquiring career management skills, indicate that these young people perceive themselves as having high levels of socio-professional skills acquisition. However, there are differences in perceptions regarding the acquisition of several soft skills and discrepancies between the perceptions of the young people and those of the educational, social and professional agents who work with them in these programs. As conclusions, we highlight the need to adopt a systemic approach that promotes experiences and opportunities for guidance and learning in real contexts, bringing together views between educational and professional environments in order to foster participation, critical awareness and positive expectations regarding the competences acquired by learners. Furthermore, the documentary analysis carried out recognizes the need to propose lines of research focused on the analysis of guidance and competence development processes from a lifelong learning approach, in order to contribute to dropout prevention.

Keywords: *Career management skills, vocational training, at-risk youth, documentary analysis.*

PRE-SERVICE TEACHERS' UNDERSTANDINGS OF HOW SOCIAL VALUES CAN BE INTEGRATED IN LIFE SCIENCES TEACHING AND LEARNING

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Abstract

The National Curriculum Statement (NCS) Grades R-12, comprising the Curriculum Assessment and Policy Statement (CAPS), is currently used for teaching, and learning in South African schools. Since the dawn of democracy, school curricula documents in South Africa have been built on 10 fundamental social values that inspired the country's post-apartheid Constitution Act 108 of 1996. These social values comprise democracy, social justice and equity, equality, non-racism, and non-sexism, Ubuntu (human dignity), open society, accountability, rule of law, respect, and reconciliation. The Manifesto on Values, Education and Democracy is another education policy statement which accentuates these values. Consequently, the NCS is underscored by a curriculum philosophy that urges teachers to equip learners with values during classroom teaching of all approved subjects, Life Sciences included. Such a stance is consistent with global efforts at promoting values education. Therefore, the study reported herein investigated pre-service teachers' understandings of the teaching strategies suitable for integration of some values into classroom teaching of Life Sciences. In a qualitative study underpinned by perception-value as the theoretical framework, 70 Life Sciences pre-service teachers were selected to participate in the study. The participants were in their final (fourth) year of studying for a Bachelor of Education Degree and were enrolled for a Life Sciences methodology module at a university in South Africa. These teachers had taught in diverse school contexts as part of work integrated learning, hence were knowledgeable about the nature

of South African classroom contexts. In collecting data, each participant was tasked to: 1. select a topic/concept from the Life Sciences CAPS document; 2. identify values they can inculcate in learners; and 3. critically discuss how the identified values may be integrated into Life Sciences classroom teaching of the chosen topic/concepts. Each participant's submission formed the data and was subjected to content and thematic analysis. From the analysis of data, the following strategies were identified as suitable for inculcating values in the learners whilst teaching various Life Sciences topics: discussion; role playing/mock sessions; collaborative group work; engaging in debates; using analogies; making reference to learners' lived experiences; and using examples familiar to learners' lives. The discussed teaching strategies were indicative of how the South African philosophy of Ubuntu is critical in developing values in learners. The findings of the study have implications on not only pre- and in-service teacher professional development but also inform how the societal issues may be mitigated through the teaching of values.

Keywords: *Life Sciences, pre-service teachers, teaching strategies, values, Ubuntu.*

PARENT'S ACTIVE ROLE AND SPECIFIC INVOLVEMENT IN CHILD EDUCATION: A SOUTH AFRICAN TEACHER'S PERSPECTIVE

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Abstract

This study sought to investigate parents' particular and active involvement in their children's education from the viewpoint of a South African teacher. Three different schools' high school teachers participated in the study. The study examined parental engagement in a child's education using a quantitative research methodology and an interpretive paradigm. Teachers who were not included in this study participated in a pilot study. The 62 teachers who were purposively selected as the study sample. A qualitative case study technique has been employed in the research design to provide a thorough investigation of the issue in the context of South Africa. Frequency tables and graphs were used to present the manually examined data. Semi-structured interviews were used as data collection instruments, and a wide range of teachers from different topic areas and grade levels participated in the interviews. Purposively choosing the participants allowed for a complete representation of viewpoints and experiences. Tables and graphs were used to analyze the data. The data's recurrent themes and patterns were found using thematic analysis. The study's findings revealed that educators generally agree that parents' active involvement in their children's education is beneficial. Educators consistently emphasize that parental involvement in their child's education—both online and offline—as well as assistance with homework and assessments, play a major role in fostering academic achievement, social and emotional growth, and a positive outlook on learning. The findings show that educators generally agree that parents' active involvement in their children's education may be beneficial. Educators consistently emphasize that parental involvement in their child's education—both online and offline—as well as assistance with homework and assessments, play an important part in fostering academic achievement, social and emotional growth, and a positive outlook on learning. The study attempts to benefit learners, teachers, parents, school administrators, and policymakers in education by providing insights into creating a cooperative atmosphere that could support and promote active parental involvement. The study suggests that stakeholders and teachers, who have valuable viewpoints, ought to develop strategies and programs that support productive home-school collaborations, thus improving children's education. By offering a teacher-centric viewpoint on the novel and open concept of active parental involvement in education, the research adds to the body of knowledge already in existence and clarifies the precise degrees of involvement that educators believe are most advantageous for the child's overall development.

Keywords: *Active role, child education, engagement, specific involvement.*

GUIDING FIRST-YEAR STUDENT TEACHERS IN THE APPLICATION OF THE SKILL OF SET INDUCTION IN MICRO-TEACHING

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Abstract

In teacher education and training, the skills of teaching and learning are significant parts of microteaching. Every student teacher must be enabled to teach effectively to ensure they can master the practice of teaching. When student teachers go for teaching practice as part of their work-integrated learning (WIL), they must present lessons that will make learners eventually achieve in their academic endeavors. Teaching and learning involve several activities that student teachers must be knowledgeable of and master proficiently. In microteaching, these activities are called skills. There are several skills such as set induction skills, questioning skills, writing on chalkboard skills, and so on. that must be understood by the student teachers to present effective lessons. In most cases, student teachers who are doing their Bachelor of Education degree attend teaching practice during the second semester of their first year of study. During this period, they are expected to have mastered the skill of set induction. This skill is essential because it is the first skill of microteaching and plays an important role in ensuring that student teachers are ready for the basic principle of teaching. This research paper will provide an explanation of the skill of set induction, its purpose, its components, and strategies that student teachers can employ to successfully apply set induction in a classroom situation.

Keywords: *Microteaching, teacher education, set induction, Work Integrated Learning (WIL), teaching practice.*

STABILISING THE LINK BETWEEN SECONDARY AND HIGHER EDUCATION THROUGH LIFELONG LEARNING PROGRAMMES

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Abstract

At the heart of this report is the question of the relationship between secondary and higher education in the post-secondary situation. The focus of the analysis is the Bulgarian education system, as here the Covid-pandemic deepened a number of negative phenomena related to serious educational deficits. The introduction of distance learning into the secondary education system, although a necessary measure to contain the pandemic, could not compensate for the traditional forms of Education - direct teacher-student communication. The latest results of international tests such as PISA highlight new low levels in the preparation of Bulgarian students, both among those from the primary stage of education and those who are on the verge of completing their secondary education. It is yet to be analyzed how these defects of Secondary Education will be reflected in the Higher Education System. And more importantly, can they be overcome? Currently, students in the Higher Education are such a group of students who lack a number of skills and habits - communicative and professional. It has also been observed that their theoretical knowledge has not transformed into a sustainable foundation of their competence. So that the natural link between secondary and higher education is broken, higher education must quickly compensate for these deficits of general preparation. It turns out that the fastest this task can be solved by adapting lifelong learning programmes. First of all, to expand the forms of practical training by additional organization of qualification courses, by introducing productive attempts to acquire professional skills and competences – internships, brigades, practical expeditions and so on. Secondly, updating the three stage model of Higher Education: Bachelor – Master- Doctor, with the addition of practical activities, and this in the direction of increasing the duration of the Bachelor to five years - inclusion of additional courses to overcome the deficits from school education. Thirdly, expanding the opportunities for organizing short-term courses together with employers. The complex of short-and medium-term actions through the inclusion of the lifelong learning system within higher education will compensate for some of the deficits and contribute to the formation of the necessary professional skills for the future realization.

Keywords: *Lifelong learning, secondary education, higher education, professional skills, competences.*

FACING THE FUTURE: VET SKILLS FOR TODAY AND TOMORROW

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Abstract

The new information and communication technologies, COVID-19, the dynamic changes are leading to changing world of work brings and the key importance of VET. Nowadays a key factor for success is the ability to develop the skills needed in the labor market that employers are looking for. Therefore, those changes are following by the important structural changes in the educational system and the need to re-engineer certain parts of VET systems in some countries to make them more resilient. It is argued that high-quality Vocational Education and Training (VET) plays a key role in ensuring that the population has the relevant and necessary skills of today to help them meet socio-economic challenges and thrive both personally and professionally with a plan. The place of inclusive education is particularly important - both for today's youth, for whom vocational education and training ensures a smooth entry into the labor market after completing compulsory education, and for adults who need to upgrade their qualifications and retrain to adapt to the changing world of work. The methodology applied in the study includes searching and analyzing factual information. This paper aims to highlight the fundamental role of vocational education and training in the preparation of personnel for the future, presenting a detailed picture of the current situation and prospects for VET, the labor market and individual professions, which will present a view of the future. This paper was developed within the framework of a scientific research project "A model for evaluating the effectiveness and quality of inclusive education, training and lifelong learning" with contract № KII-06-H80/1, funded by National science fund of Bulgaria.

Keywords: *Lifelong learning, Vocational Education and Training, new skills, future professions.*

IMPACT OF PHYSICAL ACTIVITY ON THE HEALTH STATUS AND QUALITY OF LIFE OF CHILDREN AND SCHOOL ADOLESCENTS

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Abstract

Healthy behavior during the day is very important for the improvement of the quality of life of children and adolescents. However, not all behaviors are equally important in the perception of well-being among adolescents of different sexes (boys and girls). The incidence of physical activity on the quality of life for children and school-aged adolescents stands out as the main behavior. Furthermore, it is necessary to promote these healthy habits from the educational context from an early age. Regular assessment of the impact of healthy behaviors that include diet, physical activity, and sleep time with various psychosocial benefits should be done. It is also necessary to study different sedentary activities separately (use of mobile phones, video games, computers) and assess whether they all have a negative impact on the psychosocial well-being of children and adolescents. A growing number of studies have highlighted the health benefits of greater physical activity, less screen time, and optimal sleep duration in school-age children and adolescents. *Objective:* This paper aims to examine the individual and combined association between physical activity, screen time and sleep time on the quality of life in boys and girls. *Method:* A total number of 220 students from primary and secondary schools on the territory of the municipality of Probishtip participated in the research. The results obtained for physical activity, time spent in front of the screen, and duration of sleep on the quality of life were analyzed. *Results:* Descriptive, correlational, and regression analyzes were conducted to determine the significance of the health-related behaviors of all participants. The results revealed a significant positive association between physical activity and sleep time on quality of life. Finally, regression models showed that physical activity outcomes improve quality of life, especially in children. It was also concluded that movement is particularly important for a healthy and qualitative life, and the impact of physical activity on the quality of life is emphasized as the main factor for the health condition, and for the improvement of the quality of life of the school adolescent population.

Keywords: *Physical activity, health status, quality of life, children, school adolescents.*

THE STUDY OF ENGLISH LISTENING PROBLEMS OF THAI EFL UNIVERSITY STUDENTS

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Abstract

English listening difficulty is one of the barriers to English communication which causes misunderstanding and misinterpretation between the speakers and the listeners. It is beneficial for teaching and learning English communication to study students' problems and their need for improvement. This study aimed to explore difficulties in English listening of Thai EFL university students. Samples were 30 second-year undergraduate students, majoring in English for Business Management at a public university in Thailand. The questionnaire was employed to explore students' English listening problems, the causes of listening problems, and students' need for English listening skill improvement. The results revealed that Thai EFL university students reported a medium level of English listening problems in four types regarding the problems related to the messages, the contexts, the speakers, and the listeners. In terms of the individual items, they rated a high level of listening problems with the speed of the speaker, the pronunciation of the speaker, and the ability of the listener to understand at the first time of listening. For the causes of English listening problems, students rated four causes at a high level of agreement including lack of listening skill practice, lack of exposure to different kinds of listening materials, lack of knowledge in vocabulary, and lack of knowledge in grammar. With regard to students' need for English listening skill improvement, the findings showed a high level of improvement need. The highest level of agreement was the need to improve English vocabulary and knowledge by reading English from books or online materials. Further results drawn from students' suggestions and comments indicated their need for English listening skill improvement in six main areas: practicing speaking English in class, practicing speaking English with native speakers, practicing listening English in class, learning new vocabulary and technical terms, learning pronunciation with different accents, and learning listening comprehension strategies. It can be concluded that Thai EFL university students mostly had English listening difficulties especially problems related to speaking speed and pronunciation of speakers. Moreover, most students reported that they need to improve their English listening skills. Based on the findings, it is suggested that EFL teachers should consider students' problems and implement more activities in class which can help students improve their skills in English listening.

Keywords: *English listening problems, English listening skill improvement, EFL English listening.*

LEARNING THROUGH PEER ASSESSMENT: STUDENT PERCEPTIONS BEFORE AND AFTER PARTICIPATION

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Abstract

This study aims to find out how students perceive the usefulness of peer assessment for learning in the context of reading circle discussions in higher education before and after participation, and furthermore reflect which factors related to the implementation of the peer assessment promoted or hindered learning. Results compare student expectations and experiences of peer assessment and furthermore show that majority of students both expected and found the peer review process to be useful or very useful. The clear evaluation matrix and iterative nature of peer assessment supported learning. Receiving and giving feedback helped students in analysing and reflecting on their own activities. Overall, the peer assessment seemed to support the analytical and critical approach among students and enhance their self-knowledge. At the same time, the results highlight areas for development in the peer assessment practices that could further promote learning by raising the level of given peer feedback. These development areas are rater training, course incentives for high-quality feedback, and the emphasis on the learning benefits of giving feedback.

Keywords: *Peer assessment, learning, reading circle discussion, survey, higher education.*

INCLUSIVE EDUCATION AND TRAINING DURING A PANDEMIC AND BEYOND - THE NEW NORMAL (IDENTIFYING GOOD PRACTICES)

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Abstract

The emergence of Covid-19 and its spread has faced the whole world with something new and incomprehensible. The pandemic led to a complete reorganization of educational services - in terms of delivery, access and structuring. Part of the measures taken was the introduction of distance learning, an approach that presents a number of challenges for both learners and training providers. In this report, answers will be given to questions such as: What are the challenges of distance learning in an electronic environment and is an effective educational process possible? What are the European policies and practices to support and promote the development of skills that lead to the creation and employment of new jobs? Are there inclusive practices in vocational education? How does the Erasmus+ Program contribute to the inclusion of children and youth with special educational needs? How do training organizations put into practice methods for building inclusive learning environments to create STEM and professional competencies? The methodology used for the present study is an analysis of information resources on the researched topic, a study of good practices and case-studies. This paper was developed within the framework of a scientific research project "A model for evaluating the effectiveness and quality of inclusive education, training and lifelong learning" with contract № KII-06-H80/1, funded by National science fund of Bulgaria.

Keywords: *Inclusive education, pandemic, new normal, good practices, education and training.*

TEACHERS' VIEWS ON INFUSING IK INTO CHEMISTRY TEACHING AT THE JUNIOR SECONDARY OF OMUSATI REGION

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Abstract

This study focused on the views of Natural Sciences teachers on infusing indigenous knowledge in teaching Chemistry concepts at the junior secondary school level. National Curriculum for Basic Education (NCBE) promotes the inclusion of indigenous knowledge into teaching to empower learners to actively participate in making Namibia a knowledgeable-based society. However, IK remains an afterthought in many Omusati region classrooms especially at grades 8 and 9 level. Thus, learners neither associate it with classroom nor Chemistry syllabus. This creates an assumption amongst the learners that their environment has nothing to do with science generally or Chemistry in particular. Moreover, lack of emphasis and clear guidelines on the 'how' of implementation of IK in classroom enforces the neglect of IK infusion by teachers. This paper therefore tapped into teachers views on IK and Chemistry teaching. Five (5) grades 8 and 9 Physical Sciences teachers were purposefully selected from Onesi circuit in the Directorate of Education, Arts and Culture of Omusati region, Namibia. The researcher employed interpretivist qualitative research approach. This qualitative study used CHAT to understand the teachers' views and classroom practices through integrating IK in teaching of Chemistry. Saldana (2013) was used to guide thematic analysis of data. The findings indicated a slight change of views by the Physical Science teachers. Some remained attached to certain practices where they held strong beliefs. The infusion of certain Chemistry concepts depended on the school support. The study recommended that the teaching and learning policies be clear on the 'how' of infusing IK into the classroom, and adequate support through ongoing developmental workshops be provided to the Science teachers. Moreover, the approval of Physical Science textbooks should be dependent on the inclusion of a portion of indigenous knowledge systems with relevant local examples and visuals to encourage and strengthen interest among both teachers and learners.

Keywords: *Physical science teachers, views, indigenous knowledge, chemistry concepts, Continuous Professional Development (CPD).*

REMINISCING TRAINING AND SPECIAL NEEDS CHILDREN

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Abstract

Reminiscing, a conversation between child and caregiver about past events experienced together, has been extensively studied with parent-child dyads of preschool and school-age children (Sales & Fivush, 2005). Researchers have proposed interventions to enhance the elaborative style and emotional aspects associated with caregivers' reminiscing, with positive effects on children's socio-emotional and cognitive skills (Corsano & Guidotti, 2019). Nevertheless, research within extra-familiar contexts is still limited (Andrews et al., 2019). This study aims to verify the efficacy of training aimed at improving the reminiscing skills of psychologists working with Special Needs children on psycho-educational topics and academic skills. The decision to explore this theme concerning these children was dictated by the awareness that they often present a psychological profile characterized by emotional difficulties, low self-esteem, social and cognitive problems connected to their peculiar condition, which can be improved by reminiscing. Participants were divided into an experimental group (twelve dyads) and a control group (eight dyads). Each dyad comprised of one psychologist and one child with SN aged between 8 and 10 years. The psychologists in the experimental group took part in training (3 meetings) about reminiscing, while those in the control group took part in training (3 meetings) about play. Tools proposed to psychologist in the pre and post-test were Caregiver Child Reminiscence Scale (Kulkofsky & Koh, 2009); Children's Coping Strategies (Goodvin & Romdall, 2013). Tools proposed to children were Test of Emotion Comprehension (Pons & Harris, 2000); Self-Description Questionnaire (Marsh, 1990); Narrative speech evaluation (BVL_4-12, Marini et al., 2015). During an audio-recorded reminiscing conversation in pre and post-test, reminiscing style, presence of emotional terms and references to the Self were measured for each member of the dyad. In the experimental group, the non-parametric ANOVA highlighted, at the post-test, an increase in reminiscing habits and in the use of elaborative style, both for psychologists and children. In general, no increases in children's skills emerged; however, from an analysis of individual children's profile it was found that for some of them training improved their socio-emotional abilities. Training promoted greater awareness of the use of this practice among psychologists, confirming what had already been found in the literature on the effectiveness of training among caregivers.

Keywords: *Reminiscing, training, children with special needs, intervention, psycho-educational skills.*

LIFE SCIENCES TEACHERS' UNDERSTANDINGS OF INTEGRATION OF INDIGENOUS KNOWLEDGE WHEN TEACHING BIODIVERSITY OF PLANTS

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Abstract

Although the South African Curriculum and Assessment Policy Statement (CAPS) document embraces local Indigenous Knowledge (IK), it does not specify how this should be implemented in the classrooms. As a result, little to no integration of IK is enacted in many of the Life Sciences classrooms. It is against this background that the study reported herein explored Grade 11 Life Sciences teachers' understandings of IK when teaching biodiversity of plants and related concepts. This study employed a qualitative research approach, which is underpinned by the interpretive paradigm. A case study research design was employed. Data was collected from five purposefully selected Grade 11 Life Sciences teachers in the Nkangala District in Mpumalanga, one of the nine provinces of South Africa. The selection of the participants was largely because they were easily available and that they were Grade 11 Life Sciences teachers at the schools where they were teaching. The teachers had a wide range of teaching experience (at least five years), meaning that they were assumed to be familiar with the CAPS document requirements on the integration of IK into teaching and learning process and the implementation gaps thereof. To generate data, open-ended interviews were employed. Each teacher was interviewed twice, firstly to determine their conceptualisation of IK integration, and secondly to explore their understandings of the integration of IK when teaching the topic Biodiversity of plants and related concepts. Vygotsky's social constructivism was adopted as the theoretical framework informing the data collection methods that addressed the research question. The data was analysed using the constant comparative method and three themes emerged from the patterns depicting

teachers' understandings of the integration of IK when teaching biodiversity of plants and related concepts in Grade 11 learners' classrooms. Firstly, the findings of the study revealed that teachers understood the integration of IK as an effort to mainstream IK so that it could be given the same recognition as Western knowledge. Secondly, teachers viewed integration of IK as an additive to Western knowledge and not as a standalone legitimate form of knowledge. Thirdly, teachers viewed integration of IK as a way of fostering empowerment and justice to the marginalised communities who strive to utilise their own community heritage to solve own problems and develop their families and communities. The findings have implications for both teacher professional development and classroom practices.

