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Education and New Developments
(END) 2023**

Book of Abstracts

**Edited by
Mafalda Carmo**

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Mafalda Carmo

World Institute for Advanced Research and Science (WIARS), Portugal

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FOREWORD

Dear Colleagues,

We are delighted to welcome you to the International Conference on Education and New Developments 2023 - END 2023, held in Lisbon, Portugal, from 24 to 26 of June 2023.

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 2023 received 758 submissions, from more than 45 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 279 submissions (37% acceptance rate).

The conference also includes one Keynote presentation by Dr. Omid Noroozi, Associate Professor of Educational Technology, Wageningen University and Research (WUR), The Netherlands. 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 2023), 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

“TOWARDS TRANSFORMATION OF EDUCATION IN THE DIGITAL AGE”

Dr. Omid Noroozi

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(The Netherlands)*

Abstract

The COVID-19 pandemic has forced transformation in educational settings within a short period of time. Such transformation has led to significant changes in our educational settings not only for students and teachers but also for institutions as such. This implies the need for constant innovations within educational programs to prepare our society for dealing with complex and global issues. In such transformation, digital technologies play a key role in today’s classrooms and educational institutions are increasingly developing learning and teaching concepts that rely on the extensive use of such advanced digital technologies. This talk will focus on the key characteristics of transformation in our educational settings in the digital age. Then, the focus will shift towards how to integrate digital technologies in classrooms with particular emphasis on competencies that fit well with the digital age to enhance the process of teaching and learning. It will also focus on the key competencies that are crucial for students to acquire for dealing with complex issues and wicked problems in the digital age. This talk will also provide examples of active teaching methods and how they can be used in classrooms in line with the transformation of education in the digital age. Finally, the outlook of educational settings in the future will be discussed.

Biography

Dr. Omid Noroozi is an Associate Professor of educational technology at Wageningen University and Research, the Netherlands. He explores relations among educational technology, learning, and students’ transformative competence development. His Ph.D. (2013, Cum Laude) and research projects have been the subjects of various papers he has delivered at international conferences and various articles published in peer-reviewed journals. Omid has been a visiting scholar at the University of Michigan, USA, University of Oulu, Finland. He has received various research awards such as the most promising publication award at WUR, the best conference, and journal paper awards, nomination for Jan Hawkins award, and several junior research awards. Omid is now serving as an executive board member of the International Society for Technology, Education, and Science (ISTES), a committee member of the CSCL, Editor-in-Chief for the International Journal of Technology in Education (IJTE), and President and Scientific Chair of the International Conference on Studies in Education and Social Science (ICSSES). He has co-edited a couple of collected books, served as an editorial board member of several scientific peer-review journals, and also guest-edited a couple of special issues in top-rank journals in the field of educational research. Omid is an active member of scientific associations e.g. AERA, ISLS, ICO, EARLI, and serves as an active reviewer for international peer-reviewed journals and conferences.

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ORAL PRESENTATIONS

TEACHERS AND STUDENTS

INEQUALITIES FACED BY INDIGENOUS PEOPLES IN VOCATIONAL EDUCATION AND TRAINING

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Abstract

Vocational Education and Training (VET) is a key social justice sector because it increases graduation rates for students from discriminated groups (Avis et al., 2017; Beicht & Walden, 2015; Taylor et al., 2012; UNESCO, 2016). VET provides rapid qualification to a skilled trade and offers a stepping stone to postsecondary education, in addition to meeting society's workforce needs. Considering the high percentage of Indigenous people around the world who do not have a degree or are unemployed (Australian Bureau of Statistics, 2012; Statistics Canada, 2017; Statistics New Zealand, 2018; U.S. Bureau of Labor Statistics, 2019), VET is a promising avenue to promote graduation and access to employment among them. Nonetheless, studies show that Indigenous people in VET face discriminations that results in inequalities (Beaudry and Perry, 2020; Helme, 2007; Mangan and Trendle, 2010; Lawrence, 2006). This led us to conduct a literature review in developed and colonized countries where there are Indigenous people. To carry out this review, we searched four databases. The keywords used were: Indigenous OR Aboriginal AND Vocational Training OR Vocational Education. A total of 624 peer-reviewed articles published after 2010 was identified, but a subset of 35 articles was selected on the basis of their relevance for our review, taking care to ensure “a degree of analysis and conceptual innovation” (Grant and Booth, 2009, p. 93) by refining the selection of papers several times over (by eliminating duplicates, selecting articles only in English or French, by limiting the review to peer-reviewed articles from Australia, Canada, the United States, and New Zealand, all of which have a VET system with a competency-based educational approach and industry-partnered programs). We conducted a content analysis of the 35 articles selected. For each of the writings, we began by individually reading and coding the papers using NVivo 12 software. The pre-set nodes matched the main characteristics (authors, year of publication, location, objectives, theoretical framework, methodology, main findings) and three types of school inequalities according to the sociology developed by Dhume et al. (2011). These authors identify three types of research on school inequalities according to whether they focus on 1) the entry through the public, 2) the entry through the environment or 3) the entry through the school's action. Our communication will present the results of this ongoing analysis according to Dhume et al's sociology. For example, the literature classified under the public entry focuses primarily on Indigenous social origin as a source of discrimination, minimizing other social affiliations such as being a mother. Those relating to the environmental entry examine the effects of school segregation actions on the indigenous people pathway or that VET programs focus more on government and labor market needs than on those of indigenous students and communities. The writings related to the school action entry analyze the impact of school actions on the construction or deconstruction of inequalities faced by indigenous people.

Keywords: *Indigenous people, vocational education and training, school inequalities, literature review.*

DEVELOPING COMPETENCIES IN SUPPORTING BEGINNING TEACHERS: COMPARING THE RESULTS OF TWO STUDIES IN A MENTORING CONTEXT

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Abstract

Mentoring involves providing professional and personal guidance to an assigned mentee through a supportive and caring relationship. It is one of the most popular strategies to help new teachers cope with and overcome the challenges associated with entering the profession (Gagnon, 2017). However, while some schools do make provisions for mentoring, it can sometimes be done in a haphazard manner (Sewell et al., 2017) notably due to the lack of clarity and structure in the mentoring approach (Ambrosetti et al., 2014).

Furthermore, the responsibilities and skills required of a mentor are not innate: the development of those competencies are imperative to ensure a successful mentor/mentee relationship (Stanulis et al., 2014). Understanding the mechanisms behind the development of a mentor's skills represented the main objective of two Canadian studies. Using Le Boterf's (2011) model of competent action (*agir compétent*), these studies have identified various facilitators and obstacles to the development of mentors' competencies. The first research was conducted with mentors from elementary and secondary school involved in an induction program in Ontario. The second one was conducted with vocational education cooperating teachers that support trainees-teachers in Quebec. Although this context concerns cooperating teachers/teaching trainees rather than mentors/mentees, their relationship is similar to a mentoring relationship since these cooperating teachers support trainees who are already teachers and consequently, colleagues. The two studies focus on describing the overall experience of the mentors in an effort to better understand the mechanisms linked to the development of their mentoring competencies. Experience and competence were therefore the two main theoretical concepts leading these studies. As per methodology choices, simple case study methods were used in both. The set of data used was collected from semi-structured interviews conducted with 11 elementary and secondary mentor teachers in the first study, and 15 vocational education cooperating teachers in the second study. It was followed by the use of a data-driven semi-inductive analysis approach. This communication aims to present the commonalities of those two projects. Competency being an action resulting from the combination of personal resources (knowledge, abilities, qualities, experiences, cognitive capacities, motivation, etc.), environmental resources (databases, books, relationship networks, etc.) and working conditions, this communication also aims to specify the elements acting as facilitators or obstacles to the development of mentors' competencies.

Keywords: *Development of competencies, mentor teacher, cooperating teacher, mentoring skills.*

ARITHMETIC AND ALGEBRAIC KNOWLEDGE IN STUDENT LEARNING OF CONCEPTS

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Abstract

Current research deals with students' arithmetical and algebraic knowledge, with a focus on a conceptual connection, and the relationship between two aspects of knowledge. The content in question is rational numbers, rational equations, and problem-solving in terms of proportion and ratio in grades 7, 8 and 9. The method contains three tests given to 400 students in grades 7–9. Tools for analysis were theories of generalizing arithmetic into algebra (Kieran, 2004), and the relationship between arithmetic and algebra in a conceptual context (Kaput, 2008). Current research shows that student knowledge of algebra and arithmetic often has a limited conceptual connection, and a weak relationship. Their knowledge of arithmetic operations and solving rational equations used to be just procedural, and reliant on formulas learnt in a procedural way, and often mixed up. The study also shows that student procedural strategies for finding formulas suitable for solving the equations, as well as carrying out the corresponding calculations, were often insufficient. The study investigates shortcomings in students' conceptualization of arithmetic operations with rational numbers, and how to apply them to solving rational equations. One reason for this, is lack of continuity in instruction and learning.

Keywords: *Rational numbers and algebra, conceptual knowledge, students' arithmetic and algebraic knowledge.*

TEACHERS AS STUDENTS: DUALITY AS PERCEIVED BY TEACHERS AND ASPECTS OF SELF-EFFICACY IN AN ONLINE ENVIRONMENT

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Abstract

The success of online learning processes is linked to our ability to create strong motivation among teachers taking continuing education classes and teachers in their classrooms. Creating positive feelings and motivation to invest efforts in teaching and learning actions in teachers is depends on fostering teaching practices in areas related to the sense of belonging and feeling secure, self-efficacy and autonomy.

The aim of this study was to identify how teachers perceive their abilities in online environment in different roles: as teachers and as Students

The research was conducted among 48 teachers who participated in continuing education courses given online during the COVID-19 period. The research data were gathered by analyzing validated questionnaires. This research uses mixed methods. We conducted a quantitative analysis that included t-test. Distributions were checked and participants' answers as teachers and as students were compared.

The quantitative analysis shows that participants see themselves differently when answering as teachers and as students as far as related to the potential of an online environment and their ability to cope with it. By the qualitative findings we can see that personal experience positions participants' answers as teachers and as students in different places.

Some of the findings show that the ability to manage a class, promote students' involvement through the using of teaching practices in an online environment and with the appropriate pedagogy are the factors that reflect the degree of the teacher's self-efficacy and lead to constructive thinking that encourages teachers to develop understanding and performance promoting teaching practices.

Keywords: *Self-Efficacy, mixed methods, online environment, teacher functioning.*

THE NATURE OF METACOGNITIVE LANGUAGE AND NETWORKING: DEVELOPMENT OF THE THEORY OF METACOGNITIVE LOCALE

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Abstract

Theoretical developments in education research have established, almost parallel, two strands of theories: theories of networks (e.g., gestalt theory, social network analysis and micro-triad analysis) which explain social interaction among students and theories about meta-cognitive function (e.g. metamemory, metacognition and metarepresentational) which explain the inner workings of the mind. This split between theories (one form focusing on networks and the other on meta-cognition) leaves little room for advancing our understanding of metacognition as a social construct since no theory exists for explaining the relationship between networks and metacognition. In this paper, the author explore four propositions derived from metacognition research to propose a local theory. The four propositions are: (1) metacognitive knowledge, (2) regulation, (3) metacognitive language and (4) networking as constructs of this theory. In particular, the theory of metacognitive locale explains the nature of metacognitive language and metacognitive networks as contextualized in a mathematics education methodology course. Video recordings of lesson study experiences of two groups of final year students were analyzed through social network analysis to visualize their social interaction, and coded inductively to identify specific phrases through which they express their thinking. The results show constructs of metacognition, metacognitive language and metacognitive networking emerge on a social, interpersonal and social-metacognitive stratum which brings the two strands of theories together, thereby narrowing theoretical divide.

Keywords: *Metacognitive locale, metacognitive networks, metacognitive language, local theory, social-metacognition.*

THE EFFECT OF TEACHER'S IMPLEMENTED STRATEGIES ON STUDENTS' TEXT COMPREHENSION

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Abstract

Text comprehension is the key to successful participation in society, and it should be mastered at a sufficient level by the end of basic school. Various strategies should be used to support students' vocabulary and text comprehension at different cognitive levels. The teacher's role is crucial in this process. In order to identify how teachers' strategies affected students' vocabulary and text comprehension at different levels, basic school students were pre- and post-tested, and their language teachers were questioned. In the strategic intervention, the effects of six comprehension strategies were examined. Students' better comprehension was influenced by teaching them to form and answer questions. Comprehension was positively affected by the monitoring strategy. In contrast, the use of summarising the text and improving vocabulary negatively affected students' inferential comprehension. Teacher's proper usage of strategies is essential for promoting students' comprehension skills.

Keywords: *Text comprehension, teaching strategies, intervention effects, basic school.*

BULLYING AS DRIVER OF LOW MATHEMATICS ACHIEVEMENT: SOUTH AFRICAN NO-FEE-PAYING SCHOOLS IN A CHALLENGED CONTEXT

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Abstract

Children in South Africa have the right to quality education free from harm. Still, incidents of school bullying continue to dominate South African news coverage. Creating a safe environment conducive to learning is vital to mathematics achievement (MA). We investigated the association between bullying and Grade 9 MA in South African public institutions that do not charge tuition. In South Africa, ordinary public schools are divided into five quintiles, with Quintiles 1 to 3 being in the most economically disadvantaged (poorest) geographic locations (no-fee-paying schools) and Quintiles 4 and 5 being in the wealthiest geographical areas (fee-paying schools). This study only considers schools in Quintiles 1 to 3 and uses Bronfenbrenner's ecological theory to investigate MA in a less-researched context (Global South) in schools in the most economically disadvantaged locations. We followed a quantitative design with a research paradigm of positivism and a secondary data analysis study design. We analysed Trends in International Mathematics and Science Studies (TIMSS) 2019 data, and, at Grade 9 level, South Africa was second to last in MA. We constructed a multi-level model containing 21 constructs; 20 independent variables (gender, socio-economic status (SES) and 18 bullying variables), with the dependent variable being MA. At learner-level, the unsurprising results were that learners who have been refused to talk to, their family insulted, made to do things they didn't want to do, sent nasty or hurtful messages online, shared nasty or hurtful things or embarrassing photos about them online and physically hurt, performed significantly worse than those where these occurrences happened less frequently. A surprising result is that learners who indicated they had been stolen from or had mean things said about their physical appearance outperformed learners where this was happening less frequently. For these results that seem counterintuitive, we give some suggestions on why this may be the case. At school-level, principals' beliefs concerning the level of severity of intimidation or verbal abuse amongst learners was a significant predictor. Learners must be reminded that there are clear policies that punish perpetrators of bullying. Since e-Learning has grown exponentially over the last two years due to COVID-19, we urge the inclusion of cyber-safety and cyber-protection strategies in all learner-teacher training. From the counterintuitive results, this study challenges deficit views by showing how learners living in disadvantaged areas and in a challenged context resile despite being bullied.

Keywords: *Bullying, mathematics achievement, TIMSS, socio-economic status, challenged context.*

ADOPTING ONLINE LEARNING APPROACHES IN PROFESSIONAL MUSIC TRAINING – THE TUT EXPERIENCE

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Abstract

Having been asked to respond to a question from the Ministry of Education, Taiwan, about whether educational technologies used during the COVID-19 pandemic can serve as a knowledge base and be incorporated as learning tools based on their impacts on music education curricula, what follows are some observations and reflections from the Tainan University of Technology (TUT), Taiwan, about its educators' experiences of teaching live lessons one-to-one and in groups online. The idea put forward is that technology applications reflect an emergent sensibility in music lessons, 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 the ways in which course curricula continue to grow in their range of practices and necessary literacies, pedagogies can be developed in concert with digital technologies to support broader and more cohesive, inclusive, diverse, meaningful, and useful experiences for music students.

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

EXAMINING THE MENTAL HEALTH STATUS OF HUNGARIAN TEACHERS

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Abstract

Research on burnout examines the phenomenon from an individual, interpersonal, and organizational perspective. The individual approach focuses on the examination of personality, with particular regard to personality traits predisposing to the burnout syndrome, as well as the symptoms of burnout appearing at the individual level. The interpersonal aspects refer to the social environment, the relationship between the helping professional and his client. Research on the organizational level emphasizes the particularities of the given workplace, job title, and the organization. Examining the causes of the burnout syndrome, Pines, Aronson, Kafry (1990) revealed three reasons for burnout based on their research with 4,000 people: emotional overload, client-centered orientation and certain personality traits. As a result of these findings, in our research we investigated the psychological immune competence of teachers, because they can be regarded as a particularly vulnerable group, and psychological immune competence is a good coping resource (Vargay et al., 2019). We analyzed the mental health status of teachers (N: 301) from individual and interpersonal aspects in 2022, in Hungary. Based on our results, among the 16 factors of the Psychological Immune Competence Test (Oláh, 2005), they achieved the weakest result in the field of emotional control. We measured weaker results in the areas of challenge/flexibility, inhibition of irritability and social creativity, too. However, their results in the field of sense of coherence and endurance are better. In the mobilizing-creating-executive subsystem, they achieved a much higher value than the standardized average (for Hungarians). In the self-regulating and approach-monitoring subsystems, the results of teachers are similar to the standard average. 92% of the teachers have a positive mindset, but 40% achieved poor results in terms of challenge/flexibility. In the field of emotional control, 20% of them have below average results, which can lead to burnout later. Our results show that among teachers, psychoeducational training can play an important role in preventing psychosomatic illnesses and burnout. Our long-term goal is to device targeted trainings for Hungarian teachers to prevent and alleviate burnout.

Keywords: *Teachers, mental health, psychological immune competence, burnout syndrome.*

TUTORED PRAXIS-SHOCK: TEACHER CANDIDATES' OPINION ON THE MENTAL EFFECTS OF SCHOOL MENTORING

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Abstract

Teacher training is a key element of the quality of the education system. Staying in the teaching career is determined by many factors, however, overcoming the so-called praxis-shock means the first step for beginner teachers. For teacher students, mentoring during practical training is the main support, that is why it is important to know how the triadic relationship between the school mentor, the teacher and the university works. In our heuristic research, interactions between mentors, students and university actors, as elements of the mentoring process were examined (Sternberg, 2016, Ben-Harush & Orland-Barak, 2019). During our research (2021-2022) we asked mentors working in Hungarian teacher training and student teachers who had just completed their coherent teacher training practice. Research was carried out with mixed methods, qualitative (scientific literature exploration, focus group interview in 4x8 groups) and quantitative (self-developed questionnaire based on the results of focus group interviews with 280 mentors and 351 students. In the triadic relationship, the teacher candidate and his developmental process are in the focus. In our lecture we present a segment of the results of teacher candidates: how their professional development and self-efficacy are influenced by the activities of mentor, the organizational support of the school and the communication with the university. The results show that teacher candidates are fundamentally uncertain in assessing the impact of school as a supportive environment (teacher colleagues, leaders), they are rather linked to the person of the mentor. It is surprising that almost exclusively the intensity of the personal relationship with the mentor influences self-efficiency and professional development. The results are important primarily for mentors and schools, because it seems that it depends on them to what extent they can prepare candidates for the mental difficulties of the future career in a kind of "tutored reality shock".

Keywords: *Tutored praxis shock, triadic relationship, self-efficiency, teacher training practice, career change.*

AN ANALYSIS OF THE USE OF SIMULATION CENTERS IN THE TRAINING OF PRE-SERVICE AND NOVICE ENGLISH TEACHERS IN ISRAEL. WHAT MAKES THEM WORK WELL?

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Abstract

Escalating rates of teacher attrition require teacher training programs to consider more contemporary training methods. Adapted from the medical and aviation fields, the concept of simulations is currently making an entry into the world of education. An international pioneer in this venture, Israel already has twenty simulation centers at its universities and teacher training colleges and has more in the planning stages. Through qualitative research methods, this study analyses the factors contributing to their success. It highlights benefits derived by teachers from experiences at simulation centers including, inter alia, heightened self-awareness leading to more successful interactions in the workplace. Numerous benefits, particularly for graduates entering the teaching profession, suggest that simulation center experiences should be necessary inclusions of teacher training programs around the world.

Keywords: *Simulation centers, teacher training programs.*

MENTORING IN TEACHER TRAINING PRACTICE: THE INTERPRETATION OF MENTORS' ROLE IN THE TRIADIC RELATIONSHIP

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Abstract

Teacher training is a key element of the quality of the education system. Staying in the teaching career is determined by many factors, however, overcoming the so-called praxis-shock means the first step for beginner teachers. For teacher students, mentoring during practical training is the main support, that is why it is important to know how the triadic relationship between the school mentor, the teacher and the university works. In our heuristic research, interactions between mentors, students and university actors, as elements of the mentoring process were examined. During our research (2021-2022) we asked mentors working in Hungarian teacher training and student teachers who had just completed their coherent teacher training practice. Research was carried out with mixed methods, qualitative (scientific literature exploration, focus group interview in 4x8 groups) and quantitative (self-developed questionnaire based on the results of focus group interviews with 280 mentors and 351 students. In our lecture we present one segment of mentors: how the role interpretation of mentors is influenced by organizational support, and also by the communication with the student teacher and the university (intensity, content). For the role interpretation of the mentors, we made a scale based on different models, which refer to different elements of the pedagogical process and the relationship with the mentor. Our correlation and cluster analysis also shows that the wide range of role interpretation is influenced by two factors: the intensity of supportive environment and communication with universities, as a result of which not only subject-matter knowledge, but also pedagogical content knowledge got in the focus of mentoring. The intensive communication with candidates results in the strengthening of their mental and emotional support, the strength of the correlation depends significantly on the mentor gender. Based on our results, recommendations may be articulated for each party regarding the triadic relationship: the more intense the communication between the actors and the more supportive the school environment is, the more effectively mentors and teacher candidates can participate in the mentoring progress.

Keywords: *Mentoring in teacher training, triadic relationship, school mentors' role, mixed method.*

WHO ARE YOU? PROFILE OF EARLY CHILDHOOD CARETAKERS AND EDUCATORS

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Abstract

Quantitative research aimed to investigate the professional identity of Early Childhood Caretakers (ECC) enrolled in a professional training program through the Ministry of Education. The training program is an innovative program to increase the professional knowledge of Early Childhood Education staff who have no professional training and are working in the field. The results indicated that the participants had a strong feeling of professional identification based mostly on practical experience. The opportunity to gain theoretical knowledge through a professional training program such as the one in which they are currently enrolled, is expected to increase their feelings of teaching self-efficacy and confidence and consequently improve the quality of interpersonal interactions they provide, and as such to positively affect the development of the children in their care.

Keywords: *Early childhood caretakers, professional training for early childhood, teaching self-efficacy.*

STUDENT TEACHERS' PERCEPTION ON THE USE OF MOTHER TONGUE AS MEDIUM OF INSTRUCTION IN FOUNDATION PHASE

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Abstract

The study investigated the perception of the student teachers in the use of Mother Tongue as a medium of instruction in Grades 1-3 and the perceived problems associated with its use. It also determined the relationship between attitude and age, sex, and place of origin (district). Guided by the Gardner's Socio-educational model (1985), the study collected data through a survey involving 150 student teachers enrolled in Bachelor of Education in Foundation Phase program at Central University of Technology and Free State University. Data were analysed using frequency, mean, mode, and standard deviation. The relationship between variables was determined through the Chi-Square test for independence using SPSS. The outcomes showed that most of the respondents agree that the use of home language as a medium of instruction is good in principle. They believe it would enable teachers to express themselves clearly, and it would also make the lessons interesting to learners. However, some problems associated with its use were also identified, such as: difficulty in translation, teacher's low proficiency in Mother Tongue, learners' low proficiency in Mother Tongue, degradation of English proficiency, and lack of teacher's training in teaching Mother Tongue. Findings further revealed that the place of origin, not age and gender, influences the respondents' perception. The study, therefore, proves that the student teachers, in general, have positive attitude towards the use of Mother Tongue as medium of instruction and are willing to undergo training to be able to teach using the mother tongue.

Keywords: *Perception, student teachers, Mother Tongue, language proficiency.*

A META-ANALYSIS: THE ASSOCIATION BETWEEN RELATIONAL PARENTAL INVOLVEMENT AND STUDENT AND PARENT OUTCOME VARIABLES

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Abstract

This paper shares the results of a meta-analysis on the parental-relational component of parental-involvement and its association with the academic and behavioral outcomes of urban students. This meta-analysis includes 80 quantitative studies. The results indicated that statistically significant effects emerged across students of differences backgrounds, including difference by age groups, race, gender, and nationality. The results were also substantial in the highest quality studies. The significance of these results is discussed.

Keywords: *Parental involvement, parental engagement, relational parental involvement, parenting, academic achievement, academic outcomes, student behavior, family structure, relationships, education.*

BRIDGING THE GAP: FROM CLASSROOM TO CLINIC

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Abstract

Introduction: Students of clinical degrees such as medicine, dentistry, osteopathy, optometry etc. often find that the transition from theoretical lectures and technical practice to patient care in clinics is challenging. The Optometry Department at Hadassah Academic College Jerusalem designed a workshop called "Introduction to Patient Care" in order to bridge that gap. This workshop is given to second year students in the second semester, before they begin their clinical rotations at the start of their third year. The workshop has a maximum of 14 students who meet weekly for 13 weeks. The learning outcomes of the workshop are to develop communication skills, to implement self-reflection and critical thinking, to gain experience in analysing a clinical case, to formulate an evidence based (EBP) plan, and to advance the student's self confidence in a clinical scenario. The workshop uses the following active-learning pedagogical methods: Role play, Peer Assessment, Team Learning, Case Based Learning. *Methods:* To test the learning outcome of self-reflection, the Groningen Reflection Ability Scale was administered before and after the workshop to evaluate the impact of the workshop on the student's ability to reflect. The anonymous questions explore the ability of self-reflection, empathic reflection, and reflective communication using 4-point Likert scale (1=strongly disagree, 2=disagree, 3=agree, 4=strongly agree). The overall range score is 18-72 points. The overall score as well as each reflection type's score were calculated. The Mann-Whitney test was used to compare the scores before and after the workshop. We added open questions that required the students to present their position in specific types of reflection that were thematically analysed. *Results:* 104 students were recruited for the study. 97 students responded before the workshop and 101 at the end of the workshop. The overall score showed significant improvement before and after the workshop respectively (58.06 ± 7.25 and 59.73 ± 6.74 , $p < 0.05$). In addition, a trend was seen in scores of self-reflection, empathetic and communication reflections but this did not reach a significant level. The open questions show that the workshop may trigger student's thinking about the importance of self-awareness, an empathetic approach and good communication skills. *Recommendations/Conclusions:* We recommend the implementation of workshops of this kind in other clinical degrees. The workshop helps to develop self-reflection and interpersonal/communication skills of the student. Future plans include evaluation of the other learning outcomes.

Keywords: *Role play, reflection, case based learning, team learning.*

UNIVERSITY LECTURERS' EXPERIENCES WITH TECHNOLOGY INTEGRATION INTO TEACHER EDUCATION POST COVID-19 PANDEMIC

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Abstract

In this study, technology integration into teacher education post COVID-19 pandemic was explored from the perspectives of lecturers from selected Southern African universities. The study used a qualitative research approach and a multiple case study design. Two Southern African universities, in South Africa and Eswatini, the researchers' places of work, were conveniently chosen to be the research sites in this study. A purposeful sample of lecturers involved in teacher education participated in this study. Data were generated through, open-ended questionnaire completed by nine lecturers, and a focus group discussion with 12 participants, which included lecturers from both institutes. Thematic analysis was used to analyse the data collected from the study's participants. The study's conclusions show that lecturers from both universities experienced a change in instruction delivery compelled by the prevailing COVID-19 pandemic which made the physical environment in universities not suitable for face-to-face but online instruction where technology had to be integrated into teacher education. The study concludes that lecturers experienced a new norm as universities formed policies to ensure that technology is included in teacher education. The study also concluded that lecturers had limited knowledge, pointing to the need for training on the needed knowledge domains to integrate technology into teacher education. The study also concludes that the universities under study offered some digital gadgets and internet connectivity for lecturers to using,

especially while on campus. However, internet access would be limited when lecturers leave the campuses, with institution A failing to provide data for off-campus use while institute B did so, but load-shedding was one of the problems in the nation where institute B is located.

Keywords: *Lecturer, technology integration, teacher education, university, COVID-19 pandemic.*

PRESERVICE LIFE SCIENCES TEACHERS' CONCEPTUALISATION OF GENDER EQUALITY IN THE CLASSROOMS

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Abstract

Gender equality has become a rhetorical phrase in today's modern societies where women are challenging the societal gender stereotypical practices particularly in the African context. Such vibrancy however is not evident in research to provide empirical evidence of how issues of gender equality can be promoted in different fora. The school context is an ignored stakeholder considering that schools are extensions of the lives in the homes and communities, yet this is where the future leaders are developed. In Life Sciences (Biology), there are topics which could be used as opportunities for teaching gender equality to the young learners. The current study sought to determine how preservice Life Sciences teachers conceptualised gender equality and the need for teachers to be gender sensitive. A questionnaire with only three open ended questions was administered to 90 pre-service teachers (50 enrolled for a Bachelor of Education and 40 enrolled for Postgraduate Certificate in Education) as a google form. The questionnaire sought participants' understanding of what gender equality in the science classrooms entails, topics that invoke gender issues, and reasons for the need for teachers to be gender sensitive when teaching such concepts. This information was pertinent as the lecturer (researcher) planned to introduce gender responsive pedagogy as a theme in the following year's module. Through deductive and thematic analysis of the data collected, three themes emerged: 1. Preservice teachers' understandings of what gender equality entails is based on their sociocultural practices and beliefs; 2. Gender equality issues arise from topics that evoke emotions in the Life Sciences classrooms; and 3. Teachers of Life Sciences have a duty to protect and embrace every learner despite their differences. The findings also revealed that there were preservice teachers who declined to give responses to the questions. When quizzed outside the lecture, two participants (separately) pointed out that such a topic is sensitive to them, and they declined to elaborate. Based on the findings, the researcher surmised that such a topic cannot be brought into the classroom without preparing the participants emotionally as previous experiences or encounters at home or in society may interfere with open mindedness to learn. The findings provided an important basis for further research and for teacher development.

Keywords: *Gender equality, Life Sciences, pre-service teachers, teachers' conceptualisations.*

MOVING HIGH STAKES ASSESSMENTS TO DIGITAL PLATFORM IN SOUTH AFRICA

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Abstract

Student success is critical in higher education. Measuring student success in higher education comprises of student support for retention, achievement and throughput, and to ensure employability of students. In addition, it can also be viewed through the important lens of transformation, equality and diversification. In South Africa the National Benchmark Test was developed to ensure that student was ready for university and through a diagnostic analysis it is able to provide an early warning system. The assessment has always been a pencil and paper format, however the sudden shift during the 2020 pandemic, from contact to remote digital learning platforms brought about unique challenges to the South African (SA) education landscape forcing learners into unfamiliar pathways. Similarly, the facilitation of assessments via online platforms presented new, uncharted challenges. The purpose of this technical research paper is to document the

digitisation project from a paper-based test to an Online perspective and describe the @NBT Online system migration from a project and technical management perspective. Consultations were held with stakeholders to brainstorm possible solutions that would assist the Centre for Educational Assessments in responding to the global pandemic which led to a partnership with Territorium Life. Territorium had an online platform known as EdTest-AI, a software as a service (SaaS) solution, which combined proprietary software that uses Microsoft Azure Cognitive Services, Azure App Service, and Azure Database for My Standard Query Language (SQL) to deliver remote test proctoring, including verifying student identity and monitoring the room during an assessment. The digitisation of the NBT assessment was initiated on 1 June 2020 and completed by 12 July 2020, thus taking a total of 35 days to complete with the first pilot @NBT Online successfully administered on Saturday, 25 July 2020. The cost-effective and innovative SaaS approach implemented for this project is the first of its kind to be used in South Africa. Taking a high-stakes assessment digitally allowed the Centre for Educational Assessments' department to expand the types of services, reports, and products offered. Thus, this project is envisaged to support the departmental and institutional plans in highlighting the needs that require innovation, new approaches, new service models and the adoption of new and emerging technologies.

Keywords: *Assessments, digital platform, innovation, technical report.*

PHYSICAL EDUCATION STUDENTS' INTENTION OF USING THE SPECTRUM OF TEACHING STYLE IN THEIR FUTURE WORK

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Abstract

The spectrum of teaching styles in Physical Education is essential to achieve teaching goals and to increase students' motivation and their adhesion to physical activities and sports. The purpose of this study was to examine physical education university students' intention of using the spectrum of teaching styles according to their academic level and year. This research followed a quantitative descriptive methodology using a survey with a standardized procedure for collecting data via questions to the participants. Questionnaire based on students' beliefs about teaching styles. The sample was made up of 667 Spanish physical education university students (77.8% men and 22.2% women, aged from 18 to 30). A descriptive analysis (mean and standard deviation) and an inferential statistical analysis were carried out using different tests (Student's t test and ANOVA). The results of this investigation show that in general students prefer to use reproductive styles (3.24 ± 1.53) rather than productive styles ($3.10 \pm .55$) in their future work as physical education teachers. The guided discovery and divergent production styles receive higher scores than other teaching styles, both of them are included in the productive styles cluster (student-centered learning). The level of academic studies (Master's degree students or Degree students) influences the intention of using reproductive styles ($t_{(50.481)} = -2.025, p = .04$) and productive styles ($t_{(47.997)} = -1.935, p = .05$). Furthermore, the year of studies they are currently in also influences the intention of using reproductive styles ($F_{(4)} = 2.732, p = .02, \eta^2 = .01$) and productive styles ($F_{(4)} = 9.743, p = .00, \eta^2 = .05$). The intention of using guided discovery, learner-designed, self-check and divergent production styles increases with the years of study. On the contrary, the intention of using the most traditional styles (command and practice) decrease with the years of study. These findings illustrate the future physical education teachers' intention of using the teaching styles in their future lessons and show how their intention changes during their years of study.

Keywords: *Teaching styles, physical education, university students.*

DEVELOPING PRESERVICE SCIENCE TEACHERS' PEDAGOGICAL CONTENT KNOWLEDGE THROUGH REFLECTION ON LESSON PLANNING

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Abstract

Reflection is one of the subjects most discussed in teacher development. Despite its importance in improving teacher practices, reflection has been found to be contentious amongst teachers who battle with high workload and the need to complete the curriculum in time for examinations. Thus, said reflection can be viewed as a chore to most teachers particularly preservice teachers who not only need to master the pedagogical knowledge and subject matter knowledge but also classroom management techniques amongst other skills. The current paper reports on a study on how lesson planning was used as a tool to develop preservice teachers' pedagogical content knowledge through reflection. In a qualitative case study, 50 Bachelor of Education Life Sciences students in their final year of study were each tasked to identify their 'best' lesson plan and 'worst' lesson plan and critically reflect on why they considered the lesson plans that way. These lesson plans had been designed and taught in schools during schoolwork experience (herein referred to as work integrated learning (WIL) in the first half of the year. Data was obtained from each participant's submission of the two lesson plans and the reflection, which were then subjected to content analysis. The following aspects about lesson planning were considered: knowledge of the content to be taught, knowledge of the learners including classroom context, formulation of objectives, designing of teaching and learning strategies and activities, assessment opportunities, planning for technology use, and the student's ability to realise good and bad practices in lesson planning. Thereafter they were tasked to plan and teach in their last seven weeks of WIL. The findings showed how the preservice teachers were determined to improve their lesson planning as they included in their reflections how they could plan and teach the same lesson differently including the so-called best lesson plan. Preservice teachers used words such as deficit, unstructured, misaligned, unattainable, not well thought out, to critique their lesson plans. Creativity as an aspect of the teacher skills set was evident in the way these 21st century teachers conceptualised how science should be taught. There were however some who failed to identify obvious weaknesses or strengths in their lessons plans, which showed stagnancy in development. The findings provide implications for teacher professional development practices.

Keywords: *Lesson planning, pedagogical content knowledge, pre-service science teachers, reflection.*

EXPLORING THE INFLUENCE OF CAREER AWARENESS ON THE UPTAKE OF STEM SUBJECTS BY RURAL GIRL LEARNERS

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Abstract

Learners in South African secondary schools are expected to choose subjects of specialization which will guide them to choose their preferred careers when they exit grade 9 in the General Education band (GET-Grade 8 and 9) where they are taught a generic curriculum to grade 10 in the further education and training band (FET- Grade 10-12). It is during this exit phase that career awareness assists them to choose subjects that guides their career choices. The low choice of science, technology, engineering, and mathematics (STEM) careers by female learners is a worldwide challenge especially for learners in rural communities, because of some cultural stereotypes and challenges that female learners face in such communities. This paper used a qualitative study to explore how career awareness might influence the choice of STEM careers and subject choice for grade 9 female learners in two rural schools in a South African province. The study revealed that after learners were exposed to the career awareness program, several learners changed their career choices resulting in an increase in the number of learners who wanted to pursue STEM related careers.

Keywords: *Career awareness, STEM subjects, STEM careers, female learners.*

TEACHING IN HIGHER EDUCATION WITH EYE-TRACKING: AN INTERNATIONAL AND INTERDISCIPLINARY RESEARCH

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Abstract

The oral presentation will describe the purpose, the methods, and the findings of the project "Teaching in Higher Education Effectively via Eye-tracking (THEE)", which was carried out from 2019 to 2022. The project studied the eye movements of higher education teachers and students to reflect on how to improve the teaching-learning process. The project studied the eye movements of teachers and students within the university classrooms to initiate a reflective process about the perception of one's own teaching process (for professors) and one's own learning process (for students), hence looking for ways that teachers can execute to improve the teaching-learning process. The project provides that each involved university (Middle East Technical University of Ankara, Atatürk University, University of Salerno and Vilnius University) identifies some of their courses for data collection, involving both teachers and students in the practice of wearing eye tracking glasses during three lessons. The oral presentation will be a description of the activities and results achieved within the scopes of the project THEE by the Italian research team of the University of Salerno. Four courses were identified, two concerning humanistic subjects and two related to scientific subjects. Based on the number of students attending classes, the courses were selected in an effort to have two samples of big classrooms and two of small ones. The participants were four professors and twelve students who wore eye tracking glasses during the lessons. For each course three lessons were recorded to obtain twelve recordings from the teacher's point of view and twelve recordings from the students' point of view. Teachers lectured for not less than 45 minutes wearing the eye tracking glasses, then the glasses passed to a voluntary student. The recording system provided for the acquisition of three videos, two captured by two fixed cameras placed in two different angles of the classrooms, and another one captured using the eye tracking glasses worn by the teacher and by the student alternately. The videos were then placed side by side using the split screen technique to show the three perspectives simultaneously and support the analysis of the lessons. It is worth pointing out that during the recording of the lessons the researchers were not present in the classroom. The project relied on the collection, analysis and triangulation of three sets of data: (A) eye tracking data, (B) classroom observations, (C) interviews. The results of the study demonstrate a clear benefit of the approach, based on collecting eye tracking data and teachers' self-reflection on their own classroom practice. A clear desire for change emerged from the observation of the lessons' recordings. Indeed, the experience of watching the videos and the heat maps generated a series of reflexive conditions, activating the teachers' self-reflective and critical ability with respect to their own classroom practice and teaching performance. Thus, between the first and the third recorded lesson 75% of the teachers involved have changed something or thought about changing something in their way of teaching. The main purpose of the project is to obtain useful information for planning a training course meant to improve the overall teaching skills.

Keywords: *Eye tracking glasses, higher education, reflection, transformative action, strategic partnership.*

CAPTURING UNIQUE TEACHING EXPERIENCES OF FIRST-YEAR SECONDARY MATHEMATICS TEACHERS TRANSITIONING FROM VIRTUAL TO IN-PERSON INSTRUCTION

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Abstract

This article reports on the findings of a study on the unique journey of pre-service teachers in a Teacher Preparation Program in 2020-2021 who then went on to their first-year teaching in person in 2021-2022. Secondary mathematics pre-service teachers who completed their clinical practice in a virtual learning environment due to the COVID-19 pandemic were followed throughout their first year of teaching in 2021-2022. Through interviews during their first-year teaching, these teachers' voices detail their journey from pre-service teacher to novice teacher in different modalities. The results of the analysis of the interview data hold many lessons for teacher educators that enhance our understanding of teacher preparation and inform topics for supporting new teachers during clinical practice and coursework during a Teacher Preparation Program.

Keywords: *Secondary mathematics teacher education, pre-service teachers, clinical practice, early service mathematics teachers.*

LEARNING TO TEACH: AN EVALUATION OF THE PREPARATION OF DOCTORAL STUDENTS TO LEAD THEIR OWN TEACHING

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Abstract

Studying in doctoral study programmes of universities is quite often based on individual study plans of PhD students, under the guidance of a supervisor, or with the participation of a consultant. The main content of such studies is systematic creative scientific work with an emphasis on the topic of the dissertation. However, among other things, students usually participate in the management and preparation of teaching in bachelor or master study programmes to the required extent as a part of the study plan. Therefore, it is quite common for the students to teach on top of undertaking their research, and for this teaching practice, they should be provided with quality training on how to teach. In this context, the paper focuses on the multidisciplinary course "Didactic and Presentation Skills" for students of doctoral study programmes of one of the public universities in the Czech Republic. The course mainly covers the basics of university teaching, psychology and other areas that develop didactic and presentation skills of university members as often some will remain at the university in the positions of junior academics and scientists. In addition to the theoretical fundamentals, considerable space is devoted to seminars with video training of skills with their analysis and self-reflection. The aim of the paper is to introduce the current experience of the university institute of a Czech university with the development of doctoral students' competences needed for teaching. Furthermore, the results of the course evaluation in the academic year 2021/2022 from the perspective of doctoral students are presented. Among the topics provided, the respondents themselves attach the greatest weight to practical seminars on didactic and presentation skills, which they put in first place. Theory of communication and presentation skills and educational evaluation and educometrics are also considered essential by respondents, closely followed by the use of digital technologies in education, university pedagogy, psychological aspects of teaching, and activation methods. The study confirms the importance of preparing novice PhD students to adapt in teaching, to feel comfortable in a large auditorium, and to be confident in various situations that may happen at any time.

Keywords: *Evaluation, university education, development of skills, doctoral studies, teaching.*

COOPERATION BETWEEN THE UNIVERSITY AND THE OMBUDSPERSON FOR CHILDREN IN THE EDUCATION OF TEACHER'S FACULTY STUDENTS FOR THE PROTECTION OF CHILDREN'S RIGHTS

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Abstract

Protection and promotion of children's rights is an indispensable part of teachers' work. Unfortunately, the majority of violations of children's rights are perpetrated by persons closest to the child, including teachers. In addition to home, school is the place where children spend most of their time and, consequently, challenges, responsibility for recognising violations of children's rights and potential for protection of children at school is significant. That is why it is important for teachers to have information about children's rights, to recognise the situations in which children are endangered and means and mechanisms of their protection. This paper presents an elective course on children's rights, which is a part of future teachers' education for the protection of children's rights, and which is realised in cooperation of the University of Split and the Ombudsman for Children. The aim of the course on children's rights is to familiarize students with children's rights and to make them critically reflect on protection, exercise and promotion of those rights. As a part of the qualitative and quantitative analysis, the paper includes students' evaluations and feedback and the lecturer's reflexion. Students and the lecturer estimate the contents of the course as very important and useful for working with children and their future profession, and the course can serve as an example of positive practice for other universities.

Keywords: *Education, rights of the child, ombudsman, students, evaluation.*

EXAMINING STUDENT TEACHERS' OPPORTUNITIES AND BARRIERS ASSOCIATED WITH FORMATIVE ONLINE ASSESSMENTS AT A UNIVERSITY OF TECHNOLOGY

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Abstract

During the COVID-19 pandemic, many sectors were affected including education. As a result of this pandemic, university lecturers had to change their pedagogic practices, teaching and learning approaches, and assessment strategies. Due to the suspension of face-to-face activities, the use of Information Communications Technology (ICT) was accelerated, and most universities were forced to adopt online assessment strategies. The Central University of Technology (CUT) like many universities around the world used online assessments to assess its students during this period. This study examined opportunities and barriers to using formative online assessments. Twenty (20), first and second-year Bachelor of Education student teachers were purposively selected to participate in this study. The student teachers were interviewed after participating in their respective online test that was part of their formative assessment. Telephonic interviews were conducted to collect data. The interviews were then analysed to determine the possible opportunities and challenges that student teachers experience during the formative online assessments. The findings revealed by integrating technology for teaching, learning, and assessment can enhance student teachers' ICT skills. Student teachers also believed that the approach helped them to be actively involved in their learning and enhance their participation in their learning. Several challenges and barriers were recognized as well. Student teachers described how ICT competencies and inadequate ICT infrastructures, in our country, such as poor internet connectivity and lack of ICT equipment, limited their ability to fluidly engage in formative online assessments. The study provides suggestions for future research that can contribute to understanding online assessments and proposes better approaches to online assessments at the CUT.

Keywords: *Covid-19, information communications technology (ICT), online assessment, formative assessment.*

“THE VISUAL CODE”: EDUCATING IN AN AGE OF VISUAL CULTURE

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Abstract

Over the past two decades, we have been witnessing a veritable revolution in the ever-expanding visual and material culture studies. As a result of technological advances, visual texts have become the most common carriers of information and meaning as well as shapers of people's perception of reality throughout the world. To keep up with these current and future changes, new tools of visual literacy and critical thinking are needed for teachers and educators. We argue that implementation of such tools in teacher training programs, across all disciplines, is extremely important and can be used as catalyst to foster critical thinking processes and promote active and relevant teaching and learning. Moreover, with our unique approach, we offer a much-needed innovative perspective towards new and expanding visuo-material disciplines ranging from the myriad venues of design, through architecture to visual communication. Our study presents a tool developed for Design and Visual Culture curriculum taught in more than 250 high schools in Israel. This tool, we call "The Visual Code" aims to cultivate skills of deciphering visual codes through diverse visual texts. Our approach surpasses the classic and somewhat redundant focus on Art History and allows a much broader understanding of our visuo-material surroundings, ranging from smartwatches, through buildings and urban settings, to websites, apps, and digital service platforms. We suggest observing this rich world through three prisms, suitable for different types of training: semiotic observation, suitable for teaching an training students, teachers (on and pre-service) and pupils of all disciplines; hermeneutic understanding, triggering deeper observation, suitable for those specifically engaged in visual studies, such as art and design; and in-depth phenomenological interpretation suitable for practitioners, experts, and researchers in the various fields of art and design. During our research, qualitative questionnaires, and activity, as well as visual content analyses will be used in classrooms, teachers' development courses as well as some academic courses to evaluate the impact of this tool on classroom discourse and learning processes.

Keywords: *Visual literacy, education, art, design, interpretation, meaning-making.*

LESSONS LEARNED FROM TEACHING DURING THE COVID-19 PANDEMIC: OPERATIONALIZING THE WHAT IF'S

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Abstract

During the COVID-19 pandemic teachers were asked to quickly adapt to new instructional methods. School districts, principals and other school administrators provided a variety of guidelines and outreach methods. Teachers expressed a lack of continuity across schools, grade levels and regions. The study reported here surveyed approximately 1000 teachers across one southern U.S. state, capturing real time descriptions of instructional delivery methods, perceptions of student and parent engagement, and the effects on teachers' own well-being and livelihood. Analysis provided implications for professional development and teacher education programs to better prepare teachers to avoid the stress of training, changing evaluation methods and lack of consistency in accountability. Lessons learned on working with parents and caregivers from an additive approach will be included.

Keywords: *Teacher education, teacher mental health, teacher, parent-teacher engagement.*

TOWARDS FUTURE EDUCATION: HOW DO TEACHERS AND STUDENTS PERCEIVE BLENDED EDUCATION?

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Abstract

Amidst the Covid-19 pandemic, online education has demonstrated significant potential in providing flexible and easily accessible learning opportunities on a global scale. As a result of its numerous advantages, the landscape of education in the post-Covid era is anticipated to be a combination of online and face-to-face (F2F) instruction, with F2F education retaining its predominant role. Achieving such a blended model necessitates prompt attention towards blended education and a comprehensive exploration of how educators and students perceive it. Hence, the objective of this research is to delve into and examine the perceptions and emotions of teachers and students regarding blended education. To accomplish this, a total of 327 teachers and 547 students from a Dutch university participated and completed a survey. The collected data were analyzed by using SPSS. In terms of the findings concerning teachers, it was generally observed that a majority of them experienced a significant workload and stress levels in blended education. A considerable proportion of teachers did not indicate a strong sense of well-being within the blended education context. On the other hand, in terms of motivation, teachers displayed a relatively positive level of motivation. As for the outcomes related to students, a substantial number of students expressed perceiving a high workload in blended education. However, the majority reported low levels of stress. In regard to well-being, a significant proportion of students displayed neutral well-being. Nevertheless, students demonstrated motivation towards blended education. These results can guide the future design of education for the post-Covid time in higher education contexts.

Keywords: *Blended education, future education, higher education, teachers, students.*

PEDAGOGICAL MODEL FOR SOCIAL TRANSFORMATION WITH A COMMON GOOD PERSPECTIVE

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Abstract

Education as a common good has as its distinctive feature- a renewed purpose for the formation of citizens in favor of integral human development and in a context of economic, social and environmental sustainability that favors it. For this purpose, the educational process must address the development of all the potentialities and capabilities of the individual, from a holistic and humanistic vision so that he/she may discover and fulfill his/her personal and professional vocation in order to address the main social challenges in a committed and supportive manner to contribute positively to social transformation. This new view of education goes beyond a utilitarian approach, as it integrates the multiple dimensions of human existence and considers the educational process as an inclusive and crucial factor to promote democracy and human rights, the formation of citizenship and the promotion of a culture of peace. As a proposal derived from this humanistic approach to education arises the pedagogical model called 'pedagogy of the common good', whose anthropological foundations are based on the centrality of the human person and the social values of respect for the dignity of the person, solidarity, subsidiarity, truth, freedom, justice, common good and love. In addition, this pedagogical model is based on four principles: integral experience, culture of encounter, transforming leadership and transcendence in the common good. The concretization of the model allows the generation of the following learning: learning to be integral, learning to live together, learning to transform and learning to transcend. The 'pedagogy of the common good' favors the development of meaningful experiences that facilitate the full development of the talents of the students in all their potential in an integral manner, so that they grow in a spirit of solidarity and become promoters of justice for all, care for the family, respect for the dignity of human life, protection of nature, the search for peace from the donation, otherness and mission.

Keywords: *Pedagogical model, common good, significant experiences, social transformation.*

CHALLENGES – TOWARDS CONTINUOUS PEER ASSESSMENT IN UNDERGRADUATE PROGRAMMING CLASSES

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Abstract

This paper presents a pragmatic approach for stepwise introduction of peer assessment elements in undergraduate programming classes, discusses some lessons learned so far and directions for further work. Students are invited to challenge their peers with their own programming exercises to be submitted through Moodle and evaluated by other students according to a predefined rubric and supervised by teaching assistants. Preliminary results show an increased activation and motivation of students leading to a better performance in the final programming exams.

Keywords: *Continuous assessment, peer assessment, formative assessment, competency-oriented exams.*

THE PRACTICES OF HOW PRE-SERVICE ELT TEACHERS INTEGRATE DIGITAL TECHNOLOGIES IN MATERIALS DEVELOPMENT ONLINE COURSE

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Abstract

Digital technologies have been extensively utilized for many purposes with several functions in foreign language teaching for a long time. Their importance has already been greatly appreciated considering the 21st century skills of learning within this digitalized and globalized world. However, the recent pandemic has made teachers realize their necessity more because of the emergency remote teaching. Since most teachers and learners have not been prepared for such a teaching way, they have had certain difficulties. One of the most encountered problems has been their lack of knowledge and experience in how to employ digital applications in instruction, which is directly related to their lack of training in this field. Then, it can be argued that a greater need has arisen to train teacher candidates in digital technology integration so that they become effective and capable teachers who respond to the needs of their future learners no matter what they perform face-to-face, online, or blended teaching/learning. With this in mind, the current study focuses on how to train pre-service ELT teachers in digital technology integration. For that, an online materials development course at a teacher education ELT program was implemented for a semester to improve the practices of pre-service teachers in digital technology integration. Therefore, this study aims to present their practices on how to use digital tools throughout that course in order to provide more insights into teacher training programs. That course was conducted through Canvas platform. After teacher candidates learned the basics of materials development, evaluation, and adaptation, they designed different activities and tasks with various materials by integrating Web 2.0 tools (e.g., Seesaw, Socrative, Flipgrid, Padlet, etc.). They recorded themselves while presenting their activities/tasks, uploaded their videos for others to watch and give feedback, and later participated online conferences of the course to get more feedback by the course lecturer and their peers by discussing how to improve and adapt their practices. According to the feedback, they prepared their final written reports to show their practices in digital technology integration in ELT. As a result of such an online course application, it was observed that pre-service ELT teachers developed their skills of using digital tools in ELT, and they shared personal opinions in their reports about how that course enhanced their knowledge and performance. Consequently, it can be discussed that such a course will be carried out even in face-to-face teaching easily to train teacher candidates.

Keywords: *Digital technology, English language teaching, materials development, teacher education, Web 2.0 tools.*

SYNERGY BETWEEN THE LESSON PLAN AND LESSON PRESENTATION: PRACTICE WHAT YOU PLAN!

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Abstract

The starting point of every lesson to be presented is a lesson plan. The lesson plan maps out the route that the teacher intends to take in the classroom. At teacher education institutions, student teachers are capacitated to master the skills of lesson planning and the skill of lesson presentation. The aim of this study was to investigate why there is no synergy between the student teachers' lesson plans and lesson presentations during teaching practice. Students map out their teaching on a lesson plan, but what they do in the classroom is not a reflection of the lesson plan itself. As a result, the researchers sought to investigate the reasons for this lack of synergy between the lesson plan and the actual lesson presentation. This qualitative research was conducted through semi-structured interviews. A sample of 20 B.Ed. degree student teachers who are in their third year of study were purposefully selected. The findings revealed that most students do not have high regard for lesson planning. The assessment rubric used to evaluate student teachers' teaching competence during teaching practice does not point out any aspects of the lesson plan. Again, student teachers are unsure of how to implement some of the aspects of the lesson plan template, among others identification of prior learning, values, and attitudes, assessment strategies, and expanded opportunities. The study highlighted the need to put more emphasis on the importance of the lesson plan and implementation thereof. It was also recommended that more marks be allocated for the lesson plan on the assessment rubric.

Keywords: Lesson plan, correlation, lesson presentation, teaching practice.

ASSESSMENT FROM WITHIN – UNDERSTANDING THE KNOCK-ON EFFECT OF TEACHERS' PRACTICES ON CLASSROOM SPEAKING ASSESSMENTS

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Abstract

Speaking has been increasingly promoted in language syllabuses and curriculums, both in Portugal and internationally, as one of the major aims of foreign language teaching. Naturally, the importance of oral skills has led to increasing research in this area, with the focus largely on the need to measure ability and the best way to do it. Unsurprisingly, considerable attention has been drawn both to assessment and the context in which it operates. However, the unique features of speaking make it the most challenging skill to assess. Bearing this in mind, and my role as both researcher and teacher with a vested interest in speaking, I spent almost a full school year at a Portuguese public school cluster doing classroom observation in an attempt to chart: a) – typical classroom interactions between learners / teachers and learners / learners, and b) – the general nature of most speaking events taking place in the classroom, including that of assessment. Findings seem to evidence that Portuguese EFL teachers seem to be at odds with designing suitable assessment procedures for monitoring students' progress. There is a narrow view of assessment as synonymous with testing, and thus the grading function, which largely contributes to the dominance of summative assessment over formative assessment. As a result of such procedures, functions and structures regularly arise with atypical frequency, utterances are exceedingly short and exaggeratedly well-formed; backchannel responses, discourse markers and colloquial expressions are seldom used, and a shared knowledge of context is not assumed. To turn the tables on this state of affairs teachers need to assess with a learning-oriented frame of mind, i.e., to be the link between instruction and what is learned and to promote effective student learning. The vital point when discussing (speaking) assessment is making sure it reflects instruction (frequent opportunities to engage extensively with the language), supports learning, and is meaningful for learners.

Keywords: English as a foreign language, speaking, assessment, learning, learning-oriented assessment.

THE ROLE OF STUDENTS' COUNCILS IN CHILD PARTICIPATION IN SCHOOLS

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Abstract

Child participation in schools is based on participatory rights of children defined in the Convention on the Right of the Child (UN, 1989). To participate as a student means to receive and share information, express her/ his own views, and be consulted about all things that are connected with student's life in school, to actively participate in all activities in school that are important for students and to initiate and implement ideas and project (Osmak Franjić, & Borić, 2019). Dürr (2005) suggest following classification of forms of student's participation in school: parliamentary participation, which manifests itself through student representative bodies (such as the student council); open participation, which implies relatively informal forms of participation that are often spontaneous or prompted by some current problems; participation in projects, which is most often related to specific projects related to educational content; simulation of participation as a form of teaching about democratic procedures and participation aimed at solving certain problems. Similar to that, Fielding (2004) differs three main ways in which student's participation is achieved: peer support, representative bodies (such as student's councils, and activities that enable students to be leaders and initiators of activities at school. Focus of this paper is specifically on student's councils as a form of parliamentary (Dürr, 2005) or representative participation (Fielding, 2004). The basic idea of these councils is to enable representation of children and voice of the children in decision-making on the school level, but also potentially on the level of educational system. However, there are many critics concerning this form of students' participation regarding their declarative nature and lack of influence on decision-making in schools. Student's' councils that have no influence or meaning for the students may have negative effect on students' motivation to participate in school. Students may become frustrated and alienated from the idea of participation and may be under the impression that the adults' desire to hear their voices is merely declaratory. This paper presents results of the qualitative part of research within the broader study on child participation in schools in Croatia. In first part of research, 19 focus groups were conducted involving a total of 70 children from primary and secondary schools in Croatia. In following phase of research, after the COVID-19 pandemics, additional focus groups were conducted online with the aim to gain insights in functioning of students' councils during the period of pandemic, including smaller sample of 16 students from different primary and secondary schools. Results indicate that students are poorly informed concerning role and purpose of students' councils, prior and after the COVID-19 pandemic. Basic common perspective of children is that students' councils are merely formal bodies, without any real impact on school life or decisions. From the perspective of students, students' councils are not inclusive, meaning that mostly students with excellent grades can become members of councils and in some cases those students are not interested to participate. Furthermore, students' councils are mostly led by adults in schools and children are merely passively participated whereby student's councils are often used as a place of sharing already known information about school life, instead of being a place to discuss children's perspective and suggestions. In the light of the COVID-19 pandemic and online school, research has shown that students have had many objections and suggestion to improve their school life during the pandemic, however student's councils mostly did not meet during the pandemic, so children didn't have chance to share their experience and needs through formal representative students' body. The research data will be used for developing framework for meaningful participation of students within the student councils. Furthermore, results will be used as a basis for creation of standards of operations for school councils at the national level.