Keywords: *Biodiversity of plants, grade 11 teachers, indigenous knowledge integration, life sciences, teachers' understandings.*

TEACHER'S VIEWS ON CHALLENGES WITH THE FOSTERING OF SELF-REGULATED LEARNING SKILLS AND SUPPORT FROM SCHOOL MANAGEMENT TEAMS

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Abstract

The aim of this study was to explore the challenges teachers experience with the fostering of self-regulated learning skills in intermediate phase learners as well as how the school management teams support them in their attempts to develop and enhance self-regulated learning skills. Self-regulated learning skills have become increasingly crucial in the 21st century, both within education and beyond, as it equips learners with knowledge and skills that improve academic performance and lifelong learning. In curriculum meetings with departmental officials and school management teams, the focus invariably centers on identifying methods to enhance outcomes and mitigate learner underperformance. Within these deliberations, the proposed solutions consistently revolve around actions by teachers, such as increasing classwork, homework assignments, and offering additional classes. The strategy of fostering learners' self-regulated learning skills is never proposed to improve academic achievement and pass rates. Teachers' pivotal role in fostering self-regulated learning skills is hindered by various factors. Without effective engagement from teachers and the entire school community in cultivating these skills from primary education onwards, learners will persist in struggling throughout their academic journey, unable to meet the evolving demands of the world. School management teams have an impact on teacher control, power and educational initiatives, resources and innovations. Therefore, support from school power structures such as principals and heads of departments in the development of self-regulated learning needs to be explored. The qualitative study is located within an interpretivist philosophical orientation to enable the researchers to explore a real-life situation and the experiences teachers encounter in their daily teaching and learning contexts. Fifteen participants from three primary schools were conveniently and purposively sampled to participate in the study. Data was collected through single semi-structured interviews with each participant. Data was analysed inductively through a thematic approach. The findings revealed that participants' beliefs about their roles in the holistic development of learners and the aims of teaching and learning are linked to their positive beliefs about the value of self-regulated learning skills. Participants face challenges including inadequate pedagogical content knowledge to develop some self-regulated learning skills, overcrowding, time constraints, limited resources, and lack of parental involvement. They lack professional development and training from school management to enhance their ability to foster self-regulated learning skills. Their only support comes in the form of documents like textbooks and teaching plans from the Department of Basic Education.

Keywords: *Self-regulated learning, teachers, school management teams, professional development.*

LEVERAGING ICT TOOLS FOR TEACHING AND LEARNING IN THE DOMAIN OF PHYSICAL SCIENCES

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Abstract

This study delves into the effective utilization of Information and Communication Technology (ICT) tools to enhance teaching and learning experiences within the field of physical sciences. By examining the integration of diverse ICT resources, such as simulations, virtual laboratories, and interactive multimedia, this research aims to evaluate their impact on student engagement, comprehension, and overall academic achievement. The study adopted a mixed methods design to gain a comprehensive understanding of the integration of ICT tools in physical sciences teaching and learning. Through a thorough investigation of pedagogical approaches and technological applications, this study seeks to identify optimal strategies for leveraging ICT tools to facilitate deeper understanding and mastery of key concepts in physical sciences education. Additionally, considerations for addressing potential challenges and maximizing the benefits of ICT integration in the learning environment were explored. Participants reported that ICT tools facilitated a deeper understanding of complex scientific concepts by providing visualizations, simulations, and interactive demonstrations that made abstract ideas more tangible and accessible. ICT tools allowed for personalized learning experiences tailored to individual student needs and preferences, enabling students to progress at their own pace and access additional resources to support their learning. Despite the benefits, participants also identified challenges and barriers to leveraging ICT tools in physical sciences education, such as limited access to technology, inadequate technical support, and concerns about digital equity and inclusion. Ultimately, this research endeavors to contribute valuable insights to educators, policymakers, and stakeholders seeking to enhance the quality and effectiveness of teaching and learning in the domain of physical sciences through ICT integration.

Keywords: *ICT tools, teaching, learning, physical sciences, technology integration.*

TRANSFORMING THE LEARNING ENVIRONMENT THROUGH INTERACTIVE PEDAGOGIES

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Abstract

An interactive learning environment can be understood from diverse angles depending on the nature of the subject or concept taught. Interaction in the science classrooms creates an opportunity for the learner to engage meaningfully with the content. The study sought to explore how pre-service teachers conceptualise an interactive learning environment in the Life Sciences classrooms. Using a qualitative case study research design, 45 students enrolled for postgraduate certificate in education and specialising in Life Sciences, were selected to take part in the study. During the year these participants had been exposed to the teaching and learning of Life Sciences concepts using various interactive pedagogies. They were also engaged in analysing videos of lessons where previous pre-service teachers implemented interactive pedagogies in their classrooms. For data collection, each participant was tasked to critically explore how the use of a selected teaching strategy or approach could foster interactive learning in a Life Sciences classroom during work integrated learning. The work integrated learning period was seven weeks long hence the participants had adequate time to explore and select the strategy they wanted. Whilst the task sought the interactive pedagogies employed by the participants, it also assessed the participants' knowledge of the selected Life Sciences topic; knowledge of the teaching strategy; the suitability of the strategy; and affordances in making content accessible to learners. They then submitted their analysis which formed the data source. Habermas' critical social theory was used to analyse and interpret the participants' conceptions. The findings revealed a wide spectrum in pre-service teachers' conceptions about an interactive learning environment. Some based interactive pedagogies on learner inclusivity, use of what learners bring to the classroom, learner engagement, learner interest, ability to enable application of knowledge in real life, and use of modern learning technologies. The findings have implications for teacher professional development programmes.

Keywords: *Interactive learning, learning environment, life sciences, teaching strategies.*

EXPLORING THE ONTOLOGICAL BOUNDARY OF METACOGNITIVE AWARENESS OF PRE-SERVICE EDUCATORS

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Abstract

The pre-service educator preparation period is crucial in developing the competencies necessary for effective educators who succeed in the classroom. Consequently, it becomes imperative for pre-service educators to develop their awareness of self-regulatory and metacognitive skills to become effective in the classroom. Therefore, the process of developing pre-service educators' metacognitive awareness is important if we are to produce self-directed learners with well-developed cognitive skills. However, the designing and development of Bachelor of Education programmes that enhances teaching with metacognition is a neglected area in higher education institutions. The concept of Ontology is applied in this presentation because it constitutes an explicit specification of a conceptualization of the levels of interpretation of metacognitive awareness. This presentation reports on part of a larger quantitative study on the relationship between metacognitive awareness, teaching perspectives, and sense of efficacy of pre-service educators. On the theoretical component, the presentation aims to explore a framework for analysing the level of pre-service educators' metacognitive awareness, building on the self-directed learning theory and its application in the context of pre-service educators. A sample of 683 pre-service educators completed the Metacognitive Awareness Inventory for Teachers. To present and describe data, mean scores, standard deviations, Cohen's effect size for interpretation of results, and Spearman's correlation coefficients to determine correlations between concepts using multiple regression analysis were calculated, this was done to determine the nature of the relationship between the constructs (variables) of metacognitive knowledge and the effect of specified contextual components such as gender, Language of instruction, Mode of delivery Programme enrolled for and Area of specialisation as well as Campus of the respondents in relation to metacognitive awareness. There are two levels of interpretation of the findings presented here: (i) the manifested component of metacognitive awareness, and (ii) the contextual components of gender, language of instruction, programme enrolled for, area of specialisation, mode of delivery, and campus. This study is of particular interest to tertiary institutions, who are charged with the task of developing educators who can influence student achievement in a positive way.

Keywords: *Metacognition, metacognitive awareness, pre-service educators, ontological boundary, self-directed learning.*

CREATING SAFE SPACES TO TEACH AND LEARN: THE POLYVAGAL THEORY IN ACTION

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Abstract

In the world of teaching and learning, if one considers the neurological link between the brain and the body, it can be noted that if there is a feeling of safety and connected engagement, then successful teaching and learning will occur. Our senses, which continually gather environmental information regarding risk or safety within a presenting situation, subconsciously inform the individual of danger or safety, love, and comfort (Porges, 2011, p. 11). These neurological signals are referred to as *neuroception* (Porges 2011, p. 11). Thus, to create a conducive environment for teaching and learning, the senses, must "*neuroceptionally*" perceive that teaching and learning are safe, rewarding and a pleasurable experience. Thus, to achieve a "*neuroceptionally*" safe space we must as ask, "*What can be done to create an environment of safety and connected engagement to encourage learners to neuroceptionally feel socially engaged to promote and enhance learning?*" To answer this question one must turn to the Polyvagal theory, which is a framework that understands and optimises the learning experience (Wilson, 2023, p. 7). In understanding the Autonomic Nervous system (ANS) and meeting the learner at their neurological stage, individual connections can be made to accommodate every learner within the classroom situation, optimising support, and connected engagement within a teaching and learning environment.

Keywords: *Polyvagal theory, safe learning space, safe classroom environment.*

SPECIFIC COMPETENCIES OF STUDENT TEACHERS: IDENTIFICATION OF PROFESSIONAL EDUCATIONAL NEEDS

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Abstract

This study aimed to explore how student teachers assess the extent of their acquired specific competencies during their studies (acquired competencies) and their need for further acquisition of these competencies (necessary competencies) and to determine the relation between their achieved success in the chosen field of study and their real educational needs. Teachers' competencies are one of the determinants of orientation and readiness for professional learning and development, and self-assessment of competencies acquired during studies is an indicator of the quality of the study programme. The research focuses on identifying and analysing the educational needs of student teachers based on a self-assessment of their acquired and necessary specific competencies in the areas of learning and teaching, classroom management, assessment, inclusion and community action. The questionnaire was developed based on the theoretical construct of the Global Teachers' Key Competences Framework (TKCOM (2018)), which consists of 28 items. The study was conducted on a purposive sample of N=26 student teachers in their final year of teacher education at the Faculty of Teacher Education, University of Rijeka, Republic of Croatia. The results of the descriptive analysis made it possible to measure educational needs from two aspects: acquired and necessary specific competencies. On average, student teachers assessed their acquired competencies higher in the area of learning and lesson planning and lower in the areas of inclusion and community action. Student-teachers' self-assessed competencies indicate a pronounced need for further acquisition of specific competencies to a very high degree in all competence areas. The identified educational needs relate in particular to supporting students with difficulties and gifted students during the learning and teaching process, as well as to cooperation and collaboration with families, professionals, the school and the community. The results show that prospective teachers must acquire competencies to respect students' diversity and interculturality, provide them with equal educational opportunities and build effective relationships with families, colleagues and other community organisations. The results are valuable indicators of student-teachers' educational needs in the area of specific competencies as a first step in the methodological process of improving the teacher education programme. In addition, the results form the foundation for developing a curriculum for continuing professional development/learning based on the analysis of professional development needs, conditions and opportunities as critical factors for improving teachers' specific competencies.

Keywords: *Student teachers, educational needs, specific competencies, competence dimensions, professional development.*

PROJECTS AND TRENDS

FRAMING FAMILY DIVERSITY IN EARLY YEARS: AN INQUIRY-BASED INTERVENTION ON APPROACHING SAME-SEX PARENTING THROUGH PICTUREBOOKS

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Abstract

The article presents a critical reading of four selected PreK-2 picturebooks which narrate and depict family diversity in terms of a same-sex parenting content. More specifically, the following picturebooks: *My two moms* (2015), *Stella brings the family* (2015), *The girl with two dads* (2019) and *Who's your real mum?* (2020), were chosen among a variety of LGBTQI+ picturebooks to represent disruptions of the heteronormative family. Discourses on exclusion from and inclusion in what is defined as normativity and equity are analyzed. Issues of how children who grow up in a diverse family with same-sex parents are treated among their peers within the school settings are raised. Most importantly, definitions of parenting from children raised from same-sex parents are addressed. In supporting kindergarten teachers' attempts on approaching same-sex parented families within early years settings, this article, also, proposes an intervention which outlines an inquiry-based methodology. An interdisciplinary approach of the notion of family diversity is applied through literature, mathematics, natural and social science, arts, and ICT learning areas. The same picturebooks, used for critical reading in the first part of this paper, are recommended in the second part as means for encouraging discussion, promoting empathy and gathering information during the inquiry-based intervention. The contribution of the current work to both the social sciences and the early childhood education fields is that it raises the recognition and at the same time addresses the pervasive social context of family heteronormativity by engaging young children in developing their own understanding of what constitutes a family and attempt their own definitions of parenting. Finally, the paper presents a pedagogical methodology, based on the inquiry method, to approach social issues such as the concept of family diversity.

Keywords: *Family diversity, same-sex parenting, picturebooks, inquiry-based intervention, early childhood education.*

AUGMENTED REALITY GLASSES IN CLASS – BLESSING OR CURSE

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Abstract

This paper focuses on the current state of augmented reality (AR) usage in university teaching and the impact of AR on student workload. Universities need to engage with new technologies and developments at an early stage. An empirical experiment was conducted with two independent groups to investigate the effects of Microsoft HoloLens 2 on students' subjective workload when solving a Sudoku puzzle. The experimental group used the Microsoft HoloLens 2, and the control group used a tablet. The NASA Task Load Index measured workload and its dimensions. The experiment was based on previous research on AR in higher education and Cognitive Load Theory. HoloLens users' workload was significantly higher (average 70.356/100) than tablet users (average 55.896/100). HoloLens users rated the physical demands higher in the individual components of the workload, and their subjective performance was significantly worse than that of the control group. Furthermore, the workload was mainly related to the HoloLens 2 experience, but students' affinity for technology did not influence these scores. No differences in gender-based workload could be found when using HoloLens 2.

Keywords: *Augmented reality, NASA TLX, teaching, practical training.*

TRANSFORMATIVE FAMILY ROLES IN CHILD ADVOCACY: AMPLIFYING RIGHTS THROUGH AWARENESS RAISING AND CAPACITY BUILDING IN LESOTHO

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Abstract

Lesotho's rich socio-cultural tapestry offers a distinctive setting for probing child rights and development. Central to this discourse is the concept of child rights, deeply entrenched within the vast realm of human rights, acting as a linchpin for comprehensive development. Yet, the trajectory of this development is frequently hampered by deep-seated social norms which prescribe gender-specific roles in child advocacy, with an extrapolated impact on family dynamics. This intricate meta-analysis delves into UNICEF Lesotho's research undertakings from 2023, aiming to shed light on the roles of family members, with an accentuated emphasis on men. Their roles are not just dissected as advocates for child rights but also as integral components of the familial structure. Through an exhaustive evaluation of two salient projects from that year – a three-year HIV-nutrition project and a breastfeeding study – the research meticulously navigates patterns of family engagement, leveraging a plethora of resources from inception reports to raw data compilations. Initial findings bring to the fore an intriguing narrative: while societal norms have traditionally marginalized men's active roles in child advocacy, their influence within family structures is undeniable. This dichotomy posits men as untapped advocates for child rights within the familial arena, leading to the pressing need for their more substantive involvement. Central to the study is the assertion that learning, and capacity-building are indispensable in reshaping the contours of male involvement. By equipping family members, especially men, with enhanced awareness, knowledge, and tools, their transition from passive observers to proactive advocates for child rights can be realized. Enhanced awareness and continuous capacity-building initiatives can kindle a profound change, harnessing men's intrinsic familial stature. To conclude, this comprehensive meta-analysis illuminates the complex interweaving of social norms, familial dynamics, gender equality, and child advocacy in Lesotho. It underscores the transformative potential inherent in enhancing the capacities of family members, particularly men. By galvanizing men as pivotal members within families and impassioned advocates for child rights, we are poised to pioneer a transformative shift, heralding a more inclusive and enlightened era for child development in Lesotho.

Keywords: *Child rights advocacy, gender equality, familial dynamics, awareness raising, capacity building.*

EXPLORING THE APPLICABILITY OF THE QUESTION-PROMPTING CHATBOT IN PBL: PRACTITIONER INSIGHTS ON GOAL SETTING AND REFLECTION

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Abstract

This study evaluates the potential of a chatbot, originally designed for language learning, to be adapted for wider applications in self-directed learning settings, specifically within Project-Based Learning (PBL) frameworks. The research focuses on the chatbot's utility in promoting questions regarding goal setting and reflection by providing personalized notifications. Through interviews with new PBL instructors, the study identifies key challenges, including the scarcity of class time allocated for these activities, a lack of training in intervention methods, and a general underestimation of their significance. Addressing these challenges, the study proposes the augmentation of the chatbot's functionality by incorporating access to a case database. This enhancement is anticipated to foster a constructive cycle of goal setting and reflection, thereby offering robust support to instructors in their pedagogical endeavors. The enhanced chatbot aims to bridge the identified gaps, facilitating more effective educational interventions in PBL contexts.

Keywords: *Project-Based Learning, self-directed learning, reflection, chatbot.*

ENHANCING ACADEMIC WRITING IN HIGHER EDUCATION: A MIXED-METHODS STUDY ON STUDENT INTERACTIONS WITH CHATGPT

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Abstract

Rapid advancements in and the widespread availability of AI tools, such as ChatGPT, offer new possibilities for academia, yet they also raise concerns related to academic integrity. As such, there is a need to explore these issues and consider how AI tools may be used to support student learning in a fair and ethical way. This presentation reports on the findings of a mixed-methods research study conducted during the Fall semester of 2023 at a university in Cyprus. The study aimed to investigate how students in two academic writing classes, led by two lecturers, interacted with AI technologies, specifically ChatGPT, and the impact on their academic work. Students with B2/C1 English language proficiency from diverse cultural and linguistic backgrounds participated in the study. The research design encompassed a pre- and post-intervention assessment using questionnaires to identify students' knowledge, experience, and attitudes toward using ChatGPT. Additional qualitative data were gathered through interviews. The pedagogical intervention took place over the course of one semester and involved the design and implementation of several learning activities that incorporated the use of ChatGPT. These activities were designed to (1) align with course learning outcomes to develop knowledge and skills in academic writing, and (2) develop students' knowledge of academic integrity, emphasizing responsible and ethical use, critical thinking, proper citation, and compliance with institutional policies. Preliminary results indicate a positive outcome, with students reporting an increased understanding of the use of AI tools and an enhanced awareness of academic integrity. This study contributes to a growing body of knowledge regarding the integration of AI technologies into academic settings, offering insights into possible activities and their potential benefits and limitations, as well as ethical considerations for using AI tools to support academic writing. This study has implications for educators and institutions seeking to enhance student capabilities and academic integrity in this rapidly evolving arena of AI tools and technologies.

Keywords: *ChatGPT, academic writing, higher education, academic integrity.*

HOW TO DEVELOP SCIENTIFIC THINKING IN PRIMARY STUDENTS BY INVESTIGATIVE ENVIRONMENT

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Abstract

The objectives of the ONU Agenda 2030 (designed to accompany schools in the ecological and cultural transition) and the actions outlined in 2020 in the European agenda for skills underline the importance of bringing students closer to STEM (Science, Technology, Engineering and Mathematics) subjects, and consequently promote scientific education. According to a socio-constructivist perspective, we can understand how students develop scientific thinking by observing their relationship with the social, cultural and environmental situations they experience (Fleer, 2021). Among innovative teaching strategies, the "inquiry-based learning" approach can represent a methodology suitable for stimulating the development of scientific thinking in children, as it places inquiry at the center of the learning process (Worth & Grollman; 2003; Belland, 2017). In this work, we will present some preliminary data from a case study that aims to experiment with innovative pedagogical models to stimulate the interest of children in primary school in scientific reasoning of STEM disciplines. The first phase of the project involved a class of pupils attending the last year of primary school who participated in an educational experimentation activity on learning physics based on an inquiry-based learning approach. The analysis of the data collected, using observational tools, highlighted that the activity has stimulated the flexibility of reasoning; children have built knowledge collaboratively and have shown a high motivational involvement.