Keywords: *Students' councils, participation, schools.*

THE EFFECTS OF THE MIDDLE LAYER ON CHINESE COLLEGE TEACHERS' COMPETENCE MODEL: A META-ANALYSIS

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Abstract

In this paper, based on the competence onion model theory, we conducted an integrated study of empirical data in the middle layer of the competence model of Chinese university teachers by means of meta-analysis. A total of 30 previous studies were included, resulting in a total sample size of 16,632 individuals. The result showed that the overall performance of male teachers was better than that of female teachers in the middle layer of the Chinese university teacher competence model, and the average effect size was significant. Furthermore, research showed that among the four dimensions of attitude, values, self-concept, and social role in the middle layer, only the dimension of social role had a significant effect size and indicated that the overall performance of male teachers in this dimension was better than that of female teachers, and the level of superiority was low. The results indicated that there were clear differences in the overall performance of male and female teachers in different regions. The overall performance of the female teachers in North China was significantly better than that of the male teachers, with lower and weaker levels of excellence, while the overall performance of the male teachers in South China was better than that of the female teachers, with lower levels of excellence. The findings provide future researcher with references on the university faculty competency model.

Keywords: *Competence, college teachers, middle layer, meta-analysis.*

WHAT INFLUENCE DID A DESIGN THINKING, CREATIVE PROBLEM-SOLVING WORKSHOP HAVE ON BEGINNER STUDENT TEACHERS?

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Abstract

The marketisation of education, globalisation, and the requirement for continuous economic growth, have positioned creativity and innovation as essential components of 21st century education. Creative approaches to learning have been shown to support well-being and promote a culture of continuous improvement which in turn, support the development of prosperous and sustainable, digital economies (OECD, 2019). In terms of teacher education then, creativity and innovation are now regarded as core skills for all teachers (Henriksen et al., 2021). If these skills are seen as being fundamental to societal development, they must therefore be nurtured as a key component of professional learning for teachers. Using a mixed methods approach, this study aims to explore ways in which creative and innovative mindsets can be fostered in student teachers as part of their initial teacher education. Questionnaires and focus groups were used to collect data. Firstly, a first-year cohort of Primary and Post Primary student teachers (n=118) attended an introduction to design thinking and creative problem-solving, 3-hour workshop with the objective of enhancing their creative problem-solving and innovative skills in preparation for school placement. Secondly, a collaborative podcast project with students and lecturers was developed to enhance students' learning experiences and foster creativity. Thirdly, following their school placement, further data were collected to address the extent to which the participants implemented some of the workshop initiatives during their placement. Preliminary findings suggest that the revised approach to teaching and learning can encourage creative, critical thinking and increase student confidence as they develop their competence and practice as teachers. In addition, the data suggest that students favour the more andragogical approach employed in the workshops and podcast development as opposed to traditional, pedagogical modes of teaching and learning. The research provides a strong platform to embed a culture of critical thinking, creativity, collaboration and communication, and in doing so, establish and build collaborative partnerships between education, business and community.

Keywords: *Creativity, innovation, critical thinking, pedagogy.*

FEAR, MISUNDERSTANDING AND DECORATION AS KEY ASPECTS OF CHILD PARTICIPATION IN SCHOOLS

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Abstract

The paper is based on results of the study conducted by the Office of the Children's Ombudsperson of the Republic of Croatia, entitled *Child Participation in the Educational System*. The study combined both qualitative and quantitative approach. The research goal was gaining a deeper understanding of children's participation in the education system from the perspective of students and adults (teachers and professional associates). In relation to the goal, the following research questions were defined: experience of school, experience of participation in school, levels of participation, role of the student council in participation, role of adults, factors that encourage or hinder participation, age and status (role) specificities in the experience of participation. The research was reviewed and approved by the Faculty Ethics Committee. The quantitative part of the research included students and adults from 41 schools across Croatia: 21 primary schools and 20 secondary schools. The sample is convenient, but in account was taken the representation of schools from all regions in Croatia. A total of 2720 students and 461 adults participated in the quantitative part of the research. The qualitative part of the research included 19 focus groups and was conducted in 4 regions of the Republic of Croatia, involving a total of 70 children and 41 adults from primary and secondary schools. The choice of schools from a particular region was made in consultation with the advisors of the ombudsman for children in the regional offices. It is a convenient sample of participants, which is relevant to the topic research since children and adults from schools are the ones who are best informed about topic. Looking at the results of this research, it seems that fear and resentment are underlying aspects in relationships between children and adults in schools. Fear is mutual: children are afraid of adults, and adults are afraid of children (or children's rights) and parents. In children, this fear results in withdrawal and non-participation, and in adults, resentment and little encouragement of participation. In the perception of adults, children have (too) many rights and everything is "as children wish". In this sense, adults feel that they have lost other important adults as allies- parents. Parents are perceived as the ones who defend and advocate rights of children but in teachers' opinion, often unduly. Adults in schools face even more fear than children because children are (only) afraid of adults, and adults are afraid of children (their rights), parents and educational inspections. This leads to lack of spontaneity in everyday communication between children and adults. Fear and caution in relationships seems to override dialogue and trust. Some adults are nostalgic about a time when children were obedient, and parents unreservedly supported the teachers. With such nostalgia, there is also a lack of confidence in new concepts such as autonomy, responsibility and children's participation. It appears as if adults feel that the rights of children have in some way diminished adult rights. The voice of pupils (and generally the voice of children) at the school and in society is still relatively silent, although adults often feel that everything revolves around children and their rights. Children, though they are the majority in school, do not have much influence on school life, especially if it goes beyond the colour of walls, panel drawings, or the singing and dancing in school events. Metaphorically described by young participants: *when adults write the rules, children are allowed to decorate them*. Looking into future, it seems that focus should be on transformation of relationship and power between adults and children and changes in relational and spatial dimension of school life.

Keywords: *Child participation, schools, aspects.*

TLM (THREE LAYERS METHODOLOGY) MODEL FACING MULTIDISCIPLINARY EDUCATION

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Abstract

One of the main challenges in education today is the need to adapt processes to the multidisciplinary world in which cross-domain communication is essential. Therefore, in this setting, education has to bring teachers and students from various backgrounds to work together, to develop a mutual language and synergistic teamwork and clear added value. These important challenges have gained only little attention by scholars to date. In our School of Multidisciplinary Studies, students who attend classes are from different departments and speak different professional languages. To address these challenges, we have created and implemented the TLM- Three Layers Methodology model, guided by the research question: how to assess and enhance teaching and learning within a multidisciplinary framework. Or, in other words, what educational processes need to be improved, developed and evaluated. In this research, we present the TLM model as we put to practice in our Multidisciplinary School at our institution, in which the curriculum includes courses in technology, the humanities and social sciences, community-engaged learning and entrepreneurship. Furthermore, teaching methods range from lectures to project-based learning courses (PBLs), to workshops in design of technological Proof of Concept (POCs). The research presents a program aimed at initiating processes of connection between faculty teams and promoting the quality of teaching for students, from a multidisciplinary point of view. The program is based on a holistic, innovative process that includes three layers: Peer Learning, Peer Review and Teaching Evaluation. The TLM model is groundbreaking both from an academic practical perspective and from a research perspective, while creating synergy and mutual relationships between its layers. It highlights the changes in teaching and learning patterns, the introduction of new digital tools, and unique Generation Z approach. In this article, we will present the process conducted, the evaluation study and implications.

Keywords: *Multidisciplinary, active learning, peer review, peer learning, teaching evaluation.*

QUALITY OF ONLINE BIODIVERSITY SUMMATIVE ASSESSMENTS ADMINISTERED TO STUDENT TEACHERS AT A SOUTH AFRICAN UNIVERSITY

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Abstract

Summative assessments are often used to make high stake decisions about students' academic success, which have long-term implications for both students and their respective institutions. Therefore, these assessments need to be of high quality to ensure that they yield accurate, objective and dependable results, upon which valid decisions could be made. The use of online assessments, where most lecturers have little experience and students have control of the assessment environment could compromise the quality of summative assessments. This is particularly true for Biodiversity assessments, which are complex. There is dearth of literature on the quality of online Biodiversity summative assessments in the South African context. This qualitative case study was conducted to determine the quality of online Biodiversity summative assessments administered at a South African university. The LINQED Quality Assurance Framework for Student assessment guided this study, which involved a review of eight online Biodiversity summative assessments administered to student teachers. Quality was measured by determining the content validity, authenticity, alignment with course objectives and the cognitive levels at which the assessments were pitched. The reviewed assessments were found to have high content validity and alignment to course objectives, but had poor coverage of the content and course objectives. In addition, the assessments were pitched at low cognitive levels and they had low to moderate authenticity. While these findings are based on a small sample, they could signify a global phenomenon. We therefore recommend further research, involving a bigger sample, to determine the recurrence of the findings from this study.

Keywords: *Summative, assessments, Biodiversity, online, student teachers.*

EXPLORING THE INTEGRATION LEVEL OF INFORMATION AND COMMUNICATION TECHNOLOGY (ICT) BY SETSWANA STUDENT TEACHERS AT A UNIVERSITY OF TECHNOLOGY IN SOUTH AFRICA

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Abstract

The use of ICT has become an indispensable component of education in modern times. Recently, most teachers, including indigenous language teachers, have been involved in integrating technology into their classroom practices. But there is a lack of research on integrating ICT by Setswana student teachers at higher education institutions. This study aims to investigate the competency levels of Setswana student teachers in using ICT in their classrooms. A total of 20 student teachers were purposively selected to participate in this study. Data was collected using classroom observations and interviews. The SAMR model was used as a data analysis tool to determine the extent to which Setswana student teachers can integrate ICT in their classrooms. The results of this study indicate that the student teachers' competence to use ICT was still at a lower level. They predominantly only have basic computer literacy skills, such as word processors, PowerPoint, and other digital resources. The study revealed that the student teachers' ICT integration levels were still at the substitution and augmentation levels.

Keywords: *SAMR model, Setswana language, Information and Communication Technology, teacher education, integration.*

THE DECISION TREE ANALYSIS MODEL ON A REMOTE POPULAR SCIENCE LEARNING SYSTEM FOR IN-SERVICES EDUCATION OF TEACHERS

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Abstract

The in-service training learning system for primary and secondary school teachers in Taiwan breaks through the time and space limitations and uses a distance learning method to promote primary and secondary school and kindergarten teachers on understanding the scientific development, cultivating scientific knowledge literacy and life-long learning habits, and then giving feedback to students, making popular science knowledge activities a part of teachers' in-service training and social rational cultural activities. Nowadays, Taiwan's largest teachers' in-service education distance science learning website is "Knowledge Lecture Hall" (<https://knowledge.colife.org.tw/>), which was built by the Co-Life team of National Center for High-performance Computing (NCHC) of NAR Labs. The purpose of this study was to establish a data repository based on the in-service training data of 5,291 teachers participating in distance science education learning in the past five years (2018-2022) collected by the Knowledge Lecture website. The data contains 16 domains of variables, including basic information about teachers and the schools they work for, online viewing time, and information about teachers' in-service training courses. In the process of knowledge discovery in the database, the decision tree algorithm C5.0 was used for modeling, the AUC value was used to evaluate the predictive ability, and the concept of tree branch was used as the decision model. According to the class and relationship of variables, the explanation model of good prediction results was found, and the following research objectives were achieved as follows: First, analyze the preferences and trends of in-service teachers' participation in learning courses during the past five years (2018-2022). Second, explore the decision tree model of the key predictors of in-service faculty participation in learning courses in the Knowledge Forum over the past five years (2018-2022). Finally, recommendations for improvement based on the findings are provided as a reference for future management of in-service distance learning courses on the Knowledge Lecture website and for future research by future researchers.

Keywords: *Decision tree, remote education, teacher in-service training.*

INNOVATIVE WORK-BASED LEARNING AND EMPLOYABILITY SKILLS TRAINING FOR LEARNERS WITH SPECIAL NEEDS

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Abstract

Employment has been identified as a critical need for individuals with disabilities (IWDs), given that it is an essential component of quality of adult life (Rogan, Grossi, & Gajewski, 2002). Nevertheless, despite the extensive support by federal legislation, public policy, federal initiatives and programs, the employment outcomes for IWDs are still disappointing and they continue to encounter employment problems such as lower employment rates and lower annual earnings. For example, people with disabilities have experienced significantly lower employment rates than those without a disability. According to findings from the NLTS2 (Newman, Wagner, Knokey, Marder, Nagle, Shaver, & Wei, 2011), the approximate rate of employment, at the time of the study, for individuals with disabilities ages 18-24 was 63% and was impacted heavily by the identified disability label and level of training/education. The Bureau of Labor Statistics (2022) reports 19.1% of people with disabilities were employed compared to 63.7% of their peers without a disability. Research has shown that long-term career outcomes for individuals with disabilities can drop to a rate as long as 17.2% (Baker, Lowrey, & Wennerlind, 2018). Research on evidence-based practices indicated that early employment experiences, supported internships, and collaboration are effective in preparing and supporting IWDs for their transition to employment (Bellman, Burgstahler, & Ladner, 2014; Lee & Carter, 2012). Longitudinal data demonstrates that schools can improve employment outcomes for youth with disabilities through job readiness instruction (Park, Bouck, & Duenas, 2020).

Keywords: *Employment, employability, disabilities.*

DEVELOPMENT OF A NEW METACOGNITIVE SELF-REGULATED MODEL OF COMPETENCY

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Abstract

Since 2017, the University of Aix-Marseille (AMU) has engaged in a pedagogical transformation towards a Competency-Based Approach (CBA). Nevertheless, the evaluation of competencies is not yet operational. The transition to a CBA implies a pedagogical paradigm shift: what is evaluated here is not only students' performance (the result of their activity) but also their ability to achieve this result (the mental processes that lead to performance). In order to make CBA operational, it is essential to go beyond traditional evaluation systems since these systems focus almost exclusively on the productive character of competence (performance). Indeed, some conceptions of CBA are still influenced by an empiricist and behaviourist approach and tend to reduce competence to its observable manifestations, leaving aside its constructive character. The difficulty of creating new tools to assess competencies lies in the lack of socio-constructivist models that give their rights due to the learner's cognitive activity and social acceptability. The present model aims to anchor CBA in the Self-Regulated Learning (SRL) theories and, more specifically, to define competency through the metacognitive approach. Metacognitive analysis, judgments, and controls are necessary for students to plan and regulate their activity according to what is asked of them in a specific situation. To be competent, students must be performative and consciously explain the mental processes that lead them to acceptable performance. Also, for a student to be competent, a third party must validate their knowledge and abilities. Competence is certificative. Competency is a conscious mental ability that translates into socially acceptable behaviour. This model aims to present competence through a fuller scope, including its productive, constructive, and social characteristics. The practical use of this model would allow for the implementation of new and more robust competency assessment tools.

Keywords: *College assessment, competency, metacognition, models (theoretical), self-regulated learning.*

LIVED EXPERIENCES AND CONCERNS OF INDIVIDUALIZED DEGREE STUDENTS: IMPLICATIONS FOR POLICY, CURRICULUM, AND PEDAGOGY

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Abstract

For half a century, the fundamental attraction of an individualized degree was that it offered learners the opportunity to assume responsibility and authority over their own educational journey. Over the years, the highly sought-after degree has shown, among others, that when learners assume this increased level of agency over their degree, they are building confidence in becoming self-directed learners and in taking leadership over their learning. Furthermore, having increased agency over their educational journey is shown to give learners a sense of well-being and accomplishment that they would not be able to get from following a pre-determined educational pathway. However, some learners in this major have for years expressed concerns about how their individualized degree would be externally perceived: would it be insufficiently valued, or perceived as inferior by employers, compared to how a traditional degree might be valued or perceived? Hence, the current study sheds light on the perceived value of the individualized degree. To gain a wholistic understanding of the experiences of current students and alumni, the current study covered a host of variables, including employers' perceived value of the individualized degree, degree and employability, societal perceived value of the individualized degree, and alumni overall satisfaction with their individualized degree. Data were obtained from 158 current students and 281 alumni of the major. The findings of this research hold significant implications for curriculum development, pedagogy, recruitment, and other policies.

Keywords: *Individualized, degree, perceived, concerns, employability.*

THE PRAXIS OF MENTORING FROM A SOCIAL LEARNING PERSPECTIVE: THE CASE OF PRACTISING TRAINEE TEACHERS AT A TEACHER TRAINING COLLEGE IN MIDLANDS

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Abstract

Teaching practice (TP) is one of the major components of any teacher training programme. During this period, the trainee teachers are attached to a mentor at a practising school. The mentoring process facilitates contextual and operational transfer of skills and knowledge between the trainee teacher and the mentor. The two are involved in a behaviour modelling and teaching skills relationship. Social learning theory plays a very important role at this stage. This study aimed at assessing the application of the social learning theory as a form of learning during teaching practice. The study was a descriptive survey which used quantitative and qualitative data gathering techniques to explore how mentor-mentee relationship models a social learning theory. Twenty randomly sampled trainee teachers responded to questionnaires to elicit their views on what they learnt during their attachment to a mentor. Five mentors and five trainee teachers were interviewed to explore their views on mentor-mentee transfer of knowledge and skills. The results showed that the existing mentor-mentees scenarios were not the ideal. Trainee teachers revealed that the mentor teachers, who were supposed to mentor them, were the ones who had a lot to learn from them. Most of the trainee teachers were given more teaching loads than mentors and were regarded as teaching load relievers by mentor teachers. The study concluded that trainee teachers were not benefiting much from the mentor-mentee relationships. The study recommended that teacher training colleges should staff-develop mentors, ensure that students are attached to good mentors and incentivise mentors since they are part of their training officers.

Keywords: *Social learning theory, mentor, trainee teacher, mentoring.*

STIMULATION OF PRACTICES WITH EMERGENT LITERACY WITH STUDENTS IN THE INITIAL YEARS OF LITERACY

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Abstract

Introduction: In Brazil, there are few studies developed with emergent literacy and its impact on the development of reading and writing in students in the initial stage of literacy. *Objective:* to verify the educational effectiveness of a stimulation program with emergent literacy practices with students from the 1st and 2nd year of Elementary School. *Methods:* 20 students from the 1st and 2nd year of Elementary School participated in this study, distributed in two groups, GI composed by 10 students, 05 students from the 1st year and 05 students from the 2nd year submitted to the stimulation program and GII composed by 10 students, 05 students from the 1st year and 05 students from the 2nd year not submitted to the program of stimulation. All students were submitted to the application of the Cognitive-Linguistic Skills Assessment Protocol for students in the initial stage of literacy before and after the application of the stimulation program. The GI students were submitted to the application of the stimulation program with emergent literacy practices, consisting of 8 collective sessions with the presentation of the 8 books from the Stories Collection for the Development of Rhyme and Alliteration. *Results:* Both groups showed improvement in cognitive-linguistic performance, but the GI had a greater amount of skills developed. The GI students submitted to the stimulation program with emerging literacy showed better performance in skills considered predictors for the development of reading, such as copying forms, picture dictation, syllable segmentation, word dictation, word repetition, alliteration, rhyme, repetition of numbers in reverse order and rapid automatic naming of digits, while students from GII, not submitted to the stimulation program with emergent literacy, also showed better performance in skills considered predictors for the development of reading, such as copying forms, dictation figures and segmentation of syllables. *Conclusion:* The fact that GI students showed improvement in metaphonological skills is consistent because the focus of the stimulation program carried out was precisely to develop skills related to the proper use of the letter-sound conversion mechanism. The choice of stories used to carry out the program contained facilitating factors for the development of reading and writing. However, the students from the GII, who did not undergo the stimulation program with emerging literacy, also showed better performance in skills considered predictors for the development of reading, such as copying shapes, dictating pictures and segmenting syllables, showing that the improvement of the students from the GI in these skills cannot be attributed to the program, since the school also offered educational strategies in the classroom that enabled students to develop these skills.

Keywords: *Literacy, learning, reading, emergent literacy.*

TEACHER TRAINING ON FUNDAMENTAL PROGRAMMING FOR MATHEMATICS AND TECHNOLOGY – WHAT ARE THE COURSE TAKEAWAYS?

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Abstract

The introduction of computer programming in K-12 education is a prioritised initiative in many countries. In the Swedish context this is an ongoing process with support from the government and the National Agency for Education. The focus has been set on secondary school and how to implement programming as an extension for teaching and learning activities in mathematics and technology. Several studies have reported on how to optimise the teacher training, but less has been presented on learning outcomes that can have an impact on teaching and learning in secondary school. The aim of this study was to analyse and discuss how learning outcomes could be of use in secondary school teachers daily teaching and learning activities. The main research question to answer was: *"In what parts of secondary school mathematics and technology can programming add value, and how might this be related to the learning outcomes of the teacher training?"* Data have been gathered from course participants essays that were submitted in two batches of the teacher training course on programming. Essays were analysed thematically with the research

strategy of analytical induction. Found themes have been grouped into main categories that are related to the essayists course outcomes. Most of the essayists have completed the course, but not all of them. Findings indicate that the subset of course takeaways that the essayists have chosen to reuse are related to their learning outcomes, but also to the stage of secondary school where they teach. Lower secondary school teachers with low learning outcomes have a tendency to choose the themes of visualisation of geometrical concepts and computational thinking. To be compared with upper secondary school teachers with high learning outcomes that had a preference for using programming to illustrate number series and statistics. However, there are a lot of variations from these themes and counterpoints, which is the main discussion in this paper. Interesting new themes that emerged from the analysis of the essays were Debugging, General problem solving

Keywords: *Programming education, Teacher training, Learning outcomes, Python, K-12 STEM.*

NAVIGATING FEAR: UNDERSTANDING AFRICAN AMERICAN DOCTORAL STUDENTS IN THE ACADEMY

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Abstract

This phenomenological study examines how nine African American doctoral students experience fear within their graduate programs and on their college campus, which is a predominantly white institution in the Midwestern United States. Fear is often described as a psychological or an emotional response to a perceived threat or danger. It can be prompted by social rejection, perfectionism, or even failure. *In order to understand how fear is both experienced, internalized and manifested*, we used theories of self-efficacy (one's belief in their own ability to complete a task) and socialization (the process by which students learn the cultural and behavioural norms and expectations of academic institutions including those of peers and faculty) to frame our study. Participants were interviewed three times for ninety minutes each time over the course of one academic year. There were a variety of fears that that impacted their experiences including fear of isolation (i.e., tokenization), fear of not belonging, fear of discrimination (that is; bias in grading, lack of mentorship, lack of opportunities, racial microaggressions), and fear of failure. The results of the study indicated that fear, from the participants' perspective, can be internalized as self-doubt (i.e., feeling that one is not good enough), avoidance (i.e., dodging faculty and situations that are perceived as threatening), and emotional distress (e.g., anxiety and depression). Lastly, fear is manifested through obvious behaviours and practices described by the participants including faculty intimidation and bullying, and competition amongst student peers. This study posits the following conclusions: (1) African American doctoral students experiencing fear negatively impacts their self-efficacy, (2) Fear contributes to the imposter syndrome—a phenomenon in which individuals' distrust their own accomplishments and fear that they will be exposed as a con or an “imposter”. This syndrome contributes to lower self-esteem, a lower self-concept, and a lack of confidence in oneself. (2) The socialization process itself is both racialized and psychologically violent. As graduate students transition from novice scholar to more senior scholar, the violent environments in which they are trained become breeding grounds for inducing anxiety, self-doubt, and fear. This is significant because as we are considering the role and the experiences of students and what propels them or deters them from becoming future faculty, as practitioners and scholars in the learning process, we can utilize this study to create a more nuanced and culturally relevant educational practice for graduate students to learn and thrive in the academy.

Keywords: *Fear, sense of belonging, self-efficacy, socialization, African American doctoral students.*

PRE-SERVICE TEACHERS' KNOWLEDGE OF MATHEMATICS: A FRAMEWORK FOR SUSTAINABLE DEVELOPMENT OF STUDENT KNOWLEDGE

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Abstract

The purpose of this article is to draw attention to, analyze and discuss the following issues: (1) What mathematics should teacher education include, in order for student teachers to gain knowledge of a teaching practice that ensures the progression in students' mathematics development, and (2) How can the subject-specific content in an algebra course for student teachers be designed through an interaction between formal concepts in mathematics and the content of practical mathematics teaching with focus on algebra. An analysis of these issues is carried out within a theoretical framework of didactics of mathematics, related to a research context. This article is based on two research projects, MIL (Mathematics in teacher education) and SKUM (Student teachers' knowledge and perceptions of mathematics) as well as ongoing research work with a focus on the quality of student teacher education in mathematics and the didactics of mathematics in the K–3 and 4–6 programs at Södertörn University.

Keywords: *SMK model and pre-service teacher knowledge in mathematics, student teacher learning for teaching, algebra in teacher education, Abelian groups and teaching, rational numbers and teaching.*

PROJECTS AND TRENDS

LEADERSHIP AND MANAGEMENT IN INTEGRATED MUSLIM SCHOOLS: A COMPLEX ENVIRONMENT

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Abstract

The presence of integrated Muslim schools or faith schools in South African communities is neither neonatal nor a modernistic development of the post-apartheid education system of modern-day South Africa, but rather something long established. Integrated Muslim schools were established as a response to the ideologies and challenges of the apartheid state. The primary objective of Muslim schools is to preserve the Muslim identity, practices and ethos. The curriculum followed in integrated Muslim schools is the national curriculum of the Department of Basic Education, as well as the religious curriculum – Islamic Studies. The present ownership and governance of Muslim schools can be summarised as privately owned by merchant families, religious trusts or expatriates. In Muslim faith schools, the existence and prevalence of traditional and transactional approaches to leadership dominate, leaving little to no room for principals to lead and manage these schools, as the decision-making authority is often retained by school owners. In addition, religious or faith-based schools are likely to experience challenges erupting as a result of the contradicting values of contemporary, liberal, non-faith-based leadership and management approaches in contrast to those of approaches that are based on religion. Against this background, two curricula must be presented and managed. This study was supported by the systems theory. The systems theory is seen as a theoretical approach that serves as a transcendental solution to examine and understand interactions such as ethics, relationships, limitations and boundaries, morals and the creation of social and organisational hierarchies. The aim of the study was to determine how the principals of integrated Muslim schools could increase the effectiveness of their leadership and management practices. The objectives were to understand and explain the nature of integrated Muslim schools, to explore the existing leadership and management practices of the principals of integrated Muslim schools and to determine strategies that can be implemented in integrated Muslim schools to enhance the leadership and management practices of school principals. An interpretivist qualitative research design was followed. The non-probability sampling method was employed to identify six principals of integrated Muslim schools in three provinces of South Africa. In-depth, semi-structured one-hour interviews were used as the primary method to gather data from the participants. The interviews were recorded, transcribed verbatim and analysed. This research identified invaluable insights into the nature of integrated Muslim schools from a historical perspective and the existing leadership and management portfolio of integrated Muslim schools. Furthermore, the findings revealed the need for good character, values and attitudes among those who preside in leadership roles at integrated Muslim schools. The future trajectory for best practices was identified as well. Moreover, the research established that principals who preside over the leadership and management of integrated Muslim schools have a dichotomous portfolio of leadership and management, i.e., the secular curriculum and the Islamic curriculum. The principals of integrated Muslim schools have dichotomous leadership and management tasks, primarily towards their employers and as a religious duty. This research study also established that the leadership and management duties of school principals are not detailed, which results in role ambiguity and overlapping between the leadership and management role and the governance role.

Keywords: *Integrated, leadership, management, Muslim, principal.*

A SYSTEMATIC LITERATURE REVIEW: A PRAGMATIC MODEL OF ONLINE ENGAGEMENT AND AFFORDANCES TO SUPPORT ADOLESCENT LEARNERS

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Abstract

Adolescent learners, who often have fewer self-regulatory and metacognitive skills than adult learners, require more support and higher quality interactions for online learning (Borup, Graham & Davies, 2013; Cavanaugh, Barbour & Clark 2009). Through a systematic literature review, this paper identified a pattern of student feedback that collectively addressed the wide range of support they required and received from multiple stakeholders when learning online. This work is inspired by the theoretical framework of adolescent community of engagement (ACE) involving members who play different critical roles in supporting adolescent students who are enrolled in online courses (Borup, West, Graham & Davies, 2014). To thoroughly capture who, what, and how elements within online learning environments supported or failed to support adolescent students and influenced either their positive or negative perception of their online learning experiences, five major types of support were identified, and the evidence was analyzed using thematic analysis across studies included in this review. The five types consist of 1) support by the formalized teacher-student relationships and interactions, 2) support via peer relationships and interactions, 3) support from a Proximal Community of Engagement (PCE, Oviatt, Graham, Borup & Davies, 2016, p. 223), including support from a broad yet immediate cycle, the school, familial and community members, 4) support through technological affordances that are unique to online learning environments, facilitating communication synchronously and asynchronously, and 5) support regarding structured and enriched curriculum development in online course shells/learning management systems (LMSs) for self-directed learning. The shift to online learning due to the COVID 19 pandemic has greatly shaped adolescent students' perceptions of and experiences in distance learning, as well as their readiness for the future adoption of online learning. Therefore, it is important to enhance our understanding of "smart" designs and implementation of online courses, and the related teaching and learning strategies that can lend adolescents strong support to improve their learning experience and outcomes.

Keywords: *Systematic review, online engagement and support, adolescent students, learning community.*

WONDERING AND GRADING IN HIGHER EDUCATION – A TENSION RATIO?

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Abstract

The topic of this paper is the possible tension between wondering and grading in Higher Education. By systematically discussing essential arguments, this question will be answered. Wondering means critical content questioning and a sharpened view. Things are seen differently and detached from their actual structures, which makes it elementary in Higher Education. However, there are structural elements, such as grading, that frame the learning process. On the one hand, this can contribute to a perception that students' ability to make their own judgments is low, but on the other hand, it can also lead to a focus on mere results and the usability of knowledge. Consequently, tension is created, and the effects of To-the-grade-learning and Learnification arise, which makes wondering secondary. There are examples of universities where gradeless assessment works and contributes to trying out new learning content, with less pressure to perform and focus on acquiring knowledge for its own sake. Noticing this positive development, de-grading might be a reasonable step to provide meaningful Education – and promote Wonder instead of emphasizing measurables.

Keywords: *Wondering, grading, higher education, to-the-grade-learning, learnification.*

VULNERABILITIES OF MOBILE APPLICATIONS USED IN DISTANCE LEARNING ENVIRONMENT

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Abstract

E-Learning means learning through electronic resources. This is usually done on the Internet, where students can access materials online at any time. Nowadays, more and more students are enrolling in online courses to learn, due to the comfort of their homes and the desire to learn at their own pace, turning to various platforms that provide educational materials. Thus, mobile learning platforms, used in the university environment, bring benefits to students, although they cannot fully replace traditional education. The Internet presents many opportunities and beneficial ways of learning. In this material, we present the concept of distance education and how it is used. We present different software tools intended for mobile devices used in the education environment, and especially in the distance education process, and we analyze the vulnerabilities that have appeared for these mobile applications from the point of view of the data managed by these applications. The vulnerabilities are searched in CVE MITRE - Common Vulnerabilities and Exposures. For each mobile application, we centralize the vulnerabilities identified and we will create a statistical analysis using Common Vulnerability Scoring System – CVSS. In this way, we will create a ranking of the most vulnerable mobile applications used in distance learning. We believe that such an analysis is important for a growing technology because this technology development must be linked to certain security standards. Existing vulnerabilities already identified for the solutions used must be provided and analyzed so that there is no danger that these vulnerabilities are present in the solutions used.

Keywords: *Distance education, mobile applications, learning, vulnerabilities, data.*

ASSESSMENT OF THE DIFFERENT SUBJECT AREAS IN AN INTERDISCIPLINARY PROJECT

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Abstract

The explored component of this work investigates the influence of formative assessment, interim assessment, participation grading, self and peer assessment, as well as summative assessment on the final results of Project Based Learning (PBL). The samples were 120 students at an American-type of high school divided into two groups of 60. The aim of the study is to check whether the use of these specific assessment methods is applicable for an interdisciplinary project. The effect of having feedback from multiple teachers responsible for different disciplines on the end-result will also be tested. The end-goal is to determine whether the students have control over their projects and method of studying, to an extent where their finished products are created in their own vision. The instruments used to measure the course objectives were checklists corresponding to them. The research is made by observations on project activities: Checks throughout a set period of time, Questions and goals, Peer feedback, Final project report. A comparative analysis of students' academic results, with a sole focus on Mathematics and a multidisciplinary project, was done, to make a more extensive conclusion as to the effectiveness of said methods and their application in an educational setting.

Keywords: *PBL, formative, interim and summative assessment, participation grade, peer feedback.*

COLLABORATIVE ONLINE INTERNATIONAL LEARNING: A CASE STUDY

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Abstract

This paper examines the emerging Higher Education initiative of Collaborative Online International Learning (COIL) and leads a discussion as to how we can develop an institutional approach to supporting a broad roll-out of COIL activity using the University of Glasgow as a case study. Collaborative Online International Learning is an approach that brings students and teaching staff together across cultures to learn, discuss and collaborate as part of their class. Educators collaborate to design the experience and students collaborate to complete the activities designed. COIL becomes part of the course, enabling all students to have a significant intercultural experience within their course of study. COIL connects staff with a contact in another country to develop collaborative projects that students complete together across time zones, language differences and geographical distance using online tools. The four pillars of COIL are: **Collaborative**: staff are co-teaching the module on equal footing; students are put in a position of needing to cooperate effectively and efficiently to produce the required outputs of the activity; **Online**: the interaction between the students and staff in question takes place (mostly or exclusively) online; **International**: there is meaningful interaction between staff and students in two (or more) different countries, leading to the development of international and intercultural competences; **Learning**: COIL is a learning activity, and should be an integral part of the curriculum, not an optional and inconsequential 'extra'. This paper addresses an international community of learners reflecting on how COIL supports virtual mobility, inter-cultural competences, digital and other skills development, research-teaching linkage (students and staff), inclusive learning experiences and decolonizing learning and understanding global challenges with global partners. Using as case study approach I will explore how a partnership model of design and delivery can work, reflecting on assessment design dimensions of COIL and establishing an implementation plan. The complexities of COIL will be discussed, focusing on the four pillars of COIL which are required to be in place for any activity to be considered as COIL, with a strong emphasis on International meaningful interaction. This paper addresses the key point that HEIs must ensure that students are able to gain benefit from the activity given climate sustainability and access to international experiences.

Keywords: *Collaborative, online, international, learning, global, mobility.*

THE MELARETE PROJECT: THEORY AND PRACTICE OF A KINDERGARTEN AND PRIMARY SCHOOL PROGRAM FOR ETHICAL EDUCATION

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Abstract

The contribution aims to present the theory of ethical education that founds the MelArete project, an educative program designed for kindergarten and primary school students with the aim to engage them in reflection on good, care and virtues. A phenomenological analysis of human being makes evident that caring for and being cared by others is fundamental, and theoretical and empirical research highlight that care is a practice informed by ways of being which are definable as virtues. Socrates points out the importance of the care for the soul, that is not separated from the care for the others and the care for the common good. According to Aristotle, "living well" is one with "doing well"; and to do well means to act according to virtue. After a long period of oblivion, care has come back to the attention of philosophy thanks to Heidegger and Foucault, but it is thanks to female philosophers that care has been deeply analyzed. Recently, even pope Francis referred to the concept of care to reframe a "new humanism", that promotes a better society. According to Ricoeur, ethics is an issue that deals with the care for oneself, for others and for institutions. Starting from these theoretical premises, the MelArete project, which conceives ethical education as educating to virtues in the light of care, is designed. The educative pathways, designed both for kindergarten and primary school, will be described by presenting the activities as well as the findings of the qualitative research carried out in order to evaluate the educational effectiveness of the project.

Keywords: *MelArete, ethical education, kindergarten, primary school, qualitative research.*

DIGITAL TECHNOLOGIES, MENTAL HEALTH CHALLENGES AND ACADEMIC LANGUAGE DEVELOPMENT OF INDIGENOUS YOUTH: A RETROSPECTIVE

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Abstract

Indigenous students have experienced negative inter-generational impacts from colonization and socioeconomic stress, leading to mental health challenges and persistent subpar academic performance. Both issues intertwined pose a complex challenge that has been increasingly documented by media, research, and in government reports and has had a significant impact on Indigenous youth's wellbeing and academic achievement. In addition to the educational disparity faced by Indigenous youth, particularly those living in remote Indigenous communities, high rates of suicide, depression, and substance abuse have prevented them from obtaining the language and literacy skills required for graduating high school and pursuing post-secondary education and professional opportunities. Educational interventions would be more effective if these issues were addressed in their design and implementation and grounded in Indigenous cultural and community practices. Research has reported that many Indigenous youth have adopted or are keen to adopt digital technologies, which have the potential to provide e-mental health resources as well as opportunities to improve academic literacy skills. This research synthesis examines the evidence of the efficacy of using digital technologies to support Indigenous youth's mental health and the learning of language and literacy skills. It presents a profile of important studies focusing on Indigenous youth's perspectives on both issues. Based on a culturally responsive pedagogical framework, this article provides insights for teaching practice, and also identifies gaps for future research and instructional innovations that are urgently needed to support Indigenous youth students.

Keywords: *Digital technologies, mental health, academic language skills, Indigenous youth.*

GOOD PRACTICES IN CROSS-BORDER EDUCATION. CASE STUDY FOR EDUCATIONAL INTERNATIONALIZATION *AVANT LA LETTRE*

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Abstract

Educational Internationalization as a worldwide spread concept is quite recent in the field since it has come to be largely implemented and gained popularity over the past 20 years. It is important to point out the fact that, among the 14 faculties constituting the portfolio of the institution we represent, "Dunarea de Jos" University of Galati, Romania, there is a cross-border faculty that has been operating since 1999, under the auspices of the transnational collaborative partnership between Romania and the Republic of Moldova. This faculty can successfully constitute a model of good practices in cross-border collaboration since its main objective is the implementation of the principles of educational internationalization, all the more so since the beginning of the project, there have been as many pro arguments in support for its continuation and expansion. as many arguments that seemed to exist against, including both social, economic and political arguments. It worth noticing the fact that, 24 years ago, Romania, an ex-communist country, and the Republic of Moldova, a former Soviet country, managed to implement and develop a revolutionary concept at that time. The present article aims at disseminating those strategies that led not only to broadening the academic experiences of students and academic staff in pursuit of cross-cultural experiences and internationalization of the curriculum and research, but also contributed to the linguistic and cultural reintegration of the population of the Republic of Moldova, constituting an important factor of geopolitical balance in South-Eastern Europe.

Keywords: *Cross-border education, educational internationalization, partnership.*

CREATIVE SPACES TO DEVELOP DIGITAL COMPETENCE: CHALLENGES IN A UNIVERSITY COURSE

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Abstract

In the province of Quebec, Canada, the government has published a Digital Action Plan (MEES, 2018) aimed at integrating and leveraging digital technology for the success of all students and citizens. The Plan identifies creative labs as one of the global trends in education. Inspired by third places (Oldenburg, 1999; Tremblay et Krauss, 2019) and makerspaces (Hatch, 2014), creative spaces allow people to make, transform, and equip themselves, as well as participate, share, and learn. These actions support the democratizing effect of the maker movement (Hatch, 2014) as well as the development of people's agency (Blikstein, 2013). In the wake of the Plan, the government released a Digital Competency Framework (MEES, 2019), a local way of interpreting 21st century skills. The Framework identifies dimensions deemed essential to learning and growing in the 21st century for students and faculty members (MEES, 2019). This competency has quickly found its place in the "Competency Referential for the Teaching Profession." In order to train future teachers, a course was developed in the bachelor's degree in primary education in Quebec, allowing students to address dimensions of the competency that were previously absent from their training. Thus, the course "Creative Technologies and Networked Learning in Education" is in line with the Plan, which emphasizes that the educational system must ensure the development of the competencies essential to tomorrow's citizens. The focus of the course is the purpose and possibilities of creative spaces. One of the issues that quickly became apparent was the challenge of fitting the creative space and its informal learning into the formal context of an educational program. In its reflective aspect, the course addressed pedagogical innovation. The presentation will relate how twenty students negotiated a collective definition of pedagogical innovation. On a practical level, networked learning was at the heart of the actions and projects. Particular attention was paid to the production of pedagogical objects or the improvement of educational processes. Creative spaces, their tools or ways of doing things, were at the heart of the course activity. Thus, activities such as visits of creative spaces and the exploration of virtual reality supported an ambitious collaborative production project with sixth-grade students. The paper will provide an opportunity to recount, in an autopraxeological way (St-Arnaud, 2003), the experience of the first iteration of a course on pedagogical innovation that focused on the integration of creative spaces.

Keywords: *Creative space, digital literacy, university, education, innovation.*

DUAL EDUCATION IN SLOVAKIA AND ITS IMPACT ON THE EMPLOYMENT OF GRADUATES

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Abstract

Dual education in Slovakia brings the first graduates into practice. The paper presents the first original results of dual education in Slovak conditions. This type of education in the conditions of Eastern and Central Europe is experiencing a renaissance, because during the time of the socialist establishment in the conditions of the Czechoslovak Socialist Republic, it was a common method of education in apprentice schools. The article summarizes the economic and other impacts on employers who cooperated in dual education. Paper focuses specifically on the job classification of graduates, the impact of completed education on the labour market, their application in practice and their standard of living. The article also includes proposals for changes in the principles and conditions of this type of education. The covid and post-covid era brought new conditions that have an impact on the rules of education in practice. The contribution maps the intensity of involvement in education in the individual regions of Slovakia and correlates the relationship with the level of living standards in the region. In the conclusion, the possible application of dual education to university conditions is outlined.

Keywords: *Dual education, Slovakia, employment, quality of life, quality of work.*

ENHANCING STEM EDUCATION IN INDIGENOUS SERVING SCHOOLS USING CULTURALLY RESPONSIVE PEDAGOGY

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Abstract

The DINÉ project (Diné Institute for Navajo Nation Educators) was designed to engage teachers of Indigenous students in a rich, content-focused, long-term professional development program, honoring their cultural expertise to design culturally responsive STEM learning experiences. A different cohort of teachers worked with content expert university faculty over an 8-month period during each of the past four years to gain content mastery, develop grade/subject specific STEM instructional units, and learn to become effective pedagogues bringing in cultural relevance to the STEM subject matter. During the 8-month period (March – November), teachers had monthly group meetings with the university faculty and a 2-week intense summer residency at the university. By the end of the 8-month program, teachers would have created ONE instructional unit (1 – 3 weeks duration) on the STEM topic area in which they engaged with the university faculty member and relevant for use in their own classroom. The unit employed culturally relevant pedagogy learned during the program and was taught in their designated classroom before the end of the 8-month program period. The program culminates each year with a show-case and open house in December during which the teachers displayed and presented their units along with samples of work their students did within the unit. This paper describes program impact on teachers' ability in STEM curriculum development (high quality instructional units), instructional practice, and incorporation of culturally responsive approaches to STEM education. The impact was investigated using the SCOOP Notebook protocol; an internally developed and validated questionnaire to assess elements of culturally responsive practices specific to the Indigenous context; and focus group interviews of faculty facilitators and teacher leaders in the program. Results indicate positive impact of the program on each area investigated (curriculum development, instructional practice, and culturally responsive pedagogy), indicating the effectiveness of the professional development program and the content-rich learning model it employs, which is based on the Yale National Institute© (YNI) model of K-12 in-service teacher professional development.

Keywords: *Indigenous education, STEM education, culturally responsive pedagogy, teacher professional development.*

AN APPROACH TO GAME-BASED LEARNING, COLLABORATION AND DESIGN CHALLENGES FOR TEACHING THE DESIGN OF MECHATRONIC SYSTEMS

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Abstract

In this paper, the teaching of a methodical design approach for mechatronic systems is presented. The students are collaborating in teams and must design and build a real prototype for a robot that carries a fragile load and is entered into a final contest at the end of the course. Applied teaching principles include game-based learning with Moodle quizzes, design challenges to engage with the students and weekly theoretical lectures linked with practical sessions that include the use of mechanical construction kits, CAD design and rapid manufacturing using 3D printing. The project is time-boxed and organized according to the methodical framework of the guideline VDI 2221.

Keywords: *Game-based learning, collaboration, design challenges, constructive alignment, methodical design approach.*

DIALOGUING ON FRIENDSHIP AS POLITICAL VIRTUE: AN EXPERIENCE OF CITIZENSHIP EDUCATION FOR PRIMARY SCHOOL CHILDREN

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Abstract

Citizenship education is an urgency: contemporary sociologists and philosophers describe our society as characterized by indifference, lack of empathy, disengagement in the “common good”, violence and unresponsiveness for social rules. Citizenship is a concept referring to the relational and political dimension of human being that, in Western philosophy, is presented as a “political being”, for whom existing is co-existing, whose “singular-plural” life is strictly connected to the life of the community. The sense of citizenship emerges from the awareness of reciprocal dependency. According to Aristotle (*Nicomachean Ethics*) every being tends to the good; for the human being this good is contemporary personal and political: and that is *eudaimonia*, the good quality of personal-communitarian life. *Eudaimonia* can be reached through the practice of care: for the self, for the other, for the common space. And care is a practice informed by virtues: specifically, care of the common space is characterized by friendship, that is considered by Aristotle as the political virtue par excellence. In conclusion, to live the experience of an engaged citizenship consists in experiencing care and political virtues, above all friendship. Friendship is one of the objects of the second edition of the MeArete project, a program of ethical education designed by CRED (Center of Educational and Didactic Research) of the University of Verona (Italy) to engage kindergarten, primary and middle school children in reflecting on those virtues which are central for the development of citizenship. In this contribution, we will present some texts written by the pupils and the Socratic conversations about friendship, developed during the implementation of the program, in which the children were invited to define this concept. These conversations were recorded, verbatim transcribed and qualitatively analyzed following a methodological crossbreeding between the Phenomenological-eidetic method and the Grounded Theory. Also, the written texts were analyzed following the same method. Findings bring to light what friendship is according to the participants and how they experience it. The results are finally discussed in light of the importance of such proposal in promoting citizenship education.

Keywords: *Ethical education, citizenship, friendship, phenomenological research, primary school.*

SCAFFOLDING ARGUMENTATIVE ESSAY WRITING: AN ONLINE SCRIPTED PEER FEEDBACK AND PEER FEEDFORWARD MODULE

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Abstract

This study compared the effects of support for peer feedback, peer feedforward, and their combination on students' peer learning processes and argumentative essay quality. Participants were 86 BSc students who were randomly divided over 43 dyads and assigned to peer feedback, peer feedforward, mixed, and control conditions. In an online environment, students were asked to write an argumentative essay, engage in peer learning processes, and revise their essays. Overall, the results showed that students in the three experimental conditions benefited more than students in the control group in terms of peer learning processes and argumentative essay quality. However, there was no significant difference among the three experimental conditions.

Keywords: *Argumentative essay writing, online learning, peer feedback, peer feedforward.*

THE IMPACT OF POLYCHRONICITY ON STUDENT PERFORMANCE IN DIGITAL TEST SITUATIONS

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Abstract

Polychronicity, an under-researched dimension of diversity, refers to the degree to which a person likes to engage in several tasks at once. While people differ regarding their preferences for engaging in multiple tasks simultaneously, jobs also differ in that some tend to require the successive completion of tasks, whereas others demand that the person's attention be divided among several activities at once. A body of literature which we have summarised has hypothesised, and to some degree empirically ascertained, that productivity gains also ensue from a person-job fit with respect to polychronicity. This would imply that as digitisation progresses and the demand for multitasking in the workplace continues to rise, polychrons will increasingly be sought on the labour market. This paper adds to that literature by testing, among a group of undergraduate students, the performance effects of the interaction between polychronicity and a digital task design. While one half of the students were randomly assigned to a set of tasks that was to be completed sequentially, the other half were given the choice of how to allocate their limited time across the set of tasks, and in what order. While falling short of downright multitasking, as employed by most prior studies, the latter setup allowed the students to jump back and forth between the individual tasks, which should cater to the preferences of polychrons. We found that this more flexible task arrangement improved average performance across the board, i.e., irrespective of the degree of polychronicity. At the same time, however, performance was also significantly higher when there was a match between time style and task type, i.e., when monochrons were given the sequential tasks and polychrons the flexible, simultaneous task structure.

Keywords: *Monochronicity, polychronicity, performance, person-job fit, multitasking.*

PEDAGOGICAL & TECHNOLOGICAL KNOWLEDGE AND USE OF DIGITAL TECHNOLOGIES BY FACULTY BEFORE AND DURING PANDEMIC TIMES

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Abstract

This paper describes the methodological design and main results of a research project whose main objective was to analyze the relationship between technological and pedagogical knowledge and the use of ICT by faculty at a public university before and during the pandemic. For data collection, an electronic questionnaire was applied to 250 faculty members, and frequencies, contrasts, and correlations of variables were analyzed. Among the main findings were the detection of a significant difference between both type of knowledge, with the later showing higher values in both periods, but the former experiencing a greater increase between periods. We also found significant differences before and during the pandemic in the use of ICT by faculty for planning, designing, and managing environments and experiences; for teaching, learning and curriculum development; and, for assessment and evaluation. However, the greater difference we detected was in the use of ICT for teaching, learning, and curriculum development. Finally, we also detected that technological knowledge is the factor that most strongly predicts ICT use by faculty. We can conclude that the success of universities in guaranteeing academic continuity in the face of similar contingencies necessarily requires a teaching staff competent in the knowledge and pedagogical use of existing and future digital technologies.

Keywords: *Pedagogical-technological knowledge, digital technologies, faculty, pandemic.*

PREDICTING STUDENT PERFORMANCE FROM MOODLE LOGS IN HIGHER EDUCATION: A COURSE-AGNOSTIC APPROACH

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Abstract

The institutional adoption of learning management systems (LMS) aims to improve educational outcomes and reduce churn through student engagement with educational content. Modern LMS record all student interactions and store them as activity logs that encode patterns of learning behaviour. Previous research has shown that insights derived from log data can detect students at risk of failing in a single or a few courses, but comprehensive institution-wide surveys are few and far between. The work presented herein uses machine learning to create predictive models to identify students at risk or excellent students using the Moodle logs generated by a sample of 9296 course enrolments at a Portuguese information management school. 31 candidate features were extracted to create and train different predictive models. Model performance was evaluated through 30 repetitions of Stratified K-Fold Cross-Validation, using the area under the receiver operating characteristic (ROC) curve (AUC) and the F1-score. All experiments were repeated with the addition of the average of the intermediate grades obtained by the student in the course as a 32nd candidate feature. The results suggest that features extracted from Moodle logs are good predictors of students at risk, as indicated by the 0.752 AUC score achieved by Random Forest. The addition of intermediate grades significantly improves the predictive performance, leading to an AUC score of 0.922 and F1-Score of 0.693 for the best classifier, Gradient Boosting. However, the performance for identifying excellent students was comparatively lower, with an AUC score of 0.781 and F1-Score of 0.567 for Gradient Boosting. Future work should focus on exploring the implementation of an early warning system that can assist educators in identifying students in need while there is still time to provide feedback and develop corrective measures.

Keywords: *Student performance, Learning Management Systems, higher education, classification, machine learning.*

ART VS SCHOOL DROPOUT: THE THEATRE-EDUCATION OF 'MAESTRI DI STRADA' NARRATED BY EDUCATORS AND PUPILS

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Abstract

In Italy, the percentage of adolescents dropping out of school is really high. According to several studies, extra-curricular activities can promote dropout recovery. The "Maestri di Strada" Association carries out socio-educational projects in Neapolitan suburbs, by countering school dropouts even through art education. Among several workshops is that of theatre – a powerful educational tool, which supports identity and empowerment. The present study aimed to document and evaluate the multi-year workshop journey of a group of adolescents, by giving them and their educators a voice through semi-structured interviews. The latter were conducted with 9 pupils at the end of the penultimate year (Ad-T1) and of the last year (Ad-T2) of their journey and with 3 of their educators (theatre experts) a year after the end of their journey (Ed). The large textual Corpus collected was subjected to Thematic Analysis of Elementary Contexts (T-Lab Plus). The findings (Ad-T1: 6 cluster; Ad-T2: 5 cluster; Ed: 6 cluster) show that both adolescents and educators agree to consider this workshop a precious space where one can reclaim their own desire to learn and grow. Notably, in T1, pupils emphasize differences between theatre and school, their meaningful relationship with educators, learning to regulate emotions and to cooperate, and the alliance with families and the local community. In T2, pupils emphasize the importance of the group, the personal experiences had in each staged performance, and their new idea of adulthood. Similarly, educators regard the group as fundamental, as well as the relationship between the school and the local community, and future prospects.

Keywords: *School dropout, extra-curricular activity, theatre-education, adolescence, T-Lab Plus.*

HIGHER EDUCATION DIGITALIZATION - FRIEND OR FOE?

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Abstract

The direction in our university, and indeed in the whole of Finland, regarding the teaching methods in higher education (HE) was rather strongly towards utilization of the digital tools during the first two decades of the new millennia. This translates to creating flexibility for the students to use. Also, whilst working simultaneously with the studies. The digital proficiency of the staff members was constantly under development schemes. The aim of this study is to examine the digitalization in higher education. There are lucrative benefits to be harvested in using digitalization but simultaneously there are significant risks in their use. In this paper these benefits and risks will be studied through practical examples. The results show the need for different pedagogical and didactic approaches in learning events in higher education. The year 2020 however, with the pandemic, brought the need to alter all at once to the digital mode; lectures for the students were to be held in Teams or in Zoom, the assignments were to be made and presented there too. The change went rather well, we daresay. Seemed that the worst scenario was avoided. Maybe so, but suddenly the news grew ill with various messages proclaiming that the students were feeling ill. Similarly, the university community saw cracks in the traditional institution. The unity of the university was worse than before, the students did not work together as they did before, the staff was driven away from the campus to work from home, i. e. they could not meet with their colleagues and peers to exchange views and pleasantries. Now, after the ban has been lifted, the university management wishes the return to the campus. However, the staff has witnessed the virtual mode and working from home to be very adequate to say the least and the same applies to the students. An on-campus day was announced, with other similar measures in order to get the staff back on campus together with the students. In addition, the conundrum presented itself, whether to make the on-site learning events obligatory, to stream them, to record them, or a combination of these features. The students, when asked, reported their willingness to take part in the teaching if 'it was worth it'. I. e. the traditional lecturing, with little interaction bore benefits when watched from home. The answer is that there is no silver bullet to solve various issues with one shot, but rather to address the individual questions case-specifically.

***Keywords:** Higher education, digitalization, digital tools, learning events.*

ASSISTING LEARNERS WITH HOMEWORK: PARENTAL ATTITUDES AND CULTURE, SOUTH AFRICAN CONTEXT

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Abstract

This study examined the attitudes of parents in assisting their school-going children with their homework. Participants were a purposive sample of 50 parents (Female=27, Male= 23, Black=100%, Rural=100%) with age range 27 to 60 years old. Data on homework assistance were collected using semi-structured individual interviews. The data were thematically analysed. The results showed that parents believed that assisting with homework is the responsibility of educators. South African parents expressed the most discomfort in assisting with homework, indicating that they are in most cases unfamiliar with the contents of homework. Some parents indicated that they are illiterate, and therefore unable to assist their children. Henceforth, parents need resourcing by education department on how to provide homework assistance to their children.

***Keywords:** Homework, parents, assistance, culture.*

EXPLORING ALTERNATIVE PEDAGOGICAL SPACES TO SUPPORT 21ST CENTURY SKILLS DEVELOPMENT

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Abstract

21st century skills include competences for everyday life and work, such as cooperation and teamwork, creativity, critical thinking, and problem-solving skills, which are also developed in the pedagogical space. In the framework of this research, we sought to find out in which pedagogical space alternative schools, which have declared to develop 21st century skills in their pedagogical programme, implement competence development.

Keywords: *Competence development, pedagogical space, autophotography.*

A LIVING LAB TO COUNTERACT INEQUALITIES IN EDUCATION: FIRST STEPS EXPERIENCED BY PARTICIPANTS

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Abstract

A gap exists between socioeconomic groups in terms of their ability to use ICT tools for learning purposes (OECD, 2015). The recent pandemic has contributed to exacerbate inequalities among students (Collin & Brotcorne, 2019). Nevertheless, digital technologies could also contribute to work against inequalities (Giroux & al., 2022). Digital inequalities refer to differences in access, often associated with the digital divide, either in access to the internet and hardware (Van Deursen & Van Dijk, 2019), digital skills or competencies (Peña-López, 2010), as well as uses (Kelly, 2008). Digital inequalities can be addressed as a complex problem (Van Dijk & Hacker, 2003) which is part of an authentic situation mobilizing different resources in a task of indeterminate duration, non-routine, imperfectly predictable and not decomposable into additive elements (Spiro & DeSchryver, 2009). To address the digital divide, a social innovation laboratory was set up in Quebec (Canada). Bringing together about thirty educational actors from academia, government, business, as well as potential users of the solutions to be developed (Miller & al, 2016), an innovation cell and a steering committee were set up. Education actors could benefit from exploring more inclusive and innovative approaches to adapt to changing contexts (Deslandes-Martineau & al., 2020). Therefore, the project aims to foster the adaptation of educational and pedagogical practices to especially address the diversity of needs related to social and digital inequalities. The objective of the project aims at supporting the creation of solutions that are desirable, because they are co-created by people who will use them; feasible, since they have been prototyped, and viable, having been tested and validated in the field, in order to promote the adaptation of educational practices in a context where needs are diverse. The co-creation sessions of the cells were documented and analyzed in an iterative way by the multidisciplinary research team. The research method applied is action research based on an interpretive stance: it makes the synthesis between the strong ideas and the strategic or theoretical context in which they are embedded. We present the preliminary results of the Living Lab approach deployed for solution development in the first year of the project (Gwendal, 2021): needs exploration, co-creation, prototyping, testing, deployment, and solution diffusion. The first stages of the research and development activity are presented to answer the questions: how are the foundations of a living lab to counteract inequalities in education set up, and how are the first steps experienced by the participants? In conclusion, Adjustments for the second year of the project, where a second cell will be set up, will be presented.