Keywords: *STEM, scientific thinking, inquiry-based, scaffolding, collaborative learning.*

A SYNERGETIC DESIGN PROJECT TO FORTIFY THE UNIVERSITY-COMPANY COLLABORATION

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Abstract

On a global scale, universities have recently emerged from the lingering impact of the pandemic. However, as university campuses gradually reopen, university administrators must acknowledge the inherent challenges of reverting to a pre-pandemic situation. Universities today face mounting expectations to revitalize their curricula by emphasizing real-world learning. This paradigm not only entails heightened classroom engagement but also imparts an essential contextual framework for nurturing enduring social competencies, the capacity for critical analysis and decision-making, and the proficient articulation of ideas. Over the years, the establishment and fortification of collaborative ties between universities and companies have been the subject of thorough discourse, and there is a widespread acceptance of the notion that companies can genuinely contribute to teaching content by sharing cutting-edge knowledge, expertise, and resources. According to a study conducted by Deloitte in 2017, it is evident that designers will only be partially characterized by their creative and innovative capabilities shortly. Business acumen is increasingly considered a precious attribute for professionals in this field. Integrating design and business principles has emerged as a pivotal determinant of achieving superior dynamic performance in diverse industries. Consequently, augmenting the synergistic relationship between university and company and ensuring constant and constructive long-term dialogue has become an urgent need in contemporary education. This paper investigates the disparity between universities and companies within the realm of design, aiming to shed light on potential solutions for fortifying the collaborative bonds between these two sectors. The authors introduce a design project executed in collaboration with a prominent global high-technology company, featured consistently on the Fortune Global 500 list for the fifth consecutive year, as a case study to demonstrate the efficacy of such endeavors in bridging the university-company divide. Drawing upon their distinct vantage points, the authors offer innovative insights into the interrelationship between academic research and design application. They delineate strategies for seamlessly integrating these domains to stimulate innovation and advance scholarly knowledge. The authors aspire to furnish fellow researchers in cognate fields with a valuable reference point, informed by the experiences gained from this project, to explore further and enhance design practice, achieving more substantial and consequential outcomes.

Keywords: *Design education, university-company collaboration, design practice.*

PEDAGOGICAL MODEL FOR TEACHING SUSTAINABILITY IN HIGHER EDUCATION: ENGAGING HEAD, HANDS AND HEART

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Abstract

This study aims to build a pedagogical model that engages both head, hands, and heart in the transformative learning of sustainability. We built our pedagogical model for teaching sustainability by integrating the theories of transformative learning (Mezirow 2006; Hoggan 2016), transformative learning for sustainability (Sipos et al., 2008; Rodríguez Aboytes & Barth, 2020), sustainability competencies (Redman & Wiek, 2021) and education for sustainability leadership (Haney et al., 2020; Novy et al., 2021). Our study contributes by integrating the theory into a coherent pedagogical model with learning activities that are designed to engage both the learners' thoughts, identity, and agency. By using empirical data from the first implementation in the advanced master's level course in the fall 2023, we tested its transformative potential through pre- and post-surveys (n=25) and student feedback (n=19) and demonstrated the learning outcomes as well as the evaluation of the implementation practices.

Keywords: *Education for sustainable development, sustainability competencies, transformative learning, pedagogical model, higher education.*

LEARNING TRADITIONAL HAWAIIAN OPEN-OCEAN NAVIGATION THROUGH IMMERSIVE VIRTUAL REALITY STORYTELLING

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Abstract

In recent times, there has been a growing interest in Hawaii to acquire knowledge of traditional Hawaiian open-ocean navigation techniques, yet practical canoe experiences remain limited. Our virtual reality simulation, Kilo Hoku VR, aims to address this gap by offering users the opportunity to develop and refine their skills in a simulated environment before embarking on an actual canoe journey. Departing from conventional navigation tools, our simulation utilizes the elements, creatures, and celestial bodies as guiding tools, as outlined by Low (2016). In the pursuit of authenticity, we are currently developing VCs to serve as guides, drawing on the rich tradition of Hawaiian storytelling to impart knowledge. This qualitative pilot study focuses on exploring the values and processes inherent in storytelling, such as eye contact, drawing the listener into the narrative, and the appropriate use of body language. The study aims to evaluate the effectiveness of storytelling as an instructional tool for teaching traditional Hawaiian navigation techniques within a virtual reality environment (VRE). The research methodology involved in-depth interviews with three participants selected from diverse backgrounds: a seasoned storyteller, an individual affiliated with the Polynesian Voyaging Society (PVS), and a native Hawaiian with experience in PVS. Preliminary findings from this pilot study highlight the significance of incorporating storytelling strategies, including sustained eye contact, drawing the listener into the narrative, and judicious use of body language. These elements collectively contribute to engaging learners in active listening and effective learning within the VR storytelling environment, and these conclusions point to the necessity of incorporating artificial intelligence to achieve this immersive experience properly.

Keywords: *Virtual reality, storytelling, virtual characters, cultural heritage.*

INVESTIGATING STUDENTS' PERSPECTIVES AND ATTITUDES TOWARDS MOBILE LEARNING AT A NIGERIAN UNIVERSITY

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Abstract

Mobile learning is a type of education that has significant potential and offers new opportunities for education and learning assessment. As such, it plays a critical role in the development of quality education in Nigeria, which aligns with the fourth Sustainable Development Goal. Despite its advantages as an emerging learning method and its adoption in education, research into its use in teacher education in developing contexts like Nigeria is still in its early stages. This paper discusses the use of mobile learning (m-learning) in teacher education in Nigeria. This study, therefore, investigates the perception and attitude of preservice teachers towards using m-learning for their teacher education course. The study uses a survey instrument with a 4-point Likert scale to collect responses from 54 preservice teachers registered in an ICT in education course at a university in Southwestern Nigeria. The responses are analyzed using descriptive and inferential statistics, as well as regression analysis. The results show that preservice teachers have a positive attitude towards using mobile apps and tools for learning, with females scoring higher than males. The study also found that perceived usefulness significantly influenced their attitude towards mobile learning. The results of this study indicate that preservice teachers who perceive the use of mobile apps/tools for learning as beneficial are more likely to have a positive attitude towards their use, as long as they receive the necessary educational training to improve their proficiency in utilizing such mobile learning tools/apps. As a result, it is recommended that teacher education programs implement effective technology-assisted training programs that will familiarize pre-service teachers with the pedagogical skills and experiences required to build their confidence in using mobile apps/tools in their teaching practices. Furthermore, teacher education programs should introduce preservice teachers to the ideas of mobile learning and provide learning opportunities that can foster their knowledge and effectiveness in utilizing mobile apps/tools for teaching and learning.

Keywords: *Attitudes, mobile learning, perceptions, preservice teachers, university students.*

STUDENTS 21ST CENTURY SKILL CHALLENGES: ZIMBABWEAN HIGHER EDUCATION

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Abstract

This research explores the skill challenges faced by students in the 21st century at a Zimbabwean higher education. The concept of 21st-century skills has emerged in recent years as a way to describe the skills that are necessary for success in the modern world. These skills include not only traditional academic skills, such as reading, writing, and mathematics, but also a range of other skills, such as critical thinking, creativity, communication, collaboration, and digital literacy. The study employs a qualitative method to investigate the extent to which students have the necessary skills to navigate the world of the 21st century, and the factors that may be contributing to skill gaps. The findings suggest that while students are generally confident in their digital literacy and ability to use technology, there are areas where they need further support, such as critical thinking, problem-solving, and collaboration. Additionally, skill challenges faced by students in the 21st century at a Zimbabwean higher institution include lack of access to technology and digital skills, lack of training and support for using technology for learning, lack of alignment between curriculum and 21st-century skills, and impact of cultural and social factors on technology use. These findings have implications for the university and other educational institutions and highlight the need for a comprehensive approach to addressing skill challenges. Recommendations for addressing skill challenges faced by students in the 21st century at a Zimbabwean higher institution include the provision of adequate resources, such as computers, internet access, and digital literacy training, adoption of a learner-centered pedagogical approach that encourages the use of technology for learning, a collaboration between universities and other stakeholders, such as government and industry, to ensure that 21st-century skills are developed and utilized effectively and development of policies that support the integration of technology in education and promote digital literacy.

Keywords: *Critical thinking, higher education, problem-solving, skill challenge, 21st-century skills.*

THE ROLE OF INTERACTIVE APPLICATIONS – DISCUSSION ABOUT FLEXIBILITY IN MODERN LEARNING ENVIRONMENTS

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Abstract

Modern learning environments have learning material accessible in a centralized location. They provide large amount of reading material, exercises or learning content in a way that it is available for students anywhere and anytime. This type of flexibility can become a critical factor for learners. As an example, combining work and family with studying can be overwhelming without the flexibility of modern learning environments. Today technology allows access to digital learning material. In addition, there are applications that boost interaction and allow working in groups. Technology can have an important role in integrating students into learning process and helping students in studies during the pandemic. In this article we look at the role of social media applications as part of a modern learning environment. The findings and notions are based on empirical evidence from a case university where studying and digital learning has been the norm already before the pandemic. The learning environment is built on Moodle, but students use also different social media -based applications in studies. We found that social media can bring added flexibility to learning process, it helps in keeping in contact with others. Interaction and collaboration with others can be more straightforward as learning environment and other learners may be contacted directly with each student's smartphone.

Keywords: *Learning, modern learning environment, flexibility.*

INITIAL TEACHER EDUCATION AND THE EMOTIONAL DEVELOPMENT OF TEACHERS

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Abstract

In this paper we draw on the results of a research project that seeks to relate elements of the personal dimension, specifically emotional competences and self-knowledge, as an essential part of rethinking the professional identity of trainee teachers. Currently, there are few studies that aim to contribute to training also in the area of the personal dimension, and very few that do so by focusing on self-knowledge together with the development of emotional competences. Methodologically, we used the biographical-narrative approach, in which we linked self-knowledge, the development of emotional competences and the construction of the teaching identity, specifically its personal dimension, through the use of the life line and narrative accounts. Twenty-one students from the Bachelor's Degree in Early Childhood Education participated, belonging to the same subject, Education for Diversity. The aim was to promote the development of self-knowledge and emotional competences in the training of future teachers and thus contribute to the construction of a professional identity for teachers that takes into account the personal dimension. The methodology used has been a facilitating element, putting at the service of the students the use of narratives as a tool to enable reflection and their own inner transformation. To this end, tools were provided so that students could get to know themselves and become aware of their life history and the beliefs from which they interpret their reality, such as the use of the lifeline and narrative stories. In addition, spaces were created in the classroom to work on emotional competences with the students. Finally, the student's voices were analyzed in terms of the process they were undergoing and the changes they said they had achieved after participating in the project. Their testimonies were collected through focus groups. As main results, we can show that the accompaniment and training that the students received on these aspects was a lever to mobilise internal resources and generate new ones. It also helped them to rethink their future work as teachers. In this sense, the project provides a new perspective on emotional development in the training of future teachers and how to carry out this work with students in higher education. In addition, the project is an innovative approach to education, favored a change of outlook and allowed us to place ourselves in a more humane educational paradigm that enables changes at a personal and social level.

Keywords: *Initial teacher education, emotional development, self-awareness, narratives.*

MACHINE LEARNING PREDICTION OF ACADEMIC PERFORMANCE OF LATIN AMERICAN UNIVERSITY STUDENTS. A REVIEW

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Abstract

Machine Learning (ML) is increasingly recognized as a powerful tool in predicting academic performance, providing essential aid to educational institutions in identifying at-risk students, facilitating timely interventions and enhancing overall student retention. This article presents a systematic review of literature over the past ten years from recognized databases with a particular focus on the prevalent ML algorithms employed in Latin American and Higher Education institutions of alike emerging countries for predicting student performance. This review reveals a significant efficacy of supervised learning models, especially Decision Trees and Neural Networks with accuracy metrics above the 80%. The review showed that the accuracy of the method depends on the quality and features of the student data available to train the model. Last, we list the most common student factors that contribute in these algorithms to predict student performance. There is no general rule to choose which student features must be included, but the literature shows that they may depend on the subject area or the specific predictive purpose of the algorithm.

Keywords: *Neural networks, decision trees, student performance, higher education, Latin America.*

EDUCATION AS A PATH TO CULTURAL COHESION (HISTORICAL ASPECTS OF THE DEVELOPMENT OF THE BULGARIAN DIASPORA IN THE BALKANS)

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Abstract

It is well known that the Balkans were defined in the 20th century as the powder keg of Europe and the related idea that it was from the peninsula that all troubles and wars for the continent originated. And as paradoxical as it is, this thinking about the Balkans still exists today, but - and this is symptomatic - it also characterises the Balkan peoples' understanding of themselves, but also of their neighbours. Balkan history and culture is indicative of cultural diversity, of the birth and development of separate civilizations: Ancient, Christian, Muslim, of the discovery of approaches for rapprochement and coexistence. The geographical space of the Balkans preserves cultural memories of different times and displacements. In fact, the neighbour of the Balkans remains in the category of "Other", regardless of civilisational, values, cultural similarities and intertwinings. The educational system also does not offer sustainable knowledge on the cultural identity of the neighbour, nor are approaches sought to make the cultural heritage created by the neighbour an object of study for a larger group of Balkan peoples. And in relation to this, of historically formed ethnic groups such as the Bulgarian diaspora. The study of the Bulgarian diaspora, its inclusion in the educational paradigms, it turns out, can be used as an example of expanding knowledge both about oneself and about the other, about the neighbor. Through education and particular organizational and institutional forms, cultural interweavings across eras, productive patterns of dialogue and identity preservation can be highlighted. Because, through education, on the one hand, the tribal identity, the memory of the I and the We of the Bulgarian, but also of any other diaspora, is preserved and developed, and on the other hand, the consciousness of belonging to the host country is enriched. The education of the Bulgarian diaspora in the Balkans includes not only the examination of the different forms - normative regulations, types of schools, but also the clarification of historical aspects related to the cultural mechanisms of existence of the Bulgarian diaspora in the Balkans.

Keywords: *Bulgarian diaspora, the Balkans, education, identity, cultural memories.*

MEDIA AND AUDIO-VISUAL TECHNOLOGIES FOR TEACHING ARTISTIC CREATIVITY: A COURSE FOR PRESCHOOL AND PRIMARY SCHOOL TEACHERS

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Abstract

The contribution presents a media-archaeological methodological approach to the device of the narrative and audio-vision for teaching the fundamentals of audio-visual culture. The activity involves the creation of short animated cartoons with sound, based on musical subjects. The originality of this approach consists in not relying on automatic technologies for the realization of the product, endowed with producer-programmed intelligence and its inscribed knowledge, but being based on the deconstruction and reworking of traditional techniques to solicit a conscious, non-immersive approach to the construction of visual and sound, and their mediation technology. The course is based on a modular type of methodology: it involves work divided into a series of successive steps, each of which can be modulated by the teacher: the complexity of the tasks will be managed by the teacher, taking into account the specific age (for example, in the experiences (for example, in our experiences with the last preschool classes, we have replaced writing with voice recording). The educational path we outline here can be successfully applied to classes between the last year of kindergarten and the entire primary school. The activity involves group work; from 2015 onwards, it was developed in teaching laboratories of the Primary Education Science degree course at the University of Turin and partly tested in various schools in the territory, teaching courses of between 40 and 50 hours each. This year, we have notably deepened the media-archaeological approach and addressed the dimension of sound.

Keywords: *Audio-visual media, media archeology, teaching, animation, sound.*

NOUVELLES CARTES PORTUGAISES: A GAMIFIED PEDAGOGICAL APPROACH TO PROMOTE PORTUGUESE CULTURAL AND VISUAL HERITAGE

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Abstract

This paper presents a workshop as part of a week-long event promoting Portuguese design culture among Graphic Design students in the French public higher education system. The workshop aimed to achieve three main objectives: promote awareness of 20th-century Portuguese Graphic Designers, artists, and their work; encourage reflection on the historical and current context of communication artifacts; and foster collaborative design strategies. The overarching goal was to design and produce a contemporary card game. The workshop was designed to be adaptable to various cultural contexts, promoting Portuguese and other cultures. It consisted of three main components: a historical and visual presentation, a cultural and political reflection stimulus, and an iteration-based collaborative design activity. The historical and visual presentation delved into the history and visual repertoire of 20th-century Portuguese graphic artists and designers. This included visual details and cultural/historical insights, stimulating group discussion within the contemporary context. The cultural and political reflection stimulus involved presenting the literary work “*Novas Cartas Portuguesas*” to stimulate reflection and challenge existing social representations and visual stereotypes. The collaborative design assignment centered around the creation of a deck of cards. Each participant was assigned a symbol or card value, and by using visual references, they had to reflect and synthesize these elements into a stencil fit for printing. The manual production of stencils facilitated embodied reflection and continuous iteration, with decisions made and discussed in real-time. The participants, comprising 40 students with diverse backgrounds, designed, developed, and printed their graphics on the same deck of physical cards during iterative feedback sessions, allowing for discussions ranging from technical execution to cultural semiotic interpretations. The final deck of cards became a tool for further discussion, with participants using them to explore the meaning of the graphics and develop a narrative for a card game. Other students were invited to play the game during the final exhibition. Qualitative feedback during the results’ presentation indicated that participants understood the assignment and successfully interpreted cultural values into minimal graphics. The interpretations were validated by their peers, demonstrating the effectiveness of the collaborative and iterative process in addressing cultural and social perspectives in Graphic Design. Overall, the workshop achieved its goals of promoting cultural awareness, encouraging reflection, and fostering collaborative design strategies.

Keywords: “*Novas Cartas Portuguesas*”, *graphic design education, cultural heritage, gestalt, gamification.*

EDUCATIONAL EQUALITY AND PEDAGOGICAL TECHNOLOGICAL TRANSFORMATION OF RURAL SOUTH AFRICAN SECONDARY SCHOOLS

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Abstract

The global COVID-19 pandemic has significantly impacted education systems worldwide, forcing institutions to adapt rapidly to ensure continuity of learning. In the context of South Africa, where educational disparities persist, the pandemic has exposed and exacerbated existing inequalities in access to quality education. This research critically examines the Educational Equality and Pedagogical Technological Transformation of Rural South African Secondary Schools. Recognizing the persistent educational disparities in resource allocation and quality of instruction between urban and rural settings, this study aims to investigate the potential of integrating technological advancements to bridge this gap. The research employs a mixed-methods approach, combining quantitative data collection and qualitative analysis to provide a comprehensive understanding of the challenges and opportunities inherent in education. Quantitative surveys were conducted to assess the current state of educational resources, infrastructure, and academic performance across a representative sample of rural schools. The case study research design was adopted. Concurrently, qualitative methods, such as interviews and focus group

discussions, were employed to capture the nuanced experiences and perspectives of educators, students, and community stakeholders. The study investigated the utilization of pedagogical technologies within the sampled 3 rural purposively selected secondary schools, examining 60 teachers as participants on the extent to which digital tools, e-learning platforms, and interactive media were integrated into teaching practices. Data was analyzed manually, graphs and tables were utilized, and themes were drawn. The findings of this study revealed that Special attention needed to be given to the identified barriers to technology adoption, including infrastructural limitations, teacher training, and cultural considerations. Furthermore, the study the findings revealed that the impact of technological interventions on educational outcomes, evaluating factors such as student engagement, academic achievement, and the development of 21st-century skills was a necessary need in rural schools. The study recommended the efficacy of various pedagogical technologies, which would aim to provide evidence-based technological skills for the implementation of sustainable and contextually relevant solutions to enhance educational equality in rural South African schools. The findings hold the potential to inform policy decisions, guide educational practitioners, and contribute to the ongoing discourse surrounding global efforts to achieve inclusive and quality education for all. This study concluded that the Department of Education takes a relook into education by aligning with national educational goals and considering the unique challenges faced by rural communities to contribute to the formulation of policies that promote inclusive and technology-enabled education.

Keywords: *Educational, equality, pedagogy, technology, advancements.*

EDUCATION, DEVELOPMENT AND GLOBAL CITIZENSHIP: A PROPOSAL FOR TRANSFORMATION, AN EXPERIENCE OF (CO)SOCIAL RESPONSIBILITY IN POLYTECHNIC HIGHER EDUCATION

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Abstract

Education, Citizenship and Development are currently inseparable concepts. Educating for global citizenship is inevitably a responsibility to be assumed in the development of educational practices, especially in Higher Education Institutions that train education professionals. According to Óscar Jara (2016), the contemporary scene is a time and space of multiple changes that prompt questioning about the kind of educational processes we want to foster: those that enable adaptation to change(s), while simultaneously allowing the generation of transformative capacities in those who participate, towards the type of society we aspire to. In the context of modern societies that aim to be open and democratic, HEIs must fully embrace these concerns as a civic and social responsibility that characterizes them, based on the reality that surrounds them. They should demonstrate willingness and commitment to finding solutions to identified problems and be concerned about their impact in favor of a more developed, humane, and supportive society. The ESE/IPSantarém has been on a journey of reflection, action, and research in building a course of action that seeks to adopt and consolidate perspectives and practices that are simultaneously reflective, formative, interventionist, and investigative around Education, Development, and Global Citizenship in Higher Education, particularly in Polytechnic institutions. In this process, we identify a cross-cutting investment in developing actions, projects, and partnerships that involve this mission, within a civic and supportive culture that promotes relationships with communities, social responsibility, and awareness for lifelong learning from a global citizenship perspective. Here, we will share the main objectives and proposals under development in this context, the implications for formative and institutional practices, as well as the new challenges and strategies that have been emerging.