Keywords: *Living lab, education, inequalities, numeric, co-creation.*

THE EVOLUTION OF TEACHING EVOLUTION

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Abstract

Like many other scientific theories, teaching biological evolution involves two fundamental challenges. First, the theoretical conceptualization is complex and includes many mathematical and genetic models. Second, timeframes required by biological models to demonstrate evolutionary processes make it challenging to visualize and understand them, especially in the context of introductory courses (e.g., high school, first-year undergraduates). Typical approaches to this challenge include simple narratives of events and evidence to get the students to grasp the basic idea that evolution exists. Alternatively, the evolution class is included later in the programs when students have been more exposed to natural sciences and biology information. Unfortunately, this late arrival of evolutionary theory study may leave some students to rely on intuition and even ideas unsupported by scientific evidence. As an alternative, game-based learning allows for a different approach to engage students of any level. However, game-based strategies may be stigmatized as tools to learn scientific theories under the assumption of a trivialized version of complex phenomena. Here, I propose strategies involving play and experimentation to achieve the appropriation of concepts with a learning-by-doing approach. These strategies rely on accessible material, becoming easy to implement in any school or university around the globe. This work collects more than 15 years of experience using games to bring students closer to theoretical concepts challenging to acquire from evolutionary theories (e.g., natural selection, genetic drift, or phylogeny). Notably, while focusing on students majoring in natural sciences (biology and earth system sciences), I also include experiences with a student from other disciplines. The systematization of this process includes interviews with students who inquired about crucial concepts before and after the experience and with participants that subsequently used these concepts in their advanced courses in biology or other natural sciences. The research indicates that the implemented games fostered an understanding of the theory developed general thinking skills, and are efficient tools for learning complex topics such as vicariance or evolutionary convergence. Remarkably, these results have proven to be replicable and support a central role of gamification to address issues in genetics, ecology, or socio-ecological systems, without compromising the rigor with which scientific theories support them should be addressed.

Keywords: *Biological evolution, game-based learning, science games, student engagement.*

A CASE STUDY OF PSYCHOEDUCATIONAL INTERVENTION FOR LANGUAGE LEARNING

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Abstract

This paper presents a case study focused on psychoeducational intervention for supporting language learning. It concerns a child that lost about 80% of hearing functioning at 11 months age, caused by an occlusive otitis. Despite successful surgery, the child didn't learn to talk. The paper's objective is to briefly describe the psychoeducational intervention used. This was based on inclusive practices aimed to develop language skills, and carried out by an interdisciplinary team in collaboration with primary school teachers. The methodology used for describing the case study consisted of a naturalistic observation that allowed collecting information on changes as result of the intervention. This permitted the analysis of the insights generated through practical experiences, and to find evidence in research on language learning. Also, the results emerged through the observation of this case study provided useful elements for encouraging the exploration of psychoeducational intervention's potentiality, and inspire future trajectories of research.

Keywords: *Case study, Auditory Processing Disorder, psychoeducational intervention, language learning, inclusive practices.*

TEACHERS' PERCEPTIONS ON INTERNATIONAL ONLINE TEAMWORK AND HOW IT CAN BE IMPROVED

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Abstract

In-service and preservice teachers were invited through an online platform (VALIANT) to participate in six to seven-week free online teacher development 20-hour courses with the aim to test the feasibility of a teacher development model that not only reunites novice and experienced teachers, but also promotes peer learning among them on concrete situations that happen in their classroom and their own teaching experience. This study focuses on one such course on Diversity and Inclusion in Primary Classrooms that brought together teachers from several European countries to develop their knowledge and competence on how to deal with diversity and inclusion issues through cooperative learning. At the conclusion of the VE editions of the course, nine participating teachers volunteered to be interviewed online. The main gains pointed out by the interviewed teachers are connected to the development of intercultural competence and learning; the ability to look at their and others' classrooms and education in general from different perspectives; the perusal of digital solutions they could reuse in their classrooms; and the development of social interaction and bonding with other teachers as essential for peer learning. The main challenges experienced when working in a team online were related to distributing and keeping deadlines; equal commitment to tasks, time management; and engaging with one another effectively despite only knowing each other virtually. Interviewees suggested several strategies to cope with the challenges of online teamwork that impact course design and the facilitators' and participants' roles. The main conclusion is that increased scaffolding is needed for team leadership and shared leadership to help virtual teams collaborate more effectively and cohesively across cultures.

Keywords: *Teacher development, online teamwork, virtual team, digital collaboration, shared leadership.*

INCLUSIVE PROJECTS IN SCIENCE AND TECHNOLOGY TO SECONDARY AND HIGHER EDUCATION

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Abstract

The purpose of this work is to bring science and technology and its applicability closer to secondary school and university students through the development of cooperative projects with people with functional and cognitive diversity. Through a teaching and learning methodology based on inclusive projects, professors from Higher Education aim to promote scientific and technological vocations and involve people with diversity in the advances in science and technology while making their condition visible to young people. This work shows both qualitative and quantitative indicators that allow us to evaluate the impact of those proposals. The degree of satisfaction of all the agents involved is very high, not only with the teaching and learning but also with the quality of the solutions developed to meet the needs of those people with diversity. The incorporation of projects based on both socially inclusive technological challenges and fairs increases motivation, participation and interest in science and technology, as we will demonstrate from obtained results. In addition, we would like to point out that these proposals mainly achieve three different sustainable development goals: number 4 (quality education), number 10 (reduction of inequalities) and number 12 (responsible consumption and production).

Keywords: *Secondary education, higher education, science and technology education, new learning and teaching models, inclusive education.*

SCHOOL VOLUNTEERING CLUBS: HOW THE SCHOOL CONTEXT AND ORGANISATIONAL SUPPORT SHAPE (UN)SUCCESSFULNESS

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Abstract

School volunteering clubs (SVC) are a pedagogical innovation in the Croatian education system. Recent national research communicates a high level of networking between SVCs, locally-based institutions and civil society organisations (CSOs). However, the school context in which SVCs take place is not always conducive. SVCs often lack support from the school principals and teachers, as well as financial support (Ćulum Ilić, 2019; Rijavec, Jurčec, and Pavlović, 2019). This paper therefore aims to offer insights in attributes namely school context and organisational support, shaping the (un)successfulness of SVCs. A qualitative case study (6 SVCs) was conducted to better understand the aforementioned phenomenon. Six focus groups were conducted with 38 secondary student volunteers. We will present findings of the focus groups with an emphasis on the organisational structure, and the school context in which the SVCs take place. The thematic analysis shows that SVCs are categorised in the school curricula as extracurricular activities or short-term projects. Each has coordinators who are either teachers or professional associates, while in some students share the coordinating role. Schools generally support collaboration with external stakeholders and findings of this study correlate, thus revealing a high level of successful collaboration that SVCs nurture with many CSOs. Such collaboration offers opportunities for students to engage meaningfully in addressing many local social issues, which contributes to their sense of belonging to the community. Analysis of the school context reveals layers of institutional challenges, namely lack of support coming from the 'top', thus leaving the SVCs and its coordinators to be creative and innovative in their bottom-up approach, without the necessary resources. The indifference of those students who do not volunteer is noted, as well as of teachers who don't recognise such engagement as (academically) important nor valuable. In parallel, there is a positive and supportive atmosphere in all the SVCs. Emphasis is placed on democratic relationships among students, among coordinators and students, as well as on the collaborative line between students and CSOs. Students have a less formal and closer relationship with coordinators, which also affects their positive perception of teachers in general. Many studies suggest that the school context in which educational processes take place affects the quality of these processes. The results of this study show that SVCs can operate successfully despite the lack of a positive school context, but resting solely on the coordinators' enthusiasm. This research contributes to the body of literature emphasising that a nurturing school climate, cooperation, equality within the SVCs members, and students-coordinators positive relationships are crucial for SVCs to succeed.

Keywords: *School volunteering clubs, school context, secondary schools, qualitative case study.*

DOES IDENTIFYING AND ADDRESSING ACADEMIC DIFFICULTIES EARLY ON CONTRIBUTE TO ENHANCED STUDENT SUCCESS AND HIGHER RETENTION RATES FOR A DISTANCE LEARNING COURSE?

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Abstract

In UK universities there is a problem with academic under-performance, failure and dropout of students enrolled on programming-based courses such as computer science & software development. One way to address the issue of high dropout rates in these courses is to implement targeted interventions for students who are at risk of failing or dropping out. By providing timely interventions to students who are struggling, it is possible to improve academic performance and decrease dropout rates. This requires the ability to quickly and accurately identify these students and provide them with the support they need. One challenge with current approaches for identifying students at risk of academic failure or dropout is that they often do not identify these students until it is too late to provide meaningful interventions. To improve the effectiveness of interventions and support for at-risk students, it may be necessary to consider additional sources of data and to implement interventions earlier in the academic process. When working with students in a distance learning programme the problem is more complex than when working

with those enrolled on campus-based programmes. The nature of distance delivery means that academic staff are often denied the opportunity to regularly observe a student's performance in a classroom or computer laboratory setting. Furthermore, the literal remoteness of a distance teaching modes often stands between an academic and a struggling student and often blocks the possibility of a quick and informal chat where the student might have outlined their academic difficulties. These are both classic examples of on-campus triggers for intervention that could help to support a student; in a distance learning setting these triggers are much less likely to happen. Our approach to identifying students at risk of academic failure or dropout involves using a wide range of data sources, including pre-matriculation socio-demographic data, aptitude test scores, assessment results, attendance data, and Learning Management System (LMS) activity data. This diverse range of inputs can provide a more comprehensive and accurate picture of a student's academic performance and risk of struggling in their studies. We frequently recalculate the prediction of likely academic success for each student, which helps to avoid the issue of "staleness" by using the most up-to-date data available. This can help to ensure that interventions are timely and tailored to the needs of each student.

Keywords: *Academic success, retention rates, distance learning, intervention, predictive learning analysis.*

EFFECTS OF INCREASED DISTANCE LEARNING ON EXPECTATIONS OF USING FLEXIBLE TEACHING METHODS IN HIGHER EDUCATION

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Abstract

Distance learning has made it possible to increase the flexibility in teaching and learning. Flexibility is mentioned as one of the main benefits of distance learning, both from students and teachers. Distance learning has time flexibility, as if the lectures are recorded, they can be watched at any time. Distance learning is not place bound either, which means that students and lectures do not need any time to travel and move into the classroom. On the other hand, digital tools make it possible to organize hybrid teaching, combining both distance and contact teaching. The aim of this study is to discuss the need of amount of flexibility in teaching methods at the master level courses at the university in future. What is the enough or good level of flexibility offered in education? How much flexibility do we need to offer to students? Distance learning, contact teaching or something between? These are the questions many university teachers and lectures need to consider these days when lecturing the courses and planning the future implementations. The purpose is to describe the students' and teachers' expectations and wishes related to flexibility in higher education. In addition, the benefits and challenges related to flexible teaching methods will be studied. This study is by its nature a case study in the form of survey for students at Tampere University, Finland. The study also analysis the discussions and interviews of students, teachers, and other stakeholders involved in higher education. As a result, the different aspects of flexibility in teaching and learning will be introduced. Of course, it is in the best interests of the student, if you can choose, if you want to attend in lecture either through online or contact teaching in lecture room. But this can be the case also with other stakeholders. In many courses the representatives of industrial companies are involved as visiting lectures or as case companies in course assignments and it might be easier for them to attend the learning events as well through online. For example, Anyway, hybrid teaching compared just to contact teaching in lecture room requires more resources from teachers.

Keywords: *Higher education, flexibility, flexible learning, teaching methods, distance learning, contact teaching.*

CRITICAL THINKING TO EMBED SUSTAINABILITY IN ENGINEERING COURSES ACTIVITIES. A SYSTEMATIC LITERATURE REVIEW

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Abstract

This contribution presents the results of a systematic literature review, which tries to explore the current trend in engineering studies to include Sustainable Development (SD) in the curricula with the support of Critical Thinking Skills (CTS). As future technical problem solvers, critical thinking (CT) development is considered essential for engineering students. Beside UNESCO announces CT as one of the key transversal competencies to insert SD into academic curricula, among others as, systems thinking, collaboration, normative competence, anticipation, self-awareness, strategy and problem solving. However, the way to embed sustainability in engineering education is uneven, and each academic institution or lecturer designs its own model for including sustainability in teaching. After some years embedding SD in engineering curriculum, arises the need to know if lecturers actually implement models that contribute to inserting SD supported by the so demanded CTS according to UNESCO, and, if so, how are the adopted didactic designs. All it, with the aim to obtain a model to design effective training activities to insert SD in the engineering classroom through this key competence for engineering students. This work is considered an interesting study that combines the much-demanded need on the part of evaluation agencies to include SD and CT in engineering studies to train socially committed professionals according to the challenges and scenario of the 21st century. The literature review was carried out systematically, according to the standards of the specialized bibliography. Nearly 40 articles obtained from the Scopus, WOS, and IEEE Xplore databases were analyzed. Its mains results show that there are fewer activities working on sustainability through critical thinking. In most cases, SD related PBL activities are carried out, and critical thinking is one of the ingredients needed for PBL process, which is developed transversally. Nevertheless, also interesting design has been found. This paper shows the detailed results of the review, that is, the role of CT in analyzed papers and the description of teaching methodology used to embed both SD and CT. In addition, possible orientation is proposed to work critical thinking with sustainability activities for future lines of work are proposed.

Keywords: *Critical Thinking, Sustainable Development, engineering education, literature review.*

A HETEROGENEOUS ABILITY GROUPING MODEL FOR COOPERATIVE LEARNING BASED ON NONPARAMETRIC WEIGHTED SKILL DIAGNOSIS

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Abstract

In cooperative learning, an educational approach involving students working together in small groups to accomplish a shared goal, all ability achievers can gain much learning effectiveness through work in a mixed-ability learning team to achieve a common goal. Students can learn from each other and build on each other's strengths, leading to more effective learning (Slavin, 1990a, 1990b). Many researchers supported that a collaborative environment with heterogeneous grouping can lead to superior academic achievement compared to an atmosphere comprising homogenous students. This type of group setting may enable a greater diversity of perspectives and ways of thinking, which allows for better problem-solving, more creative thinking, and more dynamic discussion (Murphy et al., 2017; Sanz-Martínez et al., 2019; Wichmann et al., 2016; Kanika et al., 2022). One core component of implementing cooperative learning in the classroom is determining how to group students according to their learning abilities. Hence, this study proposed a visual grouping diagram, a clear and easy-to-understand guideline for grouping students according to their learning abilities to give a grouping guideline. The nonparametric weighted skill diagnosis model (NWSM) was applied to capture the fine report of individual students' proficiency levels for a set of skills that make up the targeted construct first (Li et al., 2022). Then the hierarchy diagram

according to the learning profiles obtained by NWSA can be found based on the ordering theory (Airasian & Bart, 1973; Wu et al., 2012). This approach allows the teacher to quickly identify the hierarchy levels of students in the class and to group students in a way that is balanced in terms of the students' abilities. It also allows the teacher to create groups tailored to the student's specific needs, leading to more effective learning. A small class experiment was applied to test the proposed heterogeneous ability grouping model in a real-world setting. This approach involves implementing the proposed model in a small group of students and observing the results to see if it leads to more effective learning. Figure 1 shows the visual diagram of 13 students based on the proposed method in the experimental group. Student a1 has the highest learning ability, and according to the mastery profile, student a1 can help all other students. Moreover, students a8, a10, and a13 have the same mastery profile, and they can help students a6, a12, a5, and a2. In addition, student a2 has the lowest learning ability, and all other students can help a2. Following Figure 1, students can be divided into two heterogeneous cooperative groups, {a8, a10, a13, a6, a12, a5} and {a1, a3, a4, a9, a7, a11, a2}. In each group, students have complementary abilities; hence, they can help each other solve math problems. Compared to the control group based on random grouping, paired t-tests of the post-test and the pre-test show that learning performances can be improved after cooperative learning of two grouping methods. However, the ANCOVA result shows the learning performance of the proposed grouping method is significantly better than that of the random grouping method.

Keywords: Cooperative learning, heterogeneous ability grouping, nonparametric weighted skill diagnosis, ordering theory.

THE 2030 AGENDA IN HIGHER EDUCATION: EVIDENCE FROM A UNIVERSITY PROJECT

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Abstract

The 2030 Agenda is a universal call for action agreed upon by 193 countries in the United Nations. Divided into 17 Sustainable Development Goals (SDGs), the Agenda serves as a blueprint to work for a better world in three dimensions, namely, social, economic and environmental. Actors such as international leaders, private companies, NGOs and citizens are expected to contribute to a more egalitarian, fair, peaceful and prosperous planet. Higher Education Institutions are not an exception and should also strive for the achievement of the goals. Indeed, universities are expected to promote social change so they should assume an active role in the pursuit of sustainability. Additionally, they are in charge of higher education, meaning that they are entrusted to shape future world leaders and professionals. Sustainability has a long tradition in Higher Education Institutions, as universities have acted as signatories of a myriad of agreements and sustainability declarations. Although many attempts have been made at different levels and in different institutions, some authors argue that the initiatives to incorporate sustainability have frequently been limited in scope, involving only specific areas such as re-designing curricula, making the campuses greener, or building local, regional and national networks. Therefore, a more integrative approach to introduce sustainability at universities is needed, leading to what is known as “university sustainability culture”. With that concept in mind, in a mid-size European university, a multi-stakeholder SDG-based project was implemented to deal with the SDGs through a holistic approach monthly. The goal of the project was two-fold: first, it aimed to raise awareness about the global challenges among students and, second, it intended to carry out real interventions to improve the university surroundings. Thus, in this paper we present how the project was developed, with the involvement of professors, students, administrative staff, NGOs, public administration and other partners, and propose a theoretical model to evaluate the project's impact. Particularly, we analyze the influence of the SDG-based project on students' responses in terms of satisfaction, sustainable behavior and identification with the university. Preliminary results point to the favorable impact of the project on students' reactions and seem to confirm that if students are embedded in a sustainability culture, they show a strong tendency to behave more sustainably and to feel closer to the institution offering them the possibility to get in touch with the 2030 Agenda, that is, the university. Interesting implications for higher educations will be discussed.

Keywords: SDG, 2030 Agenda, students, multi-stakeholder project, satisfaction.

MOTIVATION, LEARNING AND EMOTIONS: ENGAGING STUDENTS WITH SCIENCE FLIPPED CLASSROOM

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Abstract

Motivation is an important construct in the teaching and learning process. A low-motivated student is uncommitted, with little engagement in the learning process, is not available to focus on learning tasks or processes and has low relatedness/belonging with the school environment. Motivation and resilience are two facilitators of science's teaching and learning process. In this context knowing teaching methodologies that promote school motivation is very important for physics and chemistry teachers. In a Portuguese upper secondary school class in the science field, an action research project was planned and implemented during a school year. The aim was to decrease apathy and disinterest in learning chemistry and physics, after confinement, improve study habits, and develop facilitators of the learning process. The intervention consisted of using active learning methodologies centred on students: an inverted classroom, accompanied by practical work with laboratory stations. These two methodologies allow a student-centred class and very diverse tasks to be performed during the teaching and learning process. So, throughout the research time, during the school year, the implementation of the intervention (the active methodology applied to it) was the focus of the research. This research, with the characteristics of quantitative research, followed the methodology of action research. The data were collected, through a questionnaire (already validated for the Portuguese population) at the beginning (after two months of intervention) and end of the school years (after the intervention). The questionnaire, containing statements, is structured as a self-response, with a Likert scale, ranging from totally true (5) to totally false (1). It is based on the achievement goal theory, self-regulation model, and instrumentally, and collects data regarding learning strategies applied by students. The results revealed that these methodologies allowed the students' motivation maintenance throughout the school year and that teachers as a relevant role in preserving the students' motivation.

Keywords: *Motivation, science field, active methodology, flipped classroom, laboratory stations.*

INNOVATIVE WRITING PRACTICES AS LEARNING OPPORTUNITIES IN A VULNERABLE SCHOOL CONTEXT. A SOCIAL DESIGN INQUIRY TITLE

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Abstract

The contribution presents an innovative social design research (Gutiérrez and Jurow, 2016) carried out in a vulnerable school context, to contrast students' school exclusion and underachievement. The project unfolded in a 10-hour group activity, consisting in the working out a collaborative written text (Thompson, 2014) about the social consequences of hostile communication among peers and the value of friendship, a sensitive topic of students' lives. This was considered a step to connect the students' repertoires of writing practices, developed in their everyday lives, to the academic register (Gee, 2004). The aim of the contribution is to present the learning opportunities that emerged in the collaborative writing processes in promoting relational and cognitive competences in students, in particular cohesive conversation, and reflective skills.

Keywords: *Social design research, learning opportunities, collaborative writing processes, vulnerable students.*

EARLY INTERVENTION FOR IMPROVING STUDENT PERFORMANCE BY DETECTING NON-ENGAGEMENT

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Abstract

During the Covid-19 pandemic, both teachers and students had to face many challenges, especially due to the lack of in-person classes. To address those challenges and to make up for the lack of in-person lectures, teaching modalities had been changed, which yielded unexpected benefits. For example, students started to engage more in online lecture sessions via chats, polls, and quizzes. Online lectures were recorded enabling students to revisit them as a valuable study aid, this was particularly useful for international students where English is not their first language. Post Covid-19 pandemic once the teaching was back on-campus, we decided to go with the blended mode of teaching, where we adopted all the positive things that helped in engaging students during our online teaching such as live quizzes, breakout rooms, polls, making lecture content recorded for online viewing, etc. and tried to implement them in the in-person classroom. Running this mode of teaching and learning for 2022, we have received mixed student feedback and academic results. In this paper we first reflect on the strengths and weaknesses of this approach, highlighting what worked for us and what did not, and then we propose ways to mitigate those weaknesses. Specifically, we propose an approach to tackle the lack of student engagement in the modules by identifying the students who are not engaging in the module and making early interventions either to modify the classroom activities or to motivate those students so that they re-engage. There are some key indicator metrics for identifying the non-engaging students, such as attendance in the practical lab/support sessions, log-in details to the servers where the experiments are being run, and results of classroom interactive activities like quizzes, polls, etc. It would benefit the students if these key metrics are utilised right from the start of the module in order to detect the students who might fall behind and perform poorly.

Keywords: *Student performance, student engagement, teaching delivery, blended learning.*

DATA SCIENCE AND CHANGING ECONOMIC LANDSCAPE AS DRIVING FACTORS IN HIGHER EDUCATION

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Abstract

University and College education pursue to be viewed as an important financial investment for professional future, and student families play a significant role in terms of paying for it. For the few years in a row, already during the pre-pandemic Academic Year 2018-19, 90% families with a student enrolled in college viewed college was an investment in the student's future, while 80% of families felt positive in terms of paying for higher education pursuits. That did not change significantly during the pandemic Academic Year 2019-20, as well as the post pandemic during the Academic Year 2020-21. At the same time, Universities and Colleges seized the opportunities to reimagine the curricula focusing on Data Analytics, reinvented delivery methods, and re-designed learning spaces. That resulted in significant gains in class participation, ability to focus, Professor feedback opportunities, learning through multiple means, and student appreciation of the value of costs invested in College education.

Keywords: *Data science, economic landscape, higher education.*

THE EXPERIENCES OF FOREIGN LANGUAGE TEACHER CANDIDATES DURING THE EMERGENCY REMOTE TEACHING

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Abstract

The emergency remote teaching that emerged with the Covid-19 pandemic has been an unexpected situation for students, teachers, and teacher educators. During this period, educators have had to abandon the methods they always use and moved their lessons to the online environment while students have had to learn their lessons away from the classroom. Mostly, in-class communication has been limited or even non-existent in such online teaching environments. Moreover, the experiences of educators and students about this remote teaching have differed: Some have handled this teaching effectively, some others have had difficulties. Therefore, the current study focuses on what pre-service teachers experience during the emergency remote teaching in order to reveal their practices and problems. With this given background, this study aims to investigate how pre-service teachers go through the online remote teaching and how their experiences in this period influence them for their future career. For this purpose, by applying a qualitative research design, the present study collected the data by conducting interviews with 12 pre-service foreign language teachers at the Faculty of Education. The participants started their university life with face-to-face education, continued with online remote teaching, and eventually returned to face-to-face education again. The results of the interview data showed that most of the sample did not find the online remote teaching efficient. Particularly, they reported that the differences in educational environments and the inability to provide in-class communication in online education negatively affected their psychology. In addition, they indicated that both they and their teachers did not receive any training or support in online remote teaching; so, they survived this period by trial and error. Pre-service teachers also did not have sufficient knowledge and skills to decide how to proceed if they found themselves in a similar situation in the future. While almost all the pre-service teachers preferred face-to-face education to online remote teaching due to their own experiences, some students stated that they could use remote teaching in their own career. As a result of this study, some suggestions were provided such as opening a new course on digital literacy and online teaching in teacher education programs and conducting in-service training for educators in this field.

Keywords: *Digital literacy, emergency remote teaching, foreign language teaching, teacher education.*

COLLABORATIVE LEARNING AND PRACTICAL EXPERIENCES IN ENGINEERING STUDIES: WORKING ON SUSTAINABLE DEVELOPMENT GOALS

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Abstract

In the present work, we present a learning experience developed within the frame of an interdisciplinary project funded by the University of the Basque Country, UPV/EHU (Campus Bizia Lab Program) in which professors from different departments, students doing their Final Bachelor Degree Project as well as researchers, PhD students and administrative personal work together in a collaborative project. The main goal of this practice has been to widen the practical work related to sustainable development in the curriculum of engineer students and to create actual experiences developed in the close surroundings so that the learning content is closer to the professional practice of the future engineers. The specific topic of the case was the use of renewable energies in the buildings and installations of the university campuses and, specifically, the supply of biogas produced from organic residues generated in the canteens of the

campuses. The project started on September 2021 and, since then preliminary work related to data collecting and processing, statistics and calculations of the energetic potential of the organic waste of several points, as well as logistics issues has been done. The current part of the study is covering the simulation and design of a pilot plant to obtain the biogas and the potential uses that this biofuel could have in the campuses. The development of this project includes the consideration of sustainable development goals, in terms of environmental, social and economic impacts, allowing the insertion of these concepts in the intrinsic studies of engineering. The experience of working in a multidisciplinary atmosphere, combining different fields of knowledge and working in an actual case, has been positively evaluated by the students, who have indicated their satisfaction with the learning procedure in a final quiz, highlighting the acquired skills, such as initiative, autonomy, working in complex open cases and developing actual installations in situ.

Keywords: *Sustainable development in engineering, collaborative learning, renewable energies, biogas.*

EDUCATION IN TIMES OF NEED

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Abstract

The motivation for the research is based on the recognition that over the worst of the epidemic, we are experiencing new uncertainties. The pandemic meant both constraints and opportunities. New tools and creative solutions emerged driven by ICT companies while looking back we also had to learn that part of our world had no chance to join and solve social, educational, and health problems with these tools. We may think that this will only happen in developing countries. Still, even in Western societies, there are many for whom home education is not provided to a satisfactory standard. They do not have access to education in the event of an emergency, such as a pandemic, a war situation, or energy restrictions. *Research questions:* How has education without ICT tools been solved during the pandemic in disadvantaged areas? What can we learn from the experience there? During the lockdown, some parts of Africa, South-East Asia, and South America switched from formal education to innovative approaches that use local communication channels for education. This paper is focusing on community radio as it has been used extensively as an educational tool in developing countries since the 1970s (Nwaerodu & Thompson, 1987) (Africa Educational Trust, 2019). The revival of radio in education was the consequence of the pandemic and emphasized local specifications (Education Development Center, 2020). The research is based on a scientific literature review (database of ERIC). Also, first-hand information was collected from Community Media Forum Europe affiliate member organizations in Asia. Selected case studies from Bangladesh (BNNRC, 2020), Indonesia (Prahmana, Hartanto, Kusumaningtyas, & Muchlas, 2021), Bolivia and Sierra Leone have several similarities to ensure engaging radio lessons and provide access to education in rural areas. *Results and conclusions* worth further reflection: Radio is a good alternative to ICT when online learning is impossible, cheap and accessible in most households, does not need mains electricity, works with batteries, etc. The partnership between local actors (volunteers, civil society, religious groups) is essential for long-term commitment to spread awareness, provide space and resources for the radio station or the staff and teachers. The factors of most concern are the missing educational content in audio formats and the difficulties of producing such content in a short time. Therefore, I suggest the promotion of partnership and collaboration between the education and media specialists and preparing educational protocols with emergency governmental organizations.

Keywords: *Educational radio broadcasting, community radio, emergency education.*

RETHINKING RURAL EDUCATIONAL CONTEXTS AS SITES FOR TEACHER EDUCATION TO INNOVATE TEACHING AND LEARNING

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Abstract

Despite recent prioritization in national politics and economics, rural communities and schools across the United States (US) are still facing an array of challenges. In the US, rural schools are funded less proportionately than and often do not have the resources of suburban and urban schools. In addition, rural schools struggle to recruit and retain teachers in nearly all subject areas. Rural schools are often unable to provide the same academic opportunities as suburban and urban schools, which has compounding effects on all students, whether they want to take advanced placement courses or other specific courses for their chosen career pathways. Furthermore, rural student populations are becoming increasingly diverse and require rural schools to provide new services (e.g., English language learner [ELL] resources, mental health support, internet access) to their community. To better address these challenges the Rural Education Center at Kansas State University has increased their efforts to collaborate with rural schools in addressing their need for resources, teachers, and support. We use the theory of ecological agency to frame ways in which the contextual affordances and challenges of rural educational settings provide distinct opportunities for teacher education programs to innovate teaching and learning in rural schools. Many of the factors that have prevented sustained and authentic engagement with rural schools have been minimized in recent years through technology and increased broadband connectivity in rural contexts. Technology offers a range of opportunities for teacher education programs to engage more authentically with rural schools and provide sustained support through (1) telepresence-based field and student teaching experiences, (2) distance and online-based supervision, and (3) shared virtual and online pedagogies of the rural. To make these innovative engagements more sustainable, the use of technology in rural schools will need to be evolved and supported in new manners to have an impact on the agency of rural teachers to aid their students' learning. In this way, rural can be a lens for technological innovation in teacher education and rural schools.

Keywords: *Rural, teacher education programs, teaching and learning, innovation, ecological agency.*

SUCCESS STORIES OF STRENGTHS BASED INSTRUCTIONAL (SBI) APPROACH FOR CHILDREN WITH EXCEPTIONAL NEEDS

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Abstract

SBI is a systematic approach of an instructional training model with a primary focus on identification of a child's strengths (Chakrabarti-Ghosh 2013, 2019), the main theme of this paper. The paper will explain how Strengths-based instructional approach can be beneficial to open up communication, relationship, and the trust between parents and children with exceptional needs; teachers and students, among siblings, caregivers and more. This paper presents success stories of SBI in an informal interactive sessions with interviews, reflective discussion using a narrative case study of each participant.

Keywords: *SBI, narrative case study, informal interviews, parents, children with exceptional needs.*

A DESIGN OF ONLINE LEARNING MATERIALS FOR DEVELOPMENT OF LEARNER AUTONOMY

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Abstract

There are many reports indicate that educational inequality may be widening during the pandemic, and various factors contribute to the educational disparities. Though the problems are big, we need to continue our efforts to improve the educational disparities, one step at a time. As an effort of the improvement, we concentrate on the factors attributed to learners, the difference between a learner successfully studies with no stress and one without good learning progress as expected is caused by whether he/she has adequate learning skills adjustable to online/HyFlex learning style or not. From literature research we can recognize such learning skills same as those acquired in learner autonomy/self-directed learning. When we designed the course, we employed competency-based learning and task centered instruction. As is well-known a wide variety of learning skills required for autonomous learning. It is impossible to acquire all skills with only exercises in a course only. Then we restrict our learning materials as to develop competencies of learner autonomy. Also, we assume the competences broadly as employability skills like written communication and the problem-solving skill because we regard those as essential for life-long continuous learning. As for the latter, from interviews of some students we found that our students have not been sufficiently trained to apply them practically, for example, in problem solving and learning practices, although they are familiar with the concepts of these employability skills. We carried out a practice providing an online course to learn such skills in a university, and then made sure that such online self-study is to be not only training of them practically but cultivating meta-learning skills.

Keywords: *Self-directed learning, task centered instruction, reflection, online learning, Hyflex style.*

IDENTITY-BASED ACTIVITIES CARRIED OUT THROUGH ENGRAVING AND STAMPING EXERCISES. ART MEDIATION WORKSHOPS BASED ON LOCAL ENGRAVERS' WORKS AND AIMED FOR STUDENTS FROM THE CITY OF TOMÉ IN CHILE

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Abstract

This paper will refer to a project that consists of an artistic mediation in Tomé, Chile. This project involved an art exhibition that represents an innovative pedagogical proposal to reckon the value behind the creation of images of identity through techniques related to engraving and printmaking as strategy to gain knowledge. Through the Artistic Teaching Methodologies, this project proposed creative exercises based on the work of 6 artists. The aim was to understand what could be observed in the works of art, relate to it from personal experience and, finally, to create something from it. Thus, teaching art through art. The dynamics and the visual results from the work of the students were analyzed through Arts Based Methodologies using visual instruments.

Keywords: *Art education, mediation, artistic teaching methodologies, engraving, printmaking.*

DEMOCRATIZING EDUCATION: PEDAGOGICAL ACTIVISM AND TECHNOLOGICAL FUTURES

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Abstract

The current and ongoing urgencies for pedagogical invention in both philosophy and practice demand teaching and learning designs and applications that have consequence in terms of civic engagement. The achievement of democratic civic understandings, values, and practices depends on the recognition by educators that they are in fact, charged with the critical and ennobling task of developing through content and action the present and future civic capacities of their students; and such capacities are antidotal to the troubling ascendancy of populism, political autocracies and thuggeries around the globe. In an era irrefutably afflicted with the profusion of disinformation, the erosion of public trust, and the destabilization of truth, education for democratic participation is both intervenor and instigator for the broad project of citizenship and social change. In this sense, pedagogies are necessarily activist in their commitment to social engagement and change. The recognition of the exigencies of democratic education is more than a matter of curricula content that engages critically with the definitions and principles of deliberative democracy; rather, such recognition should result in pedagogical approaches and practices that model democratic participation especially in terms of learning environments and an infinitely more expansive view of the classroom. Key and orienting in the project of democratizing education are the determinants and elaborations of technology, and in particular AI in the educational context. While there is considerable handwringing around potential compromises to academic integrity and a rapid and unrestrained increase in academic dishonesty without efforts to neutralize the foundations and capacities of AI-generated papers, this paper explores affordances of current and emerging technologies in terms of precise practices toward democratic education, from pedagogical innovation, creative approaches to course design, new evaluation methods and criteria, expansive and experiential learning spaces, and more.

Keywords: *Democratic education, AI, technological advance.*

CRITICAL COMPUTATIONAL PEDAGOGY: AN APPROACH TO EXPANDING BIOPOLITICAL LITERACIES FOR THE DIGITAL SUBJECT

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Approaches to teaching digital competencies often overlook implications of digital technologies for subject formation. Digital subjects must increasingly confront the consequences of technically embedded ethical, social and political norms which give rise to forms of algorithmic bigotry and subjugation; that is, sexist, racist, colonial, homophobic, etc. outcomes from the manipulation of data. This kind of digital biopolitics can have profound implications in every sector of human activity including justice, economy, health, employment and education. The transformation of the industrial individual into post-industrial ‘dividual’ (as Deleuze coined it), presents new conditions for the political subject-citizen. The dividuated subject manifests in fragments of information and code, a procedure through which the bio-subject is rendered legible within digital systems. The making of the datified subject is a form of biopolitics whereby subject formation is an outcome of software. The literacies required for political agency in this context must encounter the ways computational discourses overdetermine subject potentials. In this study, I analyzed the tactics and techniques used by computational artists, both historic and contemporary, to produce subjective outcomes with computational technologies. Key to understanding the pedagogical potential of these practices was identifying the gap between how computational discourses can capture and direct agency, on the one hand, or expand it, on the other. In other words, some forms of computational practice afford the exercise of more subject agency than others. Based on study results, I am proposing a ‘critical computational pedagogy’ framework emphasizing categories of both conceptual and practice-oriented learning. Using these categories, curricula for digital capacity building can be developed that address and emphasize dividual agency through digital practices.

Keywords: *Pedagogy, digital literacy, critical technology practice, biopolitics.*

AN EDUCATIONAL ESCAPE ROOM FOR COMPUTATIONAL THINKING – DEFINING THE REQUIREMENTS

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Abstract

This paper presents an educational development project where game-based learning is used to facilitate introductory programming courses in higher education. The identified problem that is addressed in the project is the low pass rate and low student satisfaction in university courses on fundamental programming. A recommended pre-training for programming is computational thinking, and to learn about the fundamental concepts that are involved in programming, independent of specific programming languages. An initial literary review revealed that there exist several educational games on the combination of computational thinking and programming. However, these games are targeted towards a younger target group, or that they have a focus on specific programming. The aim of this study is to explicate the described problem, and to gather requirements for the design and development of an educational escape room. The research project follows the design science approach where the first two steps of 1) explicate the problem and 2) define the requirements were studied and described in this paper. The problem to address in the study was identified through literature searches and the authors' experiences as teachers in programming at higher education. To address the identified problem, requirements for a digital game were defined through e-mail interviews with teachers in higher education that teach fundamental programming courses. Answers were collected from teachers from three different universities in Sweden and analysed with open coding. Findings identified through the analysis will be used in future research studies to address the remaining steps of the design science methodology and further iterations of development. Findings show that some fundamental concepts seem to be relatively easy to introduce while others are harder to grasp for students taking their first programming course. Examples of concepts that could be learnt relatively easy are variables and non-nested selection. Some concepts that are seen as harder to introduce and explain are nested iteration and ternary operators. The conclusion is to build a game with different levels of thematic escape rooms, where the first levels have a focus on what teachers mentioned as easy concepts. The highest levels should introduce the more complex concepts, but that the concepts that are seen as most problematic could be omitted. This study was the first iteration in the definition of requirements, and more interviews will be conducted and analysed in the next phase of this two-year project.

Keywords: *game based learning, educational escape room, computational thinking, fundamental programming, design science.*

PAINTING AND MUSICAL COMPOSITION: STRUCTURAL CORRELATION OF TWO LANGUAGES

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Abstract

This work observes and tries to explain numerous structural and affective levels of visual and musical language as similarities and possible mutual incentives for creation. Throughout history, there is a constant connection between those languages, those artistic expressions/forms, trying to explain and analyse them. The paper gives examples of musical works inspired by images, as well as images created based on the inspiration of musical content. The problem of unequal presentation of two languages to students: music and art, arises in the practice of Fine Arts classes. Since the work is performed in the field of visual arts, its structure and the technical possibilities of the art technique used to perform the work are explained, while the musical structure of the piece of music, which serves as a template, is reduced to listening to the impression and feeling that the student experiences, and in such a case, he would have his own "ad hoc" reflex of the soul should be an incentive to perform work. In such a eurythmic reaction, the child does not listen to the music, but his own unprepared reaction, and such usually ends in a pattern or noncontrolled waving-patterning, since the performance of art work, which is a creative cognitive-emotional process, is reduced to a random reaction of hand movements as a eurythmically guided part of the body. The paper emphasizes the importance of explaining to students the structure of musical language when listening to a

musical template, thereby approaching the place of the composer, his way of thinking. Visual language has a number of similar expressions as musical language, which can be the basis for connecting the two structures. Music is a temporal art in the way it is performed, and for it we need to have a time section through which we perceive/listen. The visual staging of the listened musical template is subject to the rules of the visual work, which is perceived almost instantly even though it is created over a period of time. The paper talks about the benefits and at the same time the importance of performing a structural correlation between the musical and visual art fields in a way of understanding the structure of the musical text as an essential aspect of the value of the musical work, which prevents children from misunderstanding music - exclusively as entertainment, backdrops that stimulate the mood and nothing else.

Keywords: *Musical composition, painting, structural correlation, synaesthesia.*

WHAT DIFFERENCE DOES A SOCIAL PRACTICE APPROACH TO ADULT LITERACIES EDUCATION MAKE TO ADULT LEARNERS IN WESTERN RWANDA?

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Abstract

In this presentation, we will focus on the outcomes of implementing a social practice approach to adult literacies education (SPA-ALE) project in Rwanda (2017 - 2023). The overall objective of the project was: “to develop, implement and embed a social practices approach for adult literacies education in Western Rwanda that can be managed and delivered by local institutions to support people’s livelihoods through poverty reduction and inclusive socioeconomic development.” The Rwandan Government recognizes that adult literacy education is essential for poverty reduction, improved health, and increased participation in community development (Ministry of Finance and Economic Planning [MINECOFIN], 2013). While the Rwandan Government has an ambitious policy on adult education (Ministry of Education [MINECOFIN], 2014), this has not been satisfactorily implemented for a number of reasons, such as lack of training for adult literacy tutors and a prevalence of the use of an ineffective teacher-centred approach for teaching adult learners. We implemented the SPA-ALE project to address some of the existing challenges affecting adult education in Rwanda. As part of our project, we adapted the existing Rwanda adult education curriculum and implemented a culturally responsive, learner-centred approach for adult education in three districts in Western Rwanda. The social practice approach (SPA) is considered more effective in comparison with the teacher-centred approach. The SPA promotes adult learners’ agency in the formulation of learning objectives and activities. It empowers learners to identify problems that matter to them as the basis of the adult classes. This enables learners to develop appropriate knowledge and skills for alleviating socio-cultural concerns in their daily lives (Street, 2016). The SPA adopts teaching approaches that are participatory, such as group problem solving, ethnographic walks, and role play. As part of the implementation of the project, we trained community adult literacy tutors (CALTs), who, in turn, implemented adult classes at various adult education centres in the three districts in Western Rwanda. As part of the project implementation, we conducted qualitative interviews with a sample of adult learners who had graduated from the classes in 2021 and 2022 to investigate their life experiencing after completing the adult classes. Data was analysed using a thematic approach. The findings indicate that learners had benefited in several ways from taking part in SPA-ALE. The benefits included better understanding of nutrition and hygiene, improved household income enabling them to save and pay health insurance, better understanding of the importance of kitchen gardens, and more involvement in community activities, among others. The adult learners retained the knowledge and skills they had developed during the classes and continued to use this to improve their quality of life. Insights gained from the implementation of the adult classes will be discussed.

Keywords: *Adult literacy, adult learners, social practice approach, quality of life, Rwanda.*

EDUCOAST – NATURE-BASED EDUCATION IN COASTAL GEOSCIENCES: A FIELD STATION IN SOUTHERN PORTUGAL

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Abstract

Project EDUCOAST is funded by the EEA grants “Blue Growth Programme”, and aims to promote nature-based education in the area of coastal and marine geosciences at the Portuguese Institute for Sea and Atmosphere (IPMA, I.P.) field Station in Tavira, in southern Portugal. This station is located in a unique coastal environment, which includes natural features such as saltmarshes, lagoons, barrier islands, dunes and beaches. Moreover, IPMA, I.P. station is equipped with a new research laboratory, "Centre Tavira EMSO-PT", dedicated to the study and characterization of marine and coastal sediments. Partnering with the University of Lisbon, the local *Tavira Ciência Viva* Science Centre and the Portuguese Environmental Agency, the project offers diversified training, including activities and short courses to various educational levels, local social associations, and maritime-tourism companies, lifelong learning for basic and secondary school teachers, summer schools for higher education students, academic field trips and internships, and communication and outreach for the public in general. The trainees have the opportunity to experience a hands-on approach to learning, by observing processes in the field, collecting data and analyzing it in the laboratory/office, and interpreting the results, all in one place. Besides providing a unique learning experience, the set of activities offered by EDUCOAST project falls within the priority theme of preserving and protecting the environment with special reference to the importance and sustainability of coastal systems using the Ria Formosa as a case study example.

Keywords: “Hands-on”, field station, geosciences, Ria Formosa.

ADVOCATING FOR PAEDIATRIC PALLIATIVE CARE NEEDS THROUGH THE DEVELOPMENT OF SOCIAL NETWORKING SKILLS IN SOUTH AFRICAN HIGHER EDUCATION

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Abstract

The integration of Paediatric Palliative Care (PPC) within the social services qualifications is part of new development in education, but for the practice impact required, this space needs to benefit of a tried and tested framework on environmental networking, that may be at risk of only being seen as part of earlier innovation. Building from known insights on the integration of the sustainable development goal of building partnerships into the curriculum, focus will be provided on social networking skills from a person-environment perspective. Considering the risk to terminally ill children when sufficient partnerships are not in place, as required by the 17th sustainable development goal, a case is made for the use of a deeper understanding of the environment and the strengthening of support structures through social network analysis and environmental modification.

Keywords: Social network analysis, paediatric palliative care partnerships, environmental modification.

AN EMPIRICAL ANALYSIS OF BERT EMBEDDING FOR AUTOMATED OPEN ENDED RESPONSE MATHEMATICS QUESTIONS SCORING

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Abstract

With the development of technology, the number of users of online tests is increasing. The online test platform's multiple choice and closed question types have automatic scoring functions. The automatic scoring of online tests allows students to get instant feedback on their answers and take advantage of information technology. However, in the open-ended response questions, most of the platform questions have not yet had an automatic scoring mechanism. The scoring still has to rely on experts in the professional field for manual grading, and the correction process is time-consuming. Currently, the research on automatic scoring is mainly in the essay, and automatic scoring is performed through Latent Semantic Analysis (LSA). Since the answers to open-ended response questions in mathematics often contain specific mathematical symbols in addition to text, semantic analysis is difficult to achieve good results. The contribution of this paper is to establish the automatic scoring of mathematical open-ended response questions through deep learning Bidirectional Encoder Representation from Transformers (BERT) and solve the dilemma of mathematical open-ended response questions. The data set is taken from Taiwan's digital learning platform, mainly used by elementary school students and junior middle school students, including four-theme mathematical construction response questions: algebra (1755 datasets), space and shape (412 datasets), data and uncertainty (1518 datasets), and number and quantity (1435 datasets). All open-ended response questions were scored by human raters using holistic 3-point scoring rubrics. This research uses Colaboratory as the development environment of the automatic scoring system. It is a development platform for virtual servers provided by Google. It is an editing and execution software running on the cloud, which allows software developers to quickly edit and execute Python code directly through the browser. In order to explore the effectiveness of BERT applied to the automatic scoring of open-ended response questions in mathematics, this study chose the application of the common automatic scoring method, LSA, as the benchmark for comparison, and to explore the application of LSA and BERT to automatic scoring of open-ended questions in mathematics. The consistency between the automatic scoring results and human raters' scoring will be presented in this research. In order to determine the accuracy of the model, 5-fold cross-validation is used to divide the datasets into the training set and testing set for model training and testing. This study uses Exact Accuracy Rate and F1-score as evaluation indicators. The exact accuracy rate refers to the score results of each level of automatic scoring and must be completely consistent with the scoring results of each level of human rater scoring in the total number of all test questions. The F1 score is calculated based on precision rates and recall rates. The F1-score ranges between 0 and 1. If the F1-score is close to 1, the model is better. The results are presented in the table below. The results show that BERT was better than LSA in both the accuracy and F1 score performance of automatic scoring of open-ended questions in mathematics. In practice, BERT can be used to automatically score open-ended mathematics questions and provide immediate feedback.

theme	Exact Accuracy Rate		F1- score	
	LSA	BERT	LSA	BERT
algebra	73.41%	89.77%	.6326	.8436
space and shape	84.00%	90.99%	.6786	.8521
data and uncertainty	76.18%	89.37%	.6700	.8246
number and quantity	75.56%	91.39%	.7427	.8987

Keywords: Automated Scoring (AS), Latent Semantic Analysis (LSA), mathematics, Natural language processing (NLP), open-constructed response.

GAMIFYING CYBERSECURITY: A STUDY OF THE EFFECTIVENESS OF A SPECIFIC GAMIFIED TOOL

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Abstract

Secure software development refers to the practice of creating software applications and systems with a focus on security. Traditional approaches to teaching secure software development often involve classroom lectures and laboratory assignments that roughly simulate real-world scenarios. However, such approaches may not always be engaging or effective for students, who may struggle to connect the abstract concepts of secure software development to practical, real-world applications. Gamified learning refers to the integration of game elements and mechanics into the learning process to enhance engagement, motivation, and retention of knowledge or skill and can offer students a more interactive and immersive learning experience. In this study, we explored the use of Hack The Box (HTB), a gamified platform for learning cybersecurity, as a tool for teaching secure software development to undergraduate students in a software engineering program. Students were given access to the platform and asked to complete a set of challenges designed to reinforce key concepts, such as secure coding practices, vulnerability assessment, and incident response. Students were also asked to complete a set of questionnaires to gather data on their attitudes towards the traditional laboratory approach versus the gamified approach using HTB. The results of the study indicate that the use of gamified platforms such as HTB can be an effective tool for teaching secure software development. Students reported feeling more engaged and confident in their ability to apply secure software development practices after using the platform. They also found the platform to be more engaging and challenging than the traditional laboratory approach. Moreover, students who reported finding the traditional laboratory approach to be challenging or unengaging found HTB to be a valuable and effective alternative. The use of gamified platforms also has several other potential benefits. For example, it can provide students with immediate feedback on their progress and performance, which can help to motivate them and encourage them to persist through challenging problems. Additionally, gamified platforms can provide a more accessible and inclusive learning experience by accommodating different learning styles and levels of expertise. For instance, students who may not have prior experience with secure software development can benefit from the more interactive and hands-on approach provided by the platform. However, challenges such as the difficulty level of some challenges and the need for additional support materials need to be addressed to maximize its effectiveness. Overall, this study suggests that gamified platforms like Hack The Box can be a valuable tool for teaching secure software development to undergraduate students. Future research could explore the use of other gamified platforms and tools, and examine the potential benefits and challenges associated with their implementation.

Keywords: *Gamified platforms, cybersecurity education, student engagement.*

RADIO NAVIGATION AIDS LEARNING, FROM VIRTUAL TO REAL WITH THE KOLB'S EXPERIENTIAL LEARNING CYCLE

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Abstract

Using Kolb's learning cycle provides a structured approach to learning that emphasizes active engagement and application of knowledge. These characteristics make it especially suitable for practical engineering learning. In this study, we describe our enhanced laboratory design dedicated to radio navigation aids in the MSc Aeronautical Engineering program, apply the Kolb's experiential learning model, and evaluate its pedagogical effectiveness. As a conclusion, the learning process is highly reinforced when the laboratory practice includes one live session versus the all-online version, as it is shown in the competence tests where the mean of the qualifications is significantly higher.

Keywords: *Experiential learning, Kolb's learning cycle, navigation aids, laboratory.*

THE DEVELOPMENT OF A METHOD FOR TEACHING EXTENDED CELLO TECHNIQUES USING FREE IMPROVISATION

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Abstract

Throughout the history of music learning, teaching methods have been a useful tool to explain how an instrument works based on the performance demands at the time. These methods have adapted to the musical style and the interpretative needs around them. They have been used as a reference by performers, composers, musicologists, and scholars to identify the evolution of a certain instrument, teaching technique or stylistic regard. This research is based on explaining the creation process of the method *El violonchelo desde una mirada contemporánea* (The cello from a contemporary perspective) and its usefulness in teaching and learning contemporary music at the university level. The product is a didactic tool that facilitates the learning process of extended techniques on the cello by using free improvisation as a guide. The project rested on the fulfillment of three specific objectives: the description of twenty extended techniques for the cello, the elaboration of ten free improvisation exercises with extended techniques from the researcher's personal experimentation, and the design of a method based on the information collected. This research was supported under the theoretical framework of practice-based research methodology which in Latin America is referred to as artistic research. As a result, the investigation created a method with a brief explanation of twenty extended techniques for cello and ten exercises focused on teaching these techniques with free improvisation. The aim of this method is to contribute to educational practices, in the sense that it facilitates the development of contemporary music playing and composing skills for both students and teachers at the university level. It also points out the lack of contemporary music teaching in Colombia. The next phase of the project will be to validate its usefulness with music teachers and students in various cities of the country.

Keywords: *Musical teaching method, practice-based research, contemporary music, extended cello techniques, free improvisation.*

RECOGNISING SOUTH AFRICAN SIGN LANGUAGE: IMPLICATIONS FOR SOUTH AFRICAN LOCAL MUNICIPALITIES

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Abstract

This article posits that the implications of Sign Language within the South African local municipalities, remains a challenge, notwithstanding existing attempts by language policies to promote multilingualism. Thus, guard against the use of other spoken languages to perpetuate inequalities which were entrenched by the history of the country. In this article it is argued that the use of other spoken languages as the only communication between South African local municipalities as the only languages of communication, impedes access to effective communication with residents. South African government has recognised eleven plus official languages, inclusive of Sign Languages. For this study, three Free State local municipalities were approached to help with data on the topic, wherein officials involved in an open-ended interview, with a voice-recorder used. Only one local municipality had a translator/ interpreter, and who does not know South African Sign Language. The other two local municipalities do not have a translator or an interpreter at all. Thus, implying that only 33,3% (only one local municipality) partially comply with the regulations as enshrined in the South African Constitution (1996); and the other two with 66,4% (two local municipalities) of the selected municipalities do not comply at all. The findings suggest that most South African local municipalities do not comply with regulations regarding the introduction and development of South African Sign Languages. Thus, this implies that South African Local Municipalities do not communicate with all its residents. Local municipalities are therefore expected to employ people who will help deaf people when they visit their offices to enquire or attend to other problems. The article poses recommendations as to how the apparent linguistic imperialism, which is a human rights violation, can be turned around to linguistic diversity that is based on linguistic justice.

Keywords: *South African sign language, local municipalities, multilingualism, communication, South African Constitution.*

THE SOCIO-MUSICAL BRAIN: STUDY OF A MUSIC EDUCATION EXPERIENCE

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Abstract

Musical practice has positive effects on human development in general, involving cognitive, emotional, motivational and social aspects, which imply changes in brain processing. The number of Music Education Program (MEP) focusing on young populations in social vulnerability has grown in Brazil and in the world. The aim of the present study was to investigate the impacts of a MEP on psychological aspects of its students, more specifically self-esteem, social skills and executive functioning. Data collection was carried out in a MEP in the city of Ribeirão Preto - Brazil and in regular schools. The participants were 69 children and adolescents aged between 10 and 17 years, divided into the Beginner Group (BG), students with up to 12 months of enrollment in the MEP; Experienced Group (EG), students enrolled in the MEP for more than 24 months; and Control Group (CG), students without any involvement with music learning. The participants answered the psychological tests Rosenberg Self-Esteem Scale (EAR), Matson Evaluation of Social Skills with Youngsters (MESSY) and Stroop Test. Semi-structured interviews were also carried out with all students from the BG and EG groups, with ten newly enrolled MEP students, with six legal guardians of these students and twelve MEP professionals. Statistical analysis of the psychological tests showed that the participants in BG and EG did not differ among themselves for any of the study variables. The CG had lower scores than BG and EG for Self-Esteem and higher scores for Loneliness and Social Anxiety, indicating that involvement with MEP can lead to gains in these skills. Analysis of the interviews indicated that participation in the MEP is related to positive impacts on participants' self-esteem, social skills and executive functioning. The results were discussed seeking to inter-relate them in order to integrate the data collected through the psychological tests and through the interviews. It is concluded that participation in MEPs with a focus on the social rescue of vulnerable populations has an influence on the development of children and adolescents, indicating that the use of music education characterizes an important social intervention strategy.

Keywords: *Music education, social vulnerability, young, self-esteem, social skills, executive functioning.*

EXPLORING INCLUSIVE CULTURE AND PRACTICE: THE PERSPECTIVES OF MACAO TEACHERS IN INFORMING INCLUSIVE TEACHER EDUCATION PROGRAMMES IN HIGHER EDUCATION

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Abstract

The inclusion of children with diverse learning needs and/or disabilities in regular classrooms has been identified as crucial to the provision of educational equity and quality for all students. In this, teachers play an essential role, as they strongly impact student educational attainment. Whilst the adoption of inclusive practice is increasing, with potential benefits for the teaching profession, there is also a rise in the level of its challenges in Macao as many more students with learning disabilities are now being included in general education classes. Consequently, there has been a significant focus on teacher professional development to ensure that teachers are adequately prepared to teach in inclusive classrooms that give access to diverse students. Major changes in teacher education will need to include more inclusive education content and equip teachers with the necessary skills in the area of inclusive practice. This paper draws on data from in-depth interviews with 20 teachers that explored teachers' views of support, challenges, and barriers to inclusive practices at the school and classroom levels. Thematic analysis was utilised to determine significant themes within the data set. Several themes emerged and served to illustrate the identified barriers and the potential value of effective teacher education. Suggestions for increased professional development opportunities for inclusive education specific to higher education institutions are presented, and the implications for practice and teacher education are discussed.