Keywords: *Education, development, global citizenship, social responsibility.*

FOSTERING GENDER EQUALITY AND INCLUSIVITY AMONG LESOTHO'S YOUTH AND MEN: LESSONS LEARNT AND RECOMMENDATIONS FROM UNICEF EVALUATIONS (2018-2023)

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Abstract

In the pursuit of gender equality and inclusivity, this study undertakes a meta-analysis of the five UNICEF Lesotho CO Office Evaluations conducted between 2018 and 2023 in Lesotho. This analysis centralizes on the incorporation of gender-focused educational strategies aimed at engaging men and male youth and evaluates the effectiveness of these interventions in shifting gender norms. The research methodology entails a comprehensive review of the Evaluations, scrutinizing the integration of gender and inclusivity principles within the program's frameworks and the extent of adherence to UNICEF's gender equality and inclusivity mandates. The aim is to understand how educational content and methods have resonated with and influenced male demographics. The analysis importantly illuminates the complex interplay between gender-focused education and the cultural dynamics of Lesotho, spotlighting the pivotal role of inclusivity. It scrutinizes how inclusivity is either fostered or hindered within the context of Lesotho's traditional gender norms. The study considers how these norms may affect the acceptance and integration of gender equality concepts, especially among male participants. It reflects on the effectiveness of strategies aimed at inclusive education, which not only challenge but also aim to broaden and transform the understanding of gender roles in a culturally sensitive manner. This component of the analysis is critical in developing comprehensive educational programs that are not just gender-sensitive but also truly inclusive, considering the full spectrum of gender identities and expressions, and ensuring that every individual has the opportunity to contribute to and benefit from gender equality initiatives. Key findings from the study indicate that while there is progress, important challenges persist, particularly in fully engaging men and male youth in gender equality, and inclusivity promotion initiatives. The study identifies successful strategies that have led to positive changes in gender ad inclusion perceptions, as well as gaps and biases that need to be addressed. The implications of this research are significant, providing actionable insights for policymakers, educators, and development practitioners seeking to develop gender-inclusive educational programs. By distilling lessons learned and offering evidence-based strategies, the paper contributes to a broader dialogue on effective approaches to gender equality education. It underscores the importance of proactive, reflective practices and the transformative potential of education as a tool for social change, setting the stage for a legacy of gender equality and inclusivity. These findings form the basis for a set of robust recommendations aimed at enhancing the gender sensitivity and inclusivity of UNICEF's future educational programs.

Keywords: *Gender equality, male engagement, inclusivity, program effectiveness, UNICEF, Lesotho.*

SHAPING THE TEACHER'S ROLE: NAVIGATING DIVERSE RESPONSES TO DIGITAL TRANSFORMATION IN AUSTRIAN MIDDLE SCHOOLS

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Abstract

In recent years, digital collaboration and communication have significantly impacted the educational sector in Austria. This study focuses on how teachers integrate digital tools with traditional teaching, affecting lesson preparation, classroom dynamics, and communication. Interviews with ten Austrian middle-school teachers revealed a positive attitude towards digitalization, emphasizing the need for well-equipped infrastructure and continuous professional development. The findings suggest that the benefits of digitalization in education outweigh the risks, advocating for ongoing teacher training in digital competencies.

Keywords: *Digital transformation, middle school education, teacher adaptation, educational technology, Austrian schools.*

COMPARATIVE ANALYSIS OF ROBOTICS AND VIRTUAL REALITY IN THE ENHANCEMENT OF SOCIAL SKILLS IN AUTISTIC STUDENTS

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Abstract

Information and Communication Technologies (ICT) have become one of the fundamental tools for improving the learning of students with special educational needs. The flexibility to adapt to the needs of these students makes them a fundamental element in the classroom. In recent years robotics and virtual reality (VR) are increasingly present in educational environments. These are the ITCs best suited to the visual learning characteristics expressed by students with autism. Therefore, the aim of the research is to analyze in which areas robotics and VR have produced improvements. To this end, we have worked with 8 students with autism aged 6-12 years in 11 sessions with VR and 11 with the NAO robot in the period from April to June 2023. To evaluate the improvements of these children, the Denver questionnaire was used, which is composed of 6 dimensions. Data were collected by the investigators and tutors. The informed consent form filled out by the participants' families explained the objectives of the research and the activities to be carried out. The results indicate that subject 6 is the one with the highest percentage of improvement after the application of VR. Reaching 37.50% in expressive communication. In robotics, subject 1 with 29.63% in adult social skills and subject 6 with 37.50% in expressive communication are the most outstanding. When comparing VR and robotics, subject 2 has experienced improvements ranging from 2-4% in the areas of imitation, joint attention, and expressive communication. As future lines of work, the possibility of including automatic algorithms that can measure in real time the improvements in learning developed by autistic students are proposed. This article was supported by the Programa Estatal de I+D+i Orientado a los Retos de la Sociedad del Ministerio de Ciencia e Innovación Español. PID2020-112611RB-I00/AEI/10.13039/501100011033 and the Agencia Estatal de la Investigación.

Keywords: Robotics, autism, virtual reality, joint attention behaviour, expressive communication.

NAVIGATING THE PROVISION OF SUPPORT TO LEARNERS WITH SPECIAL NEEDS IN RURAL MAINSTREAM SCHOOLS: TEACHERS' CHALLENGES

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Abstract

Implementing support to learners experiencing barriers to learning in South African schools, has largely been presented with challenges which increasingly make it difficult for teachers to navigate their provision of support. Thus, the pragmatic realities show that there is a need to identify and combat such challenges. This study investigated challenges experienced by teachers in their attempt to support learners with special needs. The study is underpinned by the social constructivism research paradigm. The study used the transformative learning theory as its theoretical framework. The phenomenological qualitative research approach was employed to explore teachers' challenges in providing support to learners with special needs in mainstream rural schools. Data were collected using focus group interviews, with 36 purposively selected teachers in all 6 schools. The collected data was thematically analysed and interpreted using Braun & Clarke methods. The study discovered the following as major challenges hindering the provision of support to learners with special needs: a lack of teacher competency in managing the diverse learning needs of learners; an inability to improvise amidst the challenge of limited resources; as well as a lack of consistent and thorough training in attending to complex and severe learning disabilities. The study thereby recommended resource allocation, teacher professional development training in aspects relating to supporting learner special needs, strengthening of School-Based Support Team and initiation of collaborative networks, to be in place for the alleviation of the support challenges experienced by teachers.

Keywords: Challenges, mainstream schools, special needs, support, teachers.

SELF-KNOWLEDGE IN THE INITIAL EDUCATION OF FUTURE TEACHERS THROUGH MINDFULNESS AND SELF-COMPASSION

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Abstract

The present research is part of a doctoral thesis and arises from the results obtained in the experience of working the personal dimension in the initial education of future teachers through resilience, emotional education and well-being in the subject Education for Diversity in the Degree of Teachers at the Universitat Jaume I in Castelló (Spain), from the academic year 2020-2021 to the present. Taking into account the results obtained during these academic years, it is relevant to address the importance of self-knowledge from mindfulness and self-compassion in the initial education of future teachers. The main goal of this investigation is to improve the self-knowledge of future teachers through mindfulness and compassion. To this end, it is intended to address the importance of promoting self-knowledge in the initial education of future teachers based on a proposal to develop this dimension of socioemotional education through mindfulness and compassion. For this purpose, an experiential project aimed at future teachers will be designed, implemented and evaluated. Therefore, the sample of the present study is composed of students of the Degree of Teachers of the University Jaume I. The aim is to achieve a representative sample and that the results can be extrapolated to other undergraduate students. To analyze the results, a mixed methodology will be used, structured in two analyses. The first analysis will consist of a quantitative methodology using two questionnaires. The questionnaires will be given to the student participants before and after the intervention in order to make an initial and final evaluation to know the levels of mindfulness and self-compassion. The second analysis will consist of a qualitative methodology based on focus group interviews. The data are analyzed and conclusions are drawn from the results, including proposals for improvement for future interventions.

Keywords: *Self-knowledge, mindfulness, self-compassion, future teachers, experiential project.*

EDUCATION FOR SUSTAINABLE DEVELOPMENT IN FUTURE SPANISH EDUCATION PROFESSIONALS

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Abstract

In today's university, it is essential to incorporate aspects clearly related to inclusion, equality, entrepreneurship, healthy living or sustainability into educational practice. The 2030 Agenda and the Sustainable Development Goals (SDGs) it proposes are a good opportunity to respond to this demand, and they must be included in university curricula. The idea of sustainability should permeate the university education process, especially for future education professionals. They will be the ones who, from the different areas of their professional activity, contribute to the formation of responsible citizens committed to their environment. This paper examines the level of knowledge of future educators with regard to sustainable development and the SDGs. Among other things, it is considered essential to examine their knowledge of what the SDGs are, the areas covered by each of them, the values associated with sustainability and their assessment of the training they have received at university on this subject. In order to do this, a quantitative descriptive study was carried out, using the technique of a survey. An "ad hoc" questionnaire was designed and used as an instrument to collect information from a total of 461 students at the University of Jaén (Spain) in the University Degrees of Primary Education, Early Childhood Education and Social Education. The results show that most students claim to know what the SDGs and the 2030 Agenda are, as well as the values associated with them. In addition, they show a high awareness of the role they should play in their lifestyle and professional future, making them more committed to others, to the sustainable use of resources and to inclusive education, among others.

Keywords: *Sustainable Development Goals, sustainability, undergraduate students, teacher's training, future educators.*

TRAITORS, REALITY SHOW TURNED INSTRUCTIONAL STRATEGY

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Abstract

The Traitors (US) is a popular reality game show on Peacock. This show has over a million views per episode. The purpose is to not getting voted off or 'murdered' by a traitor. The group is split up between Faithfuls and Traitors, except no one knows who is what. The Faithful need to find and vote the Traitors off between they get murdered. If there is a Traitor(s) along the Faithfuls at the end the show then the Traitors will be receiving the whole prize. The concept of this show could be an engaging and effective instructional strategy. It requires all students to be actively engaged in the content along with knowledgeable of the content they are learning. It will challenge students strategic thinking regardless whether they are a Faithful or Traitor.

Keywords: *Instructional strategy, gameshow, strategic thinking, reality television, prizes.*

DEVELOPMENT OF INTERCULTURAL LITERACY IN HIGHER EDUCATIONAL INSTITUTIONS: CHALLENGES AND POSSIBILITIES

Rasa Pocevičienė

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Abstract

The world has always been interconnected, and now even more so. Our actions, attitudes and opinions have a profound impact on others, as do cultural differences that affect each of our perceptions, behaviours, work and learning styles etc. At the same time, we need more tolerance and empathy to understand and accept others, especially those who behave, think and act differently in the teaching/learning process. In this context, the need for intercultural literacy is increasingly relevant. In addition, since intercultural education is a continuous, permanent process that is not always harmonious, self-directed learning skills are very relevant. The analysis of the theoretical and practical discourse once again confirmed the importance of intercultural literacy and self-directed learning competencies - as 21st century competencies - in order to become active citizens who will pursue social justice in communities and around the world (Boutte, 1999). The presentation will be based on a survey and analysis of the experience of the Šiauliai State Higher Education Institution in developing those competencies for our domestic and international students. Analysis of empirical data showed how intercultural literacy and self-directed learning competencies could be developed in formal and non-formal education, what are the positive factors, as well as challenges and problems here, how self-directed learning skills support the development of intercultural competences. The main methodological concepts are based on social constructivism and reconstructivism, which enable critical interpretation of "formed" educational phenomena and understanding them in a sociocultural context. A phenomenological approach favours a dialogue between learner and teacher, which requires a lot of effort and preparation required from the teacher. Humanistic psychology and pedagogy, where education in a democratic community is characterized by "cooperation, participation in the management of educational institutions, social integration, social responsibility and independent learners learning to enjoy themselves freedom, independence and life can take hold. The main conclusions, which were done, are the following: • Theoretical and empirical analysis of the discourse allows us to distinguish some positive factors that could be the basis for more effective development of intercultural literacy. • On the other hand, the development of intercultural literacy is not a harmonious process. This means that it is necessary to continue this in all possible ways, places, aspects and levels, because it is, clear that in a successful situation there are certain challenges and problems.

Keywords: *Intercultural literacy, self-directed learning competencies, higher education, intercultural and multicultural communication, management of teaching/learning process.*

INCLUSIVE POLICIES AND PRACTICES IN THE FIELD OF CONTINUING VOCATIONAL EDUCATION AND TRAINING

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Abstract

This paper aims to present various and good Bulgarian and international inclusive policies and practices in the field of continuing vocational education and training. Due to the financial crisis, EU policy has focused on investing in high-quality vocational education and training to promote smart, sustainable and inclusive growth and tackle high levels of youth unemployment, focusing in particular on promoting work-based learning place, ensuring quality, improving access to vocational education and training, strengthening key skills and professional development of teachers in the field of vocational education and training. The future of vocational education and training (VET) after 2020 will be based on a vision of VET policy promoting inclusion and equal opportunities and contributing to sustainability, social justice and prosperity for all. VET programs should be inclusive and accessible to vulnerable groups, such as people with disabilities, people without skills or qualifications, people from minorities, people with a migrant background and people who have fewer opportunities because of their socio-economic background or area, in which they live. Targeted measures and flexible forms of learning can help prevent early leaving education and training and support the transition from school to work. This paper argues that the new society based on knowledge and digital technologies has the potential to provide access for all citizens to the advantages and benefits it creates. By utilizing methods of bibliographic research, analysis, and synthesis to explore publications on inclusive policies and practices in continuing vocational education and training, and drawing upon the findings, recommendations were developed to expand inclusive opportunities within this field. This paper was developed within the framework of a scientific research project "A model for evaluating the effectiveness and quality of inclusive education, training and lifelong learning" with contract № KII-06-H80/1, funded by National science fund of Bulgaria.

Keywords: *Inclusive education, continuing education, vocational education and training, policies and practices.*

ANALYSIS OF LONG-TERM LEARNING THROUGH GAMIFICATION IN ENGINEERING COURSES

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Abstract

Gamification is an educational strategy to improve the teaching and learning process, based mainly on increasing student motivation. This study describes a teaching innovation project carried out during the academic years 2022/23 and 2023/24 with engineering students from the University of Jaén (Spain). During the first year, a series of gamified activities (quizzes and presentations) were conducted on a selection of topics from different subjects. This allowed analyzing an improvement in students' motivation and self-perception regarding the use of games in class. Subsequently, during the second year, monitoring of the assimilation of units worked on in a gamified way in the previous year was investigated among different groups of students. Specifically, the analysis of results accomplished in the Materials Science and Materials Technology subjects is described, which show a small trend of improvement compared to the control groups that worked on the same units with a classic methodology. However, the extraction of definitive conclusions is conditioned by numerous factors such as the small size of the statistical sample or the different teachers participating in the activity.

Keywords: *Gamification, engineering, students, materials, learning.*

EXPLORING PRESCHOOL TEACHERS' PERSPECTIVES ON THE INTEGRATION OF TECHNOLOGY-ENHANCED LEARNING IN BASIC SCIENCE

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Abstract

The rapid advancement of technology has led to an increased prevalence of digital devices in the lives of young children, who now view these tools as indispensable and valuable components of their everyday routines. Integrating technology-enhanced learning has emerged as a pivotal theme in early childhood education, reshaping the pedagogical approaches in preschool education. Preschool education is a critical stage for fostering foundational knowledge and a curiosity for scientific concepts. The role of technology in facilitating this educational journey has gained prominence in recent years. Therefore, this study explores preschool teachers' perspectives on integrating technology into basic science instruction for young children. This aims to examine preschool teachers' attitudes towards integrating technology in Basic science education and investigate the perceived benefits of technology integration in Basic science education from the perspective of preschool teachers. The study employed a survey approach. The survey used a 4-point Likert scale to elicit information from 63 preschool teachers. Responses from the data collected were analyzed using descriptive statistics, t-tests, and Pearson correlations. The study findings reveal a positive attitude of preschool teachers towards integrating technology-enhanced learning into basic science. The mean score shows the preschool teacher found technology to be a valuable tool for enhancing the learning experience in basic science ($\bar{x} = 3.65$), technology in basic science lessons at preschool can make learning more engaging for young children ($\bar{x} = 3.67$), integrating technology into Basic science education is essential for preparing preschoolers for the digital age ($\bar{x} = 3.46$), and the preschool teacher perceives technology as a valuable resource for adapting my teaching methods to the individual needs of preschool students ($\bar{x} = 3.52$). Furthermore, the findings show a strong positive and statistically significant correlation ($r = .608, p = .00$) between teachers' attitudes and perceived benefits of technology integration in preschool science. Conclusively, the study shows that preschool teachers hold a positive attitude toward integrating technology-enhanced learning into preschool Basic science education and recognize its benefits for student learning outcomes. Based on the result, the study recommends prioritizing professional development for teachers to improve their technological skills and pedagogical approaches and allocating resources for educational technology tools.

Keywords: *Preschool teachers, technology-enhanced, basic science, preschool children.*

EXAMINING PRE-SERVICE TEACHERS' USE OF CODING AND ROBOTICS DURING MICRO-LESSONS IN THE TEACHING OF CONSTRUCTION IN TECHNOLOGY THROUGH PROBLEM-BASED LEARNING

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Abstract

Due to the technological advances of the Fourth Industrial Revolution (4IR), the South African education system revised its existing curricula to include robotics and coding. Such a development demands teachers to re-evaluate their pedagogical approaches to accommodate innovative technologies. However, using recent technology, such as robotics, in classroom activities adds complexity to teachers when engaging learners, as some students are not familiar with this teaching strategy and have limited knowledge of robotics technology. Additionally, meaningful robotics integration requires engaging students in small group activities. Still, interpersonal dynamics come into play, which can influence robotics task outcomes as the equipment is unavailable due to the high cost of robotics kits. Hence, there is a need to develop pre-service teachers professionally. The study explored pre-service technology teachers' integration of robotics technologies when teaching grade 9 structured construction topics. The Technological Acceptance Model (TAM) was used as the theoretical framework to interpret the data and ultimately frame the study findings. Following a qualitative research design, seven final year pre-service teachers enrolled for the Technology Methodology and Practicum module were purposefully selected to participate in the study, of which five participants were enrolled for the Bachelor of Education Degree and two participants for the Post Graduate Certificate in Education at a South African university. Firstly, the participants were

developed on integrating robotics and coding when teaching Grade 9 technology structured construction concepts. The participants then planned and taught micro lessons. For data collection, each participant was observed whilst teaching micro lessons and then interviewed to determine their experiences of the development they received and their planning and teaching whilst integrating robotics and coding. Lesson observations and interviews were recorded in video and audio, respectively. Using Atlas Ti to manage the data, analysis followed a thematic approach, allowing for the identification of common themes and patterns in teachers' practices and experiences. Findings indicate that pre-service teachers acquired effective collaboration and engagement skills with learners, teamwork, and hands-on skills. The teachers acknowledged during interviews that the process not only equipped them in terms of creativity progress and pedagogical practices but also helped them to deepen their subject matter knowledge. As such, this study has implications for policy and implementation since it underscores the importance of developing pre-service and in-service teachers before implementing an innovation in any curriculum.

Keywords: *Coding, Fourth Industrial Revolution, pedagogical strategies, technology, robotics.*

ACTIVE METHODOLOGIES AND SUSTAINABILITY IN INITIAL TEACHER TRAINING: A COMMITMENT TO TEACHING INNOVATION

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Abstract

This research forms part of an innovative teaching experience centered on the practice of active methodologies as strategies for Education for Sustainable Development among future educators. Its objective is to examine the level of knowledge and experience of students enrolled in the Education programs at the University of Jaén regarding active methodologies and the development of competencies for sustainability during their initial training. This initiative aims to contribute to the sustainability of the educational curriculum within the university context. To achieve this goal, it is imperative to incorporate content and methodologies that facilitate the establishment of connections between environmental, social, and economic aspects, as well as the consequences of one's actions on the planet's well-being. This approach to understanding the teaching-learning process places students at the forefront, enabling them to attain competencies associated with social responsibility, collaboration, reflection, and inclusion, thereby aligning with the Sustainable Development Goals. For this purpose, a quantitative, descriptive study was conducted utilizing the survey technique, employing an "ad hoc" questionnaire as the data collection instrument targeted at students enrolled in the Degrees in Early Childhood Education, Primary Education, and Social Education at the University of Jaén (n=461). The results elucidate how students engage in classes where instructors primarily employ methodologies rooted in cooperative learning, self-directed learning, and research (including pedagogical discussions, Design Thinking, Visual Thinking, etc.), as well as methods fostering social awareness (such as debates or Service-Learning). Moreover, they recognize that these active methodologies enhance their creativity, foster autonomous learning, and stimulate their interest and participation in class. Regarding the development of competencies for sustainability, the study underscores how active methodologies promote reflection, mutual respect, understanding of diverse values, problem-solving skills, and the enhancement of comprehension regarding the norms and values guiding our actions, among other aspects. One of the main conclusions drawn from this study is that initial teacher training through active, collaborative methodologies tends to be effective among students. Furthermore, these methodologies serve as practical tools for sustainability education, given the competencies they cultivate, thereby offering quality education that students can subsequently apply in their professional contexts.