Keywords: *Inclusive education, inclusive practice, teacher education, higher education, Macao.*

UNDERSTANDING HOW THE CYBERCULTURE HAS INFLUENCED LEARNING STRATEGIES CHOICES BEFORE AND DURING THE PANDEMIC

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Abstract

The research project *Collaboration, Learning Strategies and Digital Literacy in Language Teacher Development* attempts to combine equity, resistance, and collaboration. The project aims at helping learners who have a lower level of English succeed in their ELT graduate course. Besides language development, the study attempts to promote learning strategies and methodology awareness, mainly related to the use of technology for teaching languages. This qualitative study may be considered a participatory action research (Brandão & Streck, 2006; Kemmis & Wilkinson, 2011), as all the participants (teachers and students) are part of the study, breaking barriers between researchers and subjects. It is a long-term study which began in 2014, and this presentation is only a part of it and focus on a better understanding of learning strategies choices. To do so, we conducted narrative interviews (Jovchelovitch & Bauer, 2015) in 2020 and 2023, in which participants were invited to talk about their study habits before entering university and the ones at their graduate course. Other instruments used were videos prepared by these learners and their participation on virtual learning environment (VLE) forums. Based on their narratives, we were able to compare their learning strategies choices before and during the Covid pandemic. The results indicate the following assertions: (a) Learners are not aware of what learning strategies mean, but they mentioned at least some of these strategies during the interviews; (b) Before the pandemic, they used technology mainly for research, as a resource of materials, and for social communication; and most of the strategies employed were (meta)cognitive and (meta)social ones. (c) During the pandemic, work and study depended on technology, so besides the learning strategies they already used before that period, they had to develop or adapt others, mainly (meta)affective strategies and (meta)motivational strategies. Based on these findings, we are now revamping the activities used in the project. The theoretical framework of the research includes discussion on learning strategies (Cardoso, 2016; Oxford, 1990, 2017, 2019); cyberculture (Santos & Weber, 2018); and the influence of the pandemic on education (Liberali, 2020)

Keywords: *Learning strategies, cyberculture, social identities, teacher development, pandemic.*

EDUCATION FOR SUSTAINABLE DEVELOPMENT. PERSPECTIVES ON INEQUALITIES THROUGH A DIGITAL SERIOUS GAME IN HIGHER EDUCATION FOR STUDENT TEACHERS

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Abstract

The background of our project is the 2030 Agenda of the United Nations, which was published in 2015 in the document "Transforming our World". The UN's 17 sustainable development goals are part of the 2030 Agenda, including gender equality, quality of education and climate protection. ESD and Global Learning have been developed accordingly. They also aim at transformative learning. ESD has received a lot of attention in recent years. It is now a crosscutting task for all teachers in schools in Germany, as they are expected to integrate ESD into their teaching, but this makes it clear that future teachers will have to acquire relevant competences and acquire specific expertise related to ESD in the course of their training. After all, they will be the ones who make future generations co-creators of a sustainable society. ESD is therefore an enormous challenge for the education sector. This is exactly where our project comes in. In an interdisciplinary teaching and research project funded by TU Dortmund University, we are developing a digital Escape Room in which students have to solve puzzles that map dilemmas from SDG 10 (Less Inequality). The BNE^{Room} cartography simulates a school building or a classroom in which the students act out different situations. The avatars are student teachers who are confronted with concrete tasks and dilemmas from SDG 10 that can only be solved in an interdisciplinary small group. This is achieved by designing the Escape Room like an adventure game or treasure hunt. SDG 10 is the biggest educational challenge for us, as many students in Germany are disadvantaged. As the students come together from different disciplines, we use the opportunity for interdisciplinary exchange of student teachers, combined

with the aim to raise awareness of social inequalities (poverty, inclusion, gender, etc.) in the school context. Key milestones are: 1. The development of a digital Escape Room (BNE^{Room}) for student teachers - including the conception of the BNE^{Room} and the development of the storyline. 2. The testing and implementation of the BNE^{Room}; 2. Testing and implementation with the students, embedded in the seminar context, and 3. The academic monitoring and evaluation of the project. In summary, this interdisciplinary project aims to implement ESD more strongly in teacher education. A special focus is on the development, implementation and evaluation of the digital Escape Room. The results of the evaluation are based on tests and can be adapted for most relevant SDGs and the interactive Escape Room will be further developed.

Keywords: *Teacher education, education for sustainable development, Escape Room, SDG 10, inequalities*

A STUDENT'S JOURNEY IN HIGHER EDUCATION: POSITIONING AND REPOSITIONING WITHIN A NEW SPACE

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Abstract

In diverse university contexts, students need to constantly navigate and negotiate their social identities. Students bring their unique embedded histories and cultures to the university context, and position and reposition themselves to experience a sense of belonging. These experiences contribute to student self-formation and sense of being. This study explored the positioning and repositioning of a student on a diverse university campus. The Positioning Theory of Harré (1999) was used as a lens to explore the intentional positioning of one student, including deliberate self-positioning, forced self-positioning, deliberate positioning of others, and forced positioning of others. The study was underpinned by the interpretivist approach and the social constructivist paradigm. A narrative methodology was used, which involved listening to and analysing the narratives of the participant. Data was generated through reflective exercises and semi-structured interviews over a period of four years. Several themes were used to present the data, i.e., gender positioning, language positioning, racial positioning, and leadership positioning. The findings illustrate the interconnection between agency, identity, and positionality. The theme on gender positioning illustrates the participant's identity of being proud of his culture while at the same time displaying sympathy for marginalized women. The theme on language positioning emphasized the participant's passion for his home language, and the agentic positions he took on to promote his mother tongue. The study highlights the importance of reflection in a journey of positioning and repositioning and the attempt to balance the self with the other.

Keywords: *Identity, narrative, positioning, repositioning, narrative.*

WORKING TOWARD AN EQUITABLE AND CULTURALLY RESPONSIVE ONLINE EXAM PROCTORING ENVIRONMENT

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Abstract

The COVID-19 pandemic created tremendous challenges for our globalized world – and in all aspects of our life. For the education system globally, however, the overnight migration to the virtual space was unbearably jarring. Still, the pandemic did not affect every higher education institution in the same way. Those who were fortunate enough to have mature IT infrastructure in place prior to the pandemic - mostly Western Hemisphere institutions – were able to weather the pandemic and manage the migration with relatively ease. The situation was even more desperate for those who did not have any IT infrastructure altogether, and no meaningful online offering. As the stay-at-home directives extended from a first to a second semester, sometimes with no end in sight, it was only natural for faculty who relied on the physical classroom for their high-stake exams to venture into online exam proctoring. Many faculty were grappling to understand unfamiliar algorithm-based proctoring software or webcam-based exam proctoring. Among

many other factors, this contributed to the wave of popular media reports in the United States claiming that students across the U.S. were constantly fearful of being wrongly flagged for cheating by online proctoring services. Online proctoring vendors provide multiple levels of service, many of which are not clearly understood by the end user: if the faculty are not fully trained in the particular proctoring service they are using, and do not receive sufficient institutional support in using them, they can end up inflating the level of monitoring appropriate for their particular exam. In the process, they may inadvertently disadvantage some of their students. Although our study found no significant difference when it comes to whether online exam proctoring disadvantages students of different ethnic and socio-economic status, if the online proctoring industry goes unregulated and keeps up its rapid and global expansion, it will present profound challenges to higher education institutions. Therefore, these institutions should pay special attention to how online proctoring may disadvantage students of different ethnic groups due to specific cultural lenses used by these vendors. This presentation draws from three research studies we conducted, over the last eight years. As such, the focus of the presentation is on the need for higher education institutions to advocate for regulations in this industry; to work toward an equitable online proctoring environment; and to aim to minimize students being burdened by unnecessary stress and anxiety that could result from online exam proctoring.

Keywords: *Online, exam, proctoring, pandemic, infrastructure.*

ACCEPTANCE OF CHILDREN WITH SPECIAL NEEDS – THE KEY TO UNIVERSAL ELEMENTARY EDUCATION

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Abstract

The number of children with learning disabilities is on the rise. The latest data from UNICEF estimates the number of children with disabilities to be over 240 million. In India, 1.67% of the 0-19 population suffers with disabilities of one or the other kind. 35.29% of disabled people of world are children. Only 1% of children with disabilities have access to schools and one-third of most disabilities are preventable. But as on date a fully comprehensive data on this topic in India remains incomplete. Statistics aside, it is a fact that there is an increase in the number of Children with Special Needs (CWSN). The reasons are many. But society's lack of responsibility towards this cannot be denied. There are many socioeconomic factors that cause disability in children. Again, it is the society's attitude that acts as an impediment in helping a child overcome such disabilities and be a part of the mainstream. In most areas of development, a CWSN is disadvantaged compared to children without disabilities. Be it education, nutrition, protection from violence, exploitation, and accessibility, these children do not enjoy equal rights with other mainstream children. The Right to Education Act 2009 in India speaks of ensuring Free and Compulsory Elementary Education for all children. Universal Primary Education set as the 2nd Millennium Goal by UN was to be achieved by 2015 and this objective was also taken up by Samagra Siksha Abhiyan in India, Equal right to education has been assured by the Rights of Persons with Disability Act 2016. Yet, out of 78.64 lakh children with disability in India, three-fourths of those aged five years don't attend any educational institution, according to a 2019 UNESCO Report. The situation has been further aggravated by the pandemic and consequent lock downs. It has been globally realized that integrated education is essential in bringing these children to school, develop their intellectual capability, generate their self-sufficiency, social skills and to open avenues for employment. Social barriers in the mainstream regarding disability, lack of awareness and empathy, lack of relevant infrastructure for such children in most schools, and majorly lack of acceptance are some of the reasons behind the exclusion of these children from mainstream education. The objective of this paper is to analyse the road blocks to the inclusion of these children into education to suggest possible solutions to remove them and ensure their acceptance.

Keywords: *Acceptance, inclusion, awareness.*

YOUTH CYBERBULLYING – UNDERSTANDING CONTEXTUAL PATHS TO PREVENTION AND RESILIENCE

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Abstract

The purpose of this project is to explore cyberbullying processes in youths from 12 to 24 years old in relation to their surrounding environmental systems or assemblages. We aim to contribute to a better understanding of cyberbullying processes among young people in the Chinese society, and its mental health, well-being, and psychosocial impacts (e.g., anxiety, depression, suicidality, and aggression). Youths are located within specific socio-ecological contexts and, therefore, are affected by their surrounding environmental systems. Accordingly, young people's interactions with their online environment, associated online risks, and experience of harm are shaped by a complex interplay between them and their wider social environment (Görzig & Machakova, 2015). Bronfenbrenner's socio-ecological framework considers the individual as the locus of analysis within a larger socio-ecological setting composed of different levels. We apply that framework to cyberbullying by considering different levels of the socio-ecological system, namely the: (1) micro and meso systems, such as family, school, peers, as proximal contexts which directly influence the situational context of cyberbullying processes; (2) exosystem, which involves the process external to the immediate environmental setting, such as the community, and mass-media or digital technology; and (3) macrosystem, nested within broader contexts, such as institutional policies, support frameworks, and online culture. To apply a socio-ecological perspective (Bronfenbrenner, 1979, 2005), we used a quantitative approach, collecting data from youth, but also from key-stakeholders involved in the larger context. We adopt the quantitative approach by using the self-response survey data from young people. A total of 327 research participants (207 college students and 120 middle school students) in this study. The finding showed that youth involved in the experience of cyberbullying victimization is associated with cyberbullying perpetration behaviors. Implications for practice and policy are discussed.

Keywords: *Cyberbullying prevention and resilience, youth psychosocial well-being, depression, interdisciplinary research.*

A COMPARISON OF GOAL ACHIEVEMENT OF STUDENTS IN A SOCIAL RESEARCH METHODS CLASS DURING COVID

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Abstract

From 2020 to 2022, the module, social research methods was taught online to third-year undergraduate students whilst lockdown due to Covid was in place. Goal achievement was assessed with the Goal Achievement Questionnaire (GAQ) measuring several constructs: Pathway, Goal setting efficacy, Resilience, Optimism, Agency, Absence of state despair and External locus of control. The GAQ was developed to indicate goal-orientated behaviour based on underlying psychological resources such as agency and resilience. Goal achievement is not only a cognitive activity but involves multiple levels of human psychological functioning. Mastery and performance goal orientation were also assessed, and the relationship between psychological constructs and academic performance was determined. The academic performance of the three-year groups (N = 1643) was compared to those that completed the GAQ (N = 175). Although academic performance showed significant differences between the three-year groups ($F(2, 1327) = 11.67, p < .001$), no significant differences were found for levels for the Goal Achievement constructs for the selected sample. A significant relationship ($r = .2, p < .05, n = 137$) between academic performance and Goal setting efficacy was found. A significant difference between Semester and Exam Marks, four GAQ constructs and performance-approach goal orientation for ethnic groups (African, Indian and White) was found. The results are compared to previous findings by the authors: the African group regarded performance goals as less important than the White group. The implications of the findings are discussed.

Keywords: *Goal achievement, academic performance, social research methods, mastery and performance goals, Covid.*

PARTNERSHIPS BETWEEN HIGHER EDUCATION AND INDUSTRY: EXPERIENTIAL LEARNING TO BUILD A DIVERSE STEM WORKFORCE

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Abstract

In order to address the complex scientific needs that continue to emerge, it is important to have a workforce that is capable of generating innovative solutions that are derived from multiple perspectives, experiences, and transfer of knowledge and skills. This will mean that in addition to addressing education and training needs the workforce will need to have the representational diversity of its citizens reflected in all levels of the workforce, including leadership positions. The motivation for this study was to examine the outcomes of the Underrepresented Minority Internships (UMI) in STEM Program using a mixed methods approach. The UMI in STEM Program is designed to build a diverse workforce in supply-challenged STEM fields such as chemistry and other related physical science fields, by focusing on connecting underrepresented minority (e.g., African American, Hispanic American/Latino, and Native American) graduate engineering degree earners to leadership positions in United States industries through hands-on experiential learning opportunities. The participants are selected for the UMI in STEM Program through an application process. Following a panel review and approval the participants receive financial support for attending graduate school and a paid summer internship at an industry related to their career and academic goals. The summer internships are intended to allow for hands-on application of skills and knowledge while also providing mentoring so that participants are competitive for future leadership positions in industry settings. This mixed methods study examined the experiences of 72 participants in the UMI in STEM Program. Surveys and interviews of the graduate student participants (n=72) and internship mentors (n=20) measured the impact of the UMI in STEM Program on participants' motivation, confidence, career goals, and knowledge and skills acquisition and on employers' workplace culture and ability to recruit diverse talent. Results from survey analysis and transcript coding indicate that internship experiences and embedded mentoring in the UMI in STEM Program led to increased motivation among participants to attain a graduate degree and positively influenced career goals, encouraging many participants to seek employment within STEM industries that they were connected to. Findings also reveal that employers benefitted from the UMI in STEM Program as it allowed them to develop and recruit diverse talent that facilitated new and innovative ideas being brought into their companies. Higher education administrators and faculty can use these findings to understand how to partner with industry in order to develop a comprehensive model to advance diversity in the STEM workforce.

Keywords: *Experiential learning, workforce training, diversity, industry partnerships.*

FUTURE TEACHERS' ATTITUDES ON E-TEACHING IN NATIVE LANGUAGE CLASSES AND MUSIC CLASSES

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Abstract

Classic forms of teaching are increasingly being replaced by modern forms that include e-teaching. The need for e-teaching has become even more pronounced with the appearance and announcement of the Covid-19 pandemic. Despite being forced to learn in these circumstances, students were able to derive both positive and negative experiences from it. This paper examined the attitudes of final-year teacher education students regarding their e-teaching competence and its potential use in future teaching, particularly when it comes to teaching their first language and music. Students in their fifth (final) year of teacher education in Croatia participated in the research, and it was conducted through a survey using a Google form. Responses of the participants were analysed using the *Statistica 14.0.1.25* software.

Keywords: *E-teaching, Covid-19, learning, native language class, music class.*

GAME-BASED LEARNING IN HIGHER EDUCATION: A COMPARATIVE STUDY IN TOURISM DEGREES

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Abstract

New strategies regarding student-centered approaches have emerged in higher education contexts, in order to promote student motivation and engagement towards the learning process. Online quiz platforms such as Kahoot! seem to contribute to the consolidation of learning, particularly through content review. A quantitative survey was conducted among 86 students from a higher education institution offering undergraduate degrees in the area of Tourism, specifically within the subjects of English and Statistical Analysis. Following a consistent application of Kahoot! quizzes in class for reviewing purposes, the survey was implemented in order to allow for an examination of how the students perceived the usage of this game-based learning tool. Results show that most students consider the use of Kahoot! in classes to make learning more challenging and dynamic, while positively contributing to content consolidation. However, the results obtained evidence that further studies are needed to confirm the effect on the use of Kahoot! in student performance.

Keywords: *Higher education, web tools, educational games, motivation.*

TEACHING AND LEARNING

RETHINKING LEARNING POTENTIALS: THE BENEFITS OF LEARNING ACROSS THE LIFE SPAN

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Abstract

Is there ever a point in life when it is too late to learn? Researchers are continuously concerned about ways to intervene cognitive and communicative decline in older adults. In fact, many of the symptoms associated with aging seem to resemble early childhood development issues like limited mobility, and poor communication (Matteson, et al., 2007). With this in mind, there are a number of questions about the relationship between early development and later stages in the life span that merit consideration, such as what is the connection between these widely separated stages in life, and could it be possible to use these similarities and differences to raise awareness on the learning potential of older adults specifically? This study, therefore, emphasizes researching the effects of enhancing communicative and cognitive ability during later adulthood, as well as bringing awareness to families, staff, and administrators of elder care homes on methods that support older individuals. This idea gives rise to further queries, such as why the abilities of older adults fluctuate to varying degrees as they age. To answer these questions, a systematic review was conducted to explore the interplay between socio-emotional, environmental, physical health, and nutrition in the development and maintenance of language and cognitive skills. As such, the findings in this study indicated that learning in each of these developmental stages depends on many of the same characteristics. Awareness of these factors may help older adults address loneliness and social isolation in nursing and assisted living facilities. With the expanding focus on multigenerational learning, this work adds to a growing body of research that emphasizes learning across the life span

Keywords: Learning, life span, dementia, cognition, language.

RECOMPOSITION AND PHOTOMONTAGE AS A STIMULUS FOR THE DEVELOPMENT OF CREATIVITY IN TEACHING VISUAL ARTS

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Abstract

Recomposition and photomontage are an integral part of contemporary art and should be implemented in the contemporary teaching of Visual Arts. This paper aimed to determine whether the use of recomposition and photomontage in Visual Arts classes stimulates student creativity. The research was carried out from 2019 to 2022 among students at the Department of Teacher Education and the Department of Preschool Education at the Faculty of Humanities and Social Sciences in Split, who applied the methods of recomposition and photomontage in Visual Arts classes. The research was qualitative, with the use of observation method and descriptive method, and a total of 133 students participated in the research. The resulting artworks were divided into groups according to the degree of creativity that the students expressed in those works. After the research, it was concluded that the use of recomposition and photomontage stimulated student creativity. However, a significantly greater degree of freedom could have been reached in terms of combining, using imagination and creating new ideas.

Keywords: Creativity, photomontage, recomposition, student, teaching Visual Arts.

HOW TO BE POLITICAL? EXPLORING EARLY CHILDHOOD UNDERSTANDING OF POLITICS ECOLOGICALLY AND PHILOSOPHICALLY

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Abstract

The interdisciplinary project PoJoMeC, funded by The Federal Agency for Civic Education in Germany, investigates children's understanding of politics at preschool and primary school age. We understand the theoretical background of the primarily didactic research, the ecological model of human development according to Bronfenbrenner (1979), as a process "emerging from the interaction of individual and context" (Rosa, & Tudge, 2013, 244). We interpret "context" as a fundamental medial orientation (Lichtenberger, 2012). Our research methods focus on the children's explicit knowledge, their medial sources of information, and their concepts of rule-governed action. The paper presents a pilot study on the PoJoMeC project. On the one hand, this pilot study concretizes the survey of the socio-ecological rule systems that constitute the students' political consciousness at the respective levels. On the other hand, this paper extends our concept in terms of argumentation theory by using a matrix from philosophy didactics. In the study, nine students from upper primary school classes (grade 4) are interviewed. In our research conception, we assume this group of students can reach general rules on Bronfenbrenner's macro system level. In the next step, we analyzed the interviews concerning the quality of the justifications the students gave for the validity of their rule assumptions on the micro-, meso-, and macrosystem. In doing so, we draw on Frank Brosow's (2020) TRAP-Mind-Theory. The TRAP-Mind-Matrix provides an instrument to capture the cognitive appropriation of social rules to understand the political in general. Parents, media, and schools have essential political responsibilities in this context.

Keywords: *Political thinking, early education research, ecological theory of human development, TRAP-Mind-Theory.*

DOUBT IN RELIGIOUS FUNDAMENTALISM: EDUCATION BETWEEN AUTHORITY AND RATIONAL AUTONOMY

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Abstract

A fundamentalist religious practice determines daily life, personal beliefs, and interaction with fellow human beings. Children and adolescents who grow up in fundamentalist homes are often collaterally involved in their parents' religious practice. Therefore, a self-determined decision about potential religious participation is usually anticipated and exchanged for authoritarian patterns of upbringing. When this practice demands blind trust in the universality of the religion and its scriptures, this is mainly reflected in educational practices and how authority determines them. The ability to doubt is fundamental, particularly regarding critical opinion-forming, social participation, and democratic involvement. But how does the possibility of young people learning to doubt situate itself in this field of tension of religious infallibility? To pursue this topic, the influence of multi-layered authority in a religious fundamentalist education on the emergence and handling of *doubt* is examined and compared to the requirements for developing an autonomous personality. A delegitimation of doubt in pedagogical practice can lead to difficulties in the child's autonomy development. It is, therefore, in the interest of society and institutions to promote the ability to exercise autonomy. This paper attempts to generate a broader and interdisciplinary understanding of the interaction of doubt in religious fundamentalism and the development of rational autonomy.

Keywords: *Autonomy, doubt, religious fundamentalism, educational authority, democracy education.*

MICROAGGRESSIONS IN HIGHER EDUCATION: PEACE-BUILDING, SAFE SPACE AND HOSPITALITY

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Abstract

Based on 20 semi-structured interviews with faculty members from a mid-size university in Western Canada, this presentation offers an examination of research participants' experiences, perceptions of, and responses to micro-aggressions with special attention to minority identity markers and hospitable educational practices. Specifically, I focus on the complexities surrounding free speech and safe space, showing that when research participants detect instances of microaggressions expressed as resentment around race and/or gender, they struggle to find a balance between taking up the teaching moment and maintaining safe space. Specifically, I question the extent to which instructors rely on intent and innocence to allow, and to an extent justify, expressions of race-based or gender-based resentment. I then turn to the concept of hospitality, specifically the host-guest metaphor, to discuss pedagogical implications when considering the tension and potential conflicts between equity seeking individuals who cannot take safe space for granted and dominant culture individuals who can rely on safe space as an unearned privilege. I argue that hospitable education spaces ought to go consider a relational process of peacebuilding that integrates agency and empowerment. Equitable responsibilities involving host-guest relations and relationships between guests themselves ought to be conceived as asymmetrical (Levinas) by shifting the emphasis from intent and potential candor to vulnerability and harm. Implications for practice include the need to consider that: (1) Safe space is an unearned privilege for some, while it means fighting against oppression for others; (2) An (over)reliance on intellectual candor can further dismiss and silence harm; (3) As there may be competing and conflicting quests for safe space, there is a need to create anchors of hospitality for equity-seeking individuals; (4) Hospitality involves asymmetrical responsibilities (greater responsibilities for some than for others) to address power and inequity; it also involves horizontal relationships when micro-spaces of belonging are developed.

Keywords: *Microaggressions, safe space, hospitality, resentment, power.*

EARLY IDENTIFICATION OF ACADEMIC FAILURE ON HIGHER EDUCATION: PREDICTING STUDENTS' PERFORMANCE USING AI

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Abstract

In this work we focus on the early identification of academic failure in higher education as a mean to allow educators to provide an early intervention and help students on a risky position to achieve academic success. For this purpose, we define a dataset of more than one thousand students with their respective grades collected from a Computer Networks course on a Computer Science degree at a Spanish university throughout four years. From the dataset we extract different features corresponding to the laboratory and quiz assignments proposed to the students during the course that intend to represent the effort and accomplishment achieved by the students. A preliminary analysis of the dataset shows a potential relation between the scores achieved throughout the course and the final exam mark. The aim is to predict if a student will pass or not the final exam using only information extracted from the different laboratory and quiz assignments. In this sense, we define a data mining classification task following a supervised learning approach where a selection of well-known machine learning algorithms is evaluated following a 10-fold cross-validation scheme to assess the performance and robustness of the models. Our results show that using Random Forest we can accurately predict in more than 91% of the cases if a student will pass or not the final exam, achieving a F1-score of 0.916. Moreover, we perform a feature importance analysis highlighting how laboratory assignments features have a higher contribution to the learning model than quiz assignments.

Keywords: *Early identification, higher education, academic failure, machine learning, artificial intelligence.*

EXPLORING EARLY CHILDHOOD UNDERSTANDING OF POLITICS AND THE IMPACT OF (DIGITAL) MEDIA EDUCATION

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Abstract

For decades, young children were not considered active members of our society (Butschi & Hedderich 2021). This is a problematic perception considering that, for example, in democratic societies, democracy and democratic behavior must be learned and practiced by each generation anew (Deutscher Bundestag 2020), since we are not born as democratic beings. Furthermore, in today's world children get confronted with aspects such as climate change, gender disparities, health care, or peace at an early age. That is why participation, global citizenship education as well as the 17 SDGs of the United Nations Agenda 2030 are already embedded in early education programs and concepts. However, research on child-centered and rights-based participation processes in early education is a major gap. Yet the few recent studies suggest that children as young as 5 years old have some political awareness (Berti 2005; Goll 2020; Schauenberg 2014). Thereby, we understand political awareness to be the recognition of and reflection on topics of public interest that are discussed in the media and trigger public interest at the same time. But when do children of pre-K- and elementary school-age develop this awareness? And what role do the different types of (digital) media play in this process? Exactly these questions the interdisciplinary research project PoJoMeC at TU Dortmund University, funded by the Federal Agency for Civic Education in Germany, seeks to explore. In this paper, we present preliminary results of 14 qualitative interviews with children aged 4 to 8. The interviews were conducted with the *Picturizing Strategy* (Tkotzyk, Lategahn & Marci-Boehncke 2022), a method developed by us specifically for the work with young children who not yet can read and write. To systematize the results, we applied a refinement of Bronfenbrenner's Ecological Theory of Human Development (1979) and an argumentation-theoretical model used in philosophy didactics, the so-called *Trap-Mind-Theory* (Brosow 2020). By evaluating the results, conclusions can be drawn not only about the significance of (digital) media and media use regarding the transmission of prior political knowledge, but also about the supposedly negative role of educational institutions in this process, even though research repeatedly shows that digital media and their use are important for children's development and their participation in society (Burnett & Merchant 2018).

Keywords: *Digital media literacy, media use, early childhood research, global citizenship education, political awareness.*

DEMOGRAPHIC CHARACTERISTICS OF TEACHERS' PERCEPTIONS TOWARDS THE USE OF TECHNOLOGY IN EARLY CHILDHOOD EDUCATION

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Abstract

The study focuses on the influence of demographic characteristics on early childhood education teachers' perception of the use of technology in teaching young children in Lagos state, Nigeria. This study's research design was quantitative, implying that an Ex post-facto research design was employed. Questionnaires were developed and administered to 100 randomly selected early childhood education teachers from 20 different schools in Lagos, Nigeria. The data collected was analyzed using descriptive statistics and linear regression analysis and the hypothesis was tested at a probability level of 0.05. Results revealed that teachers had positive perceptions (Mean=1.68, SD=.829) towards the use of technology in teaching young children. However, teachers' perception towards the use of technology was not statistically influenced by their demographic characteristics.

Keywords: *Early childhood education, technology, demographic factors, teacher perceptions.*

A MULTIDISCIPLINARY TRAINING PROGRAM FOR SMART CITIES TECHNICIANS AND ENGINEERS

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Abstract

A Smart City is a city where traditional infrastructures and services are made more efficient by exploiting digital solutions for the benefit of citizens and businesses. A Smart City aims to transform its infrastructure and services to offer smarter urban transport networks, upgraded water supply and waste disposal facilities, as well as more efficient ways to light and heat buildings. A Smart City also aims to have a more interactive and responsive city administration, safer public spaces, as well as to meet the needs of an ageing population. However, the lack of skills is a major barrier for the design and deployment of smart solutions for sustainable cities and thus to exploit the Smart Cities potential. In this work, we present a curriculum for the upskilling and reskilling of Smart Cities Technicians and Engineers. The curriculum adopts a student-centered and multi-disciplinary approach combining an adaptive blend of technical skills and competences for Smart Cities enabling technologies, as well as non-technical (soft, entrepreneurship and green) skills and competences. Moreover, the curriculum is modular and flexible, including a set of courses that are further split into training modules and sub-modules. The curriculum has been developed in the context of the Erasmus+ project SMACITE and will be supported by key stakeholder groups including SMEs and other labor partners, education and training providers, the public sector and last but not least, learners themselves.

Keywords: *Smart Cities, education & training, curriculum, MOOC, Virtual Worlds, ESCO job profiles, SC Technician, SC Engineer.*

ARTS EDUCATION IN COMBINED PRIMARY CLASSES IN THE REPUBLIC OF CROATIA

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Abstract

The work in combined classrooms is very specific and demanding for primary education teachers because one teacher simultaneously performs lessons for more than one class. According to the official data from the Ministry of Education in Croatia, there are 148,233 students in the first four classes, wherein 9,879 (6,7%) students in composite classrooms classes. In combined, i.e. split-year classes, students are heterogeneous with regard to their age and abilities. Due to the nature of instruction that is complex, teachers need to be creative in the teaching methodology as well as in organizing overall lessons. Artistic subjects (music and visual arts) represent specific educational fields, and they are taught by class teachers in the first four grades of primary school. The goal of this work was to examine how primary education teachers conduct combined instruction in the artistic fields of music and visual arts with regard to age-diverse class composition. Besides, the advantages and drawbacks of such work and challenges teachers are faced with were also investigated. The research was conducted in 2023. Teachers working in two-, three- and four-year combinations participated in the study. The qualitative research method was applied, i.e. participants were interviewed in order to gain specific information, that is, a more in-depth insight into the work in combined classrooms within artistic fields. In their interview, female teachers underlined the beauty and challenge of such work with regard to peer mentoring, tolerance and mutual appreciation. The drawbacks of working in combined classes are connected to the organisation of teaching (planned and effective time use).

Keywords: *Combined classrooms, music, primary education, Visual Arts.*

DESIGNING WITH MULTIPLE TOOLS – SUPPORTING YOUNG CHILDREN AGENCY IN EARLY CHILDHOOD EDUCATION

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Abstract

Children's rights to participate designing their everyday activities and environments have been widely declared in international regulations. The practical implementation of these rights has also been advocated in educational research to support children's agency development. However, reported challenges such as young children's difficulties verbalising their thoughts, may discourage researchers to carry out investigations with children in early childhood education (ECE) environments. Tackling this issue, we present our exploratory work in Finland involving young children (9 girls, 5 boys, ages 4-6 years) designing a greenhouse space in their day-care using multiple tools. The design activity was carried out as part of the children's environmental education curriculum and was implemented through a participatory design (PD) framework to support and foster children's agency during the research. We gave the children low-tech tools (coloured pencils, paper) as well as with high-tech tools (drawing and augmented reality (AR) apps) to complete the design of their ideal greenhouse during four PD workshops: 2 workshops using an AR app, 1 workshop using a drawing app and 1 workshop using pencils and paper to draw. We explained the low-tech and high-tech tools to be used at the beginning of each workshop, allowing children to familiarise with them, if needed. Data were gathered through observations, videos, interviews and researchers' notes. Children had the freedom to spend as much time as they needed in the design activity and the ECE personnel accompanied two researchers with the children to provide familiarity and support. The workshops ended with a group interview where children were invited to describe their designs. Here we present how each tool type supported the children differently in their design activities by engaging and offering them suitable mechanisms to express their views and wishes, encouraging verbal expressions and interactions, and thus, fostering children's agency as well as assisting the researchers' work. Furthermore, the different affordances of the tools encouraged the production of diverse results through which children could record their "construction of meaning" during the design activities. Based on our experiences during this exploratory work, we advocate the use of multiple tools, particularly when carrying out participatory design activities with young children. Due to their different affordances, the provision of high- and low-tech tools for supporting young children's design can reflect better the children's individual skills, agency and interests and, therefore, offer researchers and designers a more efficient communication channel and a more holistic understanding of the design outcomes.

Keywords: *Participatory design, high-tech tools, low-tech tools, research in ECE environments.*

TEACHER'S QUALITY OF WORK LIFE IN REMOTE AREA ELEMENTARY SCHOOL DURING THE COVID-19 PANDEMIC IN TAIWAN

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Abstract

Human resources play a crucial role in the development of the organizations. Effective schools emphasize and reinforce the value of human resources and work morale. Good quality of work life is necessary for a school organization to attract and to retain excellent teachers. Quality of Work Life leads to numerous positive outcomes. It has always been up in studying organizational behaviour. This paper aims to explore the cognition and expectation of primary school teachers to quality of working life in the Covid-19 Pandemic in Taiwan. The research method is to invite 10 scholars, experts and practitioners to analyze teachers' cognition and expectation of quality of working life. The research findings are as follows: (1) The teacher's quality of working life is multi-faceted concept and relative cognitive needs. (2) The teacher's teaching aspiration influenced by quality of working life. (3) The problems of teacher's quality of working life are cultural disadvantage, lack of resource and teacher with administrative task. (4) The improve strategies are good salary, human resources, high educational professional and commitment.

Keywords: *Quality of working life, remote area school, cultural disadvantage, Covid-19 Pandemic.*

USING AN INTERACTIVE WEB-BASED TOOL TO CONNECT FAMILIES, PRACTITIONERS, AND POLICY MAKERS

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Abstract

The Early Childhood Asset Map is an interactive, web-based tool that provides one state with a connective data pipeline between families, early childhood programs, advocates, researchers, and policy makers. The Asset Map provides transparency in resource allocation across the state in early childhood program funding.

Keywords: *Early childhood, data, practitioners, policymakers.*

STANDARD OF FINAL YEAR STUDENT TEACHERS' MAIN SUMMATIVE ASSESSMENT PAPERS AT A UNIVERSITY OF TECHNOLOGY

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Abstract

There are specific standards that are recommended for setting main summative assessment papers in accordance with Bloom's taxonomy of the cognitive domain. For final year student teachers, the recommendation is that eighty percent of the question paper must be pitched at Bloom taxonomy's upper cognitive levels, which are analyzing, evaluating, and creating. Only twenty percent of the question paper must be pitched at Bloom's lower cognitive levels, namely, remembering, understanding, and applying. This distribution is designed to assess higher order thinking and thus instill, promote, and reinforce independent and critical thinking, as well as problem-solving skills in final year students from the faculty of humanities as the final measure to prepare them for the envisaged world of work. To determine whether examiners comply with this recommendation, I analyzed ten question papers from the faculty of humanities through document analysis. The study found that some examiners pitch their question papers at Bloom's lower cognitive levels. Some spread the questions almost evenly throughout the paper, while only a few distribute the questions close to the required recommendations. Of concern was that some examiners inappropriately used action verbs belonging to Bloom's higher levels. This was evident through the posed questions and what the memorandum or marking guide revealed. It is imperative that questions are pitched at the recommended level, most significantly for final year student teachers. It is recommended that examiners be re-trained in setting question papers in line with the revised Bloom's taxonomy protocol. It is recommended also, that experts in assessment and Bloom's taxonomy be brought in to conduct workshops on the appropriate use of appropriate action verbs.

Keywords: *Assessment, Bloom's taxonomy, lower order thinking, problem solving skills, higher order thinking.*

MEANINGFUL TEACHER CHILD DIALOGUE - RESPONDING TO EMOTIONAL NEEDS OF CHILDREN IN CRISIS SITUATIONS

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¹Dr.

Abstract

In recent years, there has been an increased awareness around the world as to mental health risks to children in crisis situations, the COVID-19 pandemic is one example of this. When examining resilience and vulnerability factors amongst children, significant figures such as teachers, parents and friends' reactions will determine the child's ability to cope. Their reactions can provide open spaces for meaningful communication with children while responding to their needs. This may contribute to their resilience and coping skills (Soejima, 2021, Sprang, & Silman, 2013). The purpose of this lecture is to describe a discourse program that teachers used in order to provide emotional support during the pandemic, when conducting dialogue with children. The research method is a discourse analysis of data collected through 30 videos of teachers' conversations with children. The videos were transcribed and then analyzed, using a coding scheme that was developed by the researchers. It was based on a tool designed by Birenbaum et. al., (2004), and adapted to the needs of the study. The findings showed that as teachers created open spaces and allowed for different perspectives to be heard, the children felt free to speak of their family members, the toys they liked to play with as well as family pets and other interests. The interactions were more symmetrical, meaning that one did not dominate the dialogue, leading to active listening and personal responses. In addition, the findings showed that teachers perceptions and beliefs of their role was that of a pedagogical figure, teaching them and having the children learn. It is important to help teachers develop new role perceptions that consist of providing emotional and social support as well as being a pedagogical figure.

Keywords: *Teacher child dialogue, emotional needs, resilience.*

EXPLORING TEACHERS' CONCEPTIONS OF POSTPANDEMIC PEDAGOGIES IN THE ESL CLASSROOM

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Abstract

This presentation reports on an ongoing study exploring teachers' conceptions of teaching English as a Second Language (ESL) in a postpandemic era. Since early 2020, ESL teachers have continuously adapted their teaching to the various COVID-19 restrictions imposed at institutional and national levels, including emergency remote teaching (ERT), hybrid teaching, teaching with physical presence whilst adhering to social distancing, mask wearing and test-to-stay (TTS) protocols. While the disruption to teaching since 2020 is already reflected in emerging research literature, little is known about how ESL teachers may have changed their conceptions of teaching English since their return to the classroom and a new 'normal'. This study sets out to investigate the extent to which the experiences of the last two and a half years may have impacted ESL teachers' conceptions of teaching and how they may have developed their own postpandemic pedagogies based on principles of Technology Enhanced Language Learning (TELL). Using a sequential explanatory research design, an online survey was administered, and data collected from over 100 ESL teachers working in public and private education in Cyprus and Greece. Follow-up interviews were also conducted with a smaller sample of these ESL teachers to supplement the survey data. Preliminary analysis of the data suggests that although ESL teachers' conceptions of postpandemic language teaching are largely driven by professional and personal concerns, several attitudinal, conceptual, procedural and institutional conditions are identified as fundamental drivers in teachers' use of technology in the ESL classroom. It is argued that an essential part of the professionalization of TESOL involves understanding these conditions by encouraging stakeholders to conduct further research in their educational contexts with the goal of supporting institutions to develop more sustainable policies and pedagogies in this postpandemic era.

Keywords: *COVID-19, English as a Second Language, teaching enhanced language learning, sustainable education.*

ONLINE DISCUSSION FORUM TASKS IN ESP COURSES: SPACE FOR DEVELOPMENT OF INTRALINGUISTIC MEDIATION SKILLS

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Abstract

The aim of the paper is to analyze the potential of particular blended learning tasks with regard to the development of students' intralinguistic mediation skills in a foreign language. In accordance with the current trends in designing higher education language curricula, the paper deals with the issues of English Medium Instruction (EMI, as summarized e.g., by Macaro 2018 or Lasagabaster 2022) and draws on newly formulated categories of the updated Common European Framework of Reference for Languages (CEFR). Our primary perspective is represented by the category of mediation, which has significantly broadened its scope owing to the analyses carried out by North and Piccardo (2016) and now constitutes a very important part of the updated version of CEFR. Our focus is on the so-called intralinguistic mediation, i.e. mediation within the same language, deliberately implemented into the university curricula of English for Specific Purposes (ESP) in order to establish conditions for subsequent EMI teaching. The empirical part presents a thorough description of an integrated blended learning assignment consisting of an online discussion forum in LMS Moodle and the follow-up classroom presentation task, in terms of the key theoretical constructs, namely mediation activities, and mediation strategies. Based on that, the paper presents the results of a small-scale empirical investigation carried out by means of a semi-structured questionnaire and aimed at identifying the students' perceptions of key aspects of mediation implemented into the integrated ESP learning tasks. The research outcomes are interpreted in relation to our previous studies on the potential of ESP online discussion forums and the specifics of establishing the EMI teaching contexts. The main implication is that the concept of mediation seems to be highly meaningful for the successful integration of the most relevant learning and communication modes, i.e. written and spoken language interaction and production in both online and classroom learning environments.

Keywords: *EMI, ESP, CEFR, Moodle, mediation.*

CAN THE ANALYSIS OF THE PLAY *THE STREETCAR NAMED DESIRE* BY TENNESSEE WILLIAMS THROUGH THE SOCIAL MODEL OF DISABILITY, ENCOURAGE THE DEVELOPMENT OF CRITICAL THINKING?

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Abstract

Teaching and developing students' ability to think critically is highlighted as one of the tasks of modern education and a part of curricular documents in various countries. Teachers are expected to teach the students how, and not what to think, emphasizing the change of focus in modern education, whose demand becomes a critical reflection on the content of teaching, and not exclusively its adoption and reproduction. Tennessee Williams's play *The Streetcar Named Desire* although written in 1947 is frequently staged in theatres all over the world. The plot depicts family and social relations and, among others, the destiny of Blanche, a character with anxiety disorder, an alcoholic, labelled sexually deviant, older, who instead of being supported by her family, ends up in a mental institution. The goal of this paper is to analyse the presentation of characters in the play through the social model of disability, the central thesis of which is: disability, that is physical or mental impairment, is undoubtedly a limitation of functionality for each individual; however, disability also arises because of social processes. The way the disability is presented in the play can be a basis for teaching understanding, empathy and tolerance as well as correct decision-making as the foundation of critical thinking.

Keywords: *Tennessee Williams, drama, The Streetcar Named Desire, social model of disability, critical thinking.*

RESEARCH ON FOREIGN LANGUAGES TEACHING IN MEXICO: A DECADE OF WORK

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Abstract

In this presentation, the authors discuss the methodological design and main results of a national study, coordinated by the first author, aimed to generate a state of the art of research in the field of foreign language teaching and learning conducted in Mexico from 2012 to 2021. The study's objective was to collect, document, and analyze research reports generated on this topic. The study was carried out by 148 researchers from 34 universities who collected, concentrated, and analyzed data from 28 states, which represent 88% of the total number of states in the country. Data was collected through interviews with university authorities and academics, visits to institutions and libraries, and a review of institutional websites and documents of a sample of higher education Mexican institutions from the 28 states. Some of the main issues to be discussed in the results section are the type of institutions where research projects were conducted; the language, subjects, and topics studied; the research objectives pursued in the studies; the methodology and instruments employed for the collection and analysis of data; and the main findings reported in the studies. The presentation closes with an analysis of the main characteristics, contexts, agents, and conditions of the research projects conducted in the field of foreign language teaching in Mexico and with some recommendations for the improvement of the area.

Keywords: *State of the art, research, Foreign Languages Teaching (FLT).*

NON-JUDGEMENTAL ATTENTION WITH INTENTION: MINDFULNESS IN THE CURRICULUM AT HOME AND ABROAD

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Abstract

Extensive research has been conducted on the effects of mindfulness on the human brain and psyche, demonstrating that stress, rumination, and anxiety can decrease, as creativity and attentiveness increase in subjects who practice mindfulness regularly (Kabat-Zinn 1982, 2009; Hölzel et al., 2011). Mindfulness has been shown to have multiple benefits across fields such as medicine, psychology, and business. According to proponents, living mindfully, with an unobstructed availability to experience, allows us to exercise greater awareness and emotional self-regulation, can foster transformative learning (Barner & Barner 2011), and can increase well-being (Singleton et al., 2014). These outcomes have supported the exploration of mindfulness in the field of education where it has been shown to increase focus and concentration, promote creative thinking and mental flexibility, and decrease distractedness (Berkovich-Ohana et al., 2017; Zeidan et al., 2010). Moreover, mindfulness shifts the focus from a self-referential narrative to one that is more open to and accepting of others. Its practice can improve social cooperation, through more altruistic and compassionate decisions and behavior (Donald et al., 2019; Iwamoto et al., 2020; Condon et al., 2013). In this hands-on presentation, using the vehicle of study abroad, we suggest ways in which mindfulness can be successfully incorporated into education at multiple levels. The presentation will include a brief theoretical framework to illustrate the principles of mindfulness and contemplative pedagogy (Barbezat & Bush 2014; Palmer & Zajonc 2010; Owen-Smith 2018), followed by specific praxis, such as *statio*, visualization, or loving kindness meditation. Attendees will be guided in simple techniques that they can use in their respective classrooms or institutions. A time for individual and collective reflection will follow each practical activity.

Keywords: *Mindfulness, contemplative pedagogy, higher education, study abroad.*

ANALYSIS OF THEORETICAL AND METHODOLOGICAL ASPECTS IN RESEARCH WORKS WITH SCIENTIFIC DISSEMINATION

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Abstract

This work aimed to do a survey and analysis of Scientific Dissemination main-themed research works of the last 5 years. The selected materials were divided, categorized and analyzed for its theoretical and methodological basis. The central goal was to recognize how Scientific Dissemination is referenced and which are the main methodologies used in the found texts. It has been noticed, as a result, a group of texts with well-defined methodologies, that, however, present an incipient theoretical basis, showing the need of actions in that perspective, if we consider Scientific Dissemination as a potential area for science teaching researches.

Keywords: *Scientific dissemination, text analysis, science teaching.*

A STUDY REGARDING LEARNING AND INNOVATION SKILLS (4Cs) IN A PORTUGUESE HIGHER EDUCATION INSTITUTION

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Abstract

Doctoral education is the pinnacle of the education system but is also the link between the education system and the research area. To work, as a researcher, in a 21st-century society, learning and innovation skills, like critical thinking, creativity, collaboration, and communication are important. In Portuguese law to have a PhD degree, is necessary that students among others must have scientific skills, critical thinking, and communications skills. Creativity and collaboration skills are not mentioned. But these skills are very important as scientific research usually occurs in research teams where collaboration and cooperation are crucial to concretize the research project. Also, creativity is important once it can drive to new areas of knowledge or new solutions to the research problem. In this context, it is important to know what PhD students fill about these four skills that are among the 21st-century skills. This research work is a study case, with the characteristics of quantitative research, which aims to perceive the doctoral students' perception regarding critical thinking, creativity, collaboration, and communication (understanding and development). The data were collected, through a questionnaire applied in Jun 2022, via institutional email to the Population of the Science and technology school at NOVA Lisbon university. This survey was based on others, already published, but adapted to the Doctoral population. Among other things, it captured the students' perception regarding their trust in their capabilities regarding critical thinking, collaboration, communication skills, and creativity. The meaning of creativity, how to develop it, regarding doctoral supervision practices, research environments, and development were explored, and PhD students' perceptions were collected. Data analysis revealed that students are very confident regarding their ability to use critical thinking (77%), work collaboratively (84%), communicate with peers or with society (81%), and be creative (73%). Considering the supervision practice (and teaching practice at this level) that promotes them, there is a lower agreement regarding it. The meaning of creativity that emerges in this research implies thinking out of the box, seeing the world in different ways/perspectives, creating new things/concepts/ideas, and making unusual connections between things/concepts/ideas. The personal characteristic associated with creativity is curiosity. In the view of doctoral students, the practices that promote the development of creativity are to participate in seminars/ debates or cycles of study (80%), followed by research work in a research group (79%). It is possible with the research results to conclude that these four important skills are being developed and deepened in doctoral education at this institution.

Keywords: *Doctoral education, critical thinking, creativity, collaboration, communication.*

GAUGING ANXIETY AND RESILIENCE IN THE MATHEMATICS CLASSROOM: VOICES OF GRADE 7 TEACHERS AND LEARNERS FROM SOUTH AFRICA

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Abstract

It is widely recognised that mathematics achievement is one of the foundations of success in any society. For job creation and employment in the labour market, sufficient levels of mathematical and technological expertise are required to sustain economic expansion. This also applies to the South African economy, which is hampered by serious skills shortages in science, technology, engineering, and mathematics. South Africa's education system is struggling to produce school leavers of the calibre required in industry, most notably when it comes to mathematics achievement. Therefore, mathematics and science should be the subjects of choice for most learners; however, mathematics is, for various reasons, widely perceived to be a difficult subject by learners and teachers. Learners require resilience and encouragement to overcome the difficulties they experience in learning mathematics. To this end, the aim of this study was to explore the causes of mathematical anxiety and how mathematical resilience in Grade 7 learners can be fostered. A qualitative inquiry, rooted in the interpretivist paradigm, was conducted to generate data from participants. The findings provided a multi-perspective on the complexity of mathematical resilience, the factors that inhibit mathematical resilience among learners and strategies to overcome the challenges posed by mathematics. Recommendations are made for consideration by the Department of Basic Education to improve classroom practice, to implement district-based interventions and to amend relevant policy.

Keywords: *Grade 7 learners, mathematics anxiety, mathematical resilience, mathematics achievement.*

CODING FOR CHILDREN – A WAY TO FULFILL THE AIMS OF THE OECD LEARNING COMPASS 2030?

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Abstract

In recent years two kind of publications were observable: On the one hand, there were many contributions arguing why every child should learn to code. Beside fascinating and motivating children for STEM (Science Technology Engineering Mathematics) topics and giving a good career preparation, coding also can strengthen general skills like e.g. resilience, creativity and organization. On the other hand, there exist several publications by the OECD (Organization for Economic Co-operation and Development) describing future skills for children as well as issues of future education and work. Particularly the OECD has developed the "OECD Learning Compass 2030". This work is divided into several concepts. Each concept describes different skills being relevant for the children future. In this contribution, we want to compare, contrast and merge these two fields of publications. Therefore, we examine an extensive literature review and give an overview about skills that can be imparted by teaching children to code. Then we take a look at OECD's compass and general skills. Therefore, we analyze the publications of OECD and apply text extraction to get relevant keywords of skills. Subsequently, we compare the coding skills with the OECD skills and look which aspects of the OECD compass can be fulfilled by teaching to code. As a result, we can note that attaining many of the OECD future skills can be supported by teaching children to code. We also have identified which skills cannot covered by coding resp. which additional benefits knowledge in coding offers. The paper concludes with a summary and an outlook. Future tasks are, e.g. examine at which age children should start learning to code, which are appropriate ways to teach and learn coding or concerning the question whether coding education should be realized as an one-size-fits-all approach or by applying internal differentiation.

Keywords: *Children, coding, future skills, OECD learning compass.*

MONITORING ORAL READING FLUENCY IN ELEMENTARY SCHOOL I

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Abstract

Introduction: Assessment measures of oral reading fluency can be applied by teachers or education professionals and help to provide an overview of the academic development in reading of each student; and when these simple measures are systematically applied over time, they can be used to track a student's possible difficulties. *Aim:* This study aimed to monitor the development of oral reading fluency in students from the 2nd to the 5th grade of Elementary School I during the school year. *Method:* This study was approved by the research ethics committee (09575419.0.0000.5406) of the home institution. The study included 400 students from the 2nd to the 5th grade of Elementary School I from a municipal public school in the interior of the State of São Paulo, aged from 7 years to 10 years and 11 months. The Performance Assessment in Reading Fluency was applied. Reading fluency measures were performed by collecting oral reading of three texts of the same textual complexity in the months of March, July and November. For the analysis of each text, the analysis parameters of the types of errors made during reading were used, referring to words read correctly and incorrectly per minute. *Results:* The results were statistically analyzed using the Statistical Package for Social Sciences, version 22.0, with a significance level of 5% (0.050). With the application of the Wilcoxon Signed Rank Test, it was possible to verify that there was a statistically significant difference in the groups of this study both for the total number of words read correctly in one minute and the total number of words read incorrectly between the third moment of the fluency measure in comparison with the first moment. With the application of the Mann-Whitney Test, it was possible to verify that there was a statistically significant difference, indicating that the groups had a lower number of words read correctly per minute in the first reading measure compared to the second and third measures. This same finding was found in the reading of misspelled words per minute. *Conclusion:* The results of this study allowed monitoring and accompanying in a simple, reliable and valid way, the progressive development of oral reading fluency, evidenced by the increase in the number of words read correctly and the decrease in the number of errors from the 2nd to the 5th grade of Elementary School I.

Keywords: *Oral reading fluency, measurement, screening, progress monitoring, assessment.*

MAXIMIZING THE EFFICIENCY OF PRESENCE-DISTANCE EDUCATION MICROCOMPUTERS SYSTEMS

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Abstract

Embedded systems have been one of the most widely used areas of electrotechnology in recent decades. The common question is how to maximize the teaching efficiency of the technology area, where the IT technology and Electrotechnology areas are intersected. The departments of universities and future employer of absolvents are focused on different platforms of microcontrollers. That fact leads to finding an optimal teaching system. This article examines and proposes solutions for improving the teaching efficiency of the presence and distance education methods. The main challenge is to motivate students and increase their understanding of the microcomputer system. The article's secondary challenge is to offer a solution to the distance learning method, which has had a negative impact on students' knowledge levels. The article describes how to increase the effectiveness of distance learning using current software tools. The distance education methods are divided into two categories with a different way of education reaching.

Keywords: *Distance teaching, Proteus, versioning software, embedded systems.*

PRACTICING SOCIAL-EMOTIONAL AND COGNITIVE TEACHING STRATEGIES AND STEAM ACTIVITIES IN EARLY CHILDHOOD EDUCATION

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Abstract

STEAM education is recognized as an efficient practice of holistic education, which is already relevant at the stage of early childhood education. STEAM research focuses on the search for models of interdisciplinary integration and the justification of innovative educational approaches. The aim of this paper is to reveal the relationship between practicing social-emotional and cognitive teaching strategies and STEAM activities in early childhood education. The conducted quantitative study reveals that the population of early childhood teachers is heterogeneous in terms of practicing teaching strategies and STEAM activities. Early childhood teachers, who use social-emotional and cognitive teaching strategies with equal frequency, also often use integrated STEAM activities in young children education. Other teachers prioritise social-emotional teaching strategies and pay less attention to cognitive teaching strategies, although the latter have a slightly stronger link to the development of STEAM practices. Teachers who are less likely to use cognitive strategies to teach young children tend to use STEAM activities less frequently.

Keywords: *Early childhood, STEAM, social-emotional teaching strategies, cognitive strategies.*

PLAYWORLDS: IMAGINATIVE ADULT-CHILD JOINT PLAY IN EARLY LEARNING CLASSROOMS

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Abstract

Play is considered as one of the most effective and meaningful ways of learning for children until the age of eight years (Skene et al., 2022). Play is also a prerequisite for human development and creativity (Rieber & Carton, 1987). However, many early learning classrooms struggle to find time or ways to include playful learning in their curriculums. In this presentation I introduce an educational innovation that helps bring play in early learning classrooms. Playworlds are forms of adult-child joint play often centered around a piece of literature or story. The story is turned alive by acting, playing and creation of plot, characters and props (Lindqvist, 1995). Implementing playworlds often requires time and dedication so many teachers find it hard to combine it with formal learning goals of the school. I will introduce a Finnish first year school classroom in which a teacher developed a playworld activity around the story of Crocodile Gene (by Eduard Uspenski). The class was culturally diverse with children from around six different home languages. The data analyzed consists of teacher diaries and notes, informal email correspondence and interviews between the teacher and the researcher during the school year. I focus on one of the characters in the story, Chebi (a hand puppet played by the teacher) visiting the classroom and becoming a member of the class. I discuss how children who were ambivalently engaged (see Ferholt & Rainio, 2016) towards school going found meaningful ways to participate in class activities with the help of Chebi. The imaginative character played by the teacher was helping children to engage and attach to the classroom activities. The paper concludes that the power of imagination, play and stories should not be undermined in developing easy access and meaningful ways of participation in early learning classrooms.

Keywords: *Play, imagination, narrative, Early Childhood Education and Care (ECEC), student engagement.*

USE OF TECHNOLOGY IN SUPPORTING ECD CENTRES' PEDAGOGY AND MANAGEMENT FUNCTIONS TO PROVIDE QUALITY EDUCATION

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Abstract

Numerous studies focus on the advantages and elements of high-quality early childhood education but few to none concentrate on how technology tools are used to support their pedagogy and administrative functions. This study explored the provision of quality education through the use of technological tools of the selected ECD centres. Activity theory is employed to understand the technology tools and how they support and offer quality education at the participating centres. This study adopted a qualitative research approach and collected data through face-to-face interviews with eight participants purposively selected from four ECD centres situated in Pretoria. The data were analysed thematically. The findings reveal that participants believe that the use of technology tools will help the centre principals and teachers in their administrative duties and the teaching-learning processes. Although many of the participants lack tools and skills in technology usage. For instance, some participants said they cannot use digital applications to engage learners, maintain accounting records, or connect with parents. The study contributes to awareness and adherence to quality early childhood education by suggesting that ECD centres, principals and teachers should engage in relevant and practical training on establishing systems on the use of technology to enhance the provision of quality education. The study recommends a further empirical study on the topic of the digitalisation of administrative and teaching duties of ECD centre principals and teachers.

Keywords: *Technology tools, management, pedagogy, quality early childhood education.*

INSPIRATION FOR PRESCHOOL TEACHERS: CONTENT ANALYSIS OF CZECH FACEBOOK GROUP

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Abstract

According to Britannica Dictionary inspiration is: “something that makes someone want to do something or that gives someone an idea about what to do or create” (@2023). Inspiration is one of the most important things in the teaching profession, teachers are always looking for new inspiration and ideas, what to do in their classrooms. And when the teachers lack inspiration, they try to find it, not in the books anymore, but on the internet. In this study the content of the biggest Czech Facebook group for preschool teacher “Inspiration for preschool teachers” (nearly 40 000 members) was analyzed. Because according to the Czech Statistical Office (2022) there are only 33 156 preschool teachers in the Czech Republic, only the posts that were clearly from preschool teachers were included in this research. The main goal was to identify what kind of inspiration the teachers are looking for on Facebook, and what kind of inspiration are the teachers sharing in this group. From 623 posts (month and a half of posts) the following themes and characteristics were identified: Planning (activities in general, songs, fairy tales & rhymes, art, movement games, group activities, literacy, dramatization, math and themes). Equipment (art supplies, IT supplies, decorations, furniture, specific pictures or books), External programmes; Education. With the most common theme being questions about planning, specifically activities in general, when the teachers have a given theme and are asking for any activity related to this theme. From the second research question “what kind of inspiration are the teachers sharing” were following themes and categories identified: Activities (art, math, literacy, inquiry-based learning, movement activities, graphomotoric, dramatization, polytechnic, group activities, songs). Education; External programmes, Materials and Decorations.

Keywords: *Inspiration, Facebook, preschool teachers, Czech Republic.*

TYPES OF FORMATIVE FEEDBACK THAT TECHNOLOGY TEACHERS GIVE TO LEARNERS DURING PROBLEM STRUCTURING

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Abstract

The South African Department of Basic Education highlights the importance of the Design process in Technology education. The Curriculum and Assessment Policy Statement (CAPS) indicates that all teaching and learning activities in Technology must be structured around the design process, with Practical Assessment Tasks (PATs) serving as the primary mode of assessment. At the beginning of the PAT learners receive ill-structured, open-ended problems that require the development of innovative solutions. The ability to structure design problems is fundamental to solving such problems. Problem structuring is an inquiry process during which the scope, requirements, and boundaries of the design problem are identified. Although technology learners often rely on formative feedback from their teachers to support the structuring of design problems, they tend to focus their formative feedback on teamwork and the managerial aspects of the design process. Without formative feedback that supports learners in their problem structuring, learners often do not explore sub-problems and are inclined to reproduce known and existing solutions. The purpose of this study was to investigate the types of formative feedback teachers provide to learners during the problem-structuring phase of the design process. This qualitative case study used Schut's design feedback model to analyse the formative feedback given by five technology teachers who supported their learners with problem structuring as they solved ill-structured design problems. The findings of this study indicate that teachers primarily use Low-Level Questions (LLQs) as formative feedback, with Low-Level comments being the least observed. Verification, concept completion and example-type questions were the most frequent LLQ used to support learners' problem structuring. Additionally, compliments and direct recommendations were the most commonly used formative feedback comments. Deep Reasoning Questions (DRQs) and Generative Design Questions (DRQs) were also observed, taking the form of interpretation and method generation questions. Overall, the findings show that teachers do not adequately support learners in exploring sub-problems but instead direct learners to identify problems that have known solutions. These findings have implications for the education of pre-service technology teachers, who should be made aware of and supported by formative feedback types that can support learners' problem structuring activities. Findings from this study could inform the curriculum development and education of pre-service teachers regarding the formative feedback types they use to guide learners' problem-structuring processes. Further research is necessary to explore the impact of the types of formative feedback during problem structuring on the quality and creativity of learners' design solutions.

Keywords: *Design problem solving, problem structuring, formative feedback, technology teachers.*

VIRTUAL REALITY IN PRE-SERVICE TEACHER EDUCATION: CHALLENGES OF REALIZATION IN MUSIC EDUCATION

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Abstract

Virtual reality (VR) is seen as a tool that can enrich and advance education but there are still pedagogical and practical challenges to overcome. In this article, we present some findings on the VR usage in teacher education and student teachers' experiences and perceptions of employing VR especially in music education. We apply a categorization by Bower et al. (2020) to our analysis in order to structure student teachers' reflections. It appears that the VR applications for music are yet rather limited, their quality varies, and their pedagogical applicability seems to be poor. We argue that it is necessary to develop and design VR technology for educational purposes in collaboration with different stakeholders including teachers, and thus, address the current technical and pedagogical challenges.

Keywords: *Pre-service teacher education, student teacher, virtual reality, music education.*

DIRECT AND INDUCTIVE APPROACHES AT PRIMARY SCHOOL TEACHING AND LEARNING

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Abstract

The study's main aim was to investigate the effects of using different didactic approaches on students' performance. A secondary aim was to test different methodological approaches. Pupils of primary school (ISCED 1) were taught using two different strategies. The first, direct teaching, begins by introducing a new concept or generalization, identifying existing knowledge, and building meaning based on the teacher's interpretation and information, followed by practice. The inductive strategy differs in meaning-building based on individual and cooperative discovery and inference of new knowledge through active experimentation. The intention of the inductive approach is also to develop pupils' higher cognitive operations and their transfer to another curriculum. In both cases, free responses to questions about what students remembered from the lesson, what they found most important, etc., were used as evidence of learning. The research was designed as a pseudo-experimental with several alternatives. The teachers prepared the teaching scenarios according to the researchers' assignments. The first case involved teaching both approaches in one class on different topics. The second case involved teaching individual approaches in two classes. How teachers evaluate the effects of teaching conducted in two different ways was also investigated.

Keywords: *Primary education, inductive teaching, direct teaching, constructivism, pseudo-experiment.*

EDUCATION MODEL FOR FUTURE

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Abstract

The modern work environment requires many new abilities. Hence, there are often called 21st-century skills. It can be caused to the increasingly common use of digital tools or by more and more individualization (fitting) occurring in all aspects of life. These skills are not only subject-matter skills but auxiliary such as time planning, flexibility, ability to contact and discuss with others, social skills, etc. These skills are often called "hard" and "soft" skills. Many professions introduce these skills to help employees adjust to future changes. All industries had to follow changing world, mainly from an economic point of view. Banking, manufacturing, tourism, hotel industry, and sometimes administration, medicine, and healthcare focus on customization. Doing work quicker and more flexibly in all these areas is essential. Unfortunately, education is one of the arenas more resistant to these changes. There are "traditional" exam forms, "traditional" lecture forms, etc. The pandemic has introduced changes, but now there is a great willingness (from teachers, administration, and some students) to return to the previous situation. University is an old institution. There was a time when the university was used to individual development. There were units – students studied chosen subject in their own time and developed themselves in the desired direction (Humboldt University model). Most important was feeling like part of science society. After this, the following model – the French university, shows that students should learn to be a valuable element of the state. Students' feelings were not significant. Students can be treated as the "labor force". They learn to fulfill state expectations. What university model is desired now? What university model is practical enough to give work knowledge and prepare for new challenges? Are some pedagogical theories better matched to unknown current and future abilities? What is essential for students, and what is vital to the state? In this paper, we would like to discuss some of the possibilities of different university models and different pedagogical theories with a focus on flexibility and further self-development of students

Keywords: *21st-century skills, education model, pedagogical theories.*

TRENDS IN LEARNING GROUP PERFORMANCE IN PROBLEM-SOLVING SIMULATIONS

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Abstract

The paper discusses the application of simulations for group problem solving in management training. The aim is to explore trends in group performance, which can then serve as a starting point for analysis and discussion of decision-making processes during training sessions. The results of the observation of the work process of 113 groups with a total number of participants of about 500 people were obtained from 5 different simulations based on a procedure developed by Human Synergetics. Average individual and group results, the gain/loss from the group discussion and the resulting synergy in the group were calculated as efficiency measures. The results of the Bulgarian groups are compared with those of known published studies and can serve as reference values. Expectations of similarity in the performance trends of individuals and groups are confirmed. The hypotheses regarding the increase in the quality of group decisions compared to the averaged individual results (in 82% of cases) and the relatively limited achievement of synergy (only in 30% of cases) are confirmed. Differences are also established between groups based on belonging to a private or state organization and open groups or members of a team/organization. The observations create a basis for more in-depth discussions during the training sessions on how the quality of decisions can be improved by increasing the quality of interactions between group participants.

Keywords: *Training groups, synergistic problem solving.*

DEVELOPING YOUNG CHILDREN'S TEXT PROCESSING SKILLS BY USING DETECTIVE BOARD GAMES AND RWCT TECHNIQUES

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Abstract

Using board games in the classroom is an opportunity for experiential learning. A previous examination proves that the systematic use of Rory's Story Cubes in the methodology of native language teaching can be included as a playful method because they are useful in the development of oral and written communication. I have reflected on this with a new project focusing on reading skills. My goal is to examine how the card games, Black Stories Junior (Red Stories, Rainbow Stories) combined with RWCT techniques (Reading and Writing for Critical Thinking) can develop the interpretation of texts in 9 to 10-year-old students. The games contain riddles with exciting criminal cases for children. The players try to reconstruct the stories by asking, guessing, and fiddling. RWCT methods are the sum of cooperative, interactive and reflective techniques that make the learning process more successful and creative. In the first period, the experimental and the control group were formed. After that, the experimental group played the card game 30 times and got to know graphic organizers, drama pedagogical methods, and creative writing tasks related to the short stories. The activities were carried out under the supervision of the methodical leader of the experiment and recorded with a video camera. In the end, the students could use the learned methods independently and achieved more points on reading comprehension tests than the control group members. Thanks to the drama techniques the students were able to write in a more meaningful way from another person's perspective. The results show that the consistent use of the given board game is beneficial for reading and writing skills. The project's achievements may contribute to the widespread educational use of board games and RWCT techniques, thereby expanding the methodology of native language teaching.

Keywords: *Board game, primary education, cooperation, Black Stories Junior, RWCT techniques.*

TEACHING THE PERIODIC TABLE AS THE EVOLUTION OF MATTER FROM ENERGY TO LIFE, USING POETRY

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Abstract

*I'm on top of the table and what do I see?
The vast expanses of space, the primary polarity.
Hydrogen and Helium, being born at the start,
Both light and tiny but with natures apart...*

Most science Nobel Laureates before 2010 were actively engaged in the arts, with many saying that this was important for their scientific success. The use of the arts at the cutting edge in science suggests that innovative thought is helped by creative approaches in our teaching. Researched effectiveness in the use of the arts in science education stimulated the development of this Periodic Table poem. Construction of the poem drew upon researched differences in elemental reactivity, holism evolution, and the use of story. The resultant poem is a story of the birth, maturation and death of matter, designed to stimulate the interest of specialist and non-specialist chemistry students at all levels. Holism evolution, as developed by Smuts (1926), describes evolution as an emerging sequence of substances/levels; of energy, matter, life, consciousness (like that of the higher animals), and the human personality. By viewing the Periodic Table through the lens of holism evolution, the poem tells a story that begins with the big bang formation of Hydrogen and Helium at the top (first-born and most youthful of the elements), and ends with the radioactive elements at the bottom (old-age and death of matter). Children love stories, and stories have carried the wisdom of all cultures over the millennia. The poem in this research was designed to tell an imagination-rich story of matter that carries many important scientific ideas to students. This poem was tested in a high school chemistry class with those who had selected science as a subject, and those who had not. The findings revealed that almost all participants appreciated being taught science in this way, with many expressing that the science taught them about human life and that human life could conversely be helpful to understanding science. This paper presents the development and experience of the Periodic Table story-poem, and how holism evolution and poetry can be used in science education.

*What was seen at the start with the sun shining bright,
Giving life to the plants and Earth chemistry,
Now changes to death in the dim glowing light,
Or explosion of accelerated radioactivity.*

*Ashes to ashes, dust to dust, right?
No! Energy to matter, matter to life!*

Keywords: *Science education, holism evolution, science poetry, story, periodic table.*

IMMERSIVE VIRTUAL REALITY AND ARTIFICIAL INTELLIGENCE FOR ENHANCING STUDENT PREPAREDNESS FOR CLINICAL EXAMS

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Abstract

Introduction: Test anxiety is a common issue among post-secondary students, leading to negative consequences such as the increased risk of dropout, lower grades, and limited employment opportunities. Students unfamiliar with the test-taking environment are more likely to have test anxiety. This study aimed to explore virtual reality (VR) and artificial intelligence (AI) as potential solutions to reduce test anxiety in health science students preparing for clinical exams. By utilizing an AI-powered virtual testing environment with interactive virtual patients, students acted as medical professionals in a simulated clinical setting, allowing them to familiarize themselves with the environment and potentially reduce their anxiety levels. The study utilized AI in the form of a generative pre-trained transformer (GPT) to generate responses from virtual patients. System was evaluated on its ability to reduce test anxiety. *Objective:* To assess the efficacy of a VR simulation of a clinical setting in reducing student anxiety for a clinical exam and gather student

perspectives on their VR simulation and coursework experiences to better understand their learning environment. *Methods:* First-year health science students were invited to participate in a VR session that took place three-days before their clinical exam. Students exposed to VR (YesVR) and those who opted out (NoVR) had their anxiety levels compared to one another using the State Trait Anxiety Inventory (STAI) and Test Anxiety Inventory (TAI). Immersive VR simulation included history-taking and cognitive assessment modules, allowing students to communicate with virtual patients in natural language in a virtual clinic. Virtual patient responses were generated by GPT, fine-tuned with transfer learning techniques based on real-world student and standardized patient video recordings. After completing their clinical exams, students were invited to participate in semi-structured interviews and focus groups. *Results:* A total of 108 students participated in the quantitative aspects of the study (mean aged 24.53 years, *SD* 2.64): 61 for the NoVR group (mean aged 24.52 years, *SD* 2.42) and 47 for the YesVR group (mean aged 24.54 years, *SD* 2.93). There was a significant difference in state anxiety scores between groups, with NoVR showing greater anxiety scores (mean 51.69, *SD* 11.87) than YesVR (mean 39.79, *SD* 12.21) ($t_{106}=5.10$, $P<.001$, Cohen $d = 0.99$). The mean difference was 11.90 units (95% CI 7.28-16.53). A total of 25 students participated in the interviews and focus groups – 16 from interviews and 9 from focus groups. The major themes emerging from focus groups and interviews were overall student background, exam feedback, fear of the unknown, self-consciousness, and the exam environment. *Conclusion:* This study highlights the potential of AI-enhanced VR as an effective tool for reducing test anxiety and increasing student familiarity with clinical exam environments. The results suggest that VR may reduce ambiguity and uncertainty, which are key contributors to test anxiety. The findings provide valuable insights into the potential of VR and AI in addressing test anxiety.

Keywords: *Virtual reality, artificial intelligence, student anxiety, examination preparation, learning tools.*

STUDENTS' BEHAVIOR ON A "MATHEMATICAL LITERACY" PROBLEM

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Abstract

The construct of mathematical literacy, which has become more popular through OECD/PISA programme (Programme for International Student Assessment) recognizes the importance of students' capacity to reason mathematically, use and understand mathematical concepts while they explore real world problems. According to PISA's results, the performance of Greek 15-year-old students in mathematical literacy has not improved and has remained below the OECD average throughout the years it participated in PISA, since 2000 till today. Except PISA's general and comparable results on students' performance, students' responses on open constructed-response items and most of the items themselves are not available on PISA's open database. As a consequence, researchers cannot study them in order to analyse the way that students in Greece manage such context-based mathematics tasks and cannot comment on their difficulties which could be used as evidence to justify their steadily low performance all these years. This current study aims to explore and examine in depth the way students, who are completing compulsory education in Greece, respond in a real mathematical problem encompassing a lot of characteristics of PISA's math problems. Therefore, the open constructed-response problem, which belongs to the "uncertainty and data" content category as this described in PISA's mathematics framework, was given to 650 students who complete the compulsory education in Greece (9th Grade). After decoding their answers, we comment on the different ways of dealing with the real context-based mathematics problem and clarify students' difficulties.

Keywords: PISA, mathematical literacy, Greece, data and uncertainty.

PERSONALITY-SENSITIVE PEDAGOGIES: A MIXED METHODS ANALYSIS OF SMALL GROUP INTERACTIONS AMONG 9-10 YEAR OLDS

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Abstract

There is considerable evidence that working collaboratively in small groups has learning benefits (Laal and Ghodsi, 2012) and that children's participation in such activities mediates learning (Webb et al., 2014). Despite a growing interest in inclusion in education, personality has been overlooked as a possible source of exclusion. In this study we identified children who self-reported low levels of extraversion and/or high levels of neuroticism (tendency to worry) as personality traits and then observed them working in small group collaborative learning situations. Using social network analysis (SNA) as a way of understanding the group interactions, we employed a novel measure of degree centrality (influence) and coupled this with a qualitative analysis of the nature of the group interactions, establishing a genuinely mixed methods social network analysis (Froehlich et al., 2020). Findings suggest that low levels of extraversion and/or high levels of neuroticism can be, but are not always associated with lower levels of participation and that a range of other factors, notably the personality traits of the other children, affect participation. These findings could be used to suggest ways that teachers could employ more personality-sensitive pedagogies.

Keywords: *Personality, social-network-analysis, collaboration, participation, talk.*

SENTENCE COMPREHENSION IN CHILDREN WITH DEVELOPMENTAL LANGUAGE DISORDERS

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Abstract

Purpose: Language comprehension is vital to social and educational development. Difficulties in sentence comprehension can be detected in most children with developmental language disorders (DLD) using age-appropriate instruments with high sensitivity. There are two main theoretical frameworks for the characterization of difficulties in language acquisition in children with (DLD): linguistic-based and cognitive-based theories. The aim of this study is a comparison of language comprehension in children with developmental language disorder (DLD) and children with typical language development (TLD). Two types of tests referred to as main theoretical frameworks have been used (Token test and TEPO - Sentence Comprehension Test). *Sample:* We studied 101 children aged 4,3-6,9 years with (DLD) and typically developing peers (TLD). Data collection took place in the period 2021-2023. *Method:* It is quantitative research. A total of 47 children with (DLD) were compared with 54 children with (TLD) in two comprehension tests. The research goals were set as follows: 1) Correlation of TEPO test and Token test using Spearman's correlation coefficient; 2) Comparison of homogeneity of test results in TLD and DLD children using Stuart–Maxwell test; 3) Determination of the sensitivity and specificity of both tests. *Results:* There is a high dependence between the two tests, indicating a high level of correlation, with $T_s = 0.81$ in the whole research sample. There was a statistically significant difference ($p < 0.001$) between the test results based on percentile rank scores. The non-parametric unpaired Stuart-Maxwell test was used. The TEPO test has high sensitivity (95,7%) and the Token test has high specificity (90,7%). *Discussion:* Both comprehension tests have several advantages in terms of their characteristics, and they also have some limitations. The research results provide more information about the differences between the two testing methods and explain how the test results can be used in education.

Keywords: *Specific language impairment, comprehension, language disorders.*

CO-CREATING AN ORGANIZATION-WIDE PEDAGOGICAL PROGRAM IN HIGHER EDUCATION

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Abstract

Higher education is expected to prepare students for the future and develop their competences for dealing with rapidly transforming working life. The substantial changes in the digitizing, networking, and globalizing society and working life have recently challenged the pedagogical approaches of higher education institutions. At the same time, the tightening education policy and diminishing funding of HEIs require more efficient and effective educational processes. New ways of teaching and learning are also needed to ensure the well-being of the higher education community and the joy of learning. These remarks led to a year-long open and co-creative process at Laurea University of Applied Sciences in Finland to construct a pedagogical program that brightens the collective aspiration to renew teaching and learning. The purpose of this paper is to describe the process of co-creating an organization-wide pedagogical program and to show the first outcomes of that process. The still ongoing process has progressed through an open dialogue in small thematic groups and collective co-creative workshops. The core working group has involved about 100 persons in different positions in the organization. The first outcomes of the design process describe how the selected pedagogical choices will manifest themselves in the year 2025 at four levels: at the organizational level, degree programme level, study unit level and student level. The co-creative process and vivid discussions during the process facilitate the organization-wide transformation that the new pedagogical program requires.

Keywords: *Pedagogy, higher education, co-creation, learning, learning by developing.*

DEVELOPING AN EFFECTIVE MOBILE APP FOR IMPROVING ENGLISH SPEAKING SKILLS

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Abstract

This study aims to create a mobile application that will facilitate learners' practice of the Test of English as a Foreign Language (TOEFL) speaking and improve their speaking skills. The study follows a design-based research (DBR) framework to delineate the phases and principles of developing the application. The TOEFL exam is a requirement for international students to apply to universities in the USA. However, challenges emerge even after international students are admitted to colleges. All lectures and discussions within classrooms are conducted in English, and students need to communicate and negotiate all daily issues with others by themselves. While there are a number of mobile apps in the market targeting English Speaking skills in general, only a small number of apps address TOEFL speaking specifically with their own limitations. The four steps of DBR-- Planning, Developing, Testing, and Redesigning-- were followed in designing the mobile application. This DBR framework proved to be a successful model for designing and developing the mobile application, which can be applied to other applications as well. The Visualize TOEFL Speaking mobile application demonstrated that its learning activities could support pedagogical goals. Students found the application engaging, useful, and interactive, and they reported that it helped them improve their English-speaking skills, particularly in the TOEFL speaking test and its sub-categories. Although the interface and functions of the mobile learning application need to be refined, it is a highly valuable tool.

Keywords: *Mobile app development, English speaking skills, design-based research, TOEFL speaking, mobile app design principles.*

ADAPTING ARCHITECTURAL DESIGN EDUCATION FOR THE AI ERA: PRELIMINARY FINDINGS AND FUTURE DIRECTIONS

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Abstract

Architectural design courses are an essential part of many universities' curricula, offering students the opportunity to learn about building construction, building physics, mechanics, environmental ecology, and architectural aesthetics. Traditional architectural training typically starts with architectural graphics and model making by hand, which helps students understand the relationship between human scale and space scale and develops their aesthetic taste and innovative thinking. However, the rise of advanced technologies and AI products in recent years has led to a decline in students' interest in practical training. Some students prefer to use online searches to understand room size rather than taking measurements, and they would rather learn how to use 3D printers than how to make models with utility knives. This trend has prompted questions about the relevance of traditional architectural training methods to the new generation of students. Should educators abandon traditional training and adopt new technologies? This research examines traditional architectural training methods through personal teaching experience in universities, using first-stage AI skills to compare traditional methods and adjusted methods. The study seeks to determine the adaptability of traditional training methods to face AI trends while maintaining the relevance of human scale and space scale, aesthetic taste, and innovative thinking. The findings of this research offer insights into how educators can adjust their teaching methods to provide students with the necessary skills to succeed in the current and future technological environment. The study also offers discussions and possible solutions to address the challenges faced by architectural educators for future generations.

Keywords: *Architectural design, AI trend, architectural training, innovation.*

ENHANCING CRITICAL THINKING AND COMMUNICATION SKILLS OF BLACK MALE SECONDARY STUDENTS FOR SUCCESSFUL STEM CAREERS

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Abstract

Culturally appropriate learning opportunities for students were provided by incorporating problem-based learning, active learning, and experiential learning within the teaching and learning modalities. Students' active involvement, and learning in the context where knowledge can be used, resulted in effective learning. For active learning to be optimal, the learning environment needs to be constructed so that students' involvement in the learning process, as well as their responsibility for learning, is increased. One goal of the program was to increase broadening participation of underrepresented populations in STEM programs and careers by providing early engagement of Black Male students in STEM programs and including opportunities to enhance critical thinking and communication skills needed for entering STEM workforce sectors. The Innovative Science, Technology Engineering, & Mathematics workforce development project (iSTEM –WORK) was designed to provide Black Male students with STEM challenging technological learning experiences that increased students' exposure to innovation and creativity in STEM disciplines. Underrepresented minority students in grades 6 through 10 were engaged in a long-term (3 year) STEM technology program that included a Summer Program, Hands-on Field Experience, and Saturday Academy during the academic year. iSTEM –Work bridged students from middle school into high school and included culturally sustaining: 1) academic and social integration and advising; 2) knowledge and skill development; and 3) support and motivation which ultimately impacted students' confidence, academic outcome and STEM career choices. Students reported the innovation class and learning about project steps were important in developing their interest in becoming a STEM professional. Students engaged in critical thinking as they worked on projects such as: brainstorming, gathering pertinent background information, drafting hypothesis, discussing pros and cons of potential solutions, reviewing and including new background information, finalizing hypothesis, concluding on best potential solutions. Students reported higher levels of Critical Thinking and Problems Solving on an 11-item scale as a result of participating. For example, the percent of students who reported "seeing patterns in solving problems where others would see items as unconnected" increased by 11% over the course of the program. Similarly, when considering a

new project, the percent of students who reported strongly agreeing with their ability to “take an independent and innovative look at most situations” increased by 16% as did their ability to “see how ideas and techniques can be used in perceiving new relationships” and their ability to “find the argument to deny unsound propositions (i.e. propositions that contain of invalid facts)”.

Keywords: *Black Males, STEM education, innovation, critical thinking, problem solving.*

HACKING THE CHILDREN’S MUSEUM: ILLUMINATING MIDDLE YEARS SOCIAL STUDIES CURRICULUM IN PERMANENT EXHIBITIONS

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Abstract

The present ongoing study, seeks to extend the educational resources that exist in the Manitoba Children's Museum's fixed exhibits by introducing social studies and arts into the educational methodology of STEM (Science, Technology, Engineering and Mathematics), where visitors learn such fields of teaching and ability to interact and play with the works of art. To be able to introduce a STEAM methodology, we will be inviting 15 5th graders from a school in Northeast-Winnipeg (Manitoba - Canada) to visit the Engine House exhibit – a true size train of the 1950’s – for them to interact with the work and take notes on the relationship between the train and the place where the museum is located and the social studies curriculum of its corresponding curriculum. This is justified by the fact that the MCM is housed in a historic facility that once housed the Canadian Pacific Railway's Machine Repair Hall, which is also a significant content of the fifth-year syllabus. To introduce the Arts, we will use Museum Hacking, an active art methodology where visitors create artistic interventions such as photographs, montages and collages to present new narratives or shed light on aspects that had not been highlighted. In the case of participating students, this will be done through actions that use social studies and history that are already in their curricular system, as well as other theoretical-practical tools such as social semiotics and narrative theories. With the Engine House hack, we intend, first of all, to expand the educational possibilities of the fixed exhibitions at the MCM by introducing an important and necessary tool that is also justified by the historical importance of the place itself: the Social Sciences and the Arts. After this first initiative, we also intend to expand the actions of artistic intervention in other fixed works, to reveal new stories and expand other STEM for STEAM's, taking us to our final objective, which is to develop a new curriculum program with the MCM where other schools and other school years can also discover new narratives and new stories, using artistic-semiotic contexts. Finally, the expected result is that the artistic productions of the participating students can be organized in a future exhibition and that, also reveal important social aspects that give visibility to the excluded and provoke new ways of experiencing fixed exhibitions in other children's museums around the world.

Keywords: *Social studies curriculum, middle year curriculum, arts-based education, children’s museum, museum hacking.*

ORGANIZATIONAL ISSUES

IMMIGRANT TEACHERS IN SOUTH AFRICA: PROFESSIONAL NEEDS AND ADVICE TO THEIR COMPATRIOTS

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Abstract

Migrants consider South Africa to be a country of greener pastures in a sub-region blighted by political and economic instability. In South Africa's education system, Zimbabwean teachers constitute the largest group of migrant teachers. Although Zimbabwean teachers have become an integral part of the South African education system, no research directed at their social and professional needs has been carried out. The purpose of this qualitative study was to explore the social and professional needs of migrant Zimbabwean teachers, and their advice to prospective migrant teachers. Convenient, purposive and snowball sampling were used to select the teachers in the Gauteng Province. Fifteen migrant Zimbabwean teachers in public high schools or combined schools (private schools) took part in semi-structured, face-to-face interviews. The audio-taped interviews were transcribed verbatim, where after the data were analysed qualitatively using open coding. The research instrument was validated by experts in the field and piloted. The majority of the teachers were teaching mathematics and science related subjects (Life Sciences, Physical Sciences and Natural Sciences) at the time of the study. The findings of the study revealed that these migrant teachers needed support to overcome difficulties in classroom management, in acquiring legal documentation, and in dealing with the issues of safety and xenophobia. The findings also revealed that the teachers were in need of induction, professional development, and social and financial support. With this information, prospective migrant teachers could thus make better informed decisions and weigh the cost-benefit of migration more accurately. In spite of their many needs, the migrant teachers' advice to prospective migrant teachers was that they should try their luck in South Africa. The next cohort of migrant teachers to South Africa could be greatly influenced by the experiences and advice that they receive from the present group of migrant teachers. Both the South African government and the Department of Education should affirm migrant teachers' value.

Keywords: Migration, mobility, needs, South Africa, Zimbabwean teachers.

SCHOOL LEADERS OF HIGH-NEED DISTRICTS AND THEIR PERSPECTIVES OF A UNIVERSITY-BASED TEACHER RESIDENCY PROGRAM

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Abstract

Effective recruitment and retention strategies of teachers remain elusive for school district leaders. This qualitative study examines the pilot implementation of a university-based teacher residency program throughout 4 high-needs districts of a year-long program among 8 residents. District administrators are interviewed about their recruitment and retention efforts, and document how the teacher residents experienced these structures throughout their residency year. Findings have implications for improving residencies as an innovative teacher preparation approach and stem teacher attrition.

Keywords: School leaders, high-need school districts, initial teachers, teacher residencies, qualitative inquiry.

INTEGRATING DIVERSITY, EQUITY & INCLUSION IN LEGAL EDUCATION: TEACHING WHERE IT'S UNEXPECTED

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Abstract

In today's multicultural world, young professionals and would-be professionals must understand and be competent to serve people from diverse races, ethnicities, sexualities, and other backgrounds different from their own. Yet ordinarily when we introduce issues of diversity and inclusion in the classroom, we do so in cases and situations that specifically raise the topic like anti-discrimination matters or adoption by cross-racial or same-sex couples. In such explicit matters, it is easy to see that those issues are relevant, significant, and deserving of classroom attention. Unsurprisingly, using cases with a clear connection to fairness and equality is a common technique for ensuring that students see and appreciate historical and social meaning and context to better understand doctrine and how that context affects clients and others who face these situations. This traditional approach has the advantage of being easily understood by beginning law students, since the diversity issues are visible and concrete. Nevertheless, not every foundational course or textbook includes cases or legal rules in which race, gender, disability, or other characteristics are central to the doctrinal topic. Indeed, most do not. Rather than defer to other classes or wait for those few times when teachers have cases that call out for equity and bias analysis, this paper recommends an alternate approach: raising diversity and inclusion in cases and contexts where students may not expect it. This method capitalizes on the nature and context of pre-professional training: students will leave school and work with clients. Even if they are not noted in legal opinions and textbooks, litigants have race, economic status, gender, religion, ethnicity, sexual orientation, physical or mental abilities, gender identity, or some combination of these and many other dimensions. Our apprentice and novice professional students will have clients who also have these features, just as students, their classmates and teachers do. This paper shows how to teach students to see who and what lies hidden behind diversity-blind, neutral doctrine. It also addresses the challenges involved with the method and how to overcome them.

Keywords: *Diversity, professional education, race, gender, inclusion.*

LEADING TRANSFORMATIVE CHANGE: EXPERIENCES OF FIRST WOMEN OF COLOR PRINCIPAL LEADERS IN HISTORICALLY 'WHITE' SCHOOLS

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Abstract

Thanks to an apartheid regime, South Africa was demarcated according to race classifications of 'white', 'coloured', Indian and 'black'. Race classifications determined where one lived, went to school, and the possibilities to pursue higher education. For women of color in South Africa interested in a post-schooling education, the state availed bursaries to pursue teaching (and nursing) to control and limit their careers. The backdrop to separate and segregated living and learning for each racially classified group was to socialise amongst themselves, school themselves and obtain careers deemed sufficiently fit by an apartheid government. The transition from apartheid to a more inclusive and less segregated society has been slow and particularly evident in school leadership. This article reports on an empirical case study of the first seven 'coloured' women principals who assumed leadership positions in historically 'white' led schools. The study locates itself in the broader Cape Town area of South Africa two decades into the country's democracy. It has a qualitative research design and uses a case study method for data collection. Following ethics approval, semi-structured interviews served as data collection instruments. Data were analysed thematically, and the findings provided insights into leadership in historically 'white' schools in post-apartheid South Africa.

Keywords: *School leadership, 'coloured' women, women of color principals, transformational change.*

INSTITUTIONAL MEASURES TO PREVENT AND FIGHT AGAINST SEXUAL VIOLENCE IN UNIVERSITIES - THE CASE OF QUEBEC, CANADA

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Abstract

The high prevalence of sexual violence within academic institutions has been internationally documented. Furthermore, the phenomenon of under-reporting of sexual violence experiences has been observed worldwide. Official complaints to universities reflect only a very small proportion of sexual violence acts experienced by community members. Thus, understanding how higher education institutions can support victims of sexual violence, including in their reporting process is needed to improve upon current practices. Our results from two consecutive studies conducted in Quebec offer promising measures to stimulate the reflection process of higher education institutions in the fight against sexual violence. Based on a sample of 9,234 students and employees, the first study revealed the high prevalence of campus sexual violence in Quebec. Over one in three individuals have experienced at least one situation of sexual violence and less than 10% of victims had reported to their university. The second study used a qualitative methodology to conduct interviews with 22 victims to explore their experiences of reporting to their home university. Analyses shed light onto central themes, in particular the obstacles identified by victims in their reporting process to the university. These obstacles can be related to structural elements specific to institutions (e.g., specialized services' accessibility, sexual and gender-based policy) and the responses they can provide to victims, as well as elements belonging to the victim's environment and personal characteristics. By adopting actionable measures centered around the needs of victims, higher education institutions can promote a healthy and safe environment for community members, free of all forms of violence. The actual and sustained mobilization of institutional leaders and stakeholders in the fight against gender-based and sexual violence is an essential condition for cultural change in universities, and in so doing, would contribute to an equitable access to education within a social justice context.

Keywords: *Campus sexual violence, reporting, obstacles, institutional response, higher education.*

CHALLENGES OF INTERNATIONAL STUDENTS' PARTICIPATION IN THE LIFE OF SOUTHERN AND WESTERN EUROPEAN UNIVERSITIES

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Abstract

Our presentation gives an outlook on the differences between the participation of students in the life of Higher Education Institutions in Western Europe and in Southern Europe. Hence, we examine the relevance and efficacy of internationalization in structuring the management system in universities in an international context, where international students are encouraged to participate in the university life through different student bodies and management staff. With the Erasmus program launched in 1987, European students started exploring student life within the 33 participating nations. Nevertheless, multiple initiatives were taken by universities to ease the mobility of international students as they find their way to study in Europe. Throughout our research, a fundamental issue of discrepancies was found by some academics, like Paul Trowler and his co-authors (2002), which reside in the creation part of Higher Education policies in parallel to the implementation at the institutional level. Multiple communities play a role as policymakers when it

comes to social norms and connections between Higher Education policies and institutional reforms that also includes the roles, rights, obligations, and well-being of students. However, the participation of international students seems different from local students. Therefore, we explore international students' opportunities in contribution and development their abilities as leaders, and from another side, we investigate the gaps affecting the participation of students in the university life. Our starting point to this research is that education has changed over the years and in the last vicennial, the education reforms started affecting educational institutions and changing the participation of students in the institutional life, not only on a pedagogical level, but also on an institutional and managerial level. (Németh & Pukánszky, 2020) Consequently, we navigate the current literature that deals with the student participation in the life of HEI, whether it is in Western Europe or Southern Europe. Our research's theoretical framework is the constructivism and the socio-constructivism theory which, along with the 21st century reforms, support our research since they place an emphasis on the continuity of personal and professional fulfillment for both students and institutional personnel; thus, they raise the standard of Higher Education by developing effective actors within the institutions. (Kálmán, 2016; Laal & Salamati, 2012; Garwe, 2015). Therefore, we would want to present how our research on the students' involvement in Higher Education Institutions can be useful in an international context from an international perspective and how could it improve with the challenges faced.

Keywords: *Higher education institutions, internationalization, participation, Western Europe, Southern Europe.*

A CONDUCTIVE ALLOY: A 'WHOLE INSTITUTION' APPROACH TO STUDENT (MIS)CONDUCT

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Abstract

Student academic (mis)conduct is a source of significant organizational, strategic, and local risk, both to an educational institution and to the individual. While a university must uphold both its academic standards and its moral responsibilities, an individual student also needs to take responsibility for the originality of their work and the honesty of their degree outcome. The risk for a student can range from a lowered outcome to expulsion, while an academic institution lives or dies by its reputation. However, the general model of managing academic misconduct in a university setting is often fragmented and lacks clear ownership: often teaching and research staff educate their students on disciplinary standards, units for academic literacy provide centralized academic practice provision and can offer remedial support, and an academic standards division will manage the process of penalizing those students whose misconduct has been identified. The realities of large and complex academic institutions, often with high levels of devolved authority, often preclude a more holistic view. For example, at the stage of reprimand and redress, intentionality is not taken into account: a mistake in referencing or attribution without an intent to mislead is nonetheless still an instance of submitting the work of others for credit. This is a process issue often not appreciated fully by some academics involved in advising students, who focus on the idea of a student having planned or not to deceive a marker. Therefore, at the pre-offence stage, where a student is being inducted into new academic practices, care must be taken to bring the knowledge of the team in charge of imposing penalties directly into the process of training and advising students. In response to this, the present paper describes work undertaken at the University of Glasgow to develop a new integrated culture to tackle issues of academic integrity across the institution. We describe a partnership between colleagues in academic departments, our academic literacies/Learning Development team, our Student Conduct Team and colleagues from academic standards and policy to focus on a wide-view approach to student conduct, in order to shift the focus from reprimand and redress to 'before the offence'. We therefore propose a joined-up model that brings together this centralized teaching of good academic practice, systems and processes managing academic misconduct cases, and academic staff working within subject areas. This model places academic integrity, ownership of responsibility, and good academic practice at the centre of the student experience.

Keywords: *Student conduct, educational policy, student experience, plagiarism, strategy.*

NECRO-LINGUISTICS: LINGUISTICALLY CONSTRUCTING EXPENDABLE, DISPOSABLE CATEGORIES OF BEING

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Abstract

In our paper, we put forward a conceptual framework for applied linguistics, specifically focused on Indigenous languages, minority languages (and their speakers) that are subject to oppression. Our conceptual framework, stemming from work in biopolitics (Foucault, 2009), colonial biopolitical regimes (Fanon, 1963) and necropolitics (Mbembe, 2019) focuses on the manners in which specific languages and peoples are discursively constructed as not worth living, expendable, disposable (Evans & Giroux, 2015), better off dead, moribund, in need of revitalization, and so forth. These discursive constructions also enable us to allow vast populations (racialized peoples, queer people, disabled people, people with long Covid or AIDS) to be viewed as animal or machine, and subjected to living conditions that confer on them a status akin to that of the living dead. Because of our own work as applied linguists engaged in discourse analysis, and our critique of anthropological, theoretical, and applied linguists who believe that by documenting and teaching languages they are revitalizing or saving them, we refer to this conceptual framework as Necro-linguistics. There are many aspects to our conceptual framework; here, we note only a few. First, Indigenous people have died and still die in the fight for their languages. In fact, colonialism depends not only on exploitation but also on the death of Indigenous peoples. Second, in many contexts, people die because they speak the wrong language, or they speak the “right” language with the wrong accent, or they are viewed to use a language illegitimately. Third, we only need look as far as the rhetoric surrounding the recent overturning of Roe versus Wade in the United States to see how language can construct people who become pregnant as worthy of death, and others as allies, victims, or vigilantes; similar discursive constructions of people pertain in war or terror, which both necessitate distancing ourselves from the act of killing (McIntosh, 2021). Fourth, there is an established connection between language and wellness/health, and consequently also between language and death (Roche, 2021). Finally, in the Anthropocene in which there is no longer any doubt that humans are destroying our habitat, we suggest that we need new metaphors and discourses to live by, or rather, to die by.

Keywords: *Necro-linguistics, biopolitics, linguistic constructivism.*

WOMEN WORKING AT UNIVERSITIES IN SOUTH AFRICA – A GENDER EQUALITY PERSPECTIVE

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Abstract

The right to equality is a fundamental human right recognized in both international and local law. However, achieving gender equality remains a challenge in many countries. Women have historically been underrepresented in the higher education sector and continue to face barriers in achieving better-paid, higher status, or decision-making positions. The suppression of women's role in the higher education sector has been perpetuated by patriarchal systems and values, negatively impacting not only women's development but society as a whole. Gender transformation has become an important tool in promoting gender equality and improving development. This paper reports on a study that examined how female staff in South African universities experience gender equality and gender transformation, and explores potential best practices for achieving gender equality in the sector. Exploratory research methods were employed and combined a literature study, a legal investigation, and an empirical investigation. The theoretical framework relied on the feminist policy analysis framework, examining gender transformation through the feminist lenses of critical theory and intersectionality. Through a qualitative empirical approach, semi-structured interviews were held with 16 women employed at seven different public universities using a snowballing approach. Thematic analysis was used to condense the data into insights that could contribute to the research objectives. The research findings show that despite policies, regulations, and laws aimed at promoting gender equality, there is still a significant disconnect between policy and women's experiences in the sector. Women face challenges such as the negative impact of gendered division of domestic responsibilities, isolation, and barriers to their career paths. Although

progress has been made in bringing more female students and personnel into the sector, women's representation in leadership positions remains a challenge. The study identified a lack of political awareness and implementation, a quantitative and contextless approach to gender change, and the failure to mainstream gender-sensitive approaches as significant factors contributing to the slow progress of gender transformation in higher education. The findings and recommendations of this study provide a foundation for those engaged in or charged with gender transformation in higher education. The study calls for a more holistic and context-sensitive approach to gender transformation, one that acknowledges the diversity of women's experiences and promotes inclusive decision-making processes. The study highlights the importance of political will and leadership, institutional culture change, and mainstreaming gender-sensitive approaches to achieving gender equality in higher education.

Keywords: *Equality, gender, transformation, higher education, university.*

BARRIERS TO REPORTING SEXUAL VIOLENCE IN HIGHER EDUCATION: POWER DYNAMICS AND ANTICIPATED COSTS

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Abstract

Campus sexual victimization is associated with multiple physical and psychological consequences. It can affect the ability to pursue academic or professional activities at the university and foster feelings of institutional betrayal towards the university. The use of university services can sometimes help reduce negative consequences associated with sexual victimization. However, very few victims disclose sexual violence and use available resources in their institution. Studies that have explored reporting barriers have mostly been conducted on undergraduate students' samples. They also generally lack an intersectional perspective on violence and power relations, which acknowledges individuals' overlapping political and social identities. We conducted a mixed methods study in Quebec to explore the reasons behind the choice to not report sexual violence to university authorities or resources. First, we analyzed 88 testimonies of individuals who had experienced sexual violence and had not disclosed the situation to their institution. Second, we used a sample of 202 university community members who had been sexually victimized and had not reported it to conduct quantitative analyses. The results revealed a tendency to minimize the acts of violence, a negative perception of the institutional response and various fears of reprisals (e.g., social, professional, or academic repercussions). These findings allow us to reflect on the importance of fears for oneself and others, the assessment of anticipated costs and the potential benefits of disclosure, and the influence of power dynamics. Results can raise awareness among those likely to receive a report and, if necessary, to initiate appropriate institutional actions. The study confirms the need for awareness-raising messages that could improve victims' trust in academic institutions.

Keywords: *Higher education, campus sexual violence, sexual harassment, reporting, disclosure.*

THE DECONSTRUCTION OF AMATEURISM IN AMERICAN SPORTS

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Abstract

Despite all the good that amateur sports have brought to American society and its members over the past several decades, amateur sports have also served as a context for fostering some of life's nastier habits. The deconstruction of amateurism in America has happened, at least in part, because of a societal recognition of the need to re-construct amateurism so that it is more equitable, and to replace what was considered "fair" and "right" with something closer to actually level playing fields all across America. To gain a richly detailed understanding of the phenomena of the deconstruction of amateurism in American sports, a qualitative research approach was used for data collection and analysis. This analysis included a review of the three most prominent governing bodies in amateur sports in America, the Amateur Athletic Union (AAU) the National Collegiate Athletic Association (NCAA), and the Olympics, as well as the factors that brought America to that seminal moment at the 1968 Mexico City Olympics – the *Black Power Salute*. Despite the disparaging negativity that was used to characterize the *Black Power Salute* at the Mexico City Olympics in 1968, that act ushered into the collective American societal contemplation the *idea* that there were things that were wrong *in* amateur sports, and wrong *with* amateur sports in America – and effectively allowed for the possibility that amateurism itself had strayed from purity of intent (Andrews, 2018; Greene, 2012). Over the decades following, that awareness grew into moments of reality which collectively formed a full deconstruction of amateurism in American sports. The constellation of events and forces enacted following the *Black Power Salute* caused a steady breakdown of American amateur sports. Accordingly, this study details the factors that have cooperatively contributed to the full deconstruction of amateurism in American sports.

Keywords: *American amateur sports, governance, deconstruction.*

THE FEDERAL INSTITUTES OF EDUCATION, SCIENCE AND TECHNOLOGY AND THE CONSTITUTION OF A NEW PROFESSIONALITY OF TEACHING IN BRAZIL

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Abstract

This work discusses policies centered on the career and professionalization of teaching in Brazil, focusing on the Federal Institutes of Education, Science and Technology (IFs), and on the verticalization of teaching. Verticalization refers to teaching at two levels on the courses that encompasses technical professional teaching at secondary level and higher education, according to the demands of each region. Considering the character of this new structure, this research aimed at examining the working conditions of teachers, and the processes of professionalization, as well as different configurations of the teaching career and professionalism that result from the reorganization of the federal institutions of professional education. A qualitative methodological approach was employed, involving extensive gathering of document data and empirical research with the application of questionnaires and interviews with teachers from two campuses, one in the state of Bahia, and one from São Paulo. The theoretical concepts were taken from classic and contemporary authors of the areas of sociology and education. The analyses of the verticalization of teaching promoted by the Federal Institutes allowed us to identify three simultaneous and dialectic movements. One of professionalization, which takes place through the structuring of the career and increase in professional recognition; one of deprofessionalization, characterized by the intensification of work and destabilizing of identitarian references; and other of reprofessionalization, issuing from the peculiarities of the career and from the creation of new structures of teaching work at the two levels of teaching. This context of changes has engendered dialectically a process of reprofessionalization, in the sense of developing a new professionalism of teaching.

Keywords: *Federal Institutes of Education, Science and Technology (IFs), verticalization of teaching, reprofessionalization, teaching career.*

THE SOCIAL ASSISTANCE OFFICE AT THE UNIVERSITY OF MURCIA

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Abstract

In order to achieve SDG 4, University education should not be a privilege or a meritocracy focused institution. Also, because of higher education potential to foster social mobility, it could also contribute to SDG 10. The difficulties vulnerable students suffer in order to have an efficient academic performance are not only confined to economic issues, but also affected by factors such as: mental illness, addictions, disability, access difficulties due to residing in a rural environment, being a member of ethnic minorities, domestic violence, discrimination based on ethnicity, race or religion, etc. Thirteen months after the start of the COVID-19 pandemic, the University of Murcia conducted research addressing university students social and economic situation and needs. Some of the critical findings are as follows: a) 14.6% of students has at least once not enrolled in one or more courses due to social and economic difficulties, b) 6,7% has, at least once, given up their degrees for social reasons, c) 13,7% is currently considering giving up for economic or social reasons. These data warn of the need to implement measures that prevent the most vulnerable students from completing their studies. In view of the results, the University of Murcia decided to take action by designing and implementing a Social Assistance Office. This administrative unit promotes social inclusiveness and initiate actions guided by egalitarianism, providing students with counseling and attention services by a social worker, organizing awareness raising campaigns or developing grant programmes. In this paper, the actions undertaken by this office in the academic year 2020/2021 are showed.

Keywords: *Equity, social work, higher education, social exclusion.*

TEACHERS' ROLES IN REALISING HUMAN RIGHTS IN CHALLENGING CONTEXTS

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Abstract

The promotion and protection of human rights is a critical issue, particularly in contexts such as South Africa's township classrooms where there are unique challenges that make it difficult for teachers to fulfil their responsibilities in this regard. Therefore, there is a need to equip teachers with the appropriate knowledge and training to enable them to carry out their roles effectively. The purpose of this paper is to report on a study that explored the role of teachers in promoting and protecting human rights in township classrooms. The study drew on theoretical concepts in the domains of human rights literacy, human rights education, and legal literacy to conceptualize the roles that teachers play in the realization of human rights in the classroom. The research was conducted using a qualitative research design in the form of narrative inquiry, with 29 purposively selected township teachers who work in challenging school contexts in a South African township. Participants were asked to provide written narratives of their positive and negative experiences, opportunities and barriers related to realizing human rights in their classrooms. Six main themes emerged from the data, including support, safety, discipline, resources, and resilience. The findings revealed that teachers lack support from the Ministry of Education and parents, and they struggle with unacceptable student behaviour. This lack of support and the challenges they face in their classrooms drive teachers towards prohibited measures to control unruly students. Additionally, the study found that teachers feel unsafe in schools and that they rely on divine intervention to perform their roles effectively. The paper concludes with practical guidelines that can assist teachers in effectively fulfilling their role in the realization of human rights. The guidelines focus on the need for adequate training and support for teachers, as well as the importance of creating a safe and supportive learning environment. The study highlights the importance of promoting human rights in township classrooms and the need for teachers to be equipped with the necessary skills and knowledge to fulfil their roles effectively.

Keywords: *Human rights, social justice, township school/classroom, teacher.*

THE RELATIONSHIP BETWEEN ENTREPRENEURIAL LEADERSHIP AND TEACHER JOB SATISFACTION: THE MEDIATION EFFECT OF INTRAORGANIZATIONAL FACTORS

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Abstract

Entrepreneurial leadership has emerged following new privatization and autonomy policies in Israel. As a result of these policies, principals are pressured to assume the role of entrepreneurial leaders to find outside resources for the funding of innovative projects and programs in school. Entrepreneurial leadership has been defined in terms of leader traits and behavior. We define entrepreneurial leadership as principals' proactiveness and school innovativeness. Proactiveness means the principals adopting an active search for new opportunities to shape the school environment; innovation is defined as the actual implementation of these opportunities in school. Entrepreneurial leaders need to take into consideration intra-organizational factors. Principals as entrepreneurs should ensure teachers' willing participation in implementation and overcome their natural resistance, because those changes require more time and create a heavier workload. Teachers' readiness to make the extra effort depends on their job satisfaction. The literature indicates that job satisfaction is related to teachers' professional development, teacher-student positive interaction teamwork, and teacher/student ratio. Therefore, we hypothesize that proactiveness and innovation will have a positive effect on teachers' job satisfaction; mediated by professional development, teacher-student interaction, teacher/student ratio in school, and teamwork. Our study is based on the responses of 410 Israeli teachers from all levels, teaching in Jewish and Arab State public schools, who filled out a questionnaire. Conducting a univariate GLM model, the results indicate the following: All levels (low, medium, high) of school innovativeness and principals' proactiveness have a positive effect on teachers' job satisfaction. In addition, when the mediating variables of professional development, teacher-student interaction, teamwork, and T/S ratio are introduced, they have a significant effect on job satisfaction. Furthermore, the appearance of the mediating variables weakens the effect of proactiveness and innovativeness on job satisfaction. Our study contributes to the knowledge on the impact of entrepreneurial leadership on teachers' outcomes. This has implications on programs of principal training.

Keywords: *Entrepreneurial leadership, professional development, teamwork, teacher-student interaction, T/S ratio.*

The background features a vertical gradient from light pink at the top to light orange at the bottom. A network of thin white lines connects various circular nodes of different sizes and colors (white, light blue, light purple, light pink). Scattered throughout are small white icons: a globe, a cloud, a Wi-Fi symbol, and a four-pointed starburst. The overall aesthetic is clean, modern, and tech-oriented.

POSTERS

TEACHERS AND STUDENTS

TEACHING COMPONENTS DURING TRADITIONAL AND DISTANCE LEARNING – COMPARISON OF TEACHER’S AND STUDENT’S PERSPECTIVE. QUESTIONNAIRE SURVEY

Jakub Młodawski, Anna Swiercz, Marta Młodawska, Grzegorz Swiercz, & Barbara Gawdzik
Jan Kochanowski University in Kielce (Poland)

Abstract

The COVID-19 pandemic forced students and academic teachers to suddenly switch to remote teaching mode. In our study, we decided to assess whether the views on the effectiveness of individual learning elements differ between these two groups. The study was a structured survey. Teachers and students assessed on a five-point Likert scale (where 5 = definitely better in distance learning, 1=much better in traditional learning) the effectiveness of six key elements of teaching: student involvement and activity (1,2), contact with the lecturer (3), regularity of work (4), punctuality of performed tasks (5), quality of performed tasks (6) and adequacy of received grades (7). All the elements assessed in both groups were more effective in the case of the traditional teaching model (all means were ≤ 3). The average grade in the group of teachers in the assessment of each element was shifted to the left compared to the group of students (in the direction of greater effectiveness of traditional teaching), the difference was not statistically significant only in the case of contact with the lecturer. We observed the greatest difference between the groups in the assessment of student’s engagement and activity (2.6 vs 1.6, $p < 0.05$ and 2.65 vs 1.85, $p < 0.05$ for students and teachers, respectively). Students and teachers differ in their opinions on the effectiveness of traditional and distance learning elements. It is necessary to adapt the curricula so that there are no differences between the groups.

Keywords: *COVID-19, remote learning, distance learning, educational research, teachers’ perspectives.*

INDUSTRY – UNIVERSITY COOPERATION – A PREREQUISITE FOR DEVELOPING COMPETENCIES 4.0

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Abstract

The term Industry 4.0 represents the radical transformation that has resulted from the integration of emerging technologies and the industry. The proximity of the Fourth Industrial Revolution is observable and brings challenges arising from the ongoing automation and digitization. All companies, willing to remain competitive on the market need to go through this transformation overcoming such barriers, as the lack of qualified, skilled and talented employees to develop and manage various high-tech systems. This deficiency means that Industry 4.0 demands a change in the labour market, explicitly requiring trained professionals who have the needed competencies and skills. In this new environment, driven by new technologies and innovations the cooperation between academia and business is a prerequisite to sustainable economic growth, readiness for employment and preparedness for satisfying the new demands of the industries. The authors are university teachers, working in Mechanical engineering department and Design department. The purpose of the presented paper is to observe the competencies and skills of mechanical engineers demanded by Industry 4.0 and to systemize the links between the industry in the region and the University aiming developing the needed competencies. Example with a project “Smart Industries”, running at the Mechanical Engineering department and Department for Computer sciences, focuses on development of expert competence within research and education areas related to the digitalization of the industry will be presented.

Keywords: *Industry 4.0, Industry-University cooperation, Competencies 4.0.*

THE PREFERENCES OF STUDENTS AND THEIR VIEW ON THE EDUCATION OF ECONOMIC AND MANAGEMENT SUBJECTS AT A TECHNICALLY ORIENTED UNIVERSITY

Ivan Katrencik, & Monika Zatrochova

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Abstract

The contribution is a partial output of KEGA research task no. 011STU-4/2022 "Creating a model of education supporting the increase of competencies of students of a non-economically oriented university in the field of innovative, entrepreneurial thinking and business support" conducted at the Institute of Management of the STU in Bratislava. The research presented in this article was conducted on a sample of 45 students of the Slovak University of Technology in Bratislava, Faculty of Chemical and Food Technology, who successfully completed the master level of education in 2022. The students were presented with a questionnaire consisting of 6 questions. The questionnaire contained both open and closed questions and its objective was to find out the preferences of students and their view on the education of economic and management subjects at a technically oriented university. Data collection took place online, through the Academic Information System - AIS, and in person on the basis of printed questionnaires that students received at their final exams. The results of the survey were compared with a similar survey conducted in 2017 and we found that up to 20% more students than in 2017 think they do not have sufficient knowledge of economic and managerial subjects for their future career. Even fewer students think (77%) that they do not have enough knowledge to start a business, despite the fact that almost 49% of them consider that they would like to start a business in the future.

Keywords: *Business education, survey, entrepreneurship, research.*

THE SCHOOLIFICATION OF COMPUTER GAMING – IDENTIFYING THE ROLE OF ESPORT IN SCHOOL SYLLABI

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Abstract

The aim of this project is to examine the educational dimensions of esports as part of the course syllabi in secondary education. An increasing number of schools on the upper secondary level (in Sweden: gymnasium) are offering three-year programs with an "esport profile" within aesthetics and media. School marketing suggests that esports can work as a bait for potential students who are interested in playing computer games, but the scholastic values of computer gaming remain to be clarified. Whereas "gamification" is an established term for transforming educational (and other formal) practices into game-like activities, little has been said about its counterpart "schoolification": how originally playful and informal practices are transformed to fit within school curricula and syllabi for achieving academic goals. A number of unanswered questions follow. For example, teachers have observed that students in the esports program are less motivated in schoolwork but are highly motivated gamers. Is this a question of what students learn, or how they learn? How do the students themselves perceive esports performance in relation to academic performance? What are their driving factors and can motivation in one domain transfer to another? How do students perceive fear of failure, gains of winning, competition and success, across esports and traditional school topics? Here, we address the challenges and procedures of setting up a practice-based research program where the practitioners (i.e. students, teachers, an esports coach and school leaders) collaborate with researchers in investigating the relationship between computer gaming and traditional teaching-and-learning activities in the classroom.

Keywords: *Esport, secondary education, computer gaming, gamification, schoolification.*

EDUCATIONAL REFORMS ADOPTED BY MOLDOVA AS EU CANDIDATE AND THE TRANSFORMATIONS UNDERGONE BY HIGHER EDUCATION INSTITUTIONS

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Abstract

In March 2022, The Republic of Moldova in solidarity with Ukraine, former parties to the EU Association agreement, applied for EU membership, and the candidate status came three months later in record short time. As a result of this historic decision, the educational system in the Republic of Moldova has started a series of reforms in order to meet the standards required by the European Union Regulations. Steps towards alignment with EU standards have been taken since 2005, when the Republic of Moldova joined the Bologna Process and assumed responsibilities of reforming and modernizing higher education. The present article aims at presenting a series of challenges for the higher education system in Moldova that must be overcome in order to successfully implement the reforms that represent important steps towards integration. In particular, we will describe the reforms undergone by sports higher education which, although it has a decisive role in the training of performance athletes as well as coaches and other auxiliary personnel in the field of sports, benefits from reduced funds, which is why additional efforts are needed to support the study programs that are considerable consumers of finances, but also important bearers of rewards at the national and international level, at the same time.

Keywords: *Educational funding, extracurricular activity, reform, performance, higher education.*

TEACHERS' STRESS AS A MODERATOR OF THE IMPACT OF POMPEDASENS ON PRESCHOOL CHILDREN'S SOCIAL-EMOTIONAL LEARNING

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Finnish National Agency for Education to Prof. Nina Sajaniemi (grant 33/2178/2018)

Abstract

This study examines the extent to which the impact of a universal intervention program, i.e., POMPedasens, on children's early social-emotional learning (SEL) is different depending on early childhood education (ECE) teachers' stress at work. The POMPedasens program aims to promote children's (5–6-year-olds) SEL by supporting ECE teachers' engagement and emotional availability. The intervention effectiveness has been monitored using an 8-month randomized controlled trial design with an intervention (IG; 26 teachers and 195 children) and a waiting control group (CG; 36 teachers and 198 children) that provided the data before and after the program implementation. The ECE teachers in the IG are trained to implement the intervention program in their early childhood education and care groups. Latent change score analysis suggests that the program increases children's prosocial behavior in the IG when teachers show a low level of stress. No significant results were found for the IG regarding a change in antisocial behavior. Unexpectedly, when teachers showed a high level of stress, an increase in prosocial behavior and a decrease in antisocial behavior were only found for children in the CG. The results suggest a promising application of the POMPedasens program for promoting prosocial behavior in early childhood when teachers have low stress. The intervention will likely need a longer time to display the moderating effect of ECE teachers' well-being on children's antisocial behavior change. The stress in CG might mean that the teachers were doing their best at the cost of their own well-being.

Keywords: *Early childhood, social-emotional learning, universal intervention program, professional development, teachers' stress.*

THE DEVELOPMENT OF FORMAL THINKING

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Abstract

In the current study we have investigated the development of logical and mathematical reasoning among mature population, following Piaget's theory of cognitive development. The purpose of the present study is examining if continued biological development and/or continued accumulation of life experience, learning and education can develop into formal operation. The findings indicate that, only about 25% of the population moves to the formal operational stage, and this is before the age of 20. Furthermore, learning was affected by domain specificity. Our findings show that about one fifth of illiterate population have the ability of performing formal thinking. This percentage is close to that of literate population thus suggesting that development of formal operation is regulated innately.