Keywords: *Education for sustainable development, teacher training, active methodologies, students, teachers.*

A CONCEPTUAL MODEL FOR EVALUATING THE EFFECTIVENESS AND QUALITY OF INCLUSIVE EDUCATION, TRAINING AND LIFELONG LEARNING

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Abstract

The new information society implies a revolutionary change in the features and possibilities of the educational system. There is a need for learning, the characteristics of which will be activity, productivity, and awareness. This determines qualitative changes both in the attitude towards students and in the educational content and its priorities, the design and technology of education, the educational environment and the role of the teacher in it. The new educational paradigm, the result of the development of education in the conditions of the information society, in the pedagogical aspect is personally oriented and respects the rights of the person and in particular the child, in the didactic aspect it is oriented towards key competences in which transversal skills and metacognition have a dominant role, in a psychological aspect develops thinking and its qualities. This publication aims to present a scientific research project whose main goal is to create a new theoretical model for researching the effectiveness of lifelong learning (LLL) strategies by studying, analysing and evaluating the Lifelong Learning process globally and in Bulgaria in particular, especially when it comes to inclusive education. Testing of the theoretical model through a sociological survey and focus group research will be organized to propose a pilot model for assessing the effectiveness and maturity of the LLL. The methodology applied in the study includes searching and analysing factual information, study of models and good practices and case-studies. This paper was developed within the framework of a scientific research project “A model for evaluating the effectiveness and quality of inclusive education, training and lifelong learning” with contract № КП-06-H80/1, funded by National science fund of Bulgaria.

Keywords: *Inclusive education, lifelong learning, effectiveness and quality, vocational education and training.*

EXPLORING THE SUPPORT NEEDS OF TEACHERS IN INCLUSIVE SCHOOLS

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Abstract

Supporting teachers in inclusive schools is of paramount importance in the South African education system as it helps to enhance education for sustainable development. Supporting teachers also benefits them to get exposure to inclusive pedagogies. Even though teachers have undergone pre-service training, and some also received in-service training, it is apparent that teachers do not receive adequate support to teach in inclusive classrooms. Framed within the Transformative Learning Theory as the theoretical framework, this study sought to explore the support needs of teachers in inclusive schools. By utilising transformative learning theory, the identified support needs may aid in transforming the teachers' frame of reference regarding their teaching practices so that they can transform through the realization of their support needs. The study is entrenched within the qualitative research approach and use the interpretivist paradigm. Interpretivism is preferred because it allows the teachers to construct their own reality of their support needs in inclusive schools. 12 participants from two (2) full-service schools in the Ngaka Modiri Molema District were purposively sampled. Data was generated through semi-structured interviews. Analysis of data was done through Braun's six-step of thematic data analysis method. The findings propose that the teachers in inclusive schools require in-service training and workshops that are continuous. The teaching and learning resources for the benefit of both teachers and learners were also highlighted as the support needs of teachers in inclusive schools. In addition, collaboration with parents and district officials was highlighted as another support needs for teachers working in inclusive education settings. It is recommended that the school management teams, SBST and DBST ensure that teachers are trained continuously on various learner barriers and offer practical skills for completing the SNA1 referral form. Furthermore, it is recommended that SMT and SBST should encourage parents to be involved in the learners' learning.

Keywords: *Inclusive schools, instructional pedagogies, support needs, support services, teachers.*

TEACHING AFFINE FUNCTIONS: EVALUATING THE USE OF GAMES WITH AUTOMATIC FEEDBACK IN GEOGEBRA

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Abstract

This work is an excerpt from doctoral research, in development, and aims to evaluate games with automatic feedback, for the teaching of affine functions, through the GeoGebra software. Using the fundamentals of gamification, which consists of using elements of a game in situations that are not necessarily a game, to promote better learning and improve students' levels of engagement and motivation. Based on Raymond Duval's theory of Registers of Semiotic Representation, it is expected that the student will be able to understand and assimilate the content in order to identify the different types of register of an affine function, such as its textual, tabular, algebraic or graphic form. A workshop was offered to four students of the 9th grade of elementary school of a private school in São Paulo, Brazil, to verify the use of the games and possible improvements that can be implemented according to the feedback of the participants. Such activities will be applied, in the future, with other students, for the collection and analysis of study data. All the games developed have automatic feedback, that is, the student receives feedback from the system after answering a certain question. If the answer is correct, there will be encouraging feedback congratulating for completing the activity. If the answer is incorrect, other feedback, according to each possible error, previously predicted, to provide clues that allow the student to identify his error, make new conjectures and try again to solve the question. In an interview with the subjects of the workshop, two participants reported that they had no previous knowledge on the subject and two others stated that they had superficial knowledge. Of the nine available tasks, seven were successfully solved. The automatic feedback provided allowed the students to progress in the activities, each one at their own level and time, according to the new knowledge they were acquiring. All stated that they enjoyed learning by playing games and that this feature is a fun and different way to study. They claimed that the main difficulty was that they did not know the content beforehand and that some issues they did not know how to solve. It should be emphasized that the activities will be applied to future subjects, such as a diagnostic evaluation after the approach to the content, and that the initial applications will allow new possible improvements.

Keywords: *Gamification, digital technologies, mathematics education, affine function, GeoGebra.*

CHALLENGE BASED LEARNING AND SUSTAINABILITY: ZERO WASTE PROGRAMME APPLIED TO THE UNIVERSITY

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Abstract

Challenge Based Learning (CBL) is an engaging multidisciplinary approach to teach and learn that promotes students to use it and take advantage of technology in their day to day to deal with real problems. The approach is collaborative and hands-on, students work with other students, their teachers, and experts in their communities and around the world to develop deeper knowledge of the subjects, accept and solve challenges, take action, share their experience, and enter into a global discussion about important issues. Based on the problem that we produce twice as much plastic waste as two decades ago, almost half of which comes from OECD countries, and considering that only 9% is successfully recycled, a program called "Zero Waste" is proposed. The objective of the program is to know and analyze the problem that there is with recycling within the University of Basque Country UPV-EHU, specifically in the Faculty of Business and Economics. The initial results showed a lack of recycling among students and teachers, a lack of organization of garbage containers, as well as a lack of specific containers for recycling. Based on the results of the previous year, we propose a second school year focusing our efforts on solving the aforementioned problems.

Keywords: *Challenge Based Learning (CBL), sustainability, University of Basque Country UPV-EHU, Zero Waste programme.*

PHYSICAL THERAPIST STUDENT PREFERENCE OF A PROGRAM-SPECIFIC YOUTUBE CHANNEL FOR INSTRUCTIONAL VIDEOS

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Abstract

Instructional videos are frequently used in physical therapy education, with a recent increase in use since the COVID-19 pandemic and as more hybrid programs develop. Several studies have shown that inclusion of videos in higher education courses improves student learning outcomes. Instructors often use already existing videos from various sites, including YouTube. It can be time consuming to find videos that demonstrate exactly as an instructor would like and research has shown that the content quality and reliability of these videos can be poor to fair. The purpose of this project was to assess student preferences related to instructional videos, and then develop a private YouTube channel with videos created by the program instructors. A needs assessment survey was sent out to 3 cohorts of students who were current or recent graduates of the physical therapy program. The survey determined areas and topics in which students felt supplemental instructional videos would be beneficial to learning. Most respondents felt the implementation of a program-specific YouTube channel would be a valuable resource. Most topics identified for video development were related to skills within the Movement Science, Musculoskeletal, Advanced Manual Therapy, and Neuroscience courses. These videos were developed and edited with the assistance of 3 students working on their doctoral project. Videos were uploaded to the program-specific YouTube channel and their use was initiated within the courses during the past year. Students were provided with links to the videos, and some were embedded into the learning management system for the courses. Students in the graduating class of 2023 completed a survey to assess their use and preferences related to these videos. There was an overall response rate of 81.8%, and of the respondents, 94.4% of them reported using the instructional videos provided in the courses. 76.5% of respondents found the videos with their course instructors to be more helpful than other videos found on the internet and 88.9% of the respondents agreed or strongly agreed that they preferred videos with their course instructors demonstrating skills as compared to other videos. The follow-up survey results showed a strong student preference for the use of instructional videos featuring their own course instructors. These results have led to the continuation and further development of DPT program instructor-featured videos and the use of the program-specific YouTube channel.

Keywords: *Instruction, video, YouTube.*

LEARNING COMMUNITY SCHOOLS IN THE ALENTEJO – ANALYSIS OF INCLUSIVE EDUCATION PRACTICES

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Abstract

The diversity of the school population that currently attends school embraces a great cultural, social, ethnic richness that implies many challenges that need to be addressed effectively, so that all children, without exception, have the right to an (inclusive) education that responds to their (this) plurality. In this context, an inclusive school identifies and overcomes the barriers and obstacles caused by the students' circumstances that difficult their learning and participation in the life of the school and the community in which they live. By promoting and implementing differentiated pedagogical strategies that take into account and respect the singularity and specificity of each student, they can fulfil all their potential, promoting real participation, an increased sense of belonging and school success (Booth & Ainscow, 2002). The INCLUD-ED project, having identified Successful Educational Actions (SEAs) that are universal and transferable to all types of contexts (Flecha, 2015), aims to achieve school success for all, promoting social cohesion. In this process, it transforms schools into learning communities (LC), emphasising family and community interaction and participation as fundamental aspects. The present research has a qualitative nature, based on case studies, and aims to understand how schools which are implementing the

INCLUD-ED project, located in Alentejo/Portugal, operationalise the guidelines for inclusive education. In this study, we used semi-structured interviews, focus groups and observation of SEAs in different contexts. The sample is made up of teachers, family members, volunteers and students, with the objective of understanding the degree of adhesion (and difficulties) in implementing this approach by the educational community. The aim is to find out which SEAs have been implemented, at which levels of education, what impact they have had on the inclusion of all students, on their educational success and learning, and, in general, on improving relationships and social coexistence between all members of the educational community, as well as understanding whether the school is understood as a LC, in the sense proposed by INCLUD-ED, or at what stage it is in this process. We discuss the impact of this approach on children's learning and conviviality in educational community.

Keywords: *Inclusive education, schools, learning communities, INCLUD-ED project.*

TEACHING AND LEARNING

COLLABORATIVE MATHEMATICAL PROBLEM-SOLVING WITH CHILDREN: AN ILLUSTRATION OF SHARED AND SELF-REGULATION IN INITIAL TEACHER TRAINING

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Abstract

This presentation aims to examine the perceptions of kindergarten and primary student teachers regarding shared regulation and its influence on nurturing these skills in children, namely, when solving mathematical problems. We will focus on the first phase of shared regulation, the “preview of the formative process”. This study involved five students pursuing a master’s degree in preschool education and primary teaching, along with the respective groups of children they worked with in internship contexts. Given the qualitative nature of this exploratory study, which involved different methods and techniques – focus groups and training narratives –, data analysis is descriptive and interpretive. The results indicate that students identify facilitating aspects in the shared regulation of tasks, with group support playing a relevant role. They also consider that the kindergarten or the primary teacher can intervene, having an active role in the promotion of these competencies, insofar as they can create conditions for children to learn to solve mathematical problems together.

***Keywords:** Shared regulation, self-regulated learning, training narratives, solving mathematical problems, initial training of kindergarten and primary teachers.*

THE NATURE OF LEARNING TASKS FROM PERSPECTIVE OF CHILDREN FROM MARGINALISED ROMA COMMUNITIES

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Abstract

The Slovak Republic is a country of permanent or temporary residence for many nations and ethnic groups. The dominant language in schools is Slovak and although members of national minorities have the legal right to be educated in their mother tongue, this is not the case. The most controversial group is children from marginalised Roma communities, whose mother tongue is different from that of the majority society. The different living conditions that characterise their environment and the high degree of segregation from the majority affect their cultural experience. When entering institutionalised education, they face failure and misunderstanding. The complex language of school can affect their adaptation to school, as well as their success. Statistics show that these children often repeat the first year of school. Based on these facts, we decided to investigate the nature of language, which, according to sociocultural theory, is a fundamental determinant of a pupil's cognitive development. The object of analysis is the textbooks for the first two years of primary education. We aim to identify the most frequent words in the written lessons and to assess their potential comprehensibility from the perspective of children living in marginalised Roma communities. The results indicate the validity of the basic thesis of the French sociologist Pierre Bourdieu's theory of cultural reproduction. It seems that the dependence of school performance on the socioeconomic situation of the pupil's family, which has been repeatedly demonstrated in PISA measurements, may be related to the inability of the school to adapt the language to the needs of children whose linguistic code is underdeveloped. The research findings provide a basis for the development of an effective language programme for the acquisition of Slovak as a second language and call for the development of a comprehensive national strategy for the language support of children with a different mother tongue.

***Keywords:** Different first language, primary education, cultural reproduction theory, inclusive education, learning tasks.*

THE METHOD FOR INTERPERSONAL COMMUNICATION ENHANCEMENT AND FOSTERING OF RESILIENCE AND EMOTIONAL REGULATION

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Abstract

Psycho-social skills that help a person to integrate into society are emotional regulation, resilience and interpersonal communication competence. Adolescence is a stage of development of these skills through training and education. The goal of our research is on the bases of scientific theory and empirical research assemble psychoeducational integrative methodology for improving interpersonal communication competence, development of emotional regulation and resilience of students and adolescents and apply it in chosen classes. The sample consisted of 367 adolescents. The respondents were filling out questionnaires The Child and Youth Resilience Measure, modified version of Situational Test of Emotional Understanding and a questionnaire of trait emotional intelligence. The results have shown that adolescents in middle adolescence have lower rates of emotional regulation and resilience. The application of educational activities on the sample of 78 adolescents has raised psychological resilience and emotional intelligence of adolescents.

Keywords: *Emotional regulation, resilience, interpersonal competence, integrative methodology.*

EXPLORING FACTORS BEYOND PHONOLOGICAL INSTRUCTION IN PRIMARY EDUCATION

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Abstract

It is well known that explicit metaphonological instruction, particularly in the early years, is essential for reading acquisition. Despite the scientific consensus phonics instruction has not always been implemented in the classroom (Castles et al., 2018). The present explored which factors contributed to reading comprehension in primary education students who had not been taught to read using phonological methods, and hence performed poorly on metaphonological tasks (i.e. below normed expected mean per school year). Ninety-two Spanish students completed two reading comprehension tests (sentence and text level) and several reading skills tests: metaphonology, orthography, superficial and deep vocabulary, morphosyntax and reading strategy. Reading strategy refers to extent to which reading is based primarily on semantic content of words but not grammatical information. T-tests contrasting scores on sentence comprehension with the normed expected scores for each children showed that the students were significantly below the norms, but not classed as having a specific reading difficulty. Correlations showed a strong relationship between scores in the two reading comprehension tests in all the other measures (all $ps < .001$). In a backward regression with sentence comprehension as the outcome variable ($r = .835$), the skills that emerge as predictors are age (21.09%, $p < .05$), reading strategy (28.36%, $p < .01$), morphosyntax (22.69%, $p < .01$), and orthography (23.75%, $p < .05$). A similar analysis on text comprehension ($r = .641$) includes age (31.87%, $p < .01$), morphosyntax (27.24%, $p < .01$), deep vocabulary (23.42%, $p < .05$) and superficial vocabulary (21.70%, $p < .05$). These findings indicate that, even with low scores in the metaphonological tasks, the students' reading comprehension scores increase with age, although they do not reach the expected average reading levels. Performance in the comprehension tests seems to be achieved by students using an alternative mechanism based on the combination of grammatical and semantic information. We would also like to point out the slightly higher relevance of deep vocabulary (quality of the semantic relation between words; see Perfetti, 2007) than superficial vocabulary (number of known words) in text comprehension. In conclusion, in the absence of metaphonology, morphosyntactic-semantic information takes a primary role to advance reading skill. More research needs to be done on this topic, especially in secondary education, where the texts' complexity requires that students activate mechanisms associated with expert reading.

Keywords: *Metaphonology, grammar, deep vocabulary, reading comprehension, reading strategy.*

JOURNEY TO GLOBAL COMPETENCE: TEACHING THROUGH A SUSTAINABLE DEVELOPMENT GOALS LENS

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Abstract

The term 'global competence' has gained prominence in the past 5 years, denoting the comprehensive capabilities essential for students to succeed in a diverse and interconnected world. Educators and scholars alike now increasingly acknowledge the significance of developing learners' global competence, viewing it as a vital component rather than a mere luxury in education. The study aims to investigate how teaching English through the lens of sustainable development goals (SDGs) can enhance students' language learning and global competence. It will commence with a literature review on global competence, exploring its values and significance in the field of education. Subsequently, it will delve into the concept of SDGs and their relevance in education, discussing how SDGs can serve as a valuable lens for teaching and learning. Furthermore, the research will explore practical approaches for language teachers to integrate and leverage SDGs in their teaching practices. This may include collaborative activities such as brainstorming, group presentations, poster making, as well as curation and reflection. Ultimately, the research is anticipated to provide valuable insights for language teachers, enabling them to effectively engage learners in their language learning process while simultaneously developing their global competence.

Keywords: *Global competence, SDGs, collaborative activities, learning effectiveness.*

LANGUAGE USAGE AMONG NOVICE TEACHERS IN PUBLIC SCHOOLS: AN ANALYSIS OF INTERVIEW CONTEXTS

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Abstract

This qualitative study investigated the language usage of nine novice teachers in Early Childhood Education and the initial years of Elementary Education within public schools in the state of Mato Grosso, Brazil. The analysis focused on their use of language during social interactions within interview settings, employing a self-confrontation approach rooted in the Clinical Theory of Activity. Specifically, attention was given to the categories 'activity' and 'task.' According to Falzon (2007), 'activity' refers to what the subject does to accomplish a task, guided by the objective the subject sets based on the task's objective. Souto (2015) defines 'task' as what must be done in a specific work process and situation, emphasizing the rules and objectives established by the work organization. Concerning language use, Bernstein (1996) posits that the regulatory principle of communication involves selecting and integrating relevant meanings, their forms of realization, and the evocative contexts. The distinction in how meanings are selected and integrated does not pertain to cognitive capacity but rather to differences in the rules of recognition and realization used to interpret the context, choose an interactive practice, and craft texts. To analyze language use, teachers were presented with a video lesson they had produced and prompted to respond to two questions: 'Describe the activity you conducted' and 'Describe your task in this class.' In the 'activity' category, it was noted that teachers associate the meaning of 'activity' with content, discipline, objectives, or student characteristics. In the 'task' category, teachers select meanings linked to teaching objectives or student learning. Essentially, the meaning of 'task' can be associated with either the student or the teacher. In summary, within an oral communication context, teachers exhibit varied qualitative approaches in selecting and integrating meanings to interpret the same context. This underscores the need for careful consideration in the realm of language development for teachers, echoing the perspectives of Freire, Vygotsky, and Bernstein, who assert that language is the paramount tool for orchestrating educational processes within schools.

Keywords: *Novice teacher, public school, language.*

ADAPTING THE VALUES ENGAGED, EDUCATIVE EVALUATION FRAMEWORK TO THE EVALUATION OF A COMMUNITY-BASED PROGRAM

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Abstract

The values engaged, educative (VEE) evaluation framework (Greene, DeStefano, Burgon, & Hall, 2006) was originally conceived for, and implemented in, STEM educational contexts. Its emphasis on responsive engagement with the values of equity and social justice, makes it adaptive to other contexts. This article reports on the extent to which the VEE evaluation framework was culturally responsive when applied to an evaluation of a community-based healthy living program for older adults, a minoritized and underserved population. Findings suggest affordances of using VEE in the context of a healthy living program include engaging stakeholders in the evaluation and addressing content, pedagogy, and equity. The framework's key limitation includes lack of attention to organizational capacity. To facilitate its transferability beyond STEM settings to other context, the inclusion of a new element in the VEE evaluation framework, organizational capacity, is proposed.