Keywords: *Cognitive development, concrete thinking, formal thinking, education, mathematical reasoning.*

INTEGRATING VISUAL ARTS INTO STEM EDUCATION IN HONG KONG

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Abstract

The Hong Kong Special Administrative Region's (HKSAR) *2015 Policy Address* (HKSAR, 2015) and *2016 Policy Address* (HKSAR, 2016) announced the implementation of STEM education in Hong Kong. The HKSAR government provided one-off grants of HK\$100,000 (approximately US\$12,900) to each primary school and HK\$200,000 to each secondary school in 2016 and 2017, respectively, to support school-based STEM education (Tang, 2017). It has now been 7 years since the release of these policy documents and resources to promote STEM education. As a visual arts teacher educator, I believe that moving from STEM to STEAM education can provide students with powerful and authentic learning opportunities. The Arts not only helps visualize the students' creative thinking process but also cultivates their willingness to modify their creative products, just like the persistence of artists and scientists in achieving perfection. The author has been teaching the Nurturing Creativity Through Visual Arts Activities course at the Education University of Hong Kong (EdUHK) since 2015, which has incorporated STEAM elements since 2017. I designed teaching activities focused on guiding preservice teachers to experience how to transform what they want to "teach" into STEAM-related inquiry learning activities. Through a virtual STEAM teaching project, my teaching team developed these STEAM teaching activities into multiple STEAM teaching units, and conducted trial teaching with preservice teachers in 3 primary and 3 secondary schools in Hong Kong. Participating teachers pointed out that these STEAM teaching materials are highly feasible to implement in schools. Participating primary and secondary school students said they have never learned such comprehensive inquiry activities and found the exercises very interesting. After soliciting opinions from teachers and students of the participating schools and modifying the instructional design, the project team used the Google site to produce several online teaching materials. The project team shared these STEAM online teaching units with primary and secondary school teachers in Hong Kong through an online platform. This poster presentation will share the STEAM teaching units through QR codes, the survey results of the STEAM teaching units sharing session, and reflections on the significance of STEAM education. This sharing will provide QR codes on the poster to share the STEAM teaching units designed by the team, the survey results of STEAM teaching materials sharing session, and reflections on the significance of STEAM education.

Keywords: *STEAM education, visual arts, virtual teaching project, inquiry learning.*

EMBEDDING TRAUMA-INFORMED CARE PRACTICES INTO SPECIAL EDUCATION PERSONNEL PREPARATION PROGRAMS

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Abstract

Children with disabilities experience trauma (i.e., neglect) at alarming rates. There is a critical need to provide interdisciplinary trauma-informed care (TIC) for children with disabilities, however, many special education professionals are unprepared to implement TIC practices. Trauma-informed care (TIC) utilizes an understanding of how the effects of trauma impact both physical and mental health. Participants will be introduced to key elements of TIC, ways to use those principles in their pre-service special education teacher preparation programs, and how pre-service special education teacher education programs can move towards a trauma-informed framework. This poster is relevant for faculty or other professionals who prepare teachers, specifically special education teachers. This poster will focus on how one program at the [name of university] is maximizing the value of pre-service special education teacher programs to ensure that children and families who have experienced trauma are at the core of their work. This poster will provide examples of how TIC principles have been embedded into existing evidence-based programming for children and families. The poster will also discuss how pre-service professionals across disciplines consider TIC principles and how these principles intersect with the primary goals of their professional role. Finally, this poster will highlight the importance of working across disciplines support children with disabilities in educational settings.

Keywords: *Trauma informed care, special education, early childhood, teacher preparation.*

REVOLUTIONIZING MSI TO R1 GRADUATE PATHWAYS THROUGH DISTRIBUTED TEACHING

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Abstract

Morehouse College's Dual Degree Engineering (DDE) program has leveraged its relationship with Michigan Robotics to introduce its students to University of Michigan's undergraduate Robotics curriculum through the development of the Distributed Teaching Collaborative (DTC). The DTC connects students and faculty from Historically Black Colleges and Universities (HBCUs) and other minority serving institutions (MSIs) with doctoral universities that have very high research activities (R1 institutions) to deliver a unifying classroom experience, share distribution of resources, and prepare students for careers in AI. Since Fall of 2022, University of Michigan established a Robotics Department with an undergraduate program that emphasizes excellence in equity. A compelling feature of the department is its highly innovative approach to a robotics curriculum that allows for national scalability through collaborative distributed teaching. The curriculum, developed through active partnerships between Michigan Robotics and several MSIs, is adaptable to the teaching styles of MSI faculty, creating onramps to a robust robotics and artificial intelligence education that prepares students for R1 research experiences and graduate programs regardless of their background or where they are enrolled. The aim of the DTC model is to build MSI-R1 pathways to graduate programs at R1 universities by establishing collaborative teaching courses that have at least a 90% completion rate due to their social-interactions through student-student, student-instructor, and instructor-instructor interactions. The success of this project will be viewed through the number of students that complete DTC courses, matriculate in graduate programs, and maintain successful careers in STEM longitudinally.

Keywords: *Innovation, collaboration, robotics, curriculum.*

EXPLORATION OF THE TEACHING METHOD OF THE COURSE "CIRCUIT ANALYSIS AND ANALOG CIRCUITS"

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Abstract

The "Circuit Analysis and Analog Circuits" is an important course for electronics majors. The content of the course is the foundation of many senior courses and has a wide range of applications. The theoretical knowledge is usually taught in the classroom, but simulation and practice are completed in the experimental course. This paper attempts to propose some improvement methods which can effectively combine theory with practice, and at the same time, it is more beneficial to the cultivation of students' engineering practice ability.

Keywords: *Analog Circuit, curriculum design, simulation, engineering skills.*

MEASURING SELF-REGULATED LEARNING IN STUDENTS WITH/WITHOUT CARE-RESPONSIBILITIES TO PUSH GENDER EQUITY

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Abstract

Online Learning can be an opportunity to improve equity for students with caregiving responsibilities, who are mostly females. However, whether there are differences in learning preferences (e.g., desire for self-directed learning), academic self-assessment (e.g., assessing one's own progress), and motivation to learn (e.g., interest in learning new things) in digital courses is poorly understood. Therefore, it is difficult to address the needs of caregiving students, as their commitments and needs are often invisible in eLearning courses. For this reason, a self-regulated learning questionnaire (24 questions in total) was compiled from existing questionnaires, supplemented with demographic questions, and collected in 3 consecutive semesters (N = 195). Unfortunately, not all three facets had acceptable internal consistencies (Cronbach's alpha learning preferences = .654, academic self-assessment = .869, motivation to learn = .670). The intercorrelations were all positive as expected and only the intercorrelation of learning preferences and learning motivation was not significant. The study revealed that students with care responsibilities (n = 32) do not differ in learning preferences and academic self-assessment. Thus, they cope with the demands of eLearning as well as their peers. However, they had significantly higher learning motivation than students without care-responsibilities (n = 163). The results suggest that for students, time (rather than learning preferences or self-assessment) is a primary barrier to studying, and institutional awareness of the needs of students with care obligations needs to be raised so that they are not demotivated by unnecessary hurdles. This would improve equity and gender equality.

Keywords: *Student diversity, higher education, elearning, self-regulated learning.*

HARNESSING THE POWER OF CHATGPT: CHROME EXTENSIONS TO SIMPLIFY TEACHER TASKS

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Abstract

This presentation aims to discuss the various ChatGPT Chrome extensions that can aid teachers in increasing productivity in their daily tasks. ChatGPT is a natural language generation tool that was launched in November 2022 and has quickly gained attention, reaching 100 million active users by January 2023 (Gratas, 2023) and receiving an estimated 96 million visitors per month (Baruffati, March 10, 2023). While ChatGPT presents both challenges and opportunities (Hwang & Chang, 2021; MIT Comparative Media Studies/Writing, 2023), there are multiple extensions available that function as virtual administrative assistants, making daily tasks easier for teachers. In this presentation, we will introduce some of these extensions, including a search engine extension (e.g., ChatGPT for Google to display ChatGPT results along with Google Search results), WebChatGPT (which allows ChatGPT to search the internet for more relevant information), ChatGPT Writer (which helps write email replies), Voice control of ChatGPT (which adds voice input for ChatGPT prompts, similar to Google voice input), and writing and editing AI (GPT for Docs which incorporates ChatGPT directly into Google Docs and Sheets that assist changing tones, fixing grammars, and generating taglines). Overall, these extensions will provide assistance to teachers in various tasks, such as email writing and web searching. This presentation will offer insights into how these tools can be used to maximize productivity and simplify daily tasks for educators.

Keywords: *ChatGPT, teachers, extensions, add-ons, Chrome.*

HOW TEACHERS' VALUES AND EPISTEMIC BELIEFS GUIDE THEIR USE OF EDUCATIONAL RESEARCH FOR PRACTICE

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Abstract

Interest in better understanding the influences on teachers' uptake and use of published research has increased, in concert with a growing emphasis on the use of evidence-informed practices in educational settings. Little attention has been directed, however, to the way in which teachers' epistemic cognition may influence their uptake and use of research to inform their practice. In this qualitative study, we explored the socio-epistemic beliefs and values that may guide teachers' preferences and use of sources of knowledge for their practice. Building on previous research, we investigated teachers' epistemic beliefs, such as beliefs about the certainty of knowledge and the processes by which knowledge changes, and asked how these beliefs might relate to teachers' attitudes towards educational research as a source of knowledge for their practice. Twenty middle- and high-school teachers in a variety of subject areas were interviewed over Zoom about their epistemic beliefs related to research use using a semi-structured interview protocol. We drew on the *AIR Model of Epistemic Cognition* (Chinn, Rinehart & Buckland, 2014) to point to several aspects of epistemic cognition that may be key to understanding teachers' research use, such as values and epistemic aims. Thematic analysis was used to analyze the data (Braun & Clarke, 2013), and we first coded the transcripts, then organized them into themes. The analysis reveals that teachers' values place their students front and center, and other epistemic beliefs relevant to research use appear to be intertwined with, or subordinated to this central value of student success. For example, with few exceptions, participants articulated the belief that teachers' own direct observations of individual students is a much more reliable process for generating evidence and knowledge about "what works" than conducting research with a large number of students. As this example shows, the findings of this study shed light on the complex set of beliefs and values that may underlie teachers' attitudes and use of educational research for their practice. Implications of results of this study for communicating educational research findings to practitioners will be discussed.

Keywords: *Teacher cognition, teacher beliefs, research use, research utilization, epistemic cognition.*

GENERATIONAL INTELLIGENCE AS AN INTEGRAL ASPECT OF PRE-SERVICE TEACHERS' INTERPERSONAL COMMUNICATION COMPETENCE

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Abstract

Interpersonal communication is widely recognized as an important skill for success in personal and professional settings and is listed as a core competency in many educational frameworks around the world. Interpersonal communication is also a critical skill for teachers to establish and maintain cooperative relationships. As several East Asian countries have made the transition to an aging society, intergenerational communication has become a pressing need for teachers, as many students' primary caregivers are their grandparents, which is especially the case in rural areas.

Teacher education usually emphasizes communication with students, their parents, and colleagues. However, interaction with older people is neglected. Clearly, teachers of the younger generation should have intergenerational knowledge and skills. This article reviews publications on intergenerational communication and presents an example of a communication accommodation theory to cultivate college teachers' perspectives when interacting with a heterogeneous group of people, the elderly. The results and findings of the activities shed light on the design of interpersonal communication activities in teacher education.

Keywords: *Generational intelligence, intergenerational communication, interpersonal communication, communication accommodation theory.*

PROJECTS AND TRENDS

ONLINE VS ONSITE: LESS SATISFACTION, BUT SIMILAR EFFECTIVENESS AND ACADEMIC INTEGRITY

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Abstract

The debate about the effectiveness of online and onsite education is one of the most significant topics in recent years. The current report presents data from an obligatory Bachelor's degree course for full-time, first-year, psychology students. The course consisted of 30 didactic hours of an online lecture and 24 didactic hours of the workshop. All the workshop groups were taught by the same lecturer, but importantly, half of the workshop groups were run online (n=71) and half onsite (n=64). Due to various personal reasons, each person from this group of international psychology students decided whether to study online or onsite for the duration of the entire semester. Three groups of variables were monitored during the course: a) Study Effectiveness: 12 literature quizzes; 12 written assignments; midsemester exam; cumulative final exam; b) Academic Integrity: written assignments were submitted using Google Classroom with originality reports turned on. The algorithm compared students' work with web pages and books, flagging uncited text; c) Student Satisfaction: anonymous course evaluation (8 items, Likert-type scale). Results show that the online vs onsite students did not differ with respect to Academic Integrity, as well as mid-semester or final exams. Online students however studied less systematically, obtaining significantly lower scores on literature quizzes. Online students evaluated their workshops as less "interesting" than onsite students, but there was no difference in other aspects of evaluation (e.g. There was much to learn; the lecturer was prepared). Implications of those results are discussed.

Keywords: *Online learning, student satisfaction, academic integrity, learning effectiveness.*

PUPILS WITH HEARING IMPAIRMENT AND THEIR POSITION IN THE INCLUSIVE SCHOOL

Wanda Tureckiová

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No. 482122 - Pupils with hearing impairment and their position in the classroom team of inclusive schools (Czech Republic)

Abstract

Pupils with hearing impairments can choose between special schools and mainstream schools for their education. The Czech Republic has 13 special schools for pupils with hearing impairments, but more students are opting for inclusive education. They are therefore educated with hearing peers, with the use of support measures and often in the presence of another person - either a teaching assistant (who checks the pupil's understanding and can also help in case of mishearing) or a Czech sign language interpreter. Unfortunately, this type of education can also bring barriers - communication and social. They can arise from the nature of the disability - pupils have difficulty with hearing, have to ask repeatedly about the same thing, or use a completely different communication system. They may be overlooked by their peers after repeated failures in communication and have the role of class outsiders. This 'exclusion phenomenon' is also a common reason why pupils leave for special schools. The author of this paper has already dealt with the issue of inclusive education in her previous studies and now she is building on her research in her dissertation. The findings provide the perspective of parents and teachers on the education of this group of pupils, and the author herself focused on the interaction between classmates and teachers by observing the classroom. The results obtained from the research will be used to create material for teachers of pupils with hearing impairment - containing recommendations on how to work with this group of pupils.

Keywords: *Barriers, hearing impairment, inclusive education, mainstream school, social roles.*

REMOTE LEARNING DURING THE COVID-19 PANDEMIC IN THE OPINION OF ACADEMIC TEACHERS. SURVEY RESEARCH

Marta Młodawska, Anna Swiercz, Jakub Młodawski, Grzegorz Swiercz, & Barbara Gawdzik
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Abstract

The COVID-19 pandemic has significantly affected the entire academic world, which has so far been based on face-to-face learning, and has forced employees and students to switch to remote learning mode. After two years of such learning and returning to the traditional form of teaching, we assessed the opinion of academic teachers on this form of education. We conducted survey-based study, which included 86 academic teachers from four faculties of the Jan Kochanowski University in Kielce. Teachers indicated that student activity, regularity of work, involvement in classes, adequacy of received grades and the quality of tasks performed are higher in the case of in-person learning. In the opinion of the surveyed group of teachers, the timeliness of the tasks performed and the level of teaching did not deteriorate. The most frequently mentioned advantage of distance learning was saving time, while the most common disadvantage was reduced contact with students. In the opinion of academic teachers, the direct teaching model has an advantage over the remote one. In order to objectify the results, it is necessary to carry out research evaluating how individual teaching methods affect the achievement of educational goals.

Keywords: *COVID-19, remote learning, distance learning, educational research, teachers' perspectives.*

WHAT IS IMPORTANT FOR ME? ANALYSIS OF UNIVERSITY STUDENTS' ANSWERS AS TOOL OF WELL-BEING RESEARCH

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Abstract

The analysis of subjective perception of well-being is very important part of current inclusive education. For this reason, the main aim of presented content is the analysis of surveyed university students answers. Answers of university students were acquired by own empirical research. Empirical research of mentioned issue was realized by the content analysis of the methodical concept one page profile. The methodical concept one page profile has three question and the answer of one question (What is important for me) is one of the important ways of subjective well-being perception in the inclusive education. In the empirical research there were 194 surveyed university students. Surveyed university students were studying at the Slovakian university. 98 surveyed university students were full time students and 96 university students were students of external form of study. Presented context submits created categories by results of research. These categories are defined by subjective answers of surveyed university students. Subjective answers of surveyed university students' emphasis what is important in respondent life and it is the way of better understanding of university students' well-being. The main aim of the presented results is the comparison of created categories of both forms of university study. Presented conclusions will improve well-being of university students. Presented study is a part of scientific project solving KEGA 004-UCM-4/2022 with the name "Promoting Health and Well Being through inclusive education in Higher Education" and project BIN SGS02_2021_002 with the name "University enhancing active smart aging".

Keywords: *Inclusive education, one page profile, university students, well-being.*

SOCIAL GROWTH FOR CHILDREN AND OLDER ADULTS THROUGH INTERGENERATIONAL ACTIVITY

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Abstract

A unique research project emerged between a nursing home adjacent to a preschool, the preschool children, their teacher and two preservice teachers. Two-three pre-schoolers were grouped with one elderly person and they met on a regular basis, something that contributed to a feeling of intimacy, warmth and formed meaningful bonds between them. A case study was done using a qualitative analysis, its tools being interviews and observation (Denzin, 2008). Data was collected from 12 transcripts by two preservice teacher's conversing with two preschoolers, ages 4-5. Thematic data analysis led to the identification of two main themes that are related to the types of participation: Affective Participation and Collaborative Participation. Implication: Intergenerational activity can teach children new perspectives and empower them to teach others while being beneficial for the elderly as well, reducing medical and emotional distress. This study suggests that opportunities should be sought to involve young children within early childhood education in the lives of the elderly.

Keywords: Intergenerational activity, authentic dialogue, verbal & nonverbal interactions.

INTERACTIVE TEACHING OF PHYSICS BY VIDEO ANALYSIS METHODS

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Abstract

Teaching physics during the pandemic did not allow full-time teaching and became challenging for both students and teachers. The inability to perform real experiments was complicated by the building of new students' knowledge and the development of their abstract thinking. Video analysis is a possible substitute for experiments - analysis of real physical events recorded in the form of videos using the program Tracker. In the lectures, we applied an interactive form of teaching - video analysis - analysis of real physics experiments recorded in the form of video in the experimental group. Lectures and presentations using videos of real demonstrations combined with video analysis using the interactive program Tracker and active discussion of students were carried out using the Peer Instruction method. The following article describes the teaching of physics using the video analysis method and finally offers an assessment of the students applying the Peer Instruction method.

Keywords: Interactive teaching, video analysis, e-learning, STEM education, PI method.

THE IMPACT OF THE COVID-19 PANDEMIC ON EDUCATION: A CASE STUDY OF THE TRANSFER TO THE ONLINE SPACE

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Abstract

The contribution is a partial output of KEGA research task no. 011STU-4/2022 conducted at the Institute of Management of the STU in Bratislava. One of the areas significantly affected by the COVID-19 pandemic is education. Exclusion of students from face-to-face teaching required a quick reaction to these new conditions, both on the part of teachers and schools. Teaching at universities did not stop, but has moved to the online space, which has its own specifics. The article presents the results of the transfer of education to the online space at a technically oriented university. The article describes two basic tools used at the Slovak University of Technology in Bratislava, which have the task of neatly storing study materials, organizing students' work, and providing tools for their assessment and testing. The first investigated tool is MOODLE and the second is the Academic Information System - AIS. In addition to the mentioned areas, AIS also serves as an electronic student book, a communication channel, and a system for study

management and administration. It offers much more functionality than was primarily used before COVID-19. In the last period, the e-learning functionality comes to the fore, which allows, among other things, the automatic entry of evaluation. On the other hand, MOODLE has a greater advantage in creating questions focused on calculations, which are created with a greater range of options and with the option of automatically filling in random values from a preset data set.

Keywords: *COVID-19, information system, online education.*

FLIPPED LEARNING – INNOVATIVE, PEDAGOGIC APPROACH IN EDUCATION OF MECHANICAL ENGINEERING STUDENTS

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Abstract

In times of transformation to Industry 4.0 the requirements to develop competencies 4.0 and the needed skills are becoming more and more demanding. Academia faces a number of challenges to tune programs and curriculums in order to satisfy the needs of the companies. New and innovative pedagogic approaches are needed not so much in the introduction and first level subject courses, where basic technical knowledge is delivered. However, in the third year, for the advanced subject and project courses they are critical for achieving the objectives of the courses and developing the competencies required by the industry of tomorrow. The authors of this paper are teachers of a course – Product design and development - and they are members respectively to Mechanical Engineering department and Design department. In the paper, an overview of innovative pedagogical methods and approaches applied in educating mechanical engineering students is presented. In addition, an example with shifting the classroom teaching to flipped learning applied in the course Product design and development is given. The outcome of this shift will be represented by the result in the course and the analysis of a survey, where data was gathered from the students in the course.

Keywords: *Industry 4.0, competences 4.0, innovative pedagogic approaches, flipped learning.*

ANALYSIS OF UNIVERSITY STUDENTS' NEEDS FOR INCLUSIVE EDUCATION

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Abstract

Inclusive education is a current phenomenon in Slovakia that is associated with improving the quality of higher education. Quality education must create adequate conditions for all groups of both regular students and students with specific educational needs. It is therefore necessary to create conditions for increasing the well-being of university students in the educational process. If we want to increase the well-being of higher education students, we must first of all find out what the students' needs are. Within the project KEGA 004UCM-4/2022 “Promoting Health and Well Being through Inclusive Education in Higher Education” and project BIN SGS02_2021_002 with the name “University enhancing active smart aging” the research team carried out a qualitative analysis of students' needs through the one-page profile methodology. This methodology has been used in Slovak higher education institutions since 2018 to identify students' needs in the area of education and personal growth. The paper presents the results of the analysis in the third category of the one-page profile "how to support me". The analysis presents a comparison of needs prepared on the basis of subjective statements of Slovak university students. The research sample consisted of 96 part-time students and 98 full-time students. As a result of the analysis, the basic categories of needs of university students in student and personal life are identified.

Keywords: *Wellbeing, needed, university student, inclusive education, one-page profile.*

INTERCULTURAL COMPETENCE IN 21ST CENTURY MUSEUMS: MUSEUM EDUCATORS' PERSPECTIVES

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Abstract

Many museums around the world are providing engaging and participatory educational programs and exhibits, and reshaping their missions, structures, and staff to become more inclusive and to create and promote intercultural dialogue in their spaces. This qualitative study aims to understand the perceptions of museum educators regarding inclusive museums, intercultural dialogue practices in museums and explore necessary intercultural competence skills for museum educators. Several key findings emerged from the analysis of the data: In inclusive museums visitors feel welcome and belonged and their multiple needs are considered; museums should reflect the diversity of their community in their staff and their programs; museums should critically and continuously examine themselves and their educational programs; crucial intercultural competence skills for museum educators are flexibility, adaptivity, dynamism and openness; and financial restrictions should not discourage museum educators for creating professional trainings.

Keywords: *Intercultural competence, intercultural dialogue, museum education, inclusive museums.*

ELEMENTARY AND SECONDARY SCHOOL GEOSCIENCES HANDS ON LEARNING AT RIA FORMOSA (SOUTH PORTUGAL)

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Abstract

Elementary and secondary school hands on learning on geosciences is promoted by the project EDUCOAST (EEAGrants) at the field station of the Portuguese Institute of Sea and Atmosphere (IPMA, I.P.) in the area of Geosciences. This facility, located at Ria Formosa (Algarve, southern Portugal), is located in a unique coastal environmental setting, that includes dunes, saltmarshes, lagoon, sand barriers and beaches. The activities set is plentiful and is usually constituted by a field trip for sampling or data collection followed by a lab component and it falls under the priority theme of preserving and protecting the environment and, in particular, the importance and sustainability of coastal systems. In a one-year, the project has already engaged *circa* 438 students from different regional schools, with a very positive reception of this experimental learning.

Keywords: *Hands on, Geosciences, Ria Formosa, visits on demand.*

MOBILE TECHNOLOGIES – A KEY ELEMENT IN CONTEMPORARY APPROACHES TO LEARNING

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Abstract

Mobile technologies catalyse radical transformations in contemporary society's perceptions and needs. In terms of information and education services modern users require major changes in the approaches of provision of access to knowledge. This paper presents the results of a survey concerning mobile digital libraries and mobile learning conducted in June – July 2021 among information users, namely students at the University of Library Studies and Information Technologies – BULGARIA. The study was realised in accordance with the research project "Information portal for mobile learning and mobile access to library services and resources". The main aim is to analyse to what extent information users benefit from mobile devices for reading, learning and access to information resources, what their opinion on the inclusion of

mobile digital services and learning in library services is and whether they support international policies on mobile learning and mobile access to library services and resources. For the achievement of this goal a questionnaire with three main sections has been devised: Part 1. Mobile devices, applications and mobile digital libraries; Part 2. Mobile learning and lifelong learning; Part 3. Policies for mobile information provision and mobile learning. The study has been conducted via an online questionnaire form and the application Google Forms. The empirical data has been inserted and treated with the statistics software IBM SPSS Statistics 21. The results of the survey prove that the inclusion of mobile technologies in the contemporary university environment is widely welcomed by students and effectively satisfies the individual needs of every learner.

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

BENEFITS AND CHALLENGES IN USING AI-POWERED EDUCATIONAL TOOLS

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Abstract

The introduction of large language model tools, such as Open AI's ChatGPT in November 2022, has sparked considerable discussion on the impact of artificial intelligence (AI) in education. Educators in both K-12 and post-secondary settings began to integrate AI in their classrooms during ongoing discussions about ethical technology use, maintaining academic integrity, safeguarding personal information, and other potential concerns. This poster discusses the current state of AI in education, exploring the various applications of AI in the classroom, the benefits and challenges that come with it, and the potential impact on students and educators. It highlights the role of AI in supporting personalized learning experiences, providing adaptive assessments, automating administrative tasks, and enhancing teaching and learning outcomes. Additionally, this poster examines the need to create effective university policies for AI to promote the ethical and responsible use of AI, reduce legal risks, and ensure a safe and inclusive learning environment for all students.

Keywords: *Large language model tools, post-secondary education, artificial intelligence policies.*

DO GENDER DIFFERENCES AFFECT IN ADMISSION AND FINAL GRADES CORRELATION?

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Abstract

Unequal gender roles and social norms impact us before the moment we are born, causing serious lifetime consequences. It is widely recognised that the academic and professional development of women is directly affected by gender bias. Because of that, women result to be still seriously underrepresented in the Science, Technology, Engineering, and Math (STEM) academic environment, which may affect their performance. Our main goal was to analyse and identify differences regarding gender before and during college education. To this end, university admission cut-off marks together with final course qualification from around 7099 students from STEM subjects were divided by terciles and analysed by gender. The 5 studied subjects were chosen from the following 5 STEM degrees: Biomedical Engineering; Technical Architecture; Aerospace Engineering; Electronic Engineering and Industrial Automation; and Mechanical Engineering. All subjects were undertaken at the *Universitat Politècnica de València*, and the compiled data covered the last 11 academic years (2011-2022). The results showed that admission cut-off marks rise from 1 to around 2 points more from 2011 to 2021. Nevertheless, the final course qualification remains constant, or slightly decreases, over time. Students from the tercile with higher cut-off marks continue to

be outstanding during college evaluations. There is no difference between the lower tercile students' distributions regarding their final course qualifications. Regarding gender approaches, data show that women used to have greater cut-off marks than male students. On the other hand, when analysing the final course grades, male students show slightly higher results than women.

Keywords: *STEM disciplines, gender gap, gender differences, physics, cut-off marks.*

RECONSTRUCTING TEACHERS' DISCOURSE TO BUILD INCLUSIVE INTERACTIONS USING POSITIVE DISCOURSE ANALYSIS AND FORMATIVE INTERVENTION

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Abstract

Teachers' discourse constitutes the main bases for language instruction and learning. Humans use their discourse as a tool for building peace, and promoting inclusive interactions, democracy, and social justice in the classroom (Van Dijk, 2000). But it also may be used as a pathway for promoting exclusion. Discourse represents powerful means to transform societies. However, inappropriate uses of discourse might end in marginalization. For example, violence and discrimination are sometimes enacted in teachers' discourse by taking almost exclusive control of it in the classroom, or by unconsciously discriminating against students (McKay & Devlin, 2014). Research has explored discrimination and symbolic violence in the classroom. Others have focused on raising awareness of the power of teachers' discourse (Beaulieu, 2016; Buzzelli, 1996; Calle-Díaz, 2019; Gillies & Boyle, 2008; Ritchie & Tobin, 2001). Nevertheless, little is known about teachers' transformation of their discourse to promote inclusive interactions to students with special needs. This study explored how formative interventions and positive discourse analysis helped to reconstruct a teacher's discourse to promote more inclusive interactions with diverse learners. The study enrolled an experienced teacher in inclusive education and English teaching and 38 students. Lessons were taught at a public urban school in Monteria Cordoba, Colombia. Results showed transformation in the teacher's discourse in three main elements, subject, object, and discursive mediation tools. The teacher used more positive and inclusive discourses with students providing room to voice students' ideas.

Keywords: *Teachers' discourse, positive discourse analysis, inclusion.*

PLANTING SEEDS AND BEARING FRUIT: SWEDISH AND JAPANESE EDUCATOR PARTICIPATION IN A SYMPOSIUM OF PEDAGOGY DISCUSSIONS REGARDING SDG-INSPIRED CURRICULUM

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Abstract

In the autumn of 2022, with a research grant from the Japanese Ministry of Education, we organized a symposium in Nagoya, Japan with Swedish and Japanese early education specialists. This collaboration was based on previous work that investigated ESD, aesthetic, and multicultural curriculum in Sweden and Japan (Morrone, Matsuyama, 2019 et al). This 2022 seminar week was created to provide an opportunity to have Swedish educators experience Japanese school curriculum, see the issues facing Japanese education today, and express their opinions and queries. The Swedish reactions to what they experienced in Japanese school observations tell much about what values Swedish society and culture aims to instill in the developing child. Similarly, the Japanese opinions of Swedish education observed shines a light on what

are considered important goals for Japanese education. Additionally, our symposium invitees were given cultural tours prior to their school visits in order to gain some visceral insight into the historical and cultural environment that influences what school is in a particular society. In this way, the symposium provides a place and time to see the sort of educational realities both countries face, get a sense of how each society prepares the next generation of teachers, and motivates educators to imagine what challenges must be met. At the end of the week, both Japanese and Swedish educators saw similarities regarding changing demographics; all felt the need to create a platform for continued professional education for teachers, experts, and potentially, pre-service teachers. The following is a discussion of points of change and aspects of curricular development highlighted by the symposium.

Keywords: *Convention on the Rights of the Child, democracy, inclusion, multicultural education, SDGs, early childhood education, Japan, Sweden.*

EDUCATIONAL PROJECTS AN ADEQUATE RESOURCE FOR CONSIDERING ORAL AND WRITTEN EXPRESSION SKILLS

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Abstract

The educational project can be a useful tool in strengthening the skills of oral and written expression when the target group is made up of foreign students attending the courses of the Preparatory Year of the Romanian language as a foreign language. This method of learning and consolidating knowledge can be applied both at the beginning of studies, when the learner is initiated into the secrets of a language, and at the end of them, when oral and written communication skills will already be formed. The present study aims to highlight the importance of the educational project both in the initiation of students into the secrets of the Romanian language, at which point the 60 students grouped in 6 teams will have to draw up lists of the most common words they need both in the academic environment and in the socio-cultural one. The lists will be exchanged between the teams, and at the end of the two months of the project, they will create a dictionary of the foreign student in Romania. In the second semester, the same teams will create, based on the dictionary created as an educational project in the first semester, a guide for adapting to a foreign country for students everywhere. Thus, the study aims to highlight the formative side of educational projects in learning and consolidating knowledge of the Romanian language in the case of foreign students from the Preparatory Year.

Keywords: *Dictionary, foreign, knowledge, language, teams.*

DEVELOPING AND EVALUATING A DIALOGUE-BASED MATHEMATICAL INTELLIGENT TEAM TUTORING SYSTEM FOR LEARNING NUMBER PATTERNS

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Abstract

The purpose of this study was to construct the dialogue-based math intelligent team tutoring system (ITTS) for learning the “number patterns” unit in the sixth grade of elementary school, and to evaluate the effect of this system on students’ mathematical reasoning ability, as well as the feedback of the students on this ITTS. In previous studies, few studies have been published on dialogue-based ITTS for mathematical learning. This study combined teamwork and mathematical conjectures tasks to build a dialogue-based math ITTS. The pairing of real student and student partner agent is heterogeneous grouping in order to cooperate to solve the mathematical conjecture tasks assigned by the system. In order to evaluate the effectiveness of this ITTS, a quasi-experiment design was conducted. The pretest and post-test were parallel tests involving mathematical reasoning. The participants of this research were 114 students in the sixth grade from two elementary schools in Taiwan, which were divided into an experimental group and a control group for learning three lessons. The experimental group was 55 people, and learning with the ITTS

designed by this study. The control group consisted of 59 people, and the class didactic teaching was used. The teaching content and time of both groups were the same. The results indicated that compared with the class didactic teaching, the dialogue-based math ITTS can improve students' mathematical reasoning ability significantly. In addition, more than 70% of students in the experimental group believe that the system is attractive and can improve their confidence in learning mathematics.

Keywords: *Dialogue-based math intelligent team tutoring system, finding number patterns, math conjectures, mathematical reasoning ability.*

GAME-BASED LEARNING TECHNOLOGY INTEGRATED COOPERATIVE LEARNING IN GEOGRAPHY IN JUNIOR HIGH SCHOOL

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Abstract

This study aims to investigate the effect of integrating information technology into cooperative learning on the learning motivation and achievement of junior high school pupils in geography. The research method is quasi-experimental, and research is conducted with unequal groups prior to and following the test design. The researcher drew research samples from two classrooms of second-grade middle school students. These classes represented the experimental group and the control group, respectively. A seven-week educational experiment was conducted. The experimental group integrated cooperative learning teaching methods with information technology, while the control group used conventional narrative teaching methods. Using the Geography Learning Motivation Scale, the Geography Learning Achievement Test, and the Teaching Feedback Sheet as research instruments, descriptive statistical analysis, the independent sample t test, and the paired sample t test are employed to determine whether there is a statistically significant difference between learning motivation and learning achievement. The findings of the study are as follows:

Learning motivation: The experimental group is significantly superior to the control group ($p < .05$), confirming that the integration of information technology into collaborative learning can effectively enhance the learning motivation of geography.

Keywords: *Cooperative learning, information technology integrated instruction, geography.*

TEACHING AND LEARNING

ENTREPRENEURSHIP COMPETENCIES IN HIGH SCHOOL STUDENTS: EFFECTS OF AGE AND GENDER

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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. This comparative study examines levels of entrepreneurship qualities in a sample of n=5527 high school students from the province of Québec and compares results with n=5309 adult subjects. Entrepreneurship is measured with the Entrepreneurship Qualities Questionnaire (EQQ, L'Heureux, 2000) which contains 59 items grouped in 6 continuous scales (Commitment, Motivation, Result-oriented, Creativity, Self-competition, Leadership). Results of univariate ANOVAs show a clear and strong linear relationship with age on all entrepreneurship scales. High school students have the lowest scores and older adults have the highest. There is some small effect of gender. These results suggest the importance of entrepreneurship contents in high school curricula in order to give opportunities for students to develop the fundamental competencies for becoming successful entrepreneurs.

Keywords: *Entrepreneurship, high school students, gender effect, age effect, quantitative measure.*

DESIGN OF POWER ELECTRONIC SYSTEM WITH VARIABLE TOPOLOGY OF THE MAIN CIRCUIT FOR EDUCATIONAL SUPPORT OF LABORATORY EXERCISES OF POWER SEMICONDUCTOR CONVERTERS

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Abstract

Power electronics emerges more and more within daily life. Its use is widely increased within many application areas, at the same time, industries are emerging in which this technology is being involved for the first time ever. Regarding this trend, there is need for qualified and experienced people with the knowledge of the power electronic systems. This contribution presents the way how to support educational process of the power electronics, while the focus is given here on the experimental-laboratory training. We have developed a unique power electronic system experimental board, which is equipped with necessary electronic components to be able to form standard and advanced topologies of power semiconductor converters. The students can understand operational principles of power rectifiers, DC/DC switched regulators, isolated DC/DC converters, while open loop and closed loop operation can be studied as well. Final paper will contribute with key construction aspects, main circuit components and circuit topologies with their operational principles and examples from measurements. The paper should inspire more university professionals working in this field, i.e. it supports the idea how to increase the practical way of the university study in the field of electrical engineering.

Keywords: *Power semiconductor device, power semiconductor converter, power electronics, topology, control.*

EDUCATIONAL TECHNOLOGY IN PROBLEM-BASED LEARNING

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Abstract

The problem-based approach to teaching aims to enable students to understand and evaluate the content taught. Organizing activities that involve problem solving includes: Creating a problem situation, defining the problem, selecting a problem-solving method, analyzing the results, drawing conclusions, and applying the acquired knowledge to new problem situations. Active learning with the help of technology enables faster implementation of planned activities. The main task of the teacher in problem-based teaching is to ensure conditions for creative and research activity of students in all the mentioned phases. The Faculty of Teacher Education in Rijeka, Croatia participated as a partner in several European projects aimed at implementing problem-based methods using educational technology in the learning and teaching processes of students, preschool educators and primary school teachers. The goal of these projects was to contribute to the development of creativity and logical thinking in children so that they can apply what they have learned to new problem situations. The most important activities of the project included the teaching of students as well as the professional development of educators and teachers in various innovative teaching methods using information and communication technology. This paper presents the educational activities for solving problems in practice with the aim of achieving the planned learning outcomes.

***Keywords:** Problem-based learning, educational technology, educational activities, educator, teacher.*

THE RELATION BETWEEN PARENTS' CHARACTERISTICS/PRACTICES AND CHILDREN'S EARLY LITERACY SKILLS DURING THE COVID-19 PANDEMICS

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Abstract

Relations between parental variables and children's early literacy skills allow for preventive interventions and effective public policies in health and education. The present study aims to investigate the relation between parents' characteristics (parental literacy expectations and attitudes, number of books at home) and parents' practices (formal and informal literacy activities - shared book reading - and parental involvement) and children's early literacy skills (word/pseudoword reading, spelling, knowledge of the alphabet, oral language) during the Covid-19 pandemic. Thirty-five first grade children aged between 6 and 7 years old ($M = 6.29$; $SD = 0.45$) from private Brazilian schools took part in this study. The number of books at home predicted 16% of the variance in shared book reading frequency between parents and children. Moderate positive correlations were found between shared book reading frequency and phonological awareness and oral language performances. Parental involvement was strongly correlated with pseudoword reading performance, word/pseudoword spelling, letter writing and phonological awareness. Shared book reading explained 16.5% of the variance in phonological awareness performance and 11.8% in oral language. Parental involvement explained 28% of the variance of children's performance in phonological awareness. Family practices, especially shared book reading and parental involvement in children's learning processes seem to promote phonological awareness and oral language skills development during a period of school closures and remote teaching/learning. These metalinguistic and oral language skills are important predictors of success in learning to read and spelling and can therefore be promoted through parenting practices.

***Keywords:** Parenting, reading, spelling, children, pandemic.*

ANALYSIS, MODELING AND CONTROL OF POWER ELECTRONIC SYSTEMS AND THEIR SIMULATION AS AN EDUCATIONAL SUPPORT

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Abstract

Power semiconductor devices are frequently used in contemporary world. They are used in all areas of everyday life and industrial applications. Thanks to this fact, it is necessary for current and new professionals to be trained and educated in the given theory. Part of this theory, in which our students are educated is the state space analysis of power systems, which represents their mathematical descriptions. Therefore, we created multiple simulation models of many power electronic systems. These models are used by students to verify the correctness of the performed state space analysis of the systems and to compare their results with classical circuit wiring diagram. The aim of such a simulation models is to introduce students to the variety of possibilities to analyze power electronic systems, understanding of their functionality, and also their open loop or closed loop control. There are also other benefits, like deeper understanding of mathematical skills. This paper describes multiple simulation models (topologies) of power systems, their analysis and control.

Keywords: *Power electronics, simulation models, state space analysis, control systems.*

MOTIVATION OF SECOND- AND SIXTH-GRADE STUDENTS REGARDING INDIVIDUAL AND COLLABORATIVE WRITING

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Abstract

Writing motivation decreases in elementary school. This is an issue of major importance considering how it relates to writing skills which are necessary for education as a whole. Teachers must introduce students to the pleasure of learning, and working collaboratively is proposed as one way to sustain students' interest in writing. However, very little is known about the contribution of collaborative writing to writing motivation. This is because few studies have opted for recognized motivation indicators or a control design that would reveal the added value of a collaborative approach at different times in elementary school. The aim of this study is to compare the writing motivation of second- and sixth-grade students depending on whether they write individually or in dyads (repeated measures). After each writing session (individually and in dyads), the students answered a likert-scale questionnaire to assess their motivation on four indicators: self-competence, self-efficacy, interest and value. Preliminary results (t-tests) showed that second-graders are equally motivated to write in both contexts but that boys' motivation reached girls' only in the dyad context. Results for six-graders are expected. They will be presented and discussed to highlight the contribution of collaborative writing to writing motivation, which may vary depending on students' sex and grade level.

Keywords: *Writing motivation, collaborative writing, elementary.*

CONTRIBUTION OF INFORMATION DESIGN FOR THE AUTONOMY OF THE POPULATION IN A HEALTH CONTEXT

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Abstract

This poster presents part of the study developed by the author in the context of the doctoral study, where the importance of Information Design for the autonomy of the population in health context was analyzed. Currently, despite the existence of governmental measures aiming at a preventive health model, it is often verified that the population still uses health services in a consumer perspective or in a reactive way, not taking into account their own health as a life goal to achieve. This behavior triggers a set of negative consequences, not only in personal terms, but also in terms of the inability of the services to respond effectively. After an in-depth bibliographic review of specialist authors in the field of health and in the field of information design and taking as object of study the clinical analysis report model currently used in Portuguese National Health Service, it was concluded that the current educational health messages are not adjusted to the user literacy, not taking into account either the cognitive needs (at the cultural and social level), nor to their emotional needs. This presentation leads to the recognition of the fundamental role of Information Design tools in this specific context, due to their integrating character. Through the construction of messages with a strong sense of ownership and commitment, an increase in the individual's awareness and autonomy regarding the decisions to be taken within the scope of his/her health is promoted. We conclude, however, that in order to enhance these results, a review of the design paradigm is necessary, in which the user cannot be understood as a mere recipient of contents built based on assumptions, but rather integrated in a process of co-creation during the construction of educational health messages, right from an early stage.

Keywords: *Information design, health message, co-creation design, visual literacy, clinical analysis report.*

HIEROGLYPH AND THE FOUNDATION OF CHILDREN'S TEACHING - COSMIC LANGUAGE -- COSMIC LANGUAGE = WORLD GENERAL TYPE UNIVERSAL LANGUAGE, HIEROGLYPH ENCODING LANGUAGE FOR SPELL CHARACTERS

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Abstract

Cosmic Language is a new type of language and writing, suitable for children and people around the world to learn and master. It has the characteristics of hieroglyph, it also has the encoding characteristics of spell characters. It uses symbols, numbers, letters, Chinese characters, and other ethnic languages with certain characteristics as the units of character creation, similar to letters. Form hieroglyph structures similar to Chinese characters, such as "口,吕,品,田,朋" and string structures etc., and use the four corner codes method of Chinese characters for coding. This open universal language has specific text encoding rules that are suitable for computer classification and retrieval. It is also suitable for people of all races to quickly understand and master, as well as communicate with extraterrestrial creatures.

Keywords: *Cosmic language, children, hieroglyph, spell characters, coding features.*

IMPLEMENTING COLLABORATIVE AND DIFFERENTIATED INSTRUCTION IN MIDDLE SCHOOL

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Abstract

The objective of this action-research-training project was to contribute to the professional development of teachers by fostering collaboration and the planning of teaching/learning situations middle school, and to foster the engagement and success of students with learning difficulties. Supported by a collaborative reflective process, middle school teachers implemented differentiated and collaborative lessons which respected learning paces while promoting interactions among students. Fifteen consultation and co-planning meetings were held over two school years. Twelve teachers, an academic advisor, a special education teacher, two researchers and a research assistant participated in these meetings. Video clips of theoretical elements, supported by research knowledge and collective reflective exchanges, helped to support the implementation of teaching/learning situations. The verbatim of the interviews were analyzed thematically and revealed positive impacts on the professional development of the participants. Middle school teachers learned new teaching devices, implemented differentiated instruction, and enhanced collaboration among their students in the classroom. Analyses also show that these differentiated and collaborative approaches contribute to the success of students with learning difficulties in middle school while promoting their academic engagement and motivation.

Keywords: *Differentiated instruction, collaboration, middle school, special education, special needs.*

SCHOOL ENGAGEMENT OF YOUTHS EXPOSED TO CUMULATIVE DISASTERS IN A PANDEMIC CONTEXT

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Christine Gervais², & Ann-Sophie Simard¹**

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Abstract

During the last few years, the Outaouais region (Quebec, Canada) and its residents have had to deal with various natural disasters (floods, tornadoes). This type of event can have serious negative effects on school adjustment, including absenteeism, motivation, and performance (Olteanu et al., 2011; Piyasil et al., 2007; Ward et al., 2008). Conducted in collaboration with two high schools in the Outaouais region, our study has documented the experiences of young people exposed to cumulative disasters in the context of the pandemic. Data from an online questionnaire administered to 1 307 students highlighted the presence of academic difficulties experienced by young people, with these problems being significantly more prevalent among those who had previously been exposed to a natural disaster. Like other scientific work (Dean & Stain, 2010; Wang et al., 2012), our research data also reveals that youths living in rural areas have lower academic engagement than those attending school in urban areas. Considering these findings, it seems therefore important to focus more specifically on adolescents who have experienced cumulative disasters, particularly in rural areas, in order to better understand their needs and to develop adapted services likely to meet them. This type of services seems particularly relevant in a context where school support is recognized as a factor that promotes the recovery of young people after a natural disaster (Convery et al., 2010).

Keywords: *School engagement, natural disasters, pandemic, youth.*

COURSES IN ACADEMIC TEACHING - AN EXAMPLE FROM SLOVAKIA

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Abstract

The aim of the study is to compare models of Courses in Academic Teaching (AT) conducted at several Slovak universities. There is also briefly described the pedagogical education in Slovakia as part of the internal form of further education for university lecturers at particular Higher Education Institutions (HEI). The text illustrates the experience with the implementation of courses in higher education at Slovak universities and summarizes results from questionnaire survey on the importance of the pedagogical preparation and educational needs of the course participants - university lecturers. In education, it is important to draw on the tradition and good practice proven by years of experience. Of course, it is not possible to unilaterally strengthen conservatism in approaches to education, but mainly to develop a tradition with regard to societal needs and developmental tendencies in education science. It is important to focus on prospects for development and modernization in orientation to increase quality and efficiency of higher education process. The source of inspiration for quality improvement is from variety of good practices, surveys and opinions of participants and graduates from various models of education. The study also intends to emphasize the requirement that teachers' work at any level of education (even in higher education) cannot be the result of high erudition in the scientific field and only intuition-based knowledge of education and its' principles.

Keywords: *Courses in academic teaching, university lecturers, opinions on pedagogical education, questionnaire survey.*

INTEGRATING STEM IN COMPULSORY SECONDARY EDUCATION: A LOOK AT HIGH SCHOOLS IN THE VALENCIAN REGION (SPAIN)

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Abstract

Today's knowledge and information society faces complex and globalized challenges that demand digital and scientific-technological skills. The STEM (Science, Technology, Engineering and Mathematics) approach was created to integrate science into school curricula through interdisciplinary work and a gender perspective. The STEM methodology promotes scientific-technological competencies in students and fights against the gender gap in the vocation and access to STEM studies and professions. The present study is framed within the research project "I+D+I EDUSTEM (GV/2021/126)" with the main objective of analyzing and assessing the results of the implementation of the STEM educational approach in the development of competences in students of compulsory secondary education. Research questions gravitated around how teachers integrate the STEM approach into the classroom and what resources and training in STEM projects teachers have received. To achieve the objectives of the study, a qualitative research methodology based on a systematic review of the literature, a comparative analysis of STEM policies at European, national, and regional levels, and interviews with teachers and management staff of public high schools in the Valencian Region was used. The final sample consisted of a total of 5 principals (80% female, 20% male) and 36 teachers (61.1% female, 38.9% male) belonging to the departments of Mathematics, Computer Science, Biology and Geology. The data obtained from the semi-structured interviews were processed through the qualitative analysis software *Atlas.ti*. The results indicate that 87.81% of the teachers and management teams interviewed are familiar with the STEM concept, and all the schools carry out, in one way or another, some STEM or against gender gap activity. However, 75% of the principals interviewed stated that they had not received training, instructions, or guidance on how to integrate STEM from the administration. The most common way of integrating STEM in the classroom is through tutoring sessions and the school's educational program. Only 30.56% of the teachers interviewed explicitly carried out a STEM workshop in the classroom. In conclusion, the integration of STEM in the classrooms of the Valencian Region is still an ongoing process that is supported by educational policies at the European, national, and regional levels. Principals and teachers are aware of the importance of STEM and need more training, resources, and funding to integrate STEM into science and technology subjects.

Keywords: *STEM, gender gap, teacher training, curricular studies, educational policies.*

INNOVATIVE TEACHING OF PHILOSOPHY THROUGH DRAMA: SOCRATES

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Abstract

Is it possible for a philosophical text to be something more than words? As philosophers we're trying to understand what constitutes life and in which ways, we can improve ourselves. Socrates with his proposal for an 'examined life' provides us with a perennial means of how we and our mental skills can benefit from philosophical inquiries. Art and drama on the other hand unfolds the human soul and strengthens it through physical action, emotional expression and social explorations. Assuming that Socratic philosophy is a starting point for an alternative method of philosophical education then the platonic allegories can be used by employing specific dramatic techniques as teaching tools addressing most of the problems concerning human life, culture and critical moral issues. In philosophical drama young students in class are invited (following the track of the Platonic Dialogues) to discuss and interpret situations and emotions using guidelines based on the Socratic Method of teaching philosophy with many educational and therapeutic applications.

Keywords: *Socratic method, teaching philosophy, philosophical drama, platonic dialogues, critical thinking.*

ORGANIZATIONAL ISSUES

EDUCATION AND TRAINING AS COMPETITIVENESS ENHANCERS: THE PORTUGUESE CASE

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Abstract

A nation requires the contribution of several factors to be able to achieve sustained levels of economic development over time. Economic competitiveness is generally seen as a valid index to judge a country's economic prosperity level. Several studies emphasize that, against the backdrop of a growing and highly globalized and competitive world economy, a competitiveness strategy oriented towards technological science and innovation is critical for increasing the competitiveness of countries and achieving long-term sustainable growth [Chankseliani & McCowan, 2021]; (Doğan, 2016)]. Thus, one of the most important and differentiating indicators of a nation's success is the qualification of its population, which is reflected in the degree of sophistication, decision-making ability, and strategic vision of its leaders and elites. Education, skills, labour efficiency and technological innovation are key aspects of economic development, leading to greater competitiveness and better capacity to create wealth in the economy and higher income levels. Based on the Global Competitiveness Index developed by the World Economic Forum, focusing on the evolutionary behaviour of a group of 40 countries (top 20 most competitive and the European Union countries), between 2008 and 2017, this paper aims to determine whether a correlation can be established between the competitiveness of countries and the education and training indicators of societies. The results reveal that, to different degrees, there is a quantifiable relationship between education and training (during the active life) of the labour factor and the competitiveness of economies, which will be reflected in the level of development of nations, the creation of wealth, and the establishment of high and sustainable levels of social welfare.

Keywords: Education, knowledge, training, competitiveness, economic development.

BLENDED INTENSIVE PROGRAMMES: PROMOTING INTERNATIONALIZATION IN HIGHER EDUCATION

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Abstract

International strategies are ranked as one of the core activities in the development plans of Austrian universities. This has led to numerous promising activities in terms of internationalization (i.e. development of international degree programmes, increased staff and student mobility, and blended international projects). The latest innovative approach in terms of Erasmus+ are so called Blended Intensive Programmes (BIP) which combine jointly delivered teaching and learning elements of at least three participating ERASMUS universities in a virtual and short-term mobility setup. Students who participate in BIP can maintain their study plans at their home institution and include BIP as a parallel activity. This paper presents the experiences of this programme on the topic of sustainable computing hosted by the University of Applied Sciences FH JOANNEUM. By means of an online survey and face-to-face interviews with all stakeholders (20 students, 8 professors), the empirical study addresses the challenges of hosting an international blended learning programme (i.e. virtual phase and on-site intensive phase) and discusses the impact of such activities in terms of internationalization and Englishization. In this context, key roles are assigned to the development of future transnational and transdisciplinary curricula by considering innovative aspects for learning and teaching (i.e. virtual collaboration, research-based learning).

Keywords: Internationalization, Englishization, short-term mobility, international teaching and learning.

LEADERSHIP IN THE EDUCATIONAL ENVIRONMENT AND ITS CONSEQUENCES ON PSYCHOLOGICAL HEALTH

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Abstract

Abusive supervision involves the expression of multiple verbal and nonverbal aggressive behaviours of a supervisor towards employees. As a stressor in the workplace, such leadership results in organisational inefficiency, absenteeism, and voluntary staff turnover. The cost of this supervision for American organisations is estimated at \$2.3 billion (Seckyoung et al., 2016). An understanding of the predictors of abusive supervision in the workplace allows for intervention amongst organizations in order to significantly reduce the cost associated with these destructive behaviours. Empirical data shows that the perception of abusive supervision is associated with psychological distress, reduced workplace wellbeing, and low-quality supervisor-subordinate relationships. This study proposes an empirical exploration of the antecedents and consequences of abusive supervision in the education sector, which has been identified by certain studies (ACTU, 2000) as being a work environment where destructive leadership by school officials is particularly pronounced. Several variables, such as managerial overload or work intensification, the setting of imposing or unrealistic work objectives, high-performance human resource management practices or the frustration of managers facing a lack of resources can potentially predict the perception of abusive supervision. Supervisors' personality traits constitute mediating variables in this framework. The personality traits and attributions of subordinates influences the perception of abusive supervision. This study derives from a narrative literature review (1980-2020) on three keywords: abusive supervision, school management, and teachers. For this purpose, the databases PsychINFO, PubMed, ERIC (ProQuest), and Web of Science were consulted. References were sorted in the data processing software EndNote.

Keywords: *Abusive supervision, school management, teachers.*

EDUCATION AND ECONOMIC GROWTH: A KEY RELATIONSHIP FOR UKRAINE IN THE POST-CONFLICT PERIOD

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Abstract

Education is an essential factor for sustainable economic growth and development. There is widespread agreement that regions and countries that are better endowed in terms of human capital tend to grow more and be more resilient. This paper aims to analyse the pivotal role that education will play in the growth and development of Ukraine in the post-conflict period. The accumulated learning losses caused by the pandemic have been greatly exacerbated by the current conflict, with persistent effects on learning. Following Ukraine's application for membership in the European Union, a reflection is required on the level of education in the country and the need to converge with European averages once the conflict is over. The methodology used is the analysis of the main education indicators used by the World Bank, OECD, and the European Union, as well as the latest PISA Report, to assess the relationship between quality in education and economic growth. The comparison of statistical data with the European Union shows the shortcomings of an education system that will have to be strengthened. The statistical data underline the idea that enhancing the quality of education will be critical for Ukraine's near future.

Keywords: *Convergence, development, education, growth, human capital.*

EFFECTS OF LIFE EDUCATION ON ATTITUDES TOWARD WELL-BEING

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Abstract

The purpose of the research related to Life Education should be concretely implemented in all stages of learning, to guide students to understand themselves from the process of exploring the meaning of life, and then to demonstrate unique life values, the importance of which is unmistakable. However, at present, the twelve-year state school only has a formal and systematic life education program, while the country and small and medium-sized adopted the teaching approach to integrate themes, therefore, this study aims to understand the impact of the life education programme on the attitude of life and sense of well-being, as well as the relationship of life attitude and feeling of happiness, in order to incorporate life education programs in the national stage.

Keywords: *Life education, attitudes toward life, well-being.*

The background features a vertical gradient from purple on the left to orange on the right. It is overlaid with a network of white lines connecting various colored nodes (pink, blue, white). Scattered throughout are small white icons: a globe, a cloud, a Wi-Fi symbol, and a starburst.

VIRTUAL PRESENTATIONS

TEACHERS AND STUDENTS

THE EFFECT OF INTEGRATING GA'S INTO THE CURRICULUM ON THE DESIGN OF A NEW 3-YEAR MECHANICAL ENGINEERING DEGREE AT DUT

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Abstract

The introduction of the South Africa Higher Education Qualification Sub Framework (HEQSF) in 2014 necessitated the replacement or alignment of all existing Higher Education qualifications. The Department of Mechanical Engineering at the Durban University of Technology (DUT) chose to replace the old National Diploma in Mechanical Engineering with a Bachelor of Engineering Technology degree (BEngTech, or "BET"), which was first offered in 2018. The BET was structured such that it met the requirements of various stakeholders and statutory bodies, including the Engineering Council of South Africa (ECSA). ECSA is designated by the Engineering Profession Act of 2000 as the statutory body responsible for quality assurance and accreditation of engineering programmes. In this role ECSA developed a small bouquet of qualification standards, including the new BET degree, which was selected by DUT. Included in these standards are prescriptions such as credit values, NQF levels, knowledge areas and 11 Graduate Attributes (GAs), all of which must be embedded in the programme. The ECSA qualification standards for the HEQSF aligned programmes are accredited according to an outcomes-based framework, as opposed to the content-based accreditation of the old programmes. The outcomes-based accreditation is focused on the GAs which must be developed and assessed. ECSA stipulates that a student should not graduate unless they have passed an assessment of each GA. While the development of each GA occurs in several modules (taught exclusively by the department), it was decided that the assessment of them should only take place in exit-level modules. In addition, it was also decided that a student would fail a module that included the assessment of a GA if they failed the GA assessment. This would prevent graduation. This paper briefly describes the process that was used to design the new BET and focuses on how the development and assessment of the GAs was embedded in the modules, as well as the quality assurance issues around that. Some preliminary analysis will also be presented to indicate the effect of the GAs on the success and graduation rates. The authors of this research adhere to a pragmatic paradigm where quantitative methods will be used, guided by the Grounded Theory Method.

Keywords: *Engineering, engineering education, graduate attributes, success rates, analysis.*

MUSIC TEACHING AND LEARNING COMMUNITY SERVICE PROGRAM – TEACHING MUSIC TO ELDERS

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Abstract

This paper explores the teaching of piano to retired elders in the community by non-music major undergraduate students. It evaluates the effectiveness of the program on students' personal development and their awareness of community service through reflections and self-evaluations from both students and elders. From recruitment, training and implementation, a group of students from different background participated in the volunteer service pilot program providing piano lessons to elders. Using music as a common language, they established a town-and-gown connectivity through the black and white keys.