Keywords: *Values Engaged Educative evaluation, culturally responsive evaluation, evaluation theory, organizational capacity.*

CONSIDERING AUTOMATIC FEEDBACK IN ASSESSMENT FOR MATH LEARNING

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Abstract

In this study, we present the partial results of an ongoing project for teacher training in Portuguese-speaking countries, such as Brazil, Portugal and Cape Verde. The main objective is to identify strategies for evaluation processes using resources with automatic feedback, aiming to contribute to the improvement of students' mathematical learning. Approaching and discussing evaluation implies questioning fundamental aspects of the educational environment, seeking adjustments that improve pedagogical procedures, since the nature of evaluation evolves in methods and purposes, requiring an epistemological change to understand students' "mistakes". Some research pointed that in the evaluation process, especially in the context of learning, the interpretation of students' difficulties in mathematics is identified through the analysis of their "errors". In addition, didactic strategies, such as automatic feedback, are proposed in other studies as an attempt to overcome these difficulties. As it is a study focused on evaluation in mathematics education, the choice of the theoretical framework explores two fundamental areas of research. These include assessment of learning, which takes a comprehensive approach, covering both assessment of learning and assessment for learning. In addition, a theoretical framework is considered, in which assessment in mathematics education is recognized as an essential component in the construction of mathematical knowledge, especially regarding the treatment of errors during the educational process. We believe that the integration of technological resources into the assessment process can contribute significantly to mathematics learning. The involvement of aspects such as automatic feedback makes it possible to make decisions to achieve the objectives proposed in the development of the content. So far, six meetings have been held that indicate, in general, a positive perception of the participants in relation to the potential of automatic feedback in teaching and assessment in Mathematics. They highlight its practical applicability in the development of cognitive skills and in the treatment of errors. Additionally, if teachers have a minimum knowledge to reparametrize the applications built, they can refine the automatic feedback process, incorporating the acquired knowledge into their practice.

Keywords: *Mathematics education, evaluation, automatic feedback, teacher training.*

WORKING WITH PRE-SERVICE TEACHERS: DEVELOPING MATHEMATICS AND SCIENCE RESILIENCE WHILE ADDRESSING MATHS AND SCIENCE ANXIETY LEVELS IN SOUTH AFRICAN SCHOOLS

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Abstract

The current performance of students in STEM subjects has not improved to the desired levels in South Africa. Previous research has demonstrated a strong correlation between the acquisition of mathematical knowledge and individuals' attitudes towards mathematics and physical sciences, as well as their emotional responses, such as experiencing maths/science fear. Over time, compelling empirical data has surfaced, demonstrating that maths/science anxiety has a substantial detrimental impact on mathematical and science ability. Remarkably, several studies have demonstrated that maths/science anxiety may be moderated through mechanisms with students' emotions. However, the suggested interventions have mostly concentrated on learners and teachers rather than pre-service teachers. Hence, there is a need for interventions to address math/science anxiety levels among pre-service teachers. The Self-Determination Theory underpin this study. This study employed action research to design cycles of whole class (n=29) intervention based on three tools designed by Johnson-Wilder and the mathematical network team and the emotional grid to support pre-service teachers in building resilience in math/science as they prepare for fieldwork. Data was analysed through thematic content analysis. The findings revealed that pre-service teachers have math/science anxiety and that maths/science anxiety had a substantial detrimental effect on their proficiency in mathematics/science, aligning with previous research. Furthermore, maths/science anxiety may be successfully reduced through the effective use of emotional tools. These findings suggest a new method of utilising the affective domain in teachers' training in South Africa for educational transformation.

Keywords: *Achievement, coaching, maths/sciences anxiety, pre-service teachers, resilience.*

UNDERSTANDING THE LEARNING SPACE, A REFLECTION ON BLENDED LEARNING IN HIGHER EDUCATION: A BIBLIOMETRIC ANALYSIS

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Abstract

Over the past years, learning in Higher Education was predominantly the traditional face-to-face type of learning. Blended learning has been adopted as the relevant approach to teaching and learning, based on the lesson learned during the COVID-19 period. Blended learning promotes both face-to face and online teaching and learning. Eventually, this means adopting a new learning space in higher education. The concept "learning space" refers to a full range of spaces in which learning occurs: that is from real to virtual learning, and from the classroom to chat rooms. Blended learning necessitates an understanding of the learning space and design, pedagogy and curriculum, and their relation to the learning space. The learning space is critical for the realisation of learning outcomes. Online learning cannot replicate everything of value in the face-to-face experience of learning. The researcher's reflection on the blended learning approach is, therefore, guided by the conceptualisation of learning as acquisition, learning as participation, and learning as knowledge creation. She reflects on trends in blended learning, and this was aided by an extensive literature review that addresses blended learning in higher education, and the bibliometric analysis she conducted. Further, she employed a qualitative methodology and analysed the data, using thematic analysis and the bibliometric analysis. This paper, therefore, discusses both the positive and negative effects of blended learning on students. This study is significant in the sense that it improves lecturers' implementation of blended learning, which would translate into developing essential online and face-to-face learning pedagogy, as institutions of higher learning globally have adopted blended learning.

Keywords: *Blended learning, learning space, teaching, learning, higher education.*

REFLECTING ON NEW PUBLIC-SCHOOL TEACHERS' PRACTICES IN THE PANDEMIC IN BRAZIL

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Abstract

In 2020, the coronavirus pandemic caused the closure of schools and the suspension of in-person classes. To face the new working conditions, teachers were forced to work remotely, transforming their homes into studios for recording video classes and interacting with their students using their private cell phones and internet. Beginner teachers, who did not have extensive experience in face-to-face teaching and training for distance learning, found themselves in a situation of extreme vulnerability. In this context, a question was raised: how do new teachers conduct teaching in pandemic? To answer the question, a research project was carried out, and this article will present its partial results. To analyze teachers' pedagogical practices, nine Early Childhood and Primary Education novice teachers from public schools in the state of Mato Grosso, produced an audio-video class recording, and this material was examined regarding the rules and types of pedagogic practice based on Bernstein's code theory. The author defends the distinction between pedagogic practice as a cultural transporter, and pedagogic practice in terms of what it leads to. In other words, between pedagogic practice as a social form ("how") and pedagogic practice as a specific content ("what"). The present study sought to analyze the pedagogical practice of beginning teachers and concluded that they tend more towards child-centered practices and cultural production (progressive and transformative) than practices centered on content and cultural reproduction (traditional and conservative).

Keywords: *COVID-19 pandemic, beginner teacher, pedagogic practice, visible and invisible pedagogies.*

LEVEL OF PHYSICAL ACTIVITY AMONG UNIVERSITY STUDENTS

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Abstract

Introduction: The contribution focuses on analyzing the level of health-related behavior and identifying risk factors for musculoskeletal health among university students with specific professional orientations in the context of physical activity. The research aimed to determine the level of physical activity (PA), sleep disturbances associated with pain, and motivation for exercise among university students. **Methods:** The study involved 192 physiotherapy students. The level of physical activity was assessed using the International Physical Activity Questionnaire (IPAQ). To determine the prevalence of pain among students, we used the Oswestry Disability Index (ODI), focusing on lumbar spine pain, supplemented with demographic questions. **Results:** In the IPAQ questionnaire, students achieved the following overall physical activity scores: 5 students (2.6%) exhibited low levels of overall physical activity; 30 students (15.62%) exhibited moderate PA, and 157 students (81.78%) were moderately active to highly active. The average time spent sitting among the surveyed students was 306.81 minutes/day. Higher values of high-intensity physical activity were exhibited by male students compared to females, and they also spent less time sitting. Research results demonstrated that the largest proportion of overall PA was achieved through activities related to clinical practice during studies (\approx 3071 METs/week). The average value of overall physical activity among students who reported no sleep disturbances due to pain (n: 148) was 7671.21 MET, while among students who reported occasional sleep disturbances due to pain (n: 44), the average value of overall physical activity was 6628.81 MET. Strong motivation for PA influenced by studying physiotherapy was reported by 29 (15.10%) students, moderate influence by 83 (43.23%). 33 (17.19%) students were engaged in PA before starting physiotherapy studies, and 9 students (4.69%) stated that their motivation for PA was not influenced by their studies at all. **Conclusion:** Students who regularly engage in sports activities tend to perform more diverse types of physical activity. Studies focused on movement and physical behavior reflect young people's attitudes toward physical activity. The expected benefit is gaining lifelong professional competencies among university students that will positively influence their health-related behaviors with the intention of preserving musculoskeletal health.

Keywords: *Education, university students, lifestyle, motivation, physical activity.*

TEACHING AND LEARNING PRACTICES IN HIGHER EDUCATION INSTITUTIONS: WHERE HAS THE THEORY GONE?

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Abstract

Higher Education Institutions (HEIs) are responsible for imparting knowledge to the next generation of change-makers. While knowledge can be gleaned almost instantaneously from the Internet or an AI alternative, many students continue to choose HEIs to solidify and confirm their acquisition of specific skills and competencies. In the recent years, many HEIs have adapted their teaching and learning practices to embrace or at least accept technology in the classroom. With the experience of the COVID-19 pandemic, more technology was hastily implemented and came without directions or, more appropriately, without pedagogical theory. While theories for using technology exist, the focus was on getting courses running rather than matching the theory or tool to the context. As HEIs have returned to campus, there is time for reflection on the choices that were made and the practices that should continue moving forward. This study focuses on the importance of linking theory to instructional practices in HEIs. We expand on teaching theories, learning theories, practical theories, dynamic theories, and even transformational theories. Our study is based on the development of a metro map of teaching and learning, that we created using the data of 4 surveys held at a Business School in Fribourg, Switzerland during the pandemic. This metro map was then used in a scholarly discussion at the SFDN conference (Swiss Faculty Development Network) in 2023, where we got first feedback of 12 faculty-members of HEI's. This survey will be reconducted with all users of faculty training of the HES-SO (University of Applied Sciences and Arts Western Switzerland). Until now, we found that many traditional theories can be named and may be implemented but need to be better aligned with actual practice. In the rush called *emergency remote learning*, faculty members were more interested in tools to use and tasks to do online; theory took a backseat to the daily needs of animating online classes. Back on campus, we continue using tools and creating tasks that lack the theoretical underpinnings. In this paper, we attempt to convince faculty members of the importance of theory for their teaching, student learning, and inclusion of technology moving forward. We offer an interactive map of theories where faculty members of all disciplines and schools can find their route toward lifelong teaching and learning. We can create the classrooms of the future with a foundation of theory, walls of traditional knowledge, and ever-expansive ceilings of possibilities.

Keywords: *Teaching, learning, Higher Education Institutions (HEIs), theory, practices.*

SIMULATION MODELING OF A PRODUCTION SYSTEM

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Abstract

Modeling of production and communication systems is one of the modern trends in technical research, finding great practical application. Studying the features and application of simulation modeling by students in engineering specialties allows them to become familiar with real production tasks and the possibilities for their solution. This paper describes a research task considered in the training of students in the field of industrial production systems. A system made up of two production machines served by one robot is presented. Estimated performance values can be obtained and analyzed based on the results of simulation modeling of the system's performance under certain production conditions. For this purpose, the GPSS programming environment is used. Students are introduced to the programming language, basic GPSS operators, examine an example model or create a simulation model of the system under consideration. The obtained results in simulation modeling provide an opportunity for analysis and search for optimal solutions under set criteria for system efficiency. Solving such tasks would support the engineering training of students and their practical implementation.

Keywords: *Industrial robot, robotic technology module, simulation modeling, GPSS.*

THE CONTRIBUTION OF THE PICTURE BOOK AS AN EDUCATIONAL TOOL TO PREVENT CHILD ABUSE

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Abstract

This study seeks to investigate, analyze and explore the contribution of the picture book as an educational tool to the prevention of child sexual abuse. A distinctive aspect of our empirical research lies in the scarcity of children's books addressing this delicate subject within the Portuguese market. A primary objective of our project is to rectify this deficiency by comprehending the potential of illustrations in effectively communicating and raising awareness about child abuse in society. Initiating the project involved an analysis and collection of data concerning child sexual abuse at both national and international levels. Interviews with support and prevention organizations provided valuable insights into the challenges associated with identifying the problem and sharing information. Our analyses incorporated statistical data, firsthand accounts, and studies on abuse, encompassing methods employed by abusers for manipulation. Building upon this foundation, an exploration of existing children's books dealing with child sexual abuse and other emotionally charged subjects followed. The subsequent project phases concentrated on deciphering the symbolic value of images and the power of illustrations to convey informative and preventative messages. This was achieved through a thorough examination of various illustrated books, their styles, techniques, and interpretative approaches. The practical phase unfolded in five distinct stages: 1) collaborative writing of the textual narrative "Where do secrets live?" with a specialized psychologist, 2) development of the storyboard, 3) creation of illustrations, 4) book design, and 5) prototype development. The narrative crafted for the practical project addresses the common strategy employed by abusers—emotional manipulation through secrecy. The storyline distinguishes between good and bad secrets, illustrating the emotional toll of harboring negative secrets. A central character, the Monster of Secrets, embodies the abusers and their manipulative strategies. The character's visual evolution in scale and complexity throughout the story effectively conveys the lurking danger in each person's shadow. The other book's characters represent diverse children living in varied family structures to underscore that abuse transcends socio-economic conditions. Each child's unique experience with abuse is depicted, allowing readers to empathize and better identify abusive situations. Through visual expression and metaphors guided by specialists and utilizing the codex format's potential, "Where do secrets live?" aims to address different types of abuse, associated emotions, and ultimately inform, prevent, and encourage reporting.

Keywords: *Child Abuse, illustration, picture book, prevention.*

THE CURRENT STATE OF FINANCIAL LITERACY AMONG GRADUATING STUDENTS IN CONNECTION WITH THE EFFECTS OF CRISES

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Abstract

Recently, society has been seriously affected by global crises. These facts also affected students in the final years of high schools and universities. The paper presents the state of knowledge in the field of financial literacy in the research sample with a specific focus on personal bankruptcy and the amount of pension. The survey took place in Slovakia in 2022-2023 and presents statistically relevant results. The conclusions confirm serious deficiencies in the scope of knowledge of financial literacy and in the decision-making process associated with critical thinking. The reason for researching and writing the article is to identify a possible path for education in the area of financial literacy and critical thinking for students entering the labor market and making serious decisions about their future quality of life. One of the suggested features is the development of an application for education in the field of pensions and similar bankruptcy. It should consider competences in the decision-making process in the area of financial literacy.

Keywords: *Financial literacy, education, critical thinking, quality of life, IT resources.*

A PROBLEM-BASED LEARNING APPROACH TO INTRODUCE THE ENZYME INHIBITORS BLIND SCREENING TO UNDERGRADUATE BIOCHEMISTRY STUDENTS

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Abstract

Learning styles based on inquiry, discovery, and problem-based approaches can promote students' problem-solving skills, critical thinking, and self-confidence development. Our Educational Innovation Group TR4BIOCHEM (PIE22-067) is interested in implementing new inquiry-based biochemistry laboratory experiments focused on the last course-chemistry and biochemistry undergraduate students. The high throughput blind screening of enzyme inhibitors, one of the most widely used strategies in pharmacology for the discovery of new drugs, is the subject of a new problem-based learning (PBL) activity developed at the University of Malaga in the last few years. Within the subject "Pharmacological Biochemistry", 4th year-biochemistry undergraduate students must face a situation that resembles the real scenario encountered by a professional working in medicinal chemistry. Working in groups of 4-5 students, and guided by a challenging driving question, students get involved in a meaningful learning process which leads them to propose solutions and carry out the practical identification of acetylcholinesterase inhibitors through enzymatic analysis. The hands-on *in vitro* studies allow students to put into practice in the laboratory much of the knowledge that they have acquired throughout their studies and face, for the first time in some cases, some practical issues such as the reagents selection and protocols optimization. The implementation of this PBL has been very satisfactory in terms of academic performance. As for the students' perception, they appreciate the opportunity to apply concepts in a real-world context, considering that these experiences can better prepare them for their future professional scenarios.

Keywords: *Problem-based learning, drug discovery, blind screening, laboratory experiments, undergraduate.*

ENHANCING DEEP COMPREHENSION IN HIGH SCHOOL STUDENTS THROUGH THE USE OF GRAPHIC ORGANISERS

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Abstract

Reading comprehension is acknowledged by the European Commission as a citizenship right (Recommendation 2006/962/EC) and one of the goals of the 2030 Agenda; however, OECD PISA data show that scores on reading tasks have been steadily declining over the past 15 years, and in 2022 the average reading performance dropped by 10 points, that means half a school year (PISA, 2023). The present project aims to investigate the relationship between the use of cognitive strategies that support students in reading and information processing and deep comprehension of a text, with the aim of guiding the student towards achieving meaningful learning (Ausubel, 1968). Results in a reading comprehension test from a sample of 45 11th-13th graders don't show any difference between a control group with no given material nor instruction and two experimental groups provided with a guided or expert-made map. However, answers from a qualitative self report show a higher cognitive engagement when using a map, and students reported they perceived the use of a conceptual map as beneficial. According to the literature, we hypothesise that graphically visualising concepts may be beneficial when the task is complex, but may hamper learning and comprehension when the task is perceived as easy, since it can add cognitive demand, increasing the students' cognitive load.

Keywords: *Reading comprehension, meaningful learning, visualisation, conceptual map, graphic organisers.*

PHONETICS AND AUDIO-VISUAL HELP TO IMPROVE AND STRENGTHEN THE PRONUNCIATION OF THE ENGLISH LANGUAGE

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Abstract

College English language learners mislearn the pronunciation of some basic words, and the fossilization of these mispronounced words includes the unlearning process to relearn the new correct pronunciation, an avenue for solution is technology. The Internet is regarded as a pedagogical device to develop language teaching and the learning process. This study will use the help of seven internet tools and phonetics as an audio-visual help to improve and strengthen pronunciation. The aim is that students detect incorrectly pronounced words, get students to know seven internet tools, get them to know the differences in pronunciation between American and British English, get them to know and use the methodology of the spaced effect, strengthen memory, retain correct pronunciation, and defeat fossilization, that students learn to learn the correct pronunciation by themselves. This study is quantitative and qualitative, with pre-and post-tests aimed at measuring 42 college learners' pronunciation before and after training which aims to de-fossilized wrongly pronounced sound elements with the help of a doble methodology; Spacing Effect, a memory strategy of reviewing the material multiple times at different intervals to retain the correct pronunciation, and Action Research, aimed at problem-solving that seeks to engender positive change and a participatory process that requires the equal and collaborative involvement. The results show an improvement in learners' pronunciation, a cyclical correction, a more careful awareness of pronunciation, and a recognition between American and British English.

Keywords: *Phonetics, language internet tool, spacing effect, action research, English language pronunciation.*

SKILLS DEVELOPMENT AT THE SCHOOL SUBJECT OF MODERN GREEK LANGUAGE THROUGH DEBATE

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Abstract

This present research treats the importance of debate as a technique of skills development and more specifically communicative and metacognitive skills with students of A class of senior high school at the school subject of modern Greek language. After a brief conceptual clarification of the main motions of the research and a summary based on bibliography of similar researches, the research questions that are expressed concern, from the student's side, about how much debate contributes to communicative and metacognitive skills development by students through their participation in it, and, from teachers' side, the enlargement of their opinion about the importance of debate in the cultivation of the skills mentioned above. This research has been carried out in the school environment of an urban area high school. The sample consists of three philologists who will teach their class twice, one based on their own lesson plan and the other on the researcher's plan, and also of the students who have accepted to participate in this procedure, 59 on the first count and 50 on the second. The research questions are examined via half-structured interviews of teachers, lists of questions that were distributed and answered by students and the observation made by the recording and the transcription of the interviews. The research questions of the investigation prove the positive opinion of the teachers for the debate technique and the experimental method they used to cultivate the communicative and the metacognitive skills during their lessons. In addition, through students' participation, it is obvious that via the debate the cultivation of the skills above is facilitated taking into consideration the classes in which they participated themselves, while even international studies support these conclusions. At the same time, this research contains the comparison between the teaching methods used studying all the issues mentioned above.

Keywords: *Debate, communication skills, metacognitive skills, modern Greek language.*

PRIMARY SCHOOL TEACHERS' TRAINING NEEDS TO MEET THE CHALLENGES OF 21ST CENTURY SCIENCE EDUCATION

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Abstract

In the age of the Anthropocene, ordinary citizens have to make choices and decisions on complex and controversial socio-scientific issues that can have dramatic consequences on both their individual lives and the community's public life. That is why today, more than in the past, science education matters, and in OECD countries, it is compulsory for all students from kindergarten to age 15 or higher. According to the Pisa 2025 Science Framework, a 15-year-old school leaver aspiring to think and act as a responsible citizen should have developed specific scientific competencies that require the mastery of content, procedural and epistemic knowledge in order to be performed. Such an ideal of science education – which implies a certain image of science (epistemological variable), a specific educational task of the school (pedagogical variable), and a peculiar conception of scientific learning (didactic variable) – raises two distinct but related problems, which will be addressed concerning the Italian situation. The first problem concerns how to conceive of teachers' didactic competency in relation to the type of variables mentioned above. The position defended in this contribution is that the epistemological and pedagogical variables are mutually independent but not the didactic variable. Insofar as the choice of what is worth teaching and having students learn is concerned, the latter is constrained by the first two. Embracing this stance entails recognizing that teachers' didactic competency depends as much on their disciplinary expertise as on specific epistemological and pedagogical awareness. The second problem concerns the types of learning at stake. Since the competencies identified by Pisa 2025 are complex long-term learnings, hindered by deep-rooted misconceptions about what science is and how it works, it is necessary to define the goals of science education from the perspective of a vertical curriculum and to identify the specific training needs of teachers of different school orders accordingly. Taking physics education as a case study to explore these issues, a theoretical reflection and operational suggestions are provided for updating in-service and pre-service teacher training, focusing on primary school teachers.

Keywords: *Science education, teacher training, epistemology, physics teaching, vertical curriculum.*

EFFECT OF BELIEF ADHERENCE AND ARGUMENTATION ON BELIEF FLEXIBILITY DURING CHILDHOOD, ADOLESCENCE AND YOUNG ADULTHOOD

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Abstract

Argumentation is everywhere in social life, in debates, controversies, and daily discussions, and the most persuasive individuals are not the most "logical" but those who best justify their beliefs. Indeed, beliefs often bias reasoning and lead to systematic errors called cognitive biases. We rely on an alternative, more "ecological" model than the classical dual-process (Analytic-Heuristic) model; the argumentative theory, in which reasoning would have a primary function – argumentative – (Mercier & Sperber, 2011) and an important role when an individual must justify their beliefs; it would appear afterwards to justify an intuitive response (Mercier, 2008). We want to observe if participants justify their beliefs preferentially with argumentation based on Heuristic or Analytic reasoning. Moreover, when they fail to justify their beliefs, subjects may change their minds thanks to counterarguments (what we call "belief flexibility"); so, in children, adolescents, and young adults, does the way of justifying one's beliefs impact changing one's mind? 78 children (mean age: 11.3 years), 83 adolescents (mean age: 16.89 years), and 88 young adults (mean age: 24.65 years) participated in this study in which measures of adherence and flexibility were carried out, as well as the analysis of the production of justifications of the subjects' beliefs. This study shows that children justify their responses more with Heuristic reasoning because they rely more on their beliefs to understand the world than adolescents and young adults. Furthermore, the effect of age on flexibility is more significant for subjects with Heuristic justification; adolescents who argue their beliefs with "less logical" Heuristic reasoning would question their opinion more than others, while those who

argue Analytically would have a reasoning style more similar to adults. Overall, adolescents revise their beliefs more after exposure to contradictory arguments; they are more likely to change their minds than adults when their reasoning is no longer "strong" enough, whereas young adults are less likely to question their opinions (even if it's not well justified). In other words, adolescents argue as well as adults but are more likely to question their opinion, when necessary, while adults are more "rigid". The END Conference will be an opportunity to present this work, discuss these results in light of reasoning and its development models, argumentative theory, and the implications that these results may have in terms of critical thinking education.

Keywords: *Argumentation, reasoning, beliefs, critical thinking.*

AN ANALYSIS OF GENERATIVE ARTIFICIAL INTELLIGENCE TOOLS USAGE TO ADAPT AND ENRICH SOFTWARE DEVELOPMENT COURSES

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Abstract

The adoption of generative artificial intelligence (GAI) tools has experienced rapid growth and widespread usage, significantly impacting various industries, including software development. Recently, various AI tools and services, commonly based on large language models, have demonstrated significant potential in automatic code generation, code completion, and test case generation, but also more complex refactoring, reverse engineering, and code comprehension in explaining and reasoning the code. These tools work standalone or as extensions into integrated development environments (IDEs) to assist software developers and elevate programming productivity, thus revolutionizing and streamlining the entire software development process. Teaching and conducting programming and software development courses in higher education have often posed various challenges, especially in an online environment with students with insufficient programming experience. In recent years, various education programs in computing, computer science, software engineering, and software development have faced many challenges and have taken diverse approaches to solve them, particularly related to academic integrity and plagiarism detection. However, the recent wide availability and omnipresence of GAI tools and services that are easily used by students for various tasks in software development in an uncontrolled environment outside of a classroom brought another considerable disruption that needs to be addressed. Our research presents a preliminary analysis of the possibilities of using GAI tools and services in programming and software development courses at the undergraduate level at the university of applied sciences in Croatia. Our goal was to elucidate how these tools could enhance students' learning related to software development and motivate them to acquire better programming skills based on practical assignments from the AI-assisted learning process in an ethical and legal way. At the same time, we aimed to mitigate potential risks associated with academic honesty, specifically related to plagiarism and the unallowed use of code generation. We base our research on using these GAI tools to solve individual programming tasks and software development assignments in undergraduate courses. We analyze the applicability of these tools for various programming tasks students need to perform in a responsible way and compare their performance and the level of help they offer, as well as the correctness and accuracy of results. Finally, we summarize the findings of our preliminary analysis of examined GAI tools and services that could be used in undergraduate programming and software development courses to enrich student comprehension and help educators.

Keywords: *Artificial intelligence tools, software development, programming, course, generative artificial intelligence.*

ANALYZING DRUG COMPOSITIONS IN A PROBLEM-BASED LEARNING EXPERIMENT TO STIMULATE UNDERGRADUATE STUDENTS' AUTONOMY

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Abstract

The oversimplification of higher education experimental practices may provoke a lack of confidence among graduates, who do not feel fully prepared to face the situations that they will find when entering the labour market. Our Educational Innovation Group TR4BIOCHEM (PIE22-067) is interested in the implementation of new Problem-Based Learning-laboratory experiences to bring students closer to real situations that they may encounter in their potential job opportunities in an immediate future. Herein, we present a didactic experience carried out with fourth year-biochemistry undergraduate students, within the subject “Advanced Instrumental Techniques” at the University of Malaga. Students, working in groups of five people, adopted the role of analytical chemistry companies, which had to find a solution for a driving question, set in a letter from a pharmaceutical company, interested in the quantitative analysis of a newly developed drug. In this letter, the problem (the quantitative composition of the drug) was issued and the main required specifications for the analysis (sensitivity, accuracy, price, etc.) established. Groups had to search bibliography in order to select the most suitable analytical technique for the analysis, design and optimization of the experimental protocol, including cost estimation and safety considerations. Following the practical implementation in the laboratory, results were presented in a session that simulated a work meeting where the group members assumed a different role in the company organigram. Students, who perceived having gained skills in designing laboratory experiments, felt strongly involved in this project, considering that this experience could be useful for their future careers.

Keywords: *Problem-based learning, biochemistry, analytical chemistry, autonomous work, undergraduate.*

PEDAGOGICAL POWER OF STORY-TELLING IN HIGH EDUCATION TO DEVELOP CRITICAL THINKING

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Abstract

Storytelling is the art of telling stories. It helps to facilitate better communication and connection between humans. In high education this methodological technique helps to keep learners engaged, activate their emotions and make learning more memorable. Besides, stories are easy to remember and facts are to be remembered much better if they are part of the story. Provided that our goal in every communication is to impact the target audience, i.e., change their beliefs, attitudes and behavior, well-structured stories are the most effective vehicle for making impact. From this perspective, using stories as a pedagogical tool in high education provides great opportunities to develop students' critical thinking and reasoning skills which enables them to have better study outcomes. A good story has a transformational effect which helps students to respond positively to teaching. For example, a well-selected and structured case study presented in a narrative format helps students to feel themselves as part of the story and experience characters. Therefore, when students are taught to include the details in their stories that generate additional interest from the audience and provide significant context, they study better and communicate more effectively. Additionally, story-telling works for all types of learners – visual, auditory and kinesthetic. The article will display outcomes of research conducted in high education context in Georgia. More specifically, in teaching areas of business communication, leadership, organizational behavior, academic writing, English language and research methods. The methodological tool of story-telling was employed with the view to facilitate student learning and acquisition, especially, during pandemic times when anxiety and psychological strain were high. Tasks and activities were designed in a way which allowed learners to narrate stories and by doing so get involved in learning. Outcomes demonstrate that students found this method effective for their learning since it helped them to better and accurately remember. In business communication classes it

enabled students to influence the target audience - change their current attitudes, behavior and knowledge. Another element of story-telling being a very effective tool for influence is that stories about professional mistakes and what leaders learned from them are a good possibility to learn. In fact, when students identify themselves closely with stories, they imagine how they would have acted in similar cases. Therefore, they are able to have less risk in various situations. What's most important, with a simple personal story they convey values, offer insights and inspire others.

Keywords: *Story-telling, pedagogical tool, transformational, learner, high education.*

ORGANIZATIONAL ISSUES

RELEVANCE OF STUDENTS' MENTAL HEALTH AND WELLBEING IN HIGHER EDUCATION: A COMPARATIVE CASE STUDY

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Abstract

Mental health and wellbeing of students in European higher education institutions have gained significant attention in recent years, moreover after Covid-19 pandemic. And even though a couple of years have already passed since the pandemic, the current events in Europe and in all the world as well as the problems of mental health and psychological well-being now are no less relevant, which is why it is appropriate to study them. Educational management plays a crucial role in addressing these concerns, as it encompasses various practices and policies that can either support or hinder students' mental health. This study aims execute a comparative case study to explore the relationship between educational management, mental health and wellbeing of European higher education students in two countries: Lithuania and Spain. Research in two countries will enable to validate the methodology and the questionnaire, which could be applied in other contexts also. This survey also enables to assess students' mental health status, levels of stress, anxiety, and depression, as well as their perception of the support services and resources available to them. Comparative analysis of survey responses will provide insights into the variations in educational management approaches and their impact on students' mental health and wellbeing. The comparative case study approach will enable the identification of best practices, effective strategies, and innovative initiatives that positively influence student mental health outcomes. The study's outcomes will inform policy recommendations and provide guidance for higher education institutions seeking to enhance their educational management practices to better support student mental health and wellbeing.

Keywords: *Mental health, wellbeing, higher education institutions, Spain, Lithuania.*

MITIGATING THE MICRO-POLITICAL DIMENSION OF DISTRIBUTED LEADERSHIP IN EDUCATIONAL LEADERSHIP: AN UBUNTU PERSPECTIVE

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Abstract

Distributed leadership has been widely adopted as an apolitical leadership model with little attention paid to its political dimension and its attendant implications. This study explored the inherent dynamics of the grossly overlooked micro-politics within the distributed leadership framework. It offers a novel perspective on conflict resolution anchored in Ubuntu principles. Grounded in the interpretive paradigm, the study employs qualitative methods and draws primarily from secondary data sources. The Ubuntu Theory serves as our conceptual lens with emphasis on its principles of interconnectedness, collective responsibility, and conflict resolution. Rodger's Concept Analysis Research Design (CARD) was employed to depict distributed leadership's fluid and dynamic nature with emphasis on contextual variability. The design also enables us to make sense of the data from academic literature, pertinent texts and theory. The study proposed a framework that can be harnessed to counteract the effects of micro-politics distributed leadership practice. This we believe will empower educational leaders to foster inclusivity, equity and collaborative decision-making. This study contributes to the evolving discourse on distributed leadership by offering a fresh perspective anchored in African philosophy with global implications for educational leadership practices.

Keywords: *Distributed leadership, educational leadership, micro-politics, Ubuntu perspective, conceptual analysis.*

THE CONCEPT OF TASK AND ACTIVITY: AN ANALYSIS OF THE INTERVIEW CONTEXT WITH BEGINNING PUBLIC SCHOOL TEACHERS

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Abstract

This qualitative study investigated the meaning of “task” and “activity” selected by eight beginning teachers from public schools in Early Childhood Education and the initial years of Elementary Education in the state of Mato Grosso, Brazil. The analysis focused on teachers' responses in an interview context, using the self-confrontation technique of the Activity Clinic Theory (Clot, 1990). For data collection, beginning teachers were asked to answer two indirect questions supported by a class video recorded by themselves about a teaching activity. The two questions analyzed here were: “Describe what your task was in this class” and “describe the activity you did”. From an Ergonomics point of view, the task is what the worker is prescribed to do. It is something that is documented on paper. Activity is what the worker actually does. The activity includes the details of everything that is done. (Dengo, 2020). To analyze how teachers read in relation to the meanings of tasks and activities, the study was based on Bernstein's theory (1996), which argues that the regulatory principle of communication involves the selection and integration of relevant meanings, their forms of realization and evocative contexts. In this study, the results indicate that in the 'task' category, teachers confused Task with Activity and Teacher's Task with Student's Task. In the 'activity' category, teachers also confused activity with task and also activity with content. In summary, in an interview context, teachers presented varied qualitative approaches in the selection and integration of meanings to interpret the same context. This overlapping of the meanings of Task and Activity present in the beginning teachers' responses may be the result of their condition as a beginning teacher who is in a situation of permanent evaluation of their performance to guarantee their professional stability. Finally, the study showed that the technique of self-confrontation has its due relevance as it allows the self-analysis of the worker's own work, in this case, of pedagogical practice, as a human activity, by the teacher himself. In relation to this research, it is recommended to replicate the study by expanding its sample so that the results of this investigation can be better verified.

Keywords: *Beginning teachers, task and activity, interview context.*

URBAN LANDSCAPES AS THIRD EDUCATOR: THE CASE OF PALAZZO MICCICHÈ AS AN EDUCATIONAL PLATFORM FOR CO-LEARNING IN NATURE

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Abstract

Reconsidering urban spaces as places of learning is essential to develop a new coexistence between humans and nonhumans. However, traditional urban development models often prioritize economic and pragmatic concerns over ecological considerations, resulting in the degradation of natural ecosystems and a disconnection between humans and the environment. This paper examines the potential of Palazzo Micciché as transformative educational landscapes, aiming to promote sustainable urban development goals through a coexistence between humans and non-humans. The accelerated urbanization process has led to the fragmentation and degradation of natural habitats, exacerbating biodiversity loss and environmental hazards. Ecological sanctuaries as part of ecological corridors emerge as tools for mitigating these impacts by connecting fragmented green spaces, facilitating flora and fauna movement, and providing opportunities for human-nature interaction. Despite their significance, the educational potential of ecological sanctuary remains underexplored. This paper seeks to bridge this gap by investigating how ecological sanctuaries can serve as platforms for environmental education, instilling relational values with nature, and fostering collective consciousness towards environmental preservation. Through an analysis of the experience in Palazzo Micciché, this paper outlines a conceptual framework for understanding the role of ecological sanctuary as educational landscapes in developing new routes for new alliances between humans and nature. In the course of history, man has slowly distanced himself from nature to the point of conceiving

the anthropocentric vision of which we are part. To develop a sustainable future, it is essential to educate the society to new sensitivities and approaches to nature, the urban environment in this context is considered as a third educator. Moreover, the paper examines how to maximize the educational and ecological benefits of ecological sanctuaries, emphasizing the importance of community engagement and participatory processes. Learning, in fact, is an active process. By reconceptualizing urban spaces as intertwined with nature, ecological sanctuaries and ecological corridors offer promising avenues for nurturing harmonious relationships between humans and the natural world. Through education and awareness-building initiatives, these sanctuaries can serve as agents of change, inspiring sustainable behaviors and fostering a deeper appreciation for the interconnectedness of all living beings. Ultimately, the integration of ecological sanctuaries as educational landscape into urban landscapes represents a critical step towards creating more resilient, inclusive, and nature-based cities for current and future generations.

Keywords: *Co-learning, environmental education, ecological sanctuary, nature based solutions, sustainable urban development.*

BEYOND TRADITIONAL METRICS: RETHINKING HUMAN CAPITAL IN SCHOOL LEADERSHIP THROUGH EMOTIONAL INTELLIGENCE

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Abstract

This paper examines the traditional metrics to establish the degree to which emotional intelligence and qualitative instruments are accorded recognition in assessing school leadership effectiveness. Traditional metrics adopt quantitative indices such as standardised test scores, matriculation rates and teacher evaluation scores. They measure effectiveness across various leadership models, including distributed, transformational, transactional, instructional, and shared leadership. However, the weakness of traditional metrics lies in their over-reliance on numerical data - which downplays the qualitative dimensions of leadership. The study adopts Trait Emotional Intelligence Theory (TEI) and Team Emotional Intelligence (TEI) as units of analysis to reconceptualise school leadership assessment. The Integrative literature review was adopted as a methodological approach to make sense of the principles of the adopted frameworks and related literature. It was discovered that emotional intelligence is an essential component in gauging leadership effectiveness. The study reveals that school leaders' emotional composition and their awareness of it impact their leadership effectiveness. We also found that leaders who are aware and sensitive to their teams' emotional configuration engender cohesion, collaboration, and goal attainment. In addition, the role of adaptable qualitative instruments for measuring school leadership effectiveness was underscored. The study proposed an adaptable framework drawing from theoretical exploration and empirical evidence.

Keywords: *Traditional metrics, emotional intelligence, school leadership, human capital, conceptual analysis.*

WORKSHOPS



PROJECTS AND TRENDS

APPROACHES TO ENHANCE TEAMWORK IN HIGHER EDUCATION

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Abstract

Purpose: All employers desire prospective employees who excel in teamwork, leading many higher education institutions to include team projects and activities in their courses. While students are expected to perform well in teams, they are often not explicitly taught how to do so. When students are questioned about stress and pressure related to university studies, teamwork consistently emerges as a significant concern. **Background:** There are many resources and literature on teamwork. However, there is a distinction between reading about it and understanding how to address teamwork challenges constructively for both instructors and students. This workshop aims to equip academics with practical strategies to enhance the quality and impact of teamwork in higher education settings. **Keypoints:** The workshop will be based on a short teamwork program developed to instruct students on how to effectively work in a team. This program includes group bonding exercises, conflict resolution workshops, peer-led teaching sessions, feedback forums, and reflections. Using a Likert scale, student surveys revealed 88% agreement on gaining valuable teamwork skills via the program. **Procedure/Methodology:** The workshop will employ a parallel process model whereby participants will work in teams of 4-6 to apply good teamwork practices from the program as they learn about them through hands-on activities. Through effective teamwork, participants will acquire valuable knowledge and resources to improve the student learning experience and outcomes. **Description of the participants:** This workshop benefits those using or planning to incorporate teamwork in teaching. It can accommodate as many participants as the space allows.

Keywords: *Teamwork, student learning, academic skills, higher education, soft skills.*

SHATTERING CLASSROOM WALLS: FOSTERING GLOBAL UNDERSTANDING THROUGH VISUAL LITERACY

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Abstract

Teachers often seek to push the boundaries of their students' critical thinking skills. As an English instructor, I often do this through a special photography project. In this project, students visit the renowned World Press Photography Exhibition, choose a photograph, and then research the inspiration, context, and motivating force behind their chosen photograph. Through this project, students are empowered to better articulate their perspectives on local and global affairs both orally and in writing, pushing the limits of both their English abilities and their higher-level thinking skills. Students are also equipped with skills, such as Visual Thinking Strategies (VTS) and photography literacy, which they can then use to independently engage with media. These techniques, which can be applied to any topic, make this project suitable for teachers of all classes and subject matters. During my workshop, I will introduce the techniques that students learn in this project. After this, attendees will be invited to apply the techniques to a photograph in a team activity. Finally, attendees will be guided to critically examine the historical, social, and cultural context of their chosen photograph, just as my students do in the photography project. Attendees will also be provided with comprehensive instructions and language scaffolding to facilitate the circulation of this project to their own students.

Keywords: *Critical thinking, visual thinking strategies, TESL, group project, multidisciplinary project.*

VIDEO EDUCATION: ENHANCING ENGAGEMENT AND COMPREHENSION THROUGH COLLABORATIVE MULTIMEDIA LEARNING

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Abstract

1. *Purpose:* This workshop addresses the shift in student learning preferences towards multimedia, focusing on the use of animated videos, discussions, and quizzes to enhance understanding and engagement. Educators are guided to integrate animation effectively, transforming traditional teaching into an interactive learning experience.

2. *Background:* Embracing the Digital Revolution in education, the session empowers participants with the skills to create animated summaries that captivate and educate. It highlights the shift from text-based learning to dynamic, visual engagement, showcasing how this approach can improve comprehension, retention, and enthusiasm for further learning.