Keywords: *Music teaching and learning community service, teaching music to elders, student affairs, pedagogy.*

PRE-SERVICE SCIENCE TEACHERS' EMOTIONAL PROFILE DESIGNING IBSE ACTIVITIES: THE GENDER PERSPECTIVE

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Abstract

In recent years, gender has been one of the demographic variables most often used to describe differences between groups. It results in particular interest regarding science education since there is a gender gap related not only to the students' future career expectations but also there is an important emotional difference between two genders in order to face and perceive science education. These gender differences could persist in posterior stages of education, reaching master levels after a science degree. As is the case when they are referring to pre-service teachers, these differences could be important in the way of selection, design, and application of active methodologies such as inquiry-based science education or integrated STE(A)M education, especially in the use of these methodologies to investigate and promote scientific attitudes and values towards science. Hence, this study aims to gain insight into the possible gender differences in the emotions experienced by pre-service science teachers (PSSTs) when designing and presenting an inquiry activity for Secondary Education students. To do so, we applied an *ad hoc* emotion questionnaire adapted from the work of Jiménez-Liso et al. (2019), referring to the emotions achievement and epistemic emotions associated with the stages of the design of the inquiry activities. The questionnaire was issued to 43 Physics and Chemistry PSSTs, and the analysis was performed in terms of the gender they explicit (20 males and 23 females), collecting the frequencies of emotions and their percentage representation per participant and stage. Results show that, in general, female PSSTs show more insecurity, altogether with a greater concentration level, compared to the male PSSTs, revealing that the differentiated emotions expressed by female or male PSSTs when designing IBSE activities might be taking into consideration into pre-service teaching.

Keywords: *Pre-service teachers, inquiry-based science education, gender, emotions.*

SIGNIFICANCE AND ATTITUDE OF TEACHING APPLIED MECHANICS CALCULATIONS IN CIVIL TECHNOLOGY: STUDENTS ANALOGY

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Abstract

The principles of mathematics and science play a significant role in the Civil Technology curriculum. The study aimed to investigate the attitudes of the prior and topical students/teachers towards Civil Technology applied mechanics calculations. The objective of the study is to explore the significance of Civil Technology applied mechanics calculations to the teachers, also to evaluate the attitudes of the prior and topical students/teachers towards Civil Technology applied mechanics calculations. The purposive sampling applied to review data of the sample of 8 teachers (prior students) from five education district in the Free State province, also to select 24 students (topical). All 32 participants were from BEd and PGCE programme at the University of Technology. The research used mixed method consists of quantitative and qualitative to gather data, questionnaire and face to face interview were used as the instruments. The researcher analysed data, interpreted the results, and discuss the finding. The results revealed that participants do not have negative attitude towards Civil Technology applied mechanics calculations, moreover, they are ready to teach calculations. The results also indicated that few teachers need a refresher training on challenging area of the calculations. The participants suggested that the Department of Basic Education (DBE) should include applied mechanics back in the curriculum and partner with the Institutions of Higher Learning to provide them with special formal training on Civil Technology calculations. The results implicate that participants have positive attitude to teach Civil Technology applied mechanics calculations as they conduct a meaningful integration of practical and theory in the subject.

Keywords: *Civil technology, mathematics and science principles, attitude and curriculum, applied mechanics calculations.*

ASSESSMENT OF THE SUB-COMPETENCES OF ENTREPRENEURIAL COMPETENCE IN THE BASIC SCHOOL

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Abstract

Age-appropriate entrepreneurial competence increases the well-being of the individual and society because diverse abilities and competences must be applied in entrepreneurship. Entrepreneurship is defined through the entrepreneurial process, which begins with the recognition and action of an entrepreneurial opportunity and ends with the implementation of a new idea. In the development of entrepreneurship competence, the assessment of the development of cognitive and social skills is difficult and novel in the field due to the abundance of entrepreneurship sub-competences and their different starting points. The purpose of the study is to create and validate a test to assess the knowledge and attitudes of basic school students about entrepreneurship. 19 Estonian basic schools of different locations and sizes participated in the test. The test was taken by 616 students who were divided into 3rd grade (N=326) and 6th grade (N=290) students. The test contains special types of tasks, e.g., multiple-choice tasks, each answer of which provides information about the learner's knowledge or attitude about at least one entrepreneurial sub-competency. There were three tasks in the test to measure each sub-competency. The tasks (N=34) were divided into multiple-choice situational tasks and self-directed tasks. The entrepreneurial sub-competences were: (1) self-efficacy, (2) motivation and risk-taking, (3) economic and financial literacy, (4) planning and management skills, (5) sustainable thinking, (6) community initiative, (7) environmental awareness and ethical thinking, (8) teamwork, (9) valuing ideas and opportunities, (10) vision and creativity. As a result, the tasks measuring sub-competences were divided into three categories: ideas and opportunities, resources and into action. As the main results of the study, the responses of the 3rd and 6th grade students differed, and it was found that the 3rd grade students achieved the best results on the tasks categorized according to the self-efficacy dimension and the lowest results in tasks measuring economic mindset competences. In contrast, 6th graders achieved the best results in tasks assessing ideas and opportunities and the worst results resources mobilization in tasks. As a result of the study, a test was prepared and validated, which enables the evaluation of sub-competences in entrepreneurship. As a result of the purposeful assessment of the sub-competences of entrepreneurial competence, there is an opportunity to develop entrepreneurial competence in the 3rd and 6th grades.

Keywords: *Entrepreneurial competence, assessment, cognitive, social, basic school.*

CONSIDERING TEACHERS' IDENTITY, WELL-BEING, AND PROFESSIONAL DEVELOPMENT IN CROATIAN CULTURAL CONTEXT

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& Aleksandra Smolić Batelić

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Abstract

Previous studies worldwide have shown not only that teachers' professional development is significantly related to their identity and well-being, but also that it should be empirically studied in each specific cultural context. Given the insufficient similar research studies in Croatia, this review paper aims to discuss the theoretical framework of teachers' identity, well-being, and professional development in the context of the characteristics of the educational system and the position of teachers in Croatia. Therefore, this paper presents a systematic literature review and a research proposal to investigate the relationship between the identity of pre-service and in-service teachers of kindergarten and elementary schools, their well-being and professional development in Croatia. The neo-social analytic approach to understanding human personality implies an integrated model of identity-based on five key principles: evolutionary influence on human nature, dispositional personality traits most commonly examined with the Big- Five personality model, characteristic adaptations in particular situations, integrated life stories and the broader social context in which individuals live. At the same time, considerable attention is given to embedding the above principles in the social ecology of everyday life, characterized by motives, values, goals, situations, roles, statuses, competencies, demands, attitudes, developmental tasks, and challenges.

Thus, the main contribution of this article is to review the identity model of the teaching profession and propose a research model to examine the relationship between the elements of this model and professional development and well-being. Well-being includes psychological well-being (environmental mastery, self-acceptance, personal growth, meaning in life, positive relationships with others, and autonomy), life and work satisfaction, optimism, self-efficacy, resilience, grit, and flow. The following research questions are posed for discussion: How can the identity, well-being, and professional development of teachers in Croatia be described?; What is the relationship between the different elements of the focused and socio-demographic variables?; How do the aforementioned different elements of identity affect certain aspects of well-being, i.e., what type of identity leads to high levels of well-being and what type of identity and level of well-being leads to a certain type of professional development? The use of qualitative (narrative biographies of a subsample) and quantitative methods (use of scales) are described. The research and practical implications of the proposed study are associated with new findings that will improve existing educational policies that provide guidelines for achieving high levels of well-being in the teaching profession in terms of identity and professional development.

Keywords: *Identity, personality traits, pre-service and in-service teachers, professional development, well-being.*

THE AMPHIBIOUS LIFE OF SOUTH AFRICAN SCHOOLS DEPARTMENTAL HEADS: A STRADDLE BETWEEN LEADING AND TEACHING

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Abstract

Departmental heads are teachers of subjects and specialists who in turn are leaders of such specialized fields called subjects. They lead departments and carry a workload they must execute in their classes and being part of the school management. These cohort of teachers are part of the middle management of schools. They are the bridges between what is decided in the school management teams and what should happen in the classrooms and are expected to enforce policy implementation in their departments and school-wide too. Basically, they are channels of communication between teachers and the school management teams and vice versa. Their existence is “amphibious” as they straddle between leadership and teaching, responsibilities that are regulated and must be carried out satisfactorily. The departmental head position in South Africa is a recognized, formal one as it is constituted in the Personnel Administrative Measures on what and how they should carry out their responsibilities. The document also indicates the workload of all teacher categories with teaching load ranging from 85%-90% for primary school departmental head and up to 85% for secondary school departmental heads as stipulated by the Education Labour Relations Council Resolution No. 7 of 1998. Therein, the departmental head is appointed as a post level two teacher who is responsible for teaching, extra and co-curricular activities, personnel, general or administrative and communication responsibilities. As leaders, they are expected to have basic knowledge of policy pertaining for their subject specialization area, lead a team of educators, motivate their teachers, manage resources and facilities in their departments, advice the principal on teacher placement and assist in the recruitment of new members of staff particularly those serving in their subject department. The other demand placed on the departmental head are that they are subject teachers. They are not ordinary teachers as they must be specialists in those subjects. This is because they should advice their teams on the best practices of teaching the subject. They must have specialized skills in the assessment and moderation of such subjects. As a result, departmental heads spend most of their time teaching than leading and managing. The latter was supposed to be their primary occupation, but this is to the contrary. Due to the contradictions, the DH is forced to live an “amphibious” life which needs to be managed well and for which they require to be well informed and supported in.

Keywords: *Departmental head, middle management, amphibious, school management team, teaching and leading.*

PRIMARY SCHOOL TEACHERS' PERCEPTIONS OF THEIR SELF-DIRECTED LEARNING SKILLS AND USE OF PRACTICES THAT PROMOTE SELF-REGULATED LEARNING

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Abstract

In a review of the causes and consequences of the weak outcomes of South Africa's education, researchers reported high drop-out rates before completion of secondary school and that less than five percent of learners who start primary school obtain a university qualification. The recent outbreak of the COVID-19 pandemic that resulted an unprecedented change in teaching and learning environments heightened the necessity of self-directed teachers who develop learners' self-regulated learning skills to empower them to manage and regulate their own behaviours. Against the background of poor performance and the central role of teachers in the development of self-regulated learning skills in primary schools, the aim of this paper is to explore teachers' perceptions of their own self-directed learning skills and the teaching strategies they utilise to develop self-regulated learning skills in their learners. The study was located within an interpretivist philosophical orientation and a qualitative research design. We made use of purposive sampling and collected data via semi-structured individual interviews from eleven teachers. Content analysis and a thematic approach were used to analyse the data deductively and inductively. Most participants were confident with their own self-directed learning skills and abilities to develop self-regulated learning skills. Participants revealed that they are well supported in the schooling environment with the needed resources to assist in developing self-regulated learning skills. Participants make use of various strategies, which seem to be more teacher initiated than learner initiated in attempting to teach and develop self-regulated learning skills by engaging in various activities.

Keywords: *Motivation, higher quintile schools, self-directed learning, self-regulated learning, teaching strategies.*

MIXED REALITY IN SECONDARY EDUCATION

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Abstract

The advancement of emerging technologies in society has been underlined since 2020, during the confinements implemented in all countries to protect the population from COVID-19. This was the turning point in which specific digital tools forcefully positioned themselves within each area of society. Thus, in the area of education, the first step was to strengthen online training, and the second to provide methodologies that would bring laboratories and classrooms closer to the walls of the rooms in which students were carrying out their learning process. In this sense, technologies such as virtual reality and augmented reality have been positioning themselves as resources that turn the training process around, by bringing workspaces that are difficult to access, or classified as either dangerous or unsafe, closer to students. However, there are also negative aspects regarding their use, such as the lack of training for their use, or the scarcity of economic resources for acquiring the devices needed. Thus, this communication presents the results obtained regarding the knowledge possessed by secondary education teachers about them. The objective of the work, as part of the larger project [Design, implementation and evaluation of Mixed Reality materials for learning environments (PID2019-108933GB-I00)], is to discover the knowledge possessed by secondary education teachers about Mixed Reality (virtual + augmented reality). With a sample of 121 teachers, and with a mean age of 41.3 years old (S.D. = 8.67), it was concluded that teachers, although they are aware of the existence of this emerging technology, don't have enough training for its use in secondary education classrooms.

Keywords: *Mixed reality, teacher training, pre-service teachers, secondary education.*

RESPONSE TO INTERVENTION (RTI) PROGRAM FOR THE DEVELOPMENT OF EXECUTIVE FUNCTIONS IN FIRST-YEAR ELEMENTARY SCHOOL

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Abstract

Objectives: To develop a second-tier Response to Intervention (RTI) program for the development of executive functions in first-year elementary school students and to analyze the clinical significance of the program via a pilot study. *Method:* The work was carried out in two phases: elaboration and application of the RTI program; followed by a clinical significance analysis of the children's performance in pre and post-test situations. *Participants:* The initial sample comprised 71 children (age from 6 years to 6 years and 11 months, of both sexes) from two public schools (groups GI and GII). These were submitted to a pre-assessment protocol: Attention Screening Test by digit cancellation; Five Digit Test; Digit Span subtest, Track Testing, and Protocol for Early Identification of Reading Problems. Risk for difficulty in executive function was presented by 18/37 of the participants that completed the pre-assessment protocol and these were selected for the intervention program. *Results:* There was a reliable improvement in the components of executive function inhibition, working memory and alternation, for some children and in rhyme identification tasks, phoneme production, and phonological working memory, although the program does not focus on its development. *Conclusion:* The program we elaborated demonstrated applicability and can be used by educational speech therapists, school psychologists and educators as a scientific evidence-based intervention tool to support the development of executive functions in second-tier RTI programs.

Keywords: Executive function, intervention studies, learning.

AN EVALUATION OF FLIPPED CLASSROOM PEDAGOGY IN NATURAL SCIENCES LEARNING USING MOBILE VIRTUAL REALITY

Mafor Penn

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Abstract

Integrating advanced learning technologies (ALT) like virtual reality in science classrooms has become an imperative goal in preparing learners for future ways of learning and careers. This ideal, therefore, has implications for teacher training and development. This paper evaluates flipped classroom pedagogy in Natural Sciences (NS) learning with mobile virtual reality (VR) applications. One of the main setbacks of introducing mobile virtual reality (MVR)-enhanced learning in educational settings is the need for more knowledge of sound instructional/pedagogic strategies for facilitating their adoption. The study therefore aimed at exploring techniques within a flipped classroom model that saw the integration of MVR technology in NS learning. 95 Natural Sciences students (in a teacher training program) were conveniently sampled to participate in the study. Data were collected from the qualitative analysis of student pre-lesson plans, video analysis of flipped classroom interactions and quantitative analysis of post-flipped learning quiz scores. Students worked in groups of five to interact asynchronously with MVR applications using cellphones and cardboard VR headgear to generate their own pre-lesson plans and concept maps for the actual contact class session. The analysis of these high-end lesson sequences showed that students' awareness of flipped roles compelled them to collaborate more, be creative, and change their approach to problem-solving. Aspects like knowledge sharing and pre-planning of questions for the instructor were also prompted by the experience. Higher-order thinking skills (HOTS) were developed holistically from the flipped learning experiences. Students also showed that more time spent engaging with MVR technology and the content led to deeper learning and better achievements in learning tasks. Challenges of the flipped pedagogy included more planning time, incompatibility of some mobile phones to MVR applications, fear of presentation and peer criticism. From the findings, some recommendations and implications related to autonomous learning and the development of HOTS in relation to flipped classrooms for science students' learning are also discussed in this paper.

Keywords: Flipped classroom, Higher order thinking skills (HOTS), interactive learning, Mobile Virtual Reality (MVR).

ASSUMPTIONS ABOUT LEARNING THAT UNDERPIN TEACHERS' FEEDBACK PRACTICES

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Abstract

This paper seeks to examine models of cognition and of learning and its possible alignment with formative assessment. This, using feedback as an entry point to have access to teachers' actions and interpretations in the intertwining that takes place between teaching, learning, and assessment. Data is informed by doctoral research conducted in three primary schools in England. The empirical work was undertaken by classroom observation and teachers' follow up interviews. The main findings foregrounded different participants' views. For some teachers the strategies used to provide feedback such as modelling skewed towards instruction, which resonates with the idea of making judgments about what is missing within tasks, with the teacher exerting the prime role within interaction by taking responsibility for the pupils' misunderstandings. Another relevant notion was assessment as learning (Torrance, 2007), which consisted of feedback actions focused on specifying what were the necessary features to be completed to meet the objective which resembled a hierarchical sense of how these elements or criteria should be taught and learnt (James, 2006; Marshall & Drummond, 2006). Results also depicted teachers' assumptions regarded to talk and shared learning, which trace some similarities with cognitive and constructivist perspectives of learning. The corresponding actions were enacted by encouraging their pupils to use conceptual and strategic resources in collaboration when discussing on their writing tasks. These practices also involved pupils' suggestions on the criteria already proposed by the teacher. Finally, the study also revealed a teacher's perspective portrayed as Questioning means learning, which reflected how teacher provided their students with evaluative experience when the task was ongoing. In this view, a link could be made with a sociocultural approach as students took ownership of both, the learning and the assessment process.

Keywords: *Feedback, learning conceptualizations, formative assessment.*

PERFORMING SMALL PROJECT ASSESSMENT IN CIVIL TECHNOLOGY THROUGH HEUTAGOGY APPROACH TEACHING AND LEARNING PROCESS

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Abstract

A small project is one of the formal assessment tasks used in Civil Technology, along with preparing for the stage of the actual project that integrates theory and practical work. The aim of the study was to promote and assess the heutagogy approach in the teaching and learning process in Civil Technology small project assessment. While the main objective was to assess the impact of heutagogy as a teaching and learning approach to achieve a small project assessment in Civil Technology. Moreover, the proposition of the study was that the degree of teaching and learning freedom in Civil Technology promulgates creativity, innovation, critical thinking, and problem-solving application. The study used a mixed-method approach consisting of a questionnaire and a semi-structured interview to gather data. The participants of the study were Civil Technology students, both males and females, from different cultural groups enrolled at one of the Universities of Technology in South Africa. Additionally, the study occurred between the 2020 and 2021 academic years, while the teaching and learning process was more hybrid (online for theory, face-to-face for practical work and verbal presentation). According to the findings obtained by the study, it was determined that the proposition and objectives of the study were positive. However, close monitoring and supervision by the lecturer on integrating theory and practical work should be more active and proactive in the heutagogy approach of teaching and learning.

Keywords: *Small project, heutagogy, Civil Technology, theory and practical work.*

A STRENGTH-BASED MENTORSHIP PROGRAMME FOR NOVICE TEACHERS ILLUMINATED BY ACQUIRED STRENGTHS

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Abstract

The lyrics from “Another brick in the wall” by Pink Floyd released in 1979 inadvertently puts teachers on the backfoot, especially when the society can’t help to sing along. Although the song voices the feelings of many young adults pondering about teachers ruining their freedom by forceful actions of superiority, the majority of children, however, deem their primary school teachers as heroes. High school learners on the other hand, find themselves in a tussle with teachers; whether it might be an authority challenge or the need to be heard. Annually novice teachers instinctively rock up at schools as young and energetic postgraduates hoping to impact children’s lives; often finding themselves exhausted after their first year, occasionally considering leaving the profession. Is this an indication that novice teachers are unprepared for reality? This paper will not dispute any level of content knowledge nor ability to teach but will investigate whether a one-year internship could be beneficial to young graduates entering the teaching sphere. Professions in medical, engineering, accounting, and law require postgraduates to complete at least a calendar year internship prior to becoming full members. Some even expect their candidates to pass board exams including extending certain skills. On the other hand, our education students are only required to complete 21 weeks across their four years at university for full employment. Mastering some soft skills before postgraduate shoulder responsibility in the classroom setup could prove to be a valuable commodity in the education profession; with seasoned educators playing a vital part to instil these soft skills. Internships overall suggest that being present in the day-to-day activities often offer opportunities for growth which repeatedly include people management, integrating theory and practice. The study will aim investigate how strengths-based coaching can be utilized to assist mentors and novice teachers during their internship year. Research about strength-based coaching indicate that applying formerly acquired strengths to new challenges, could guide an individual to a higher percentage of achieving success. The Education Sector is under severe pressure to perform; therefore, an individual entering the sector knowing how to manage their strengths and address learners, will greatly contribute to communities with little hope for their children. This research would aim to motivate the introduction of an internship for educators instilling an appropriate level of preparedness of novice teachers, especially by pairing them with seasoned educators using Gallup and the Clifton Strengths assessments. The value of a strength-based mentorship program embedded in an internship structure for postgraduate education students serving in government school could soon become a necessity.

Keywords: *Mentoring, novice, strength-based, leadership, soft skills.*

LECTURERS’ PERSPECTIVES ON THE INTERNATIONALISED TEACHER EDUCATION CURRICULUM: SOUTH AFRICA

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Abstract

The exponential growth of globalisation phenomenon has influenced the curriculum in higher education. Consequentially, higher education institutions including teacher education institutions have internationalised their curriculum. However, mismatches have been identified, namely, the curriculum fails to meet social needs such as employability, mobility, and economic progress. Therefore, this qualitative paper aims to provide an in-depth analysis of lecturers’ perspectives on this internationalised higher education curriculum in teacher education institutions. Further, this paper was underpinned by Dynamic Systems Theory to examine the nature and development of internationalised higher education curriculum. The Dynamic System framework proposes an approach to examine the dynamics of complex systems in the internationalised higher education curriculum and defines dynamic systems of elements that constantly develop rather than fixed. A case study research design and interpretivism paradigm were employed to obtain rich data from a personal reality perspective. Twelve purposively sampled lecturers participated in focus group discussion and semi-structured interviews were administered with four lecturers. Data were

analysed using thematic analysis. Findings revealed that lecturers have various interpretations and perspectives of the concept of the internationalized teacher education curriculum. Further, lecturers perceived internationalised teacher education curriculum in South Africa as a transformation strategy however it is not meeting the social needs of the country. This results in the internationalised curriculum being perceived as the motive for mismatches of employability, mobility, and poor economic progress. Thus, this paper concludes that the internationalised teacher education curriculum requires reprogramming, not complete decolonisation, to balance the mismatches.

Keywords: *Internationalisation, higher education curriculum, lecturers' perspective, Dynamic Systems Theory, reprogramming.*

MULTILINGUAL LEARNERS' PERCEPTIONS OF THE ROLE OF ENGLISH AND SCIENTIFIC LANGUAGE ON NATURAL SCIENCES LEARNING

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Abstract

South Africa has eleven official languages, and yet only two languages, English and Afrikaans are the Languages of Learning and Teaching (LoLT) in schools. Language is important in shaping the learning and teaching environment in a classroom. Teaching Natural Sciences in English in a multilingual classroom can be challenging when learners are not proficient in the language of LoLT. That complexity is exacerbated by the nature of scientific language which is designed and considered to be academic concise, precise, and authoritative, making scientific concepts inaccessible to most learners. This is an unfortunate situation because in science classrooms, learners are expected to read, comprehend, write, articulate, and use English and subject-specific terminologies. The authors of the current paper argue that both English language and scientific language create a learning barrier for the learners whose home languages are different from English, the LoLT. It is against this background that the current study being reported herein sought to determine multilingual learners' perceptions of the role of English language and scientific language in their learning of Natural Sciences. In a qualitative research design two grade 8 and 9 Natural Sciences classes and their teachers were selected from two high schools in township areas using purposive sampling technique. Data collection involved focus group interviews with learners and individual interviews with the teachers. Each teacher was observed once whilst teaching Natural Sciences to grade 8 or grade 9 classes. The qualitative data collected was subjected to content analysis and two main themes were obtained: 1. Learners' perceptions that English language and scientific language limit their understanding of scientific concepts; and 2. Teachers' assistance in mitigating challenges imposed by English language and scientific language experienced by English-second-language speakers. Learners from the two schools indicated that both English language which is their second or third language and scientific language imposed many challenges in their learning of Natural Sciences. These challenges included failure to read, write and understand Natural Sciences content. Those learners showed excitement at the prospect of learning science in their home languages as they were not comfortable with being taught in English. Teachers used code switching and hands on activities to mitigate language challenges in their classrooms. The study findings thus have implications for both curriculum policy implementation and continued teacher professional development.

Keywords: *Language of learning and teaching, Natural Sciences, scientific language, perceptions.*

FACTORS INFLUENCING THE COMPREHENSION OF NON-LITERARY TEXTS BY CZECH PUPILS OF SECONDARY TECHNICAL SCHOOLS

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Abstract

It is essential to develop reading comprehension of non-literary texts in primary and secondary technical school pupils with an interdisciplinary approach focusing on developing their critical thinking, transversal, (e) reading, and digital competencies in everyday situations. International PISA research (2000, 2009, 2019) has repeatedly pointed out the below-average reading literacy level among the fifteen-year-old Czech boys' community. Pupils at secondary technical schools in the Moravian-Silesian and Olomouc regions belong to the endangered groups in terms of their level of reading and digital strategies, especially regarding data processing and evaluation. A quantitatively oriented questionnaire survey investigated (external and internal) factors influencing the reader's understanding of non-literary texts through the lens of 384 pupils at secondary technical schools. A partial goal was to identify the types of non-literary texts the pupils like and the kinds of non-literary texts that are part of the recommended secondary school reading. The research results showed that Czech secondary school pupils do not comprehend the information in non-literary graphic representation. Informal Facebook texts with visualisation are popular among pupils. Administrative-style texts are the most common school-recommended secondary school reading at secondary technical schools in the Moravian-Silesian region.

Keywords: *Reading and digital literacy, text comprehension, non-literary text, secondary technical school pupils, critical thinking.*

THE ROLE OF SCHOOL MANAGEMENT IN MENTORING NOVICE TEACHERS' TRANSITION INTO THE TEACHING PROFESSION

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Abstract

The primary aim of this study was to explore the perceptions of novice teachers and school management team (SMT) members concerning the role of school management in mentoring novice teachers' transition into the teaching profession. Aligned to this aim, the study examined whether initial teacher education (ITE) programmes adequately prepared novice teachers for best practices in the actual school context. Further, this study sought to make-meaning of novice teachers' perceptions on mentoring programmes that are being implemented in primary schools in the Metro-North Education District, Western Cape, South Africa. Additionally, the study examined the perceptions of SMT on the role of mentoring novice teachers. For this study, the generic qualitative design guided the researchers to understand the responses of both novice teachers and SMT members on the role of school management in mentoring novice teachers' transition into the teaching profession. The study's qualitative design assisted the researchers in ascertaining novice teachers' perceptions of mentorship programmes at quintile five primary schools through qualitative data analysis. Finally, the qualitative design was ideal for the researcher to construct a research report to understand the role of SMT members in mentoring novice teachers' transition from ITE programmes into the actual school context (Yin, 2018:60). It was concluded that this study will assist policymakers in the Department of Basic Education, Department of Higher Education and Training, and Higher Education Institutions to introduce improved ITE programmes.

Keywords: *Role, school management, mentoring, novice teachers, transition.*

INVESTIGATING THE IMPLEMENTATION AND ADMINISTERING OF ASSESSMENT POLICY AT TECHNICAL VOCATIONAL EDUCATION AND TRAINING (TVET) COLLEGE IN THE FREE STATE

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Abstract

Assessment policy serve as a guiding mechanism for determining how various assessment tasks should be administered and carried out. As a result, its implementation is critical. This study aims to investigate the implementation and administering of an assessment policy at one of the Technical Vocational Education and Training (TVET) Colleges in the Free State. The study's objective is to identify and justify the need for TVET colleges to implement an assessment policy. The study used a mixed-method approach that included both qualitative and quantitative methodologies to collect data. Face-to-face semi-structured interviews and a questionnaire were used to collect data from participants. Two assistant campus managers (academic) were interviewed, and six male and female National Certificate (Vocational) (NC(V)) lecturers of varying ages and years of experience in their careers completed a questionnaire. According to the research findings, all participants agree on the importance of implementing the assessment policy. The findings also revealed that there are concerns about whether the assessment policy is being properly implemented. The research suggests that a monitoring tool should be developed and implemented to ensure that the assessment policy is always followed at all levels. Furthermore, the paper recommends among others that the college should have workshops regularly to train lecturers and other stakeholders on the assessment policy so that it can be effectively implemented.

Keywords: *Implementation of assessment policy, administering of assessment policy, TVET.*

THE UGLY SIDE OF TEACHING PRACTICE: TEACHERS' PERCEPTIONS OF STUDENT TEACHERS' IMMORAL AND UNPROFESSIONAL BEHAVIOUR DURING TEACHING PRACTICE

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Abstract

Teaching practice (TP) is regarded as a crucial component in initial teacher training programmes because it affords student teachers an opportunity to put theory into practice. During TP student teachers (also referred to as pre-service teachers) are afforded the opportunity to explore the different educational contexts in which teaching and learning take place. It is expected of all B.Ed students (from 1st to fourth year, and PGCE students) to undertake TP, and to behave professionally and ethically during their TP period. However, the university often receives negative feedback about students' unethical and unprofessional behaviour from the *teaching community* after TP had been completed. This negative feedback was one of the motivating factors that prompted the writing of this paper. The second motivation was the findings of the portfolio content that students have to submit after TP. Some students' actions were dishonest, for example, they forged mentor teachers' signatures on forms. The purpose of this article was to obtain teachers' perceptions of how pre-service teachers conduct themselves during teaching practice. Individual face-to-face interviews were conducted with twenty-seven teachers and three school principals to collect data. The findings revealed that despite the fact that many students are generally well-behaved and ethical, a significant number of them are entitled, unprofessional, disrespectful and dress inappropriately when they are at the schools. From these findings one can conclude that certain student teachers behave in an undesirable fashion which negatively impacts on their future placements at schools. One of the recommendations is for student teachers to be adequately prepared by teacher education programmes to meet the requirements of teaching in the real classroom environment.

Keywords: *Teaching practice, teacher professionalism, behaviour, values, student teachers.*

EMOTIONS LINKED TO CERTAINTY-BASED SELF-ASSESSMENT: A MULTIDISCIPLINE EXPERIENCE

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Abstract

This exploratory study presents data from various curricular areas in Higher Education: Primary Teacher Education, Secondary Teacher Education, Psychobiology, Microeconomics, Art History and Law. In all these areas, the instructors implement the same instructional program during a one-semester module to improve students' self-regulated learning behaviour. The project had two main goals: (1) enhancing students' learning engagement through certainty-based self-assessment and (2) researching the metacognitive and affective (motivational and emotional) implications of such instructional program in students' learning behaviour. Over 1000 students participate in these courses, responding to three progressive (discipline-related) multiple-choice online learning tests with a knowledge-certainty component at three different moments during one semester, incorporating the certainty-based marking (CBM). Certainty declaration activates deep metacognitive and emotional processes. We implemented the testing system in these courses only with a diagnostic and formative purpose. After each testing point, students responded to an accompanying reflection questionnaire that allowed the collection of their emotional reactions in a Likert-scale form. The students manifested positive/negative and activating/deactivating retrospective emotions (joy, pride, sadness, shame, anger) and prospective emotions (hope, boredom, indifference, fear, anxiety) in relation to the certainty-based self-assessment experience. Results indicate that the certainty-based self-assessment program triggered all of these emotions in different amounts. These results are positive news concerning the students' engagement in learning and particularly motivated self-regulated learning. This paper presents preliminary results concerning the students' emotional experience with this innovative diagnostic self-assessment program. Differences and similarities between areas and educational levels are exposed. The main result points to similarities outweighing differences.

Keywords: *Self-assessment, certainty-based marking, formative assessment, students' emotions, higher education.*

WHAT WE TALK ABOUT WHEN WE TALK ABOUT INNOVATION AND VOCATIONAL EDUCATION? A SCIENTOMETRIC ANALYSIS OF THE RESEARCH FRAMEWORK

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Abstract

The role of education in innovation is well-established, but little is known about how innovation is understood in vocational education. This study used bibliometric analysis to explore the relationship between vocational education and innovation. The results showed that research on this topic is still limited, with only 539 articles published over a 53-year period. Furthermore, most authors (93.6%) only published one paper on the subject and none were affiliated with technical institutions. These findings suggest that research on innovation in vocational education requires a multidisciplinary approach and more collaboration between countries, authors, and institutions. Given the broad definition of innovation, it is likely that different contexts will yield different definitions. Thus, expanding research on this topic is crucial.

Keywords: *Education, innovation, vocational education, bibliometric analysis, technical education.*

SONG-LEADING: AN OVERVIEW ON CONTRASTING DIDACTICS

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Abstract

Music and song singing is a widely used mean of expression and of cultural transmission between adults and children. In many institutions, this practice is led mainly by generalist teachers as one of the different parts of the children's school curriculum. Children's songs can be analyzed as specific objects that sum up and exemplify a coherent use of musical structures and rules, showing how they can be considered, as such, a cornerstone of the music education dispensed by generalist teachers in schools. Previous studies focus on the teacher's actions during music lessons from an evaluating standpoint. In our research, we focus on describing and understanding the phenomenon from a didactic standpoint: we question what rules underlie the actions, what aspects of the actions are relevant for the teacher, what insight guides our observation as researchers. In the framework of the Swiss National Fund research project (2018- 2020), The song leading capacity: developing professionalism in teacher education, carried out by PH Schwyz and HEP-BEJUNE, we observe and characterize the development of pre-service teachers as well as the work of experienced teachers, through video analysis of lessons, interviews while viewing the filmed lessons, and field notes. In this presentation, I report on two contrasting case studies of experienced generalist teachers, by analyzing their approach in teaching a children's song. Using the transcription system "Lesson Activities Map" (LAMap), created by our research team, I visualize the most important actions in a music lesson's sequencing, focusing on how the teachers organize the lesson, and how they implement classroom activities and visual supports relating to musical learning. In-depth analysis of important episodes, contextualized within the entire lesson by the LAMap, allows us to characterize the appearance of meaningful events: the way a specific song element is introduced provides detailed insights on the teachers' ability of explicitly or implicitly navigating the different rules and norms of each stratus of the song leading phenomenon in a way that allows them to follow, or fall out of, their self-determined course of action.

Keywords: *Song leading, interview analysis, video analysis, pedagogical content knowledge, core practices.*

ABEPLANA: AS HOW TI TEACH WITH VIDEOGAMES IN KINDERGARTEN CLASS

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Abstract

The development of the so-called emerging technologies at the present time undoubtedly implies keeping in mind the classroom methodologies that teachers use in classrooms of any educational level. Said methodologies are characterized by the search for an introduction of the ICT linked to the development of the contents so that, through the implementation of different methodological strategies, it responds to the achievement by the students of the digital competence that Today's society demands tomorrow's future leaders. The Abeplana project's starting objective is to know emerging technologies, in general, and videogames in particular, available for the creation of learning situations, this is materialized in several specific objectives, being of our interest to present those referred to Objective 3.1. which is none other than: Learning, as future teachers, the potential of emerging technologies in general and videogames in particular in the principles that underpin the universal learning design (DUA), more specifically in the multiple forms of representation, action and expression and involvement and forms of commitment that can occur with the use of the same in infant and primary classrooms. The use of videogames in the classroom will encourage the development of their own and individual skills in the student so that they know not only how to respond to the requirements of the content they must learn, but also the social reality in which their future work will take place. To respond to these objectives, the following activities have been proposed, which have been carried out in the first semester of the 2022-2023 academic year at the Faculty of Educational Sciences and Psychology of the University of Córdoba in Spain. The work of Ceballos et al. (2022) has indicated that once the video game is used, students develop better verbal, procedural and attitudinal learning, and this is the line that we have focused on in this project. Through a methodology based on service learning the teachers in training. The students or teachers in training, to address this general

and specific objective, developed a series of didactic sequences, where the backbone was the video game. As a positive aspect, the students indicated that contact with the reality of the classrooms has allowed them to corroborate or rule out elements that they considered key to putting their activities into practice. They also pointed out the need for greater training by the curricula of Spanish universities in the critical use of digital tools in early childhood education classrooms.

Keywords: Videogames, university student, innovation, learning by doing.

COVID-19: RETHINKING THE SKILLS REQUIRED OF 21ST CENTURY EDUCATORS

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Abstract

The skills required of 21st Century educators are constantly evolving as it is important for teachers to stay current and develop their skills and knowledge to best support their students' academic and personal growth. Overall, there are numerous competency frameworks that provide standards or guidelines that outline the knowledge, skills, and attitudes that educators should possess to effectively support student learning and development. Technological skills are increasingly emphasised: There are several competency frameworks that describe digital skills of educators, i.e. the knowledge, skills and attitudes that educators need to effectively integrate technology into their classrooms and support student learning in a digital environment. Each of these frameworks offers a unique perspective on what educators should know and be able to do to effectively support student learning and development in a digital environment. The recent COVID-19 pandemic has highlighted the need for digital skills frameworks for educators to be more comprehensive, relevant, and aligned to the challenges and realities of teaching and learning in a virtual environment. It became clear that the effective incorporation of digital technologies and innovative pedagogies into education requires a rethinking of the digital competence portfolio of educators. Competencies to transition seamlessly into digital learning scenarios, as well as competencies and skills to respond to psychological effects such as technostress, depression or isolation are required. The present paper examines some of the most commonly used digital skills competency frameworks for educators and discusses future directions for their improvement based on the lessons learned from the COVID-19 pandemic.

Keywords: Digital competence framework, educators, distance education.

PROJECTS AND TRENDS

INNOVATIVE STUDENT-CENTRED STRATEGIES IN HIGHER EDUCATION: AN EXPERIENCE OF ACTIVE FOREIGN LANGUAGE LEARNING

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Abstract

To be innovative, the chosen methodological framework in higher education must encompass strategies centred on the student and his professional expectations linked to his training field, with the objective of also working on vital and adequate transversal skills according to the requirements of the labour market and with better results than traditional practices accomplish/have accomplished. A creative, collaborative and interdisciplinary work environment ensures the acquisition of multilingual skills and the development of plurilingual awareness in the digital age. St-Jean & Dupuis Brouillette (2021) show that, thanks to pedagogical activation, the student effectively engages in his learning, progressing thanks to his ideas and their fulfilment. In project-based learning, the student must invest in developing a project, a dynamic strategy that requires collaborative work, the use of technologies and the creation of artefacts. The teacher's role is to support learning. The experience presented focuses on the learning of foreign languages through project pedagogy, using digital tools available mainly on android, tablet and computer equipment with undergraduate Media Studies students of the School of Education in Viseu (Portugal), in order that they may acquire skills in French and English for specific purposes. Students work on a project in the two foreign languages using strategies and skills specific to their future professional field. The methodology is presented and discussed, as well as the difficulties encountered and the results obtained, both from the point of view of the student and that of the teacher. Current research results tend to show that the use of active learning methodologies in the context of collaborative work, compared to traditional strategies, can increase student motivation and autonomy. They promote the interactive process among students and between them and the teachers, facilitating the acquisition of knowledge and skills as far as foreign languages are concerned. Our objective is to show the path followed by students and teachers, to describe the evolution of learning, with its positive aspects, stumbling blocks and difficulties, and to open up new ways of reflecting on the foreign language teaching/learning process in higher education, based on an experience carried out with students at this particular level. The conclusions taken highlight the need for forthcoming work projects in this area.

Keywords: *Higher education, foreign language for specific purposes, project pedagogy, digital tools, transversal competences.*

EXPERIENCES OF TEACHERS IN THE ENACTMENT OF SIMULATIONS IN 5E INQUIRY-BASED SCIENCE TEACHING

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Abstract

Inquiry-based teaching and learning has been promoted in school curricula all over the world and it is described as an efficient method of teaching science in terms of understanding of the content and improving student attitudes towards the subject matter (NRC, 2012). Quintana et al (2004) defined inquiry as a process of raising questions and analyzing them with empirical data, either by manipulating variables directly through experiments or by creating comparisons using established data sets. Despite the widely reported benefits of inquiry-based learning such as developing critical thinking abilities, scientific reasoning, and a deeper understanding of science (Barrow, 2006), its implementation is still a challenge in many parts of the world. The research reported here is a part of a larger study that investigated South African teachers' use of simulating in enacting 5E (engage, explore, explain, elaborate and evaluate) inquiry. The 5E instructional model of inquiry is a model that can assist teachers in developing inquiry-based lessons (Ihejiamaizu et al., 2018) and it is a technique used by science teachers to produce students who are scientifically literate (Chitman-Booker & Kopp, 2013). Post-lesson interviews conducted with three teachers on their

experiences of using simulations for 5E inquiry-based teaching. The interview data were transcribed and subjected to Saldaña (2009) coding to generate themes. The interviews focused mainly on the teacher's justifications of their pedagogical actions that they have employed when using simulations in enacting a 5E instructional model for inquiry. The results of this study showed that a simulated 5E inquiry lesson enables collaborative learning in the Explore phase of the 5E model where groups of students worked together to solve problems and complete tasks. The significance of this finding is that the use of simulations is an alternative to actual hands-on inquiry and can be effectively used to teach 5E inquiry. In particular, active and collaborative learning can be promoted through the use of simulations. The use of simulations could also address the challenge of resource inadequacy in South African schools. It is recommended that future research be conducted with a larger sample that includes a diversity of schools.

Keywords: *Computer simulations, inquiry-based learning, physical sciences teachers.*

COMPARISON OF THE LEARNING PROCESS OF HIGH SCHOOL STUDENTS BEFORE, DURING AND AFTER THE PANDEMIC

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Abstract

During the post-pandemic time period, it was observed an increased interest among scholars over studying the effects of online schooling regarding the teaching-learning-evaluation process and how the school has changed after the introduction of technology in teachers lives. However, there are few studies that treat the subject of how online schooling has affected students. The main objective of this research is to compare the manner in which the teaching-learning-evaluation process has been carried out for both gymnasium students and highschoolers during the pre-pandemic, pandemic and post-pandemic period and to analyze how this process has changed for the students and how digital technologies are useful. The used research method is the focus-group in a private high school from a large Romanian City, Bucharest, the Capital City of Romania. During the group interview, a structured interview with three essential parts has been used. The present research is structured into four sections. The first section presented the context in which digital technology has entered students' lives and how they have adapted to the changes, the second section presents a list of good practices used by teachers and the third section contains the results of the focus-group. The last section is composed of conclusions and recommendations over the main results. The results of this study show that students appreciate the use of new digital technologies in the teaching-learning-evaluation process, and even if they returned to physical classes, teachers must continue to integrate digital resources and tools into their activities. Since all the participating students to the focus-group come from a private high-school, carrying out a similar study on a public school group, there could be major differences in the results obtained. The implications of this study are useful to both teachers, that may pick up examples of good practices, and students. In conclusion, the present study presents the lives of students during the pre-pandemic, pandemic and post-pandemic period and highlights the changes they have been through and how the technology helped.

Keywords: *Students, learning, pandemic, Romania, private high school.*

ANALYSIS OF THE INITIAL ACCEPTANCE OF THE BEE-BOT ROBOT IN STUDENTS WITH AUTISM SPECTRUM DISORDER

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Abstract

Nowadays, pedagogical robotics is configured as a methodological trend in schools, conceptualized as a technology for learning and knowledge (TLK). Particularly, in the field of inclusive education, the use of CAT during the learning process of students with autism spectrum disorder (ASD) could imply a greater motivation towards the tasks by these students and, therefore, a greater focus of their efforts. Specifically, pedagogical robotics has a series of characteristics, such as predictability, high degree of control of the environment and sequencing, which are perfectly aligned with the educational needs of these students. Among them, the need for a controlled environment that favors error-free learning and decreases the high levels of frustration in the face of non-achievement of the task stands out. Thus, the purpose of the study is to analyze the initial acceptance, by students with ASD, of the Bee-Bot robot for teaching communication and social interaction skills. The proposed research presents a quantitative approach with a single-case quasi-experimental design. A non-probabilistic purposive sampling technique was used for the selection of participants. Thus, the sample of participants consisted of 11 students aged between 3 and 16 years old, attending specific communication and language units in schools in the city of Alicante (Spain). The instrument used is a field notebook designed *ad hoc* that evaluates the parameter called "initial acceptance". Regarding the procedure, an individual session with each participant lasted approximately 20 minutes. A descriptive data analysis for the calculation of frequencies and percentages was carried out with version 27 of the Statistical Package for Social Sciences (SPSS). The results indicated that more than 54.00% of the students indicated that they wanted to play with the robot, listened attentively to the explanations and pressed the robot's upper commands. Also, these results indicated that 90.91% approached the robot showing interest and 100.00% responded that they wanted to use the robot again. On the other hand, less than 28.00% of the students were frightened when the robot moved and covered their ears when the robot sounded. In conclusion, students with ASD accept the Bee-Bot robot, which makes it a potential tool for carrying out different activities.

Keywords: *Autism spectrum disorder, robot, Bee-Bot, initial acceptance.*

HARNESSING PEDAGOGICAL AFFORDANCES OF ONLINE TOOLS TO ENHANCE GRADE 11 PHYSICAL SCIENCES LEARNERS' CONCEPTUAL UNDERSTANDING OF ELECTROMAGNETISM

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Abstract

This study explored the utilization of online tools to enhance grade 11 Physical Sciences learners' conceptual understanding of Electromagnetism. The empirical investigation adopted a quasi-experimental design and involved purposively selected grade 11 Physical Sciences learners as participants. Quantitative data was collected through the administration of a questionnaire. The questionnaire was administered as a pre-test and post-test with a view to evaluate the efficacy of the utilization of online tools as an instructional intervention. Findings emanating from the study demonstrated that the utilization of online tools served to enhance grade 11 Physical Sciences learners' conceptual understanding of Electromagnetism as a key knowledge area. There is a crucial need for teachers to fully embrace pedagogic innovation to improve learner outcomes in Physical Sciences teaching and learning. Theoretical implications for pedagogic innovation are discussed.

Keywords: *Conceptual understanding, affordances, Physical Sciences, pedagogic innovation.*

LEARNING STYLES, TECHNOSTRESS & BLENDED LEARNING – IMPLICATIONS FOR THE EDUCATIONAL MODEL OF THE FUTURE

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Abstract

Although the blended learning teaching format has been existing for several years, the COVID-19 pandemic has shown us once again how important digitization is in the education industry. The aim of this study is therefore to find out what opportunities and risks blended learning has as a teaching format from the perspective of students with the learning style "pragmatist" and to what extent technostress will be relevant in this context. A qualitative study was conducted in which 11 undergraduate students with the learning style "pragmatist" were asked about their personal experience and opinion regarding the three teaching formats face-to-face, distance and blended learning in order to find out the individual advantages and disadvantages. The results have shown that blended learning is suitable as a teaching model from the students' perspective. However, attention must be paid to good organization and communication in order to be able to take advantage of both teaching formats, namely face-to-face and distance learning. The effects of technostress could not be determined after the COVID-19 pandemic as an external influencing factor strongly affected the students' perceptions of distance learning.

Keywords: *COVID-19 pandemic, learning styles, face-to-face learning, distance learning, blended learning, technostress.*

E-KINE: EDUCATION FOR ONLINE REHABILITATION SKILLS

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Abstract

The present paper presents new approaches in rehabilitation in the framework of the Erasmus + project entitled "Development of digital skills for online rehabilitation therapies" with the goal to spread knowledge and practical skills about online/remote patient rehabilitation. The project is based on collaboration between hospitals and Higher Education Institutes from Turkey, Bulgaria and Romania and aims to develop, test and adapt a continuous vocational educational medical program, developed on an exhaustive needs analysis and focusing on a transnational approach for online rehabilitation. Online rehabilitation has gained popularity during the Covid 19 pandemics and due to many advantages for both the therapist and the patient, it seems to be accepted as a valid and widely implemented method. In the "traditional" rehabilitation process, in order to choose the right therapeutic option for the patient, the rehabilitation team must evaluate the previously diagnosed patients' current state. Normally this process requires hands on examination and use of different diagnostic tools. In addition, e-KINE project offers solutions to replace classical assessment and rehabilitation practices with remote alternatives. Classical examination methods were adapted to be done alone by the patient and at the home environment. These adaptations were first tested by the project team and then applied to the patients. The proposed methods are used in different case scenario presentations for the education of health professionals. A database including 100 rehabilitation and prophylaxis protocol and correspondent videos will function as an e-rehabilitation tool. The innovative information that emerges as a result of this sharing will be placed in the physiotherapists education curriculum to provide graduated students with more effective and quality service. This will allow physiotherapist professionals to apply the gained knowledge in a virtual workplace and to develop practical skills for assessment, decision, elaboration and follow up of rehabilitation programs in the new online environment.

Keywords: *Online rehabilitation, rehabilitation protocols, Erasmus Project.*

AUGMENTED REALITY PROMOTES SOCIAL RESPONSES IN AUTISM SPECTRUM DISORDER SUBJECTS

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Abstract

Inclusive education is a pedagogical proposal that pursues the basic right to a joint education for all students. In this line, the increasing prevalence of students with Autism Spectrum Disorder (ASD) in the classroom requires a greater understanding of their academic abilities, experience and outcomes. Given recent education reform processes, experts are actively developing opportunities for the educational and personal fulfilment of this group. Among these is the use of a set of technologies that take into account the characteristics of learners. It is for this reason that the need arises to talk about the application of technologies in the classroom, which invite reflection on the teaching-learning process. In this sense, this study aims to apply Augmented Reality to enhance social responses in students with Autism Spectrum Disorder. This research is based on a quantitative approach with a quasi-experimental design with a control group and an experimental group. The sample is made up of 12 students with ASD who are enrolled in a Special Education Specific Unit. Regarding the participant selection procedure used in this study, it was non-probabilistic sampling with an available or accidental nature and easy access or accessibility. The study variable is the social response that has been studied based on three parameters: the greeting at the beginning of the session, the farewell at the end of the session and the communication presented throughout the session. Regarding the instrument used in the educational intervention, the research was carried out through a field notebook designed *ad hoc*. Subsequently, once the intervention and data collection had been planned and implemented, data analysis was carried out using the SPSS statistical package for Windows (Statistical Package for Social Sciences) version 25. The results obtained show that from the first session more than half of the students in the experimental group (83.33%) said hello at the beginning of the session, as opposed to the control group (16.67%). Likewise, with regard to saying goodbye, the percentage of learners who produced this skill was higher in the experimental group than in the control group. Finally, in terms of communication presented throughout the sessions, the same results were obtained for both groups from the third session onwards. As future lines of research, we propose the continuation of the study with the possibility of applying this tool to a larger group of students, as well as the study of other variables.

Keywords: *Autism Spectrum Disorder (ASD), Augmented Reality (AR), social communication, social interaction, intervention.*

A FICTITIOUS VEHICLE MANUFACTURING COMPANY AT A UNIVERSITY AS INTERDISCIPLINARY FRAMEWORK TO COMBINE STUDY PROGRAMS

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Abstract

Interdisciplinary thinking is becoming an increasingly important competence for meeting the challenges of our time, for example in the areas of sustainability or even digitalization. Successful value creation can only be achieved if all subject disciplines work together. Universities, too, must adapt to these needs and anchor the teaching of these competencies in their courses of study. In this context, interdisciplinary cooperation cannot be limited to the curricula, but must also bring together the teachers and the learners in a common context. Traditionally, universities have found it difficult to develop interdisciplinary scenarios. The teaching scenarios themselves must already provide interdisciplinary content and learning objectives. The challenge here is multi-level. First, it is a great challenge to connect the modules of a course of study in a thematically meaningful way. Second, it is the linking with other study programs that brings about the most sustainable interdisciplinary effects. One possible solution, which has been tested for several years, is to set up a fictitious company as a digital learning factory, which serves as a basis and reference for the interlinking of individual modules of the various courses of study. The scenarios that can be depicted here are extremely application-oriented, which means that not only can internal university modules be very easily aligned with them, but external partners, can also get a simple participation. Furthermore, the participating courses of study can continue to maintain their original core competencies while participating

in the interdisciplinary scenarios via the modules that are aligned accordingly with the learning factory. A company from the vehicle construction sector was selected as the business model in order to be able to map another focus at the same time, autonomous driving. The individual departments of the company are linked professionally with the contents of the individual courses of study. Study programs, such as industrial engineering, form the design department, whereas technology-oriented study programs, such as business computing, represent technical development, in particular the area of driver assistance system development. In addition, the relevant departments also include economics and so on. The special feature, however, is the fact that real products in the form of vehicles on a scale of 1:14 are also created and continuously developed, which is an important success factor of the learning factory. The following article transfers the experiences made into a scheme of different levels of interdisciplinary forms of teaching within the framework of the learning factory and classifies and explains the existing scenarios accordingly. Furthermore, the teaching formats used, which have proven to be effective in imparting competences, are described.

Keywords: *Higher education, science and technology education, educational environment, technology in teaching and learning, new learning and teaching models.*

ONLINE TEACHING, LEARNING, AND ASSESSMENT: LESSONS IN AFFECTIVE EDUCATION AND SKILL DEVELOPMENT DURING THE PANDEMIC

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Abstract

The Covid-19 pandemic disrupted higher education classrooms and required faculty, across disciplines and irrespective of their skill or preference, to transition their pedagogical approaches to virtual/online formats. This transition appears permanent. For example, data collected in the United States found that distance education courses are on the rise, with 75% of undergraduate students in the US being enrolled in at least one distance education course in the fall of 2020 (National Center for Education Statistics [NCES], 2022). Most certainly, online education creates unique challenges in the ways that professors address the various domains of learning. This switch from classroom teaching to virtual instruction is particularly salient in the fields that require significant affective education, instruction, and skill development. This is significant in the social sciences such as Human Services, Psychology, and Social Work, where intervention skills and affective change is equally as important as cognitive gains or shifts. Bloom's taxonomy proposes three learning domains of learning: cognitive, affective, and kinetic/psychomotor (Bloom, 1956). While translating cognitive knowledge is rather simple, the bigger challenge is translating affective and kinetic learning from in-person experiences to those online. Affective learning involves students' attitudes, values, and emotional connection to the material and fellow classmates. In the social sciences, for example, this requires teachers to change how students understand, value, and intervene while working with a client in crisis. In 2019, The Virtual Learning Leadership Alliance and Quality Matters group assembled a committee of experts (the National Standards for Quality team) which created "best practices" for on-line courses. Originally designed for K-12 settings, these standards are also applicable to higher education environments. These practices include six standards for the development of online courses (National Standards for Quality [NSQ], 2019). Two of the standards address instructional design and learner assessment, both of which ground this presentation. In this session, we will share lessons learned and teaching tips from our transition from face-to-face skill-based classes to online formats (both synchronous and asynchronous). In particular, this session will explain how to facilitate meaningful online discussions and structure role plays so that each member of the triad (i.e., counselor, observer, client) have a meaningful experience. The workshop will also provide specific examples of how to translate emotional and kinetic learning experiences to an on-line environment. Finally, the session will also share assessment tools such as rubrics that clarify assignment expectations and promote student engagement and learning in a digital educational environment.

Keywords: *Online teaching, affective teaching, learning.*

SUSTAINABLE FASHION DESIGN PRACTICE IN THE STUDIO-BASED CLASSROOM

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Abstract

Today's prevailing fashion industry system has become extraordinarily polluting and wasteful. Many have already criticized the considerable waste generated during the current manufacturing process. Fashion practitioners have also proposed plenty of modest attempts. However, as one of the most vital aspects supporting the current industry paradigm, fashion design education must take its sustainable responsibilities thoroughly. Few studies investigate ways to implement sustainability practices in classroom teaching, and literature about creating an unfettered environment for fashion design students to come up with solutions is still relatively rare. With the increasing awareness of environmental issues, fashion design education has reached its curving point. Many researchers have addressed the necessity for an alternative teaching and learning approach in fashion education. How to bridge the gap between values and collaborations, academic practices, and industrial expectations is a paradigm-shifting question to be responded to. In this paper, the authors have set out their experience conducting an innovative sustainable fashion design workshop in the studio-based classroom by outlining the holistic teaching and learning process and proposing critical questions and reflections around pedagogy and projects. The authors wish to provide a reflective example for further discussions around new pedagogical norms, which might generate the collective evolution of a new curriculum to educate future designers to contribute to the sustainable fashion industry.

Keywords: *Sustainable fashion, fashion practice, fashion design education, studio-based teaching, and learning.*

ANALYSIS OF THE EXAMINATION METHODS OF GARDNER'S INTELLIGENCES IN THE DIGITAL ENVIRONMENT

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Abstract

The subject of this research was the examination of the dynamically changing and widely applied theory of Multiple Intelligences (Gardner, 1983; 1999; Gardner, 2009), and its possible manifestations (Dezső, 2012; 2015; 2020), in relation to kindergarten education (Gyarmathy & Herskovits, 1999; Sándor-Schmidt, 2019; Ábrahám, 2022). The aim of the research was to implement the "Everyone is Intelligent in Different Ways" (EIDW) method (Sándor-Schmidt, 2016; 2019; 2022) into the digital environment. The EIDW is used for the investigation and development of Multiple Intelligences and is a methodology based on an independent adaptation of the Project Spectrum concept (Gardner, Feldman, & Krechevsky, 1998), but differs from it in many points. With the spread of mobile devices and the Internet, as well as the digital work schedule outside the classroom, digital devices and the online space play a key role in children's lives. In the 21st century, everything is given to realize the examination of Multiple Intelligences in the digital space. The affordable, accessible, and easy-to-use mobile devices are essential to the digital world of digital natives (Prensky, 2001). Based on these thoughts, the following questions arose: Can the examination of Gardner's Multiple Intelligences be realized in the digital space? Is the EIDW method (Sándor-Schmidt, 2016) applicable in the digital environment? To what extent is the method transferable, and what difficulties arise when implementing it in the digital space? The goal of the research was, on the one hand, to analyse how the activities related to the seven knowledge areas based on Gardner's eight intelligences of the EIDW method can be transferred into a software solution, and on the other hand, to define the appropriate software and audio-visual elements. As a result, an application was created that runs on a tablet or mobile phone, and it was established that the activities of the EIDW method can be transferred to the digital environment, if not entirely, but to a significant extent. In addition to the implemented application, the research aims to provide a comprehensive concept of the possibilities of examining Multiple Intelligences with software tools.