3. *Key Points:* Participants will learn to craft animated videos that succinctly convey complex concepts, making learning more accessible and engaging. The workshop covers the principles of multimedia learning, techniques for effective animation, and strategies for aligning these tools with educational objectives to foster deeper student engagement.

4. *Procedure/Methodology:* The methodology combines theoretical insights with practical application. Educators will participate in hands-on activities, creating their animations and related assessments. The interactive format ensures skills are directly applicable, with peer feedback enhancing the learning process.

5. *Description of the Participants:* This workshop invites educators to collaboratively explore multimedia learning by dividing into groups that create, engage with, or compare animated videos to traditional texts. This hands-on approach not only enhances skills in producing educational animations but also offers insights into various learning modalities. It's scalable, accommodating diverse participants, fostering rich discussions, and equipping them with innovative strategies to elevate student engagement and comprehension.

Keywords: *Multimedia learning, animated education, student engagement, instructional design, collaborative learning.*

TEACHING AND LEARNING

EFFECTS OF CRITICAL THINKING IN LITERATURE EDUCATION

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Abstract

The workshop 'Effects of Critical Thinking' provides insight into the subject-taught concept of critical thinking and the impact and effects of using this tool on the thinking process of students in secondary literature classes. The academic skill of critical thinking can be useful in facilitating students to think more deeply about a literary text and the relationship of literature to its social context. By consciously working from an intuitive response towards a reasoned judgement, students experience how critical thinking can deepen their thinking process. In doing so, students consistently reflect on the various thinking steps and the effects that can occur. Critical thinking is a useful tool within literature classes that can enhance a teacher's ability to bolster students in four domains: knowledge about literary conventions, the application of critical thinking as an academic skill, the understanding of the individual thought process and the development of citizenship. After a brief theoretical introduction, participants are asked to read an excerpt from a literary text related to the social issues artificial intelligence and racism. After participants give a primary reaction, a joint analysis of content, narrative style and social context is used to work towards a reasoned judgment. The output of this reflection is then compared with the results of the similar intervention in upper secondary school student cohorts. The workshop's concluding discussion focuses on teacher expectations and the effects of the students' actual thought processes. The workshop is aimed at both researchers and language teachers with a maximum of 25 participants.

Keywords: Critical thinking, literature, citizenship, secondary education.

LEGO® - VOICES AS A PARTICIPATORY, ARTS-BASED DATA GENERATION TOOL

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Abstract

Arts-based data generation tools are inductive methods that are valuable for answering research questions, understanding perceptions and experiences, validating local knowledge, and visualising complex ideas. Traditional data collection assumes that speaking and answering pre-determined questions is a preferred way of gathering knowledge. Participatory researchers are now recognising the value of creating and valuing different forms of data generation and analysis to make participants feel more comfortable, make connections between ideas, and explore emotions and experiences. In this workshop, a maximum of twenty participants will be invited to experience and reflect on a new innovative arts-based data generation approach. LEGO®-voices is a play-based adaptation to the traditional Photovoice technique for generating and interpreting qualitative data. Attendees will receive a prompt to use a variety of random LEGO® bricks and minifigures to conceptualise and build a model to represent their views and experiences of a specifically selected topic. After completing their models, exploring the symbolism of the bricks, minifigures, and colours they used will highlight their reflection and meaning-making. Next, we will collaboratively explore how patterns, colours, and configurations in a combination of models can be coded and analysed to provide meaningful insight applicable to a variety of studies for which qualitative data gathering is used. Not only will participants recognise the value of their own creative expression, but this hands-on workshop will foster a safe, spontaneous environment where participants can explore ideas freely and consider the potential challenges and advantages of integrating LEGO® to enrich their own data-gathering strategies and skills.

Keywords: Arts-based data generation, LEGO®- voices, qualitative research methodology, participatory research.

ORGANIZATIONAL ISSUES

FREE TOOLS FOR USING DATA TO TELL A STORY

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Abstract

It is important to see how data can shape effective decisions, playing a key role in regulatory decisions, statewide policy decisions, programmatic decisions on service delivery and staffing, and even family decisions about program enrollment. For 15 years, the Illinois Early Childhood Asset Map (IECAM) has equipped its users with the necessary tools to harness education and demographic data. Presenters will demonstrate how IECAM uses these tools to present data for its users. Participants will have the opportunity to (1) engage with the storytelling tools, (2) ask questions about education and demographic data, and (3) start talking about how data can connect families, local programs, policymakers, educators, and researchers using readily available online resources. Participants will be able to use their devices (laptops) to interact with open source tools, and they will learn how they can create visualizations to tell the story about their data. Participants also will be able to interact with the presenters, explore the arc of a story, delve into what is needed to tell that story, and gain a comprehensive perspective on the significance of the data. There will be a maximum of 25 participants for the workshop. Anyone interested in using data to tell significant stories is welcome.

Keywords: *Data, education, visualization, research.*

AUTHOR INDEX

Aarset, M.	17	Ben Yaish, D.	100
Abar, C.	139, 145	Bennett, C.	55
Abdushelishvili, L.	154	Benson, A.	48
Abu, S.	48	Ben-Yair, S.	100
Adeyele, V.	125, 136	Berg, L.	19
Aflalo, E.	50	Beridze, M.	57
Agbenyegah, K.	117	Bianco, N.	19
Aguilar Rangel, G.	35	Bin, C.	51
Ajayi, E.	110	Blazquez-Parra, E.	82
Albert, G.	128	Blomniece-Jurāne, B.	23
Aldinah, S.	100	Boateng, S.	99, 109, 146
Alexander, G.	9	Boise, G.	164
Alexander, K.	123	Bologna, V.	123
Alexander, M.	95	Bonnard, L.	95
Allen, C.	18	Borges, M.	79
Amado, P.	129	Botha, C.	163
Amorotti, G.	116	Boulala, A.	91
Andras, M.	79	Bousquet, M.	152
Andreou, L.-V.	89, 91	Braganza-Valera, I.	10
Andrew, K.	94, 164	Braniste, G.	86
Antxustegi, M.	16	Brasil, C.	74
Arias-Blanco, J.	101	Breda, A.	13
Arsovski, S.	33	Britton, G.	33, 37
Asino, T.	115	Broad, J.	95
Athanasiadis, A.	101	Brockmann, P.	35, 40
Auvinen, H.	124	Brûlé, M.	19
Avramescu, E.	82	Bruno, V.	6
Awad, N.	107	Bücker, S.	31
Azuero Isaza, M.	62	Bueno, L.	12
Baiocco, R.	6	Bueno, S.	135
Bakina, W.	57	Buka, A.	111, 129
Balfour, J.	90	Burguera, J.-L.	101, 110
Barahona, P.	52	Busque-Carrier, M.	73
Barboza Junior, J.	37	Buzhashka, B.	112, 128
Barrera, D.	127	Byskov, L.	3
Barrio, I.	16	Cabalín Robles, L.	154
Barros, J.	49	Cabello, P.	52
Bartolf, D.	36	Cadilhe, M.	29
Batelić, A.	59	Cadoni, C.	157
Battaglia, M.	150	Caetano, A.	140
Baumeister, T.	74	Cámara-Estrella, A.	133
Beavers-Forrest, B.	48	Capellini, S.	12, 19, 74, 75, 76, 83, 90, 102
Bejarano-Franco, M.	132	Carballo-Ontiveros, M.	85
Bembich, C.	123	Cardoso, J.	47

Cardoso, M.	19, 76	dos Santos, J.	145
Carrilho, J.	79	dos Santos, N.	19
Carvalho, P.	13	Duda, D.	44, 80
Casanova-Valencia, S.	84, 151	Dudu, W.	115
Cassis, M.	51	Eckes, S.	68
Castañeda-Sortibrán, A.	85	Eliche-Quesada, D.	135
Čekolj, N.	27	Escobedo Peiro, P.	127, 133
Čepić, R.	120	Esculier, M.-C.	95
Chacón Rivas, M.	37	Esperanza Quintero, R.	31
Chasokela, D.	126	Evan-Rifinski, H.	161
Chiang, C.-L.	88, 91	Fadli, H.	47, 162
Christakopoulos, P.	89	Fafner, G.	73, 76
Ciobotaru, G.	53	Feldberg, S.	75
Colaço, S.	130, 142	Felmer, P.	52
Comassio, P.	74	Ferreira, S.	122, 131
Conboy, A.	38	Fey, D.	74
Conley, L.	67	Fiorentino, A.	92
Corsano, P.	116	Fleer, J.	61
Costa, E.	79	Fojcik, M.	42, 50
Covarrubias Carreño, R.	66, 164	Fontaine, R.	152
Csernoch, J.	22, 27	Forgó, N.	44
Csernoch, M.	22, 27	Fox, K.	34
D'Angelo, I.	19	Frade, S.	36
D'Arcy-Warmington, A.	61	Franceschini, A.	150
Daly, M.	95	Fresneda-Portillo, C.	127
Davidson, A.	69	Freudenthaler, L.	44
de Alencar, P.	76	Galán-Martín, Á.	135
de Almeida, M.	145	Gallardo-Vázquez, D.	104, 109
de Graaf, J.	61	García Baldán, M.	127, 133
de Jong, G.	163	García Caballero, M.	150
De Vries, S.	61	García-Zambrano, L.	139
Denchev, S.	83, 128	Geduld, B.	117
Denicolai, L.	128	Gélinas-Proulx, A.	19
Denois, V.	64	Gera, R.	12, 36
Dias, C.	29	Germano, G.	90, 102
Díaz, A.	52	Giaconi, C.	19
Díaz-Pareja, E.	133	Gilhuber, C.	81
Diković, M.	6	Giménez-Dasí, M.	33
Dimitrova, D.	113, 135, 138	Gingras, M.	73
DiSantis, K.	38	Giunti, C.	99
Dlamini, T.	53	Glotzbach, R.	13, 39
Dlavane, D.	45	Gómez Barreto, I.	132
Dobreva, V.	112, 128	González Alriols, M.	16
Dolan, K.	81, 94	González Moreno, A.	154
Donahue, T.	17	González Santamaría, V.	143
Dorceus, S.	8	González-Samaniego, A.	84, 151
Dorgan, V.	87	Gottlöber, S.	20

Gourgoulianis, K.	95	Kasimatis, K.	151
Grigorescu (Pîrvu), F.	102	Katrencik, I.	78
Guidotti, L.	116	Katsarou, E.	91
Gutierrez-Sigut, E.	143	Kerges-Alcantara, G.	90
Haav, K.	58	Khampool, W.	114
Hall, A.	13, 36, 39, 49	Khishfe, R.	15
Hamilton, S.	103	Khoshaba, S.	76
Hanegraaff, S.	61	Kilborn, W.	3, 11
Haralanova, V.	73, 76	Kinney, M.	24
Harding, J.	78	Kirby, A.	18
Hedge, P.	84	Kirilova, B.	23
Heredia Bayona, A.	154	Klettenberg, E.	58
Hernández Sobrino, L.	143	Kob, T.	74
Hernández, C.	31, 62	Korenova, L.	21
Hestbech, A.	3	Kostadinov, C.	148
Hirner, H.	44	Kotsiou, O.	95
Hlinková, Z.	100	Krotký, J.	44, 80
Höfer, H.	31	Kuhl, S.	24
Hofmann, S.	74	Kuperová, M.	149
Hollenkamp, K.	66, 81	Kuzmanovska, D.	25, 60
Hollman, E.	9	Kyte, L.	50
Honzíková, J.	44, 80	La Rubia, M.	135
Høyland, S.-O.	50	Laiho, M.	26
Huang, Y.-C.	66	Lakenen, B.	84
Hudson-Matthew, T.	15	Langseth, I.	42
Hyde, S.	14	Larochelle-Audet, J.	19
Ilić, B.	27	Laskowska, G.	42
Ingaramo, M.	124	Lassalle, C.	64
Invernizzi, E.	157	Lee, H.	88, 91
Isaksson, A.	64	Lenková, R.	147
Ishida, Y.	122	Lépine, F.	73
Ivanova, B.	25, 60	Letina, A.	6
Jacobsson, A.	93, 94	Lewin, T.	100
Jagals, D.	119	Lievens, J.	25
Jama, P.	22	Lightbody, B.	86
Jaumot-Pascual, N.	145	Lima, C.	30
Jentsch, A.	52	Lin, X.	124
Jia, J.	105	Lind, M.-L.	9
Junkin, S.	134	Lindgren, J.	64
Kai, A.	122	Lintilä, T.	41, 59
Kaila, E.	40	Lisnik, A.	149
Kaiser, K.	45	Liu, W.-Y.	56
Kalaitzi, C.	121	Llorent-Vaquero, M.	137
Käpylä, J.	114, 124	Lodes, D.	125
Karampet, P.	89, 91	Lokkila, E.	32, 40
Karan, K.	57	Londoño-Vásquez, D.	60
Karlsson, N.	3, 11	López-Núñez, J.	132

Lorenzo, G.	132	Mende, K.	140
Lothamer, J.	45	Meyer, M.	46, 51
Lotti, P.	99	Midão, L.	79
Lukáčová, E.	147	Mihaljević, B.	153
Luz, F.	49	Miladinovic, I.	43, 44
Mabalane, V.	103	Miočić, I.	34
Machowski, A.	45	Mion, L.	70
Madiba, O.	132	Mitchell, C.	24
Mahlangu, T.	146	Modiba, M.	138
Mahomed, M.	108	Mohottala, H.	45
Majerník, M.	149	Molina-Quintana, B.	84, 151
Majola, N.	112	Mollo, P.	112
Mak, N.	4	Monova-Zheleva, M.	82
Makhalemele, T.	22	Moodley, M.	136
Makhubalo, P.	136	Morando, P.	49
Makhunga, K.	116	Moya García, A.	150
Makris, I.	43	Mpisi, A.	9
Makunye, M.	119	Muckenhumer, C.	43
Malcienė, Z.	106	Müller, M.	131
Malheiro, C.	30, 37	Mussini, I.	56
Mangisoni, B.	24	Muthengi, K.	122, 131
Manuhuwa, D.	61	Nahmad, M.	48, 85
Marais, E.	163	Naldini, M.	99
Marchão, A.	140	Nanwani, S.	46
Marci-Boehncke, G.	8, 31	Necula, G.	54
Marcucci, L.	64	Neethling, M.	65
Marolova, D.	25, 60	Nelson, M.	55
Marstio, T.	59	Nguyen, V.	24
Martín Dominguez, J.	89	Nkosi, N.	103, 108
Martin, D.	45	Nolka, E.	11, 55
Martínez-Martínez, S.	135	Novaković, S.	59
Martínez-Valdivia, E.	137	Nozaki, I.	144, 147, 157
Martins, M.	140	Nuevo-Gallardo, C.	104
Masoabi, C.	126	Nuñez, J.	16
Masri, S.	107		113, 115, 128, 135,
Masson, J.	64	Nusheva, K.	138
Masters, M.	24	Nykvist, C.	42
Masunungure, A.	132, 138	Nykvist, S.	42
Matashu, M.	156, 158	Ochoa-Luna, J.	51
Mateu Pérez, R.	127, 133	Ogegbo, A.	125
Matsuba, R.	122	Oliveira, M.	63
Mavuru, L.	110, 116, 118, 136	Oliveira, T.	140
Mayimele, R.	22	Onaindia, E.	16
Mazur, P.	149	Orlandini, L.	99
McNeill, L.	41, 48	Orságová, M.	142
Melo Ramos, L.	62	Ortega-Tudela, J.	133
Melo, D.	79	Osello, A.	51

Pacheco-Martínez, A.	127	Rodrigues, M.	149
Pais, S.	13, 36, 39, 49	Rodríguez Quesada, A.	150, 154
Papak, P.	120	Rodríguez-Muñiz, N.	101, 110
Papakostas, K.	89	Rodríguez-Quevedo, Á.	132
Papathanasiou, I.	95	Romero-García, J.	135
Patchkoria, N.	57	Romero-Pulido, I.	135
Patrikakou, E.	26	Romero-Rodríguez, J.	132
Peeva, I.	148	Rubira García, R.	156
Pegalajar-Palomino, M.	137	Rubrecht, B.	104
Pennequin, V.	152	Ruchti, W.	55
Perez, D.	30	Ruiz-Roqueñi, M.	139
Pérez-Herrero, M.-H.	101, 110	Russias, C.	64
Pérez-Villarejo, L.	135	Rytilahti, J.	32, 40
Petersen, M.	84	Saieva, F.	157
Peteva, I.	83	Salas, M.	52
Petrovska, S.	113	Salter, A.	106
Pichitelli, E.	144, 147, 157	Samuel, K.	115
Picinini, R.	75, 90	Sánchez, A.	16
Piscalho, I.	130, 142	Sande, J.	50
Pistella, J.	6	Santos, M.	29
Ploder, C.	121, 131	Sarmento-Henrique, R.	33
Poater, A.	63	Sasere, O.	156, 158
Poceviciene, R.	134, 156	Savvidou, C.	123
Pollen, B.	50	Saxena, A.	36
Pool, R.	92	Scarlat, C.	67, 69, 102
Preston, B.	94, 164	Schefer-Wenzl, S.	43, 44
Preston, L.	119	Schlünzen Junior, K.	37
Probst, G.	148	Schlünzen, E.	30
Puksand, H.	9, 58	Schmid, A.	21
Quintanilla, L.	33	Schmuck, V.	121
Radovan, A.	153	Schönrock-Adema, J.	61
Radzeviciene, A.	95	Schötteler, S.	40
Ramaila, S.	108, 118	Schuhbauer, H.	35, 40
Ramírez-Botero, A.	60	Schunemann, S.	74
Rapti, G.	95	Sergeyev, A.	24, 84
Raptis, D.	95	Shapir, B.	100
Rath, M.	8	Silkane, V.	69
Reith, M.	36	Silva, A.	129, 149
Rens, J.	119	Silva, J.	140
Reyneke, M.	45	Silva, T.	139
Rice, M.	48	Sincuba, L.	99, 105, 111, 129
Richards, D.	107	Sincuba, M.	99
Rieksta, R.	4, 23	Siren, K.	88
Ringaceva, A.	25, 60	Sirkemaa, S.	126
Rionero, M.	7, 75	Sivén, S.	41, 59
Robledo Carranza, T.	89	Sivevska, D.	113
Rodrigues, A.	29	Sjödén, B.	79

Škrečková, G.	147	Valenzo-Jiménez, M.	84, 151
Smallwood, J.	18	Vančíková, K.	142
Sofianopoulou, C.	11, 55	Vancu, E.	100, 143
Sousa, A.	39	Varhelahti, M.	26
Sousa, C.	49	Varlami, E.	89
Spanja, S.	33	Vega-Cervera, J.	109
Spiess, T.	121	Vendramin, V.	28
Spieß, T.	131	Venkat, S.	32
Sposetti, P.	75	Veselinovska, S.	113
Spreafico, M.	49	Vidinhas, C.	149
Stragapede, I.	150	Viens, C.	19
Sweany, N.	29	Vietienė, I.	106
Swoboda, A.-K.	52	Virgós-Sánchez, M.	101, 110
Szpunar, G.	75	Vivanco Vargas, M.	35
Sztandera, L.	38	Vukelic, N.	85
Tammemäe, T.	9, 58	Vyas, T.	103
Tan, W.	33	Wang, R.-J.	66
Taufner, B.	44	Warhol, M.	149
Teixeira, L.	130	Watson, S.	17
Teixeira, S.	58	Whiteside, E.	29
Teral, M.	92	Wijenayake, N.	161
Thakur, R.	84	Wildsmith-Cromarty, R.	45
Thomas, D.	66, 81	Woodward, J.	29
Thorvaldsen, P.	50	Worthy, S.	15
Tick, S.	36	Wyatt, S.	106
Tinoca, L.	140	Xaba, M.	67
Tirapelli, D.	83	Xu, C.	144
Toldy, T.	58	Yankova, I.	128, 135
Toma, A.-M.	77	Yankova-Hadzhieva, B.	115, 138
Tomac, L.	120	Yanovych, V.	80
Tomášková, T.	44, 80	Yergeau, E.	73
Tombolato, M.	152	Ytterstad, S.	17
Tomljenović, Z.	59	Žagar, M.	153
Topelberg, N.	5	Zaslona, A.	42
Torres Vargas, J.	150	Zatrochova, M.	78
Trnka, M.	142	Zehetner, A.	28
Trotter, M.	79	Zehetner-Hirtenlehner, D.	28
Trujillo-Aguilera, F.	82	Zizka, L.	148
Tsaliagkou, F.	151		
Tseng, H.	5		
Tshuma, T.	10		
Tsvetkova, E.	83		
Turner, B.	18		
Uddin, M.	41		
Uruba, V.	80		
Uva, M.	130		
Valencia Pérez, L.	35		