Keywords: *Multiple Intelligences concept, examination method, digital environment.*

TEACHERS' PERCEPTIONS AND INTENTIONS ABOUT INTEGRATING COMPUTATIONAL THINKING INTO SCIENCE INSTRUCTION

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Abstract

This study explored teachers' perceptions of integrating computational thinking in South African science classrooms using the Technology Acceptance Model (TAM). This research adopted a combination of informal discussions and closed and open-ended questions to elicit responses from fifty science teachers in an education circuit in Johannesburg, South Africa, via a google form. Responses from the open-ended questions and informal discussions were analysed using content analysis, and data from the structured questions were analysed using correlation analysis. It was found that teachers demonstrated a positive perception towards the integration of CT in their science classrooms but lacked appropriate technological knowledge and technological pedagogical to teach the concepts of CT in science lessons, affecting their CT teaching efficacy beliefs. The findings of the study revealed a strong positive correlation between teachers' interest in CT and behavioural intention ($r = 0.539$), perceived ease of use of CT with behavioural intention ($r = 0.543$), perceived usefulness of CT with behavioural intention ($r = 0.599$), and a moderate positive correlation between teachers' attitude and behavioural intention ($r = 0.312$). However, there was no statistically significant relationship between teachers' self-efficacy and behavioural intention. Based on these findings, it is recommended that teachers engage in practical training programs that will provide them with the pedagogical experience needed to develop their self-confidence in using CT concepts and practices to teach science. Besides that, teacher education programs need to introduce students to the knowledge of CT and provide learning experiences that can promote the development of teachers' interest, knowledge and efficacy in using CT to teach science content.

Keywords: *Computational thinking, perceptions, science instruction, teachers, intentions.*

“SOIL” IN BASIC EDUCATION IN SÃO PAULO, BRAZIL: STRATEGIES FOR SKILL DEVELOPMENT AND CONSTRUCTION OF GEOETHICAL VALUES

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Abstract

The study of the soil in formal education, through the planting of vegetables at school and in the community, involves, in general, the implementation of a school garden. The rational use of soil has taught in Basic Education in Brazil, in accordance with the National Common Curricular Base (BNCC), from the 2nd year of elementary school. However, for the development of specific skills that involve the interaction between reflective teaching, sustainability, problem solving, among other themes, there are few school projects that promote interdisciplinary strategies for such purposes. In carrying out this pedagogical action, it was necessary to develop methodologies that would integrate the student into the knowledge construction process, from the perspective of environmental education and geoethics. The project involves directly basic education students, 1st and 5th years of Elementary School level I, and 6th and 9th years of Elementary School level II, and indirectly with participation of high school students, as monitors, in activities in the garden and vegetable garden of School Prof. Francisco de Paula Conceição Junior, a state public school of São Paulo, Brazil. Based on the Sustainable Development Objective - SDG 15, of the 2030 Agenda, the project developed behavioral changes in students, based on the rational use of land, while developing a teaching methodology in which the student was the protagonist in the learning process. The construction of learning spaces, such as the school's vegetable garden and garden, and the soil laboratory, were strategies in the Interventions adopted in the form of practical, theoretical, and concluding classes.

Keywords: *Hybrid teaching, environ-mental education, agroecology, geoethics.*

COULD I BE MORE SATISFIED? THE RELATIONSHIP BETWEEN ONLINE LEARNING ACTIVITIES, SATISFACTION, AND AGREEABLENESS PERSONALITY TYPE

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Abstract

The ubiquity of online courses in learning programs indicates a significant trend in higher education. This trend has increased even further due to COVID-19 restrictions and social distancing requirements. As Techno-Pedagogical Learning Solutions (TPLS) are constantly being developed and improved, it is quite easy to adapt diverse learning paths for learners, based on their characteristics. Personality affects learners' preferences and thus their satisfaction with the learning process. This study examined the relationship between learners' personality traits (using Costa & McCrae's Big-Five model, which is the most widely accepted psychological model) and their satisfaction with various online learning activities. Questionnaires were used to measure personality traits and satisfaction of 123 university students enrolled in an innovative online academic course. In this paper, we focus on one of the five traits proposed by the Big Five model, the Agreeableness trait. This trait was found to be the most common trait in earlier studies, as well as in the current study. Moreover, Agreeableness was also found to be the most significant and important factor in students' adopting online learning. Significant correlations were found between learners who tend to Agreeableness and their satisfaction with the tested TPLS. In addition, three conceptual activity groups of TPLS were defined toward exploring learners' satisfaction. Following data processing, correlations were found between Agreeableness and the "Communication" and "Media" groups. These findings clearly indicate that personality plays a significant role in online learners' satisfaction, with emphasis on the Agreeableness trait. Therefore, when selecting learning activities for an online course, this trait should be considered. The current study seeks to suggest personalized online learning paths with activities that agreeable learners find satisfying. This proposed personalization has the potential to increase learners' satisfaction with online courses and therefore benefit the entire field of online learning design. The few previous studies that addressed these relationships did not test them empirically, hence, we seek to bridge this gap between theory and practice. The use of personality-based personalization can enable online learning to be adapted to a wide range of learners, thus increasing their satisfaction with the learning process, regardless of whether or not they like online learning.

Keywords: *Agreeableness trait, online learning activities, personality traits, personalization, satisfaction with online learning.*

TEACHERS' PERCEPTION OF DIGITAL GAME-BASED LEARNING IN EARLY CHILDHOOD EDUCATION IN RURAL SCHOOLS IN GHANA

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¹*Prof.*

Abstract

Digital game-based learning (DGBL) is increasingly being used as a teaching methodology to engage learners in the learning processes. The limited usage of digital game-based learning (DGBL) in rural education in Ghana has motivated this study. This study investigates the use of DGBL in early childhood education (ECE). Specifically, the study sought to examine rural teachers' perspectives of DGBL. The study adopted a quantitative data-gathering method. Questionnaires were administered to sixty-five (65) early childhood rural teachers and 62 responses were received. The analysis revealed that most rural teachers who do not employ DGBL in ECE classrooms do not have the prerequisite knowledge, and view DGBL as a distractive technique that hinders students learning. The consequences of these findings from the viewpoints of ECE rural teachers suggest that the government must support rural teachers in using DGBL through professional development programmes.

Keywords: *Digital game-based learning, computer devices, early childhood education, rural education, digital games.*

ORDINARY DIFFERENTIAL EQUATIONS IN A MATHEMATICAL MODELING CONTEXT

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Abstract

Many of the problems involving motion, growth rate, electricity, physical, biological phenomena, or that in the context of rate of variation are modeled with Ordinary Differential Equations (ODE). This content provides several relationships between Mathematics and other Sciences, offering opportunities for contextualization and creation of an environment conducive to learning. Researches indicates that the approach given in the teaching of ODE has a strictly algebraic approach, where students learn the methods of resolution without focusing on the behavior of the solution obtained, without performing a qualitative analysis of the problem that generated these equations. This paper aimed to present and analyze a teaching and learning experience that took place during the first classes of Applied Differential Equations in a Mathematics Teaching Degree course using the GeoGebra software as a pedagogical resource. The classes took place in the computer lab of the State University of Goiás, in the city of Goiás, with the participation of 10 students, and included activities designed from the perspective of Mathematical Modeling as a teaching strategy. The theoretical framework was based on reflections on Raymond Duval's Theory of Registers of Semiotic Representation, which considers that learning occurs when the individual performs articulations between the different representation registers of the same mathematical object. As a result, we found that mathematical modeling and GeoGebra provided a favorable environment for teaching and learning, as they allow the integration of theory and practice. The sequence of activities, prepared in a context in which the students experience, contributed to the students' involvement in their development.

Keywords: *Ordinary Differential Equations, Mathematical Modeling, degree course in Mathematics, GeoGebra, Teaching and Learning.*

VIRTUAL REALITY IN SPEECH SOUND DISORDERS THERAPY

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Abstract

Virtual Reality is considered to be a new way in which therapists can ensure the generalization of the acquired skills. In speech and language therapy field the use of virtual reality is commonly related with communication disorders. In our research virtual reality is supposed to improve the pronunciation skills by creating a more realistic perception of the referees denoted through the words used for training articulatory skills. In order to be able to ensure this virtual reality implementation Octoplay Application was used during our training pilot program. This application is designed to train articulatory skills and it has enclosed a module to create virtual reality and to build pronunciation skills in more realistic environments. In our research we try to identify in which way the use of virtual reality improves pronunciation skills of children with speech sound disorders. Three case studies are presented in this study and the impact of using Octoplay Application in speech and language therapy is highlighted. The students participated in 30 minutes' speech and language therapy session/week for two months. Results underlined that VR helps children remained focused in the training activities, improves their motivation to be involved in training activities aiming improving their articulatory abilities, facilitates enlarging children's vocabulary by enhancing semantic access. In conclusion, VR can be exploited in speech and language therapy field in order to help children improve their pronunciation skills. We also consider that new applications and softs in with VR models included are needed in order to help speech and language therapy process.

Keywords: *Speech sound disorders, Octoplay application, virtual reality, speech therapy, pronunciation skills.*

TEACH INDUSTRIAL DESIGN STUDENTS HOW TO MAKE PHYSICAL PRODUCTS

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Abstract

Companies mention a lot of difficulty in finding industrial design professionals capable of knowing how to carry out the complete process of designing physical products, which naturally implies physical prototyping and not just the creation of virtual 3D models. Currently, there are many higher education courses in industrial design that do not value or promote in their curricula the skills to make physical models or prototypes, in many cases, students and professors are satisfied with a graphic image of a digital 3D model as result, which is a huge mistake for who is teaching and learning to make three-dimensional and physical objects. This fact is due to the disinvestment of design schools in workshops equipped with manual and digital manufacturing tool, the need for large investments in equipment also implies associated costs of maintenance and technical support. In this context, schools choose to invest in computers and CAD software which, although are fundamental equipment in carrying out an industrial design project and an important step in the prototyping process itself. How can we improve the teaching process in industrial design project so that students can idealize, develop, and prototype physical products with high quality standards? The Industrial Design Project 2 class wants that students develop an inspirational connection with the best international references in industrial design. Interior lighting is one of the areas where we can find companies with a design driven identity. In this scenario, students are challenged to design a table lamp for indoor spaces for one of these brands, using a technical kit consisting of an LED strip, simulating a collaboration between designer, producer, and editor. To carry out this project and to find answers to the question posed, a method consisting of four phases was applied: project preparation; research and definition of the theme; concept development; and final model. Each of these phases is made up of tasks that, when carried out, provide outputs that allow the project to advance to the next phase. The results obtained were prototypes of high aesthetic, technical and functional quality and with low-cost materialization values easily supported by the students. Yes, it is possible to idealize, design and prototype high quality physical products, providing students with personal and professional fulfilment and increasing their technical and research skills, as well as the ability to know how to relate digital and analogue tools.

Keywords: *Industrial design education, process and outcome, physical prototyping.*

RESEARCH PATHS AND FUTURE TRENDS OF ONLINE TEACHING QUALITY IN HIGHER EDUCATION: A BIBLIOMETRIC AND CONTENT ANALYSIS

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Abstract

Online teaching reshapes the traditional classroom teaching by shifting instructions online, providing remote and virtual learning, and enriching and integrating electronic resources and activities into academic programs. Due to the influence of the coronavirus pandemic, online teaching has become a common distance education tool and widely used in higher education. Despite its universal adoption, the effect of online teaching has raised many questions, resulting in a variety of studies conducted for addressing the quality issue of online teaching. To systematically identify main findings, explore challenging issues and reveal research gaps and future trends in the field of online teaching quality, this study conducts a bibliometric and content analysis based on 477 articles from the Web of Science Core Collection published from 2000 to 2021. With the analysis of keyword co-occurrence and bibliographic coupling, 7 thematic clusters and main research contributions are identified. With the analysis of co-citation network, 5 theoretical clusters together with 13 widely used theories in online teaching quality research are explored. The relationships between the research themes and theoretical roots are then clarified and visualized in a social relation diagram, providing scholars with clear research paths which link the future studies and existing knowledge. The content analysis is applied to reveal gaps and key research issues for future study. The outcome of the study provides a research framework that clarifies the variety of research avenues for further developing the field of online teaching quality.

Keywords: *Online teaching quality, research path, bibliometric analysis, content analysis.*

DESIGNING RUBRICS TO ASSESS PEDAGOGICAL KNOWLEDGE OF PROSPECTIVES TEACHERS

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Abstract

This study is encompassed within a two-year project that was commissioned by the Chilean Ministry of Education and executed by the University of Concepción. This initiative concerned the elaboration of open questions stemming from cases studies and the rubrics for them to be corrected, amongst other products. The case was conceived as an assessment resource with the purpose of linking the theoretical insights acquired by students-teachers, throughout their undergraduate training process, with their future professional development and professional learning. The open questions triggered the analysis of the outlined case and demanded from respondents the association between theory and practice through a reflective process of interpretation and re-interpretation, accessing the possible points of view that guide decisions of those who are represented. Thereby, the rubrics should provide quality assessment information on the students' capacity to demonstrate their abilities to pose hypotheses and questions, to infer meanings and implicit information, to establish generalizations, to criticize models and strategies, to generate alternative didactics solutions. This paper reports on this stage of the project, namely, the devising of rubrics aimed at the assessment of the general pedagogical knowledge for prospective teachers. Two main methods were applied, i) Documental analysis, which had at its core the review of national standards that guide teacher training programmes. In this process, specific indicators were examined. This procedure came up with a categorization that comprised the content, the ability examined, and the theoretical difficulty level. ii) Expert panels, which congregated together higher education teachers and schoolteachers. These professionals were subdivided into three different groups for: writing, reviewing and external academics judges within an evolving process of reflection and improvement of the elaborated rubrics. The study's results state that, once determining content validity and construct validity, four interrelated notions emerged that should be the constituent elements within each rubric description level. This means, a descriptor should make reference to: the highest ability demonstrated within the answer, what actions might serve as evidence of those ability has been achieved, the core content which reflects the student's perspective or stance from which they elaborate their answer, what information from the case analysed was used to articulate their responses. This, in turn, allowed researchers to develop a writing scheme by integrating these four defined parameters. This approach was used as a theoretical frame in training assessors and in the design of all set of rubrics involved within the project.

Keywords: *Rubric, pedagogical knowledge, descriptor's components.*

TECHNOSTRESS IN DISTANCE LEARNING: THE POSITIVE LEARN PROJECT

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Abstract

During the recent Covid-19 pandemic, school education has massively shifted to online-only learning. One of the key lessons learned from the pandemic was that many teachers and students were unable to deal with new technologies in a healthy way, resulting in various psychological effects such as anxiety and stress. Technostress in online education refers to the negative effects of using technology on a person's well-being, including physical and mental health, work-life balance, and overall quality of life. It is a phenomenon that affects both teachers and students. Technostress can arise from a variety of sources, such as: difficulty of adapting to new digital platforms and tools, information overload, technical problems and feelings of isolation. This can lead to decreased motivation, burnout, and negative impacts on mental and emotional well-being, and negatively impact learning outcomes and performance. Managing this digital transformation requires developing digital readiness, resilience and capacity. There is a need for profound overhauls and changes that address wellbeing and mental health. The POSITIVE LEARN ("Distance

learning positification: technostress relief and wellbeing”) project starts against this background. POSITIVE LEARN aims to empower school professionals and modernise teacher education through curriculum innovation to meet the demands of the emerging online-first learning paradigm. The focus of the present paper is twofold. The first objective is to investigate how technostress is affecting Distance Learning in schools, its causes and effects. The second objective is to present the goals of the POSITIVE LEARN project and to report on early research findings.

Keywords: *School, online education, emergency remote teaching, technostress.*

JUMPING OUT OF THE COMFORT ZONE: PROMOTING COLLABORATIVE LEARNING THROUGH MUSIC AND MOVEMENT COURSE IN HIGHER EDUCATION

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Abstract

This presentation investigates the benefits and challenges of a collaborative learning (CL) model implemented within a music and movement course in higher education in Macau, China. CL is an educational approach that involves groups of learners working collaboratively to solve a problem, complete a task, or create a project (Laal & Laal, 2012). This university-level music and movement course is structured to promote collaborative learning through small group creative projects and group demonstrations. In addition to the musical and pedagogical skillsets, this course aims at developing students' 21st century learning skills: critical thinking, communication, collaboration, and creative thinking. Research has shown that East Asian students usually tend to learn passively yet low participation is found to be only confined to classrooms as students are generally talkative outside the classroom (Tani, 2005). To engage students through active learning and experience (Dewey, 1938), a pre and post-survey were employed to obtain students' feedback on collaborative learning. Participants (n=71) were non-music major students enrolled in this music and movement course. Results revealed that the benefit of the CL encourages the 4Cs of 21st century skills, self-management, leadership skills, knowledge acquisition, social interaction, and so on. Yet, there are also challenges and barriers to implement this model in a classroom where passive learning is ingrained in the culture (Tani, 2005). It is to recommend collaborative learning model to be used more often as a pedagogic innovation to transform the current learning culture in the higher education in East Asia.

Keywords: *Collaborative learning, music, movement, 4Cs, pedagogic innovation.*

CULTIVATING COLLABORATIVE ONLINE INTERNATIONAL LEARNING (COIL) EXPERIENCES FOR UNDERGRADUATE HEALTH EDUCATORS IN THE CLASSROOM

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Abstract

Collaborative Online International Learning (COIL) is a globally networked classroom that prepares students to understand the interconnectedness of the world. Previous studies have found that US students need to learn about the world, languages, and other current events compared to their counterparts. Notably, this becomes concerning for students majoring in health fields, where there is a need for culturally competent health educators to aid in improving health outcomes, providing quality care, and contributing to eliminating racial and ethnic health disparities. This study explains an undergraduate COIL experience created by two institutions within the United States and The Netherlands. The study seeks to explain the emergence of the institutional partnership, course content, digital technologies, and students' perspectives on the COIL experience. Institutional partnerships were created by two professors from the United States and The Netherlands. They created a COIL course sustained for the past

five years. Students are paired with individuals from the opposite country to collaborate on prominent health issues impacting our global world. Over the past five years, topics have included lifestyle interventions, COVID-19 impacts, mental health, physical activity, and nutrition. Students came together virtually to exchange ideas using digital technologies, like Zoom, Skype, What's App, Facebook Calling, Instagram Live, and other unique platforms. Blackboard was used as the Learning Management System (LMS), where the structured tasks, assignments, and materials were outlined. The innovative COIL project aimed to understand and appreciate cultural differences, acquire digital communication skills, and build skills to attain cultural competence. A qualitative thematic analysis was used to ascertain participants' perspectives regarding the effectiveness of the COIL experience and the impacts on their student learning. Students completed online open-ended questionnaires related to their global learning experiences. Results yielded three categories and eight themes. *Category 1: Impacts on Student Learning* had three emerging themes (1) Cultural Immersion, (2) Global Problem-Solving, and (3) Diverse Perspectives. *Category 2: COIL Experiences* identified two emergent themes of (1) New Friendships and (2) Learning a New Language. *Category 3: Tools* had three emergent themes (1) Time Management, (2) Openness, and (3) Communication. COIL affords all students the experience of studying abroad without leaving the classroom and without the financial burden that prohibits many students from participating in traditional international experiences. COIL initiatives are essential for those seeking degrees in the health field because their future careers will consist of creating health initiatives and programs face-to-face and virtually.

Keywords: *Collaborative online international learning, health educators, technology, and cultural competency.*

GAMIFICATION IN THE PORTUGUESE LANGUAGE SUBJECT: A REVIEW OF TWO E-LEARNING PLATFORMS

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Abstract

The study presented in this paper is part of a master's investigation project that aims to design a gamified interface to engage young students with school literature. Recognizing the importance of reading in human development and the urgency of addressing the progressive disinterest of young people in this activity, associated with technological progression and reduced contact with books, it becomes relevant to explore the relation that the study of school literature currently has with the available learning technologies. The educational reality during the pandemic also highlighted the importance and convenience of e-learning platforms that support distance learning and self-study. These e-learning platforms often use multimedia and gamification strategies that, when well designed, demonstrate to be able to increase the quality, effectiveness, and motivation of students in learning processes. Thus, this study aims to identify and understand the current application of gamification in digital learning contexts, specifically in school literature, by analyzing gamified resources present in the Portuguese language discipline of two educational digital platforms from the two main publishing groups in Portugal: Escola Virtual, from Porto Editora, and Aula Digital, from LeYa. The methodology adopted was case-study-based research. A literature review in the fields of e-learning and gamification was made, to select the criteria for the case studies analysis. The findings indicate that the implementation of gamification in digital educational resources, particularly in the school subject under examination of 7th, 8th and 9th grade, remains limited in terms of variety, and is primarily focused on quizzes. The few remaining resources fall under the category of serious games and seem to provide a more engaging experience by incorporating multiple game elements. In future studies, it is intended to understand this resources efficiency for students and teachers through empirical research.

Keywords: *Gamification, reading, e-learning, school literature, Portuguese language.*

ABILITY GROUPING AND INCLUSIVE PRACTICE IN FOREIGN LANGUAGE TEACHING

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Abstract

There is no doubt that inclusive education has become a global agenda, an important topic discussed at international level, and a political objective responding to the problems and challenges of the modern world, such as multiculturalism, ever growing social inequality across the world as well as within countries. Inclusive education has also become a generally accepted and closely monitored criteria for assessing the quality of educational systems around the globe. In the context of these facts, it is important to analyse in more depth the problems of segregation in education and ability grouping at the level of both the education system and the school. Researchers are trying to find an answer to the question whether ability grouping really brings benefits to all children or only to individuals. In the paper, the authors reflect on the extent to which ability grouping of children can be considered as a strategy for inclusive practice. Against the background of existing research findings, they analyse the possibilities and models of grouping children in the context of foreign language teaching in primary education. They conclude with a recommendation to strengthen differentiated teaching at the classroom level, respecting not only the level of foreign language proficiency but also other characteristics of the pupils. They also present the possibility of creating specialised programmes beyond the normal teaching time for children who are significantly ahead. At the same time, they point to the risks of creating elite classes or fixed elite groups in relation to the social and learning climate of the school and the broader concept of social inclusion. The authors' contribution responds to the trend of segregation in education in Slovakia and provides impulses for the development of inclusive school policy, culture, and practice.

Keywords: *Inclusive education, ability grouping, foreign language teaching, primary education, segregation in education.*

CREATIVE THINKING OF CHILDREN WITH ADHD AND THEIR PERFORMANCE IN LANGUAGE AND MATHEMATICS

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Abstract

The purpose of this research is to study the relationship between the creative thinking of children with ADHD and their performance in Language and Mathematics. That is, we sought to explore the creative possibilities in speech and drawing of children with ADHD and the relationship of the individual factors of their creative thinking such as fluency, flexibility, originality, the abstract form of the titles, etc. with the performance of these children in selected factors in language and mathematics such as reading proficiency, reading comprehension, calculations, solving mathematical problems, etc. The sample of our study was a total of 13 primary school children from the 5th and 6th grade (9 boys and 4 girls) attending schools in the city of Rethymno in Crete, Greece. All children had been diagnosed with ADHD. For the collection of research data, the Test Torrance of Creative Thinking (TTCT, 1998, Verbal and Figural) was used for creative thinking, the Reading Test Test-A (Panteliadou & Antoniou, 2007) for language while the Psychometric criterion of Mathematical Proficiency for children and adolescents (Barbas, Vermeoulen, Kioseoglou, & Menexes, 2008) for mathematics. The SPSS22 statistical program and the non-parametric Spearman rho test were used to analyze the collected data. According the research findings, there is a positive statistically significant relationship between the most factors of figural creative thinking of children with ADHD and their performance in mathematics. The language performance of children with ADHD seemed to have a positive statistically significant correlation only with two factors of figural scale (fluency and originality) of the TTCT. We hope that the results of our research, although based on a relatively small sample, will contribute to the understanding and study of the special characteristics of children with ADHD and their education.

Keywords: *Creativity, ADHD, school performance, creative thinking.*

TECHNOLOGY INTEGRATION IN GRADE 10 LIFE SCIENCES TEACHING AND LEARNING

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Abstract

This study explored the role of technology in grade 10 Life Sciences teaching and learning. The study adopted embedded mixed method design. The empirical investigation involved purposively selected grade 10 Life Sciences teachers and learners as participants. Quantitative data was collected through the administration of a questionnaire. Qualitative data was collected through classroom observations. The learners demonstrated significant improvement in academic performance as a result of technology integration in Life Sciences teaching and learning. This improvement underscores the need for coherent utilization of technological tools to be embraced as an effective means to enhance learner academic performance in science teaching and learning. The teachers employed various pedagogical strategies when integrating technology in Life Sciences teaching and learning. However, technology integration in Life Sciences teaching and learning posed instructional challenges to teachers. There is a crucial need to enhance teacher professional competence on technology integration in science teaching and learning. Theoretical implications for pedagogic innovation are discussed.

Keywords: *Life Sciences, technology integration, academic performance.*

STORYTELLING AS AN INTERDISCIPLINARY STRATEGY IN GEOSCIENCE EDUCATION

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Abstract

Education can change the world. It influences our reasoning and is preponderant in the development of competencies. It is recognized that school teachers have difficulty involving and motivating students to learn about different complex topics, namely in Geoscience Education. It is up to the teachers to be creative and innovative. They must be able to implement diversified strategies and resources that motivate and actively involve the students in their learning process. Studies reveal that storytelling is an effective, meaningful, enjoyable, and creative way to enhance teaching and promote learning. Thus, storytelling is a powerful education strategy that should be promoted in science teaching. Telling stories makes us human, this is how we understand the world and our experiences. Good teachers tell well-known stories. Great teachers tell their own creative stories. This study aims to verify whether storytelling enhances the curiosity, motivation, and meaningful learning of students in Geosciences. The present study used a convenient sample of students (n=18) from a K7 class (range 12-14 age) who attended a Portuguese public school. The storytelling strategy was framed in an interdisciplinary approach in discussing subjects "A Woman in Science" and "Sustainable Development" within Natural Sciences and Education for Citizenship. Playful-sensory storytelling - "A story with Science", was presented to the students resorting to an audio-visual video. The constructed narrative challenged the students' imagination in a "Journey through Time and Earth". Mary Anning, the renowned "palaeontologist fossil hunter", traced the common thread that captivated the interest and engagement of pupils, revealing her work and reflection on the sustainable development of humanity. The assessment instrument applied at the end of the intervention was a questionnaire consisting of three open-ended questions. The content analysis of the three questions showed that the storytelling contributed to meaningful learning, motivation, and curiosity of students in learning Geosciences. Through the teacher's naturalistic observation, the involvement and participation of students in discussions were active. The study allows us to conclude that storytelling is a strategy to be considered in teaching Geosciences to promote the engagement and commitment of pupils.

Keywords: *Innovation, middle school, motivational complement, palaeontology, playful-sensory activity.*

A SYSTEMATIC LITERATURE REVIEW ON MULTICULTURAL MENTORING RESEARCH FOR STUDENTS WITH MIGRANT BACKGROUNDS

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Abstract

This study aims to systematically analyze research related to multicultural mentoring in Korea conducted for the purpose of supporting students from migrant backgrounds and present development directions based on this. For this study, basic information on multicultural mentoring research was identified, and the main topics and characteristics of the research were analyzed. As a result of reviewing the abstract and text of the journal published in the web database by January 2023, 28 documents were finally selected. The collected papers were analyzed in four categories: research trend analysis, subject-specific characteristics, effects, and activation factor analysis. The results of the study are as follows. First, research related to multicultural mentoring began in 2009 and is steadily progressing, but it is on the decline. Qualitative research is the most common, and research materials were accumulated in the order of program case analysis and quantitative research. Second, the research topic is about the experiences of participants such as mentors, mentees, and managers, and growth, change, and competency development in multicultural mentoring were dealt with. The effect of multicultural mentoring shows positive results in the improvement of mentee's achievement and confidence, and the multicultural attitude and attitude of attitude and attitude. As a limitation of multicultural mentoring, the method focused on subject learning was mentioned. Third, supervision provision for mentors, mentor education, and systematic support systems were proposed as the activation requirements for multicultural mentoring. Based on these research results, the direction for multicultural mentoring to be developed as an educational activity was presented.

***Keywords** Multicultural mentoring, mentoring, research trends, systematic literature review.*

DIVEMIX: PERCEPTIONS OF MIXED REALITY IN SECONDARY EDUCATION IN SPAIN

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Abstract

The growth and rapid development of virtual reality in the last decade has made its inclusion in classrooms of any stage of education to become a latent and patent reality. With the passing of time, virtual reality resulted in the creation of an augmented reality, which further advanced the immersive learning proposed by its predecessor. With technological growth, further advances in this technology were made, to what is known today as mixed reality, yet another step in the immersion of learning. The DIVEMIX project intends to bring to the table the transfer of the creation of materials based on this technology, to further develop the curriculum of the secondary education stage. Focusing our attention on the use of MR in the context of Biology and Geology teaching, and considering the current regulations in Spain as a frame of reference and starting point, we present the perceptions of pre-service secondary education teachers on the usability of this resource for teaching class content. The main result obtained was the lack of training and resources to be able to implement innovative actions in the classroom with MR. It was also determined that gender was not an element that determined the differences associated with the possession or not of knowledge that would allow teachers to use it in the classroom.

***Keywords:** Mixed reality, teacher training, pre-service teachers, secondary education.*

MOOCs CREATION AND MANAGEMENT METHODS: EXPLORING THE DESIGN APPROACH OF A MOOC ON EUROPEAN HISTORY AND CULTURE

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Abstract

Since their first appearance and diffusion, MOOCs have steadily been integrated into Higher Education programs as part of either blended learning or fully distance learning courses. In this context, MOOC's pedagogical approach, development, and planning strategies have often been central to discussions among MOOC creators and researchers. Not only the setting up of a targeted educational method is needed to allow learners to reach their learning goals and make their distance learning experience valuable but also attention to the collaboration between educators and learning designers during the content creation process represents a pivotal -although sometimes contrasting- element during the MOOC's production process. Recently the KU Leuven's group of European Studies was involved in the development of three content-wise interlinked MOOCs created with the primary goal of providing students with the right tools and knowledge to enhance their expertise in different fields of European Studies. Built on the long-standing KU Leuven's experience in developing humanities-oriented MOOCs, this set of interlinked online courses represented one of the very first KU Leuven's efforts in delivering online courses that content-wise aim at supporting each other. Given the high involvement of educators, it also represents a valuable research case study due to the considerable effort in terms of design planning and coordination/management. Using as a primary example the results of the MOOC on European History, Society, and Culture, created with the support of the KU Leuven Faculty of Arts and included in the aforementioned educational framework, this paper aims at discussing the choices and challenges behind its development, on the one hand. On the other hand, by highlighting the management and learning design strategies used to support the creation of the MOOC and to ensure its pedagogical alignment within the integrated three MOOCs program, it intends to offer new perspectives in the context of content creation management and instructors/educators' coordination, highlighting the dynamics of the relationship between the learning designers and educators.

Keywords: *Massive Online Open Course (MOOC), e-teaching, teachers, learning designers, education.*

CHANGES OF TEACHER-STUDENT/STUDENTS COMMUNICATION IN STUDY PROCESS: CONTEXT OF REMOTE TEACHING/LEARNING

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Abstract

The global Covid-19 pandemic of 2020-2021 has brought about changes in all areas of our lives, including the higher education system. The global and very rapid transition to distance learning, the development and development of distance learning courses, the review of study schedules are just a small list of activities that needed to be done to manage the unusual situation and ensure the quality of studies. No less important, as it turned out later, were not only the external changes in the organization of the study process and their communication in the organization, but also the changes in the communication itself among all participants in the study process, especially among students and teachers. This is clearly confirmed by the qualitative and quantitative research conducted in our institution in 2020 and 2021, which revealed how students and teachers assessed the quality of distance learning, what challenges they faced and how they overcame/did not overcome them, what skills and competencies enabled them, in both teachers and students, not only to adapt to all changes, but also to experience success even in such a critical situation. Research has also shown what changes in communication have been relevant and have led to easier transitions and greater success at different stages of study. It also reaffirmed the importance of information in communication, in particular its quantity, accuracy, relevance to specific decisions and so on. These studies and the conclusions drawn from them and the links found would be presented at the article

Keywords: *Communication, information, communication in education, self-directed learning competencies, distance learning.*

MULTICULTURAL PERSPECTIVES OF L2 LEARNING

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Abstract

One of the significant issues in the context of migration is learning the language of the country of arrival as a vehicle for inclusion and integration. This topic has been extensively discussed in several studies, and much data has been collected on adult language erosion due to migration (Wong Fillmore, 1991) or L2 learning difficulties (Liddicoat & Taylor-Leech, 2014). It has been observed that the interaction and interdependence between L1 and L2 can be paramount in determining migrants' language choices. In addition, a rapid process of learning and acquisition of the target language could facilitate encounters with different cultures, encouraging integration and inclusion. During this process, two variables come into play that can make a difference in L2 learning: motivation to pass the B1 citizenship exam for reference documentation (according to Italian regulations) and anxiety about not being up to the task of adequately learning the language to foster full autonomy. Based on these premises, the research objectives were: - to measure the level of motivation toward learning Italian and toward Italians; - measure the level of anxiety within Italian L2 classes. The type of research was purely quantitative, and the data matrix allowed the analysis tool (histogram) to calculate individual and cumulative frequencies for a range of cells and classes of data. The research involved the online administration of a questionnaire through google forms. Participants answered questions within the attitudinal/motivational test battery (Gardner, 1985) with a 7-point response mode on a Likert scale (strongly disagree to agree strongly). A total of 30 migrants (15 females, 14 males, 1 non-binary) attending two Italian L2 classes in the city of Palermo (Italy) with an age range of 20-50 years participated in the online survey. The main results show that most participants expressed a positive attitude toward learning Italian and Italians with a high degree of interest in foreign languages; a moderate level of embarrassment or anxiety within the classes emerged. In conclusion, as teachers, trainers, and pedagogists, it would be appropriate to mitigate and facilitate this learning process by promoting a serene and non-judgmental environment to foster language learning from a perspective of active listening and intercultural empathy. Thus, try to intervene so that the acquisition of the new vocabulary is seen as a tool for autonomy in the migrants' decision-making processes and not as a building block to obtain the documents required by current regulations, and thus a mutual bond that can ensure mastery of the second language combined with personal skills.

Keywords: *Attitudes, language L2, linguistic inclusion, migrants, motivation.*

USING IMMERSIVE TECHNOLOGIES TO ENHANCE STUDENT LEARNING OUTCOMES IN CLINICAL SCIENCES EDUCATION AND TRAINING

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Abstract

In recent years, the development of immersive technologies has progressed significantly, becoming more accessible and emerging as a fundamental change agent in how we will engage across all levels of society. These technologies are already being used in the workplace for various functions and for leisure and everyday life. They are recognized as the most disruptive technology of the next decade, with healthcare and education being amongst the most disrupted fields. Emerging research shows that Virtual Reality (VR) offers potential advantages for educational simulation and therapeutic intervention because of its ability to capture and recreate content and interactions in virtual environments. Through three-dimensional rendering of environments that incorporates visual, auditory, tactile and/or kinesthetic elements, VR presents unique opportunities to improve educational outcomes through increased engagement, enriched learning experiences and improved understanding, and increased knowledge retention. Given these potential benefits and inevitable proliferation of VR, particularly in highly experiential health-related fields with clinical components, we undertook to introduce immersive technologies into the speech-language pathology program curriculum and collect data on perceived impact on student learning. This study outlines the activities undertaken and examines aspects of integrating immersive technologies into an educational curriculum such as faculty and student attitudes on the usefulness of these technologies within a particular

field, perceptions on the effectiveness of immersive technologies in increasing educational and training outcomes, availability and access to immersive technologies and software that meet defined educational needs, and adaptability of these technologies to meet specific learner and educational considerations. Ultimately, the purpose of this study is to spur discussion and exploration of the use of immersive technologies, particularly VR, across a variety of disciplines to advance student learning outcomes.

Keywords: *Innovation, technology, immersive technologies, virtual reality, clinical sciences.*

BEHAVIOURAL DISORDERS AND THE LAW: THE LEGAL SITUATION OF PUPILS WITH BEHAVIOURAL PROBLEMS IN THE INTERNATIONAL CONTEXT - WITH PARTICULAR REFERENCE TO DISCIPLINARY ISSUES

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Abstract

The focus of our interdisciplinary research is the situation of students with behavioural problems in the public education system - legal regulation - starting from the right to an adequate education as a starting point from the child rights approach (Stein, 2019). In the first phase of the research, we examined how this aspect and requirement is reflected in various international legal documents, and to what extent authors and research reflect each other in the discourse of international law and education and disability studies, i.e. to what extent an inter- and multidisciplinary approach prevails. In this presentation, we will show how the rights articulated in legal documents relate to, and are specifically implemented in relation to, inclusive educational opportunities for students with behavioural disabilities, including their health care, as well as experiences of criminalisation in the educational system (Gillies, 2013). Our key question is whether the education system for typically developing learners can actually achieve inclusion for learners with behavioural problems? In my research, I intend to use a mixed methodology, qualitative and quantitative methods (Creswell & Hirose, 2019). In the qualitative research part, I plan to use hermeneutic legal analysis, document analysis and case studies, as well as quantitative methods to conduct a secondary analysis of existing research findings and research databases, and to analyse my own data. I intend to carry out the research in two research years, in partly overlapping research phases, using mixed methods (triangulation). The empirical part of the research will be carried out primarily in the Hungarian school system among pupils in grades 3-8, their parents, teachers working in these grades and heads of institutions. I plan to reach teachers through the heads of the institutions concerned, using existing databases. In the first part of the research, I plan to reach teachers and parents through an online questionnaire. The results of this research will be presented at the 2023 conference. Based on these results, I will develop the criteria for the interviews with the heads of the institutions, teachers and pupils.

Keywords: *Human rights, behaviour disorder, school law.*

IMPROVING STEM ACCESS WITH A COLLABORATIVE 3D/VR DESIGN LAB

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Abstract

To evaluate a collaborative 3D/VR Lab established to improve STEM access and math skills at a Midwest US secondary school, three data sources were reviewed and analyzed. STEM access (course enrollment) improved early and consistently over five years but math achievement (STAR assessment) initially improved but did not reach the goal. The 3D/VR Lab struggled due to COVID closures.

Keywords: *Virtual reality, connected learning, math, STEM, motivation.*

THE CONTRIBUTION OF PROJECT BASED-LEARNING IN THE DEVELOPMENT OF STUDENTS' SKILLS IN SENIOR HIGH SCHOOL

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Abstract

This qualitative research reports on the contribution of project based-learning as an evaluation tool for the development of student's skills in the first grade of Senior High School. The aim of this study is to investigate the attitude of teachers' sample towards the use of project in the educational process. The participants are secondary teachers from two school environments (one standard provincial and one experimental High School in urban area). The research questions are structured through observation (participant and non-participant) and are examined through ten semi-structured interviews from the teachers that were mentioned above. The research empirical findings point out the positive attitude of the sample teachers concerning the use of project in school environment which connected with the positive meaning of method, the upgrading of educational process, the connection between project and philological subjects, the connection between project and modern Greek, the implementation of project, the comparison between project and traditional teaching, the expectations about the project and the skills which are fostered through the project. In conclusion, this study includes the investigators' conclusion regarding the contribution of the project as an alternative and authentic evaluation in contemporary teaching environments.

Keywords: *Teacher education, evaluation tool, skills.*

ARTIFICIAL INTELLIGENCE CHATBOTS – A HELP OR HINDRANCE TO COMPUTER SCIENCE EDUCATION

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Abstract

Recent developments in artificial intelligence (AI) chatbot systems have gained significant coverage over the past few months across all subject disciplines and educational levels. Emergent technologies such as Chat GPT from Microsoft and BARD from Google have demonstrated extraordinary use of machine learning to enable detailed responses with high-utility for simple text-based queries. Students at all levels are broadly aware of the significance of such systems in providing an apparently easy route to homework solutions, with associated concerns from educators. While many consider such systems to be a threat to educational practices, others have embraced the technology, exploring these capabilities to support and enhance learning and development. The work detailed in this paper considers the use of Chat GPT in suggesting solutions to simple programming problems, typically used when leaning to develop software. Problem specifications from current programming assignments in year 1 of an undergraduate computing degree program are considered in the context of this system, over a range of input fragments and compared against utility of output (functionality and correctness of generated code). Responses generated from Chat GPT for a problem specification are considered alongside current student work and submitted to a blind assessment process. Results indicate that for simple problems, a significant proportion of code generated through Chat GP produces a fairly high utility, although amendments are required in all cases to enable testing. In many cases, text directly lifted from a problem specification provided enough material for Chat GPT to generate a reasonable response, although increased complexity resulted in reduced utility. The paper provides an overview analysis of initial experimentation and results, focusing specifically on how such systems could potentially benefit the novice programmer.

Keywords: *Generative artificial intelligence, programming.*

VALID BUT NOT (TOO) RELIABLE? DISCRIMINATING THE POTENTIAL OF CHATGPT WITHIN HIGHER EDUCATION

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Abstract

“Education is a complex concept that has been the subject of ongoing discussion and exploration by scholars and educators alike”. Who could disagree with this sentence? As clear as empty but, nevertheless, plausible and convenient. Due to the title of this communication, none would be surprised if we, the authors, confess that these quoted first words were written by the AI of the moment, ChatGPT, when we kindly ask for a 400 word abstract regarding a congress about education. The rest, as Mario Bunge maybe would have said, is just -at the very best- mere literature. With the increased use of the platform created by OpenAI, raising voices expressed their concerns about its lack of accuracy. Far from an appropriate way of imitating smooth human communication, the main problem relies in the inability to guarantee quality results. In this sense, a pilot study was designed within University of Castilla-La Mancha (UCLM, Spain) in which different definitions of education were presented to would-be social educators and would be teachers in two different faculties of education. These definitions presented different levels of complexity and precision (from an eight-year-old child to a full professor). In addition, the researchers used artificial intelligence to mimic, through specific and direct commands, the same level of complexity and precision. Subsequently, all the definitions were randomly arranged in a document in which the sample (n = 130) had to rate on a Likert-type scale their degree of agreement and the level of complexity they considered for each definition. After this first stage, they were also given a second record sheet in which they were informed that one or more -but not all- of the previous definitions had been elaborated by an artificial intelligence, requiring them to indicate, for each one, whether they considered that a person was behind it or not. The results, currently being coded through the SPSS, are likely to contrast with what ChatGPT itself -surprisingly with no further evidence- predicts: “The results of the study indicated that the students had a moderate agreement with definitions made by people and a low agreement with definitions made by artificial intelligence. Additionally, the students perceived the definitions made by people to be more complex than the definitions made by artificial intelligence”. We -the authors- are eager to corroborate whether the title of this communication should have been phrased as a solid statement or not.

Keywords: *Higher education, artificial intelligence, AI, ICT, theory of education.*

EXPERIENTIAL PEDAGOGICAL MODEL FOR TEACHING MANAGEMENT AND LEADERSHIP IN HIGHER EDUCATION

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Abstract

This article presents an action-oriented case study on how the experiential learning theory (Kolb 1984) can be applied in the management and leadership education at the undergraduate and graduate level. We build an experiential pedagogical model for the higher education context for teaching the management and leadership in the knowledge economy. The experiential pedagogical model combines three different courses, where the advanced students act as leaders for those who are in an earlier stage of their studies. By using empirical data from six different implementations of this experiential pedagogical model (in 2020–2023), we demonstrate its implementation practices and evaluate its usefulness.

Keywords: *Kolb's experiential learning theory, higher education, leadership education, pedagogical model, peer learning.*

GAMIFICATION APP “EXPRÉSATE CON CIENCIA” BOOSTS UTILITY AND ACCEPTANCE FOR HEALTH SCIENCE STUDENTS

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Abstract

The utilization of pertinent scientific terminology holds significant value for university students, as it facilitates the dissemination of their ideas and could potentially augment their prospects for employment. Over the past few years, the level of knowledge of specific terminology has decreased among university students, making them difficult to learn from academic texts. In that context, an educational app (“Exprésate con ciencia”) was been carried out to improve knowledge of scientific terminology through gamification between university students. Gamification has been shown to increase engagement, motivation, and learning outcomes, making it a powerful tool in educational contexts. This work evaluates the grade of acceptance and utility of the app “Exprésate con ciencia” among university students of the University of Granada, Spain after its use. Five types of scores were employed to determine the grade of satisfaction and utility of the app (“generally useful”, “its use is better than paper-based applications”, “easy using”, “innovative” and “motivating”). Data were recorded through a poll after the use of the application. The students were classified according to the university degree they were studying, and the relationship between the degree and the scores was determined using an unsupervised classification algorithm (clustering). These findings divided the population studied among two clusters. One of them was formed by students who coursed health science-related degrees, such as Pharmacy, Nutrition and Dietetics, Medicine, Physiotherapy and Psychology degree, while the other cluster was integrated by science-related degrees like Chemistry, Biology, Biotechnology and Food Science and Technology degree. The present results show that the students belonging to the cluster of health science-related degrees exhibited higher values of the parameters related to the usefulness and acceptance of the app compared with the students of science-related degrees. This fact could be associated with these areas of scientific knowledge requiring the use of specific terminology more frequently compared to degrees related to sciences. In conclusion, the degree of evaluation and usefulness of the "Exprésate con ciencia" application depended on the users' field of study.

Keywords: *Gamification, learning, university students, scientific terminology, health science students.*

EXPLORING THE CHANGE TO REMOTE LEARNING IN NEPAL

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Abstract

The transition to remote learning in Nepal presented formidable challenges especially for rural students. To explore and document their experiences a pilot study was conducted. Interviews of seven students from several remote villages were collected and coded to capture frequency and impact of common themes. As expected, device and Internet access were key limitations, followed by minimal teacher and platform support. Surprising findings included innovative technology use, increased reliance on self and friends, and inspirational determination.

Keywords: *Remote learning, collaboration, social, technology, equity.*

IDENTIFYING PATTERNS OF TACTILE EXPLORATORY BEHAVIORS IN CHILDREN WITH VISION IMPAIRMENT AND MULTIPLE DISABILITIES

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Abstract

The research aim of the present study is to identify and describe patterns regarding tactile exploratory behaviors of children with vision impairment and multiple disabilities during active exploration of small 3D objects in terms of their shape. The participants of the study consisted of seventeen children who had vision impairment and multiple disabilities. Their age range was from 5 to 7 years old, and they were all enrolled in a variety of early intervention and special education programs.

The authors observed and recorded the children's tactile behaviors while the latter were exploring actively a series of small 3-D objects in order to trace potential patterns of haptic exploration. For this, the authors developed an observation protocol which was consisted of the following three activities: a. explore and describe shape and properties of spherical items by touch, b. explore and describe shape and properties of cubical items by touch, and c. match objects in terms of their shape. All activities were video recorded after teachers' and parents' consent and the analysis of the data was based on two tools: a. VegasPro 13.0 software to analyze the videos in a quantifiable manner, and b. Atlas.ti to elaborate relevant data from a qualitative point of view. Based on the results, it seemed that some of the children's tactile exploratory behaviors could be considered as tactile exploratory patterns since the frequency of their appearance was quite high and repetitive. The practical implications of the findings are of great importance because they have direct link either to education programs or to early intervention programs. Identifying and analyzing tactile exploratory behaviors and patterns of children with vision impairment and multiple disabilities may lead to alternative "channels of communication" something extremely useful for professionals and parents who work in this sector of Special Education.

Keywords: *Vision impairment and multiple disabilities, tactile exploratory behaviors, tactile patterns.*

MULTICULTURAL AND INTERCULTURAL COMMUNICATION: NEW LEARNING AND TEACHING MODELS

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Abstract

World is becoming more and more interrelated, and this means that we need more tolerance and empathy to understand and accept others, especially those who behave, think, and act differently. As well as we need to know how to keep our identity and at the same time constructively live and act in multicultural environment. Our culture has influence on our perception, behaviour, working and learning style and etc., so the need for multicultural literacy, which could be described as the ability to understand and appreciate the parallels and differences between customs, values, and beliefs of your culture and a different culture, is obvious. Multicultural literacy as one of the 21st-century competencies could be developed by the specialized curriculums or involving the main ideas, principles, attitudes, and skills of multiculturalism in the study programmes and other extra-curriculum activities. It also could be developed by the multicultural and intercultural communication among people of different cultures in formal and non-formal educational activities. The presentation will be based on the survey and experience of analysis of Šiaulių valstybinė kolegija in developing those competencies for our national and international students.

Keywords: *Multicultural communication, intercultural communication, communication in education, teaching and learning models, educational innovations.*

INTEGRATING SUSTAINABILITY INTO INFORMATION AND KNOWLEDGE MANAGEMENT CURRICULUM

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Abstract

The study aims to answer the research question of how to integrate sustainability into information and knowledge management curriculum and course design, and what kind of opportunities and challenges relate to this curriculum development. The empirical study was conducted in the Finnish university that holds the Degree Programme in Information and Knowledge Management. The action-oriented case study research methodology was applied, and different sources of data are used from participatory observation to interviews. In the results, different means to sustainability integration are analysed and evaluated.

Keywords: *Sustainability, curriculum development, information and knowledge management, management education, higher education.*

WHAT IF STUDENTS HAD LEARNING BRICKS TO “BUILD” MUSIC AND THEATER PERFORMANCES?

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Abstract

When we think of music and theatre in primary school, we are familiar with situations in which students sing songs or participate in theatre performances. Teaching pre-existing forms of performances, i.e. songs that have already been composed or theatre works that have already been produced, is crucial for the acquisition of models of thought and actions. However, the replication of models in relation to the original production still seems to play a predominant role in music and theatre education. In our project, we therefore do not want models to be replicated. We want students to discover artistic 'bricks' that they can combine as they like. Like LEGO bricks, we want to offer students musical and performing 'bricks' that can be combined in different ways to create original musical pieces, actions, sung and/or staged stories, both individually and collectively. We approach this educational project from a research-based perspective. We film the activities and have dialogues with 8-9 year old students in the focus group setting in order to observe and describe both their interpersonal relationships and their familiarity with different cultural toolkits from a dual perspective.

Keywords: *Music education, theater education, original production, interdisciplinarity, focus group.*

TEACHING AND LEARNING

REPRESENTATIONS OF CONSUMPTION AT THE CHOCOLATE FACTORY. A CREATIVE WRITING TEACHING PROPOSAL ON POSITIVE CONSUMERISM

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Abstract

The present study consists of a critical reading of Tim Burton's adaptation of "Charlie and the Chocolate Factory", accompanied by a positive consumer attitudes' teaching proposal for early childhood education. In the first part, a theoretical framework regarding representations of consumption practices in childhood within the context of various economic and social factors is presented. The case study outlines the way the film portrays in a sarcastic way distinctive consumer manners. Discourses of gluttony, competitive eating, nutritional indifference and famine are framed. What is clearly defined by the particular cinematic adaptation of the classic novel, are the consequences these young consumers suffer due to their ill consumption attitudes. Tim Burton's surrealistic representations of consumption practices frame the child's position in a capitalist era; they seem as if they are lurking to eat the most, or to eat the fastest, or to eat what is hard to find. In the second part, a Kindergarten teaching proposal regarding the promotion of positive consumer attitudes in early ages completes this critical reading. Based on film's notions and morals, two different creative writing approaches are outlined, recommending methodological ideas of teaching consumer behavior in early stages. The contribution of this particular study is to highlight children's cinema significant role as a means of influencing children's thinking on fundamental issues related with their capacity as citizens of the 21st century.

Keywords: *Consumption practices, Charlie and the Chocolate Factory, Tim Burton, kindergarten creative writing teaching proposal, positive consumer attitudes.*

DIGITAL CREATIVITY ABILITIES FOR DESIGNING SUSTAINABLE AND FAIR FUTURES. REFLECTING ON THE RESULTS FROM THE DM LEARNING LAB MADEIRA

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Abstract

The ever-changing digitally enabled world we live in requires preparing young creatives and entrepreneurs with more suitable abilities and set of skills to face the challenges of ongoing digital transformations. The Erasmus+ funded project DC4DM aims to implement a human-centred educational model to train Digital Maturity Enablers. This new type of professionals would be able to drive small and medium organisations towards their digital maturity: owning specific creative digital skills, they would be able to extract value from what the technological landscape offers and respond to the human needs through the principles of ethics and sustainability. This paper aims to describe the DC4DM educational model and share some aspects of its first application at the *DM Learning Lab 'Feeding Madeira'*, a 10-days design-led workshop on the island of Madeira in July 2022. The workshop gathered 36 university students, diverse for country of origin and study background, 6 start-ups, and several local mentors and stakeholders to co-design 6 compelling future scenarios for the island of Madeira where digital technologies are enablers for the sustainable development. Finally, the paper reflects on summarised learnings from the *LLab1*, particularly from the educators' perspective.

Keywords: *Digital creativity, digital maturity, digital creativity abilities, HE education, design education.*

LIFE SCIENCES TEACHERS' PLANNING OF LESSONS FOR FORMATIVE ASSESSMENT IN INQUIRY-BASED TEACHING

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Abstract

Formative assessment (FA) is considered one of the most powerful tools to enhance learning and influences the development of inquiry skills. However, few studies have addressed how Life Sciences teachers plan for formative assessment in inquiry-based teaching. A lesson plan is one of the crucial tasks for any science teacher since it assists in the presentation of a lesson. Lesson plans show how students will be moved toward obtaining specific objectives. This paper reports on five grade 10 Life Sciences teachers' planning for formative assessment in inquiry-based teaching. The ESRU framework guided this study. The ESRU cycle consists of four elements; the teacher elicits (E) questions to check students' ideas, the student (S) response, the teacher recognises (R) the students' response, and then uses (U) the student's response to promote learning. The ESRU comprises complete and incomplete cycles. A complete cycle is when all four elements are visible and incomplete if Elicit, Student response, and Recognize; or only Elicit and Student response. The lesson plan analysis looked at the ESRU cycles' elements in the questions planned to see if the questions were focused on the epistemic or conceptual dimensions. It also looked at how the entire lesson was planned. This research is a part of a more extensive qualitative study where data was collected through lesson observations, interviews, and lesson plans. The study was conducted to describe teachers' formative assessment practices in inquiry-based pedagogy. This paper reports only on lesson plans. One lesson plan was requested per teacher. Participants were purposively selected based on their teaching of the subject and conveniently sampled according to their proximity to the researcher's residence. Findings from all five teachers are as follows; when planning a lesson, it was evident that the five teachers planned for FA. In terms of ESRU, Eliciting and Using strategies were evident in the planned questions. The Student's response was not included when planning since it is the students' responses during the lesson and can only be captured when the teaching is happening. The Recognising strategies were also not included in the lesson plans since they depend on learners' responses. Four teachers planned more questions focused on epistemic than conceptual structures. The findings signal that there is still a need to train teachers to plan lessons that focus equally on conceptual and epistemic dimensions.

Keywords: ESRU, formative assessment, lesson plan, inquiry-based.

A PROPOSAL FOR TEACHING AND LEARNING IN PRIMARY SCHOOL POST-COVID-19

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Abstract

With the adoption of emergency remote education during the Covid-19 pandemic, students' teaching and learning practices changed from one moment to the next. According to the perceptions of 4th grade students in primary schools in northern Portugal, digital technologies were used to perform learning tasks, such as research projects, viewing and making of videos on curricular content and on topics of current reality, and taking quizzes using the Kahoot App. Such tasks involved working individually but also in small groups, and the use of teaching methods more focused on students. Therefore, in view of these students' perceptions and the literature review on teaching and learning in today's society, the aim of this work is to present a proposal for teaching and learning in primary school post-Covid-19, which is based on the use of active teaching methods for students, the performance of tasks that correspond to their interests and needs, as well as the complexity of learning they must carry out, in particular with the use of digital technologies, as well as their participation in the assessment of their learning processes so that they can adjust them and thus succeed in school.

Keywords: Teaching, learning, proposal, primary school.

GAME FOR DIDACTIC INNOVATION. *CLASSCRAFT* IN ITALIAN SECONDARY SCHOOL

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Abstract

Developing new didactic methodologies in a fast-changing world is increasingly important for teachers. Students are immersed in technological devices outside the school, and engaging them is getting more complicated. *Classcraft* is a gamification platform that transforms class activities into a fantasy game. This study examines gamification and game-based learning features that affect students' marks, engagement, inclusivity, and flow in Italian middle schools. The secondary research question concerns the border till which gamification is positive. The literature review led to exciting results confirmed by the first part of data collection. “Point system, achievements, quests and challenges, and narrative structures,” “gamified reward mechanics,” “interactive settings,” and “collaborative tasks” contributes to growing of marks, engagement, inclusivity, and flow. This first part of the project was conducted with a third-year middle school classroom in Lombardy during Italian Language, History, and Geography classes. The researcher was also the teacher, who proceeded with a quasi-experimental design. Students completed a pre-test (Likert scale based, 6) and a post-test that included some open-ended questions. Throughout the whole experimentation, the researcher wrote an observation diary. During the second half of the experiment, five significant students were interviewed. The next phase of the study wants to collect more data from different middle schools in Italy and to use teachers, determinants on results, for discussing them. The design of the second part will follow the one of the beta tests.

Keywords: *Game-based learning, gamification, secondary school, Classcraft, augmented reality.*

BETWEEN EXPECTATIONS AND GENERATIVE UNCERTAINTIES: AN ACTION STUDY IN HIGHER SECONDARY SCHOOL

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Abstract

Uncertainty in education is frequently seen as something that may trigger various defence mechanisms (Jordan, 2015) or lead to feeling confused and lost. Generative uncertainty may be productive (Mint, 2016), enhancing learning and fostering professional growth (Lygo-Baker, 2019). This paper presents an action study which main goal was to investigate students' and teacher's uncertainties brought about by re-organization of learning and teaching activities in the form of an intervention in higher secondary school English classes. Students were tasked with creating study aids for their peers and asked to articulate their uncertainties. In analysing the uncertainties articulated by the students, uncertainty was approached as resulting from a triadic relationship. This relationship is characterized by a situation where the student (1) is responsible for carrying out tasks (2) to the teacher (3). Similarly, teacher is performing their social role as an educator, being responsible for the society (Bardone et al., 2017). Such a relationship may affect teaching situations reflecting the specific uncertainties experienced by students and teacher and the way such uncertainties may foster learning, growth, and educational change. From the intervention, three types of uncertainties were identified: uncertainties regarding expectations (students were not sure what they were expected to deliver), regarding the content (whether students' work would be of the necessary quality) and regarding the triadic relationship (students' and teacher's focus turning increasingly towards being responsible for the process rather than responding to expectations).

Keywords: *Generative uncertainty, higher secondary school, triadic relationship, action study, responsibility.*

TRANSITIONAL OBJECTS IN EARLY CHILDHOOD: WHAT PARENTS' THINK ABOUT THEIR IMPORTANCE?

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Abstract

The period of transition and adjustment in a new environment is a very dynamic and challenging phase in the life of every child and also of his/her parents. They have a strong impact on the child's psychological well-being and the strategies the child will later use during times of various adjustments and transitions. Having in mind this significant influence on the child's well-being, it is important to address the quality and manner in which the child will cope with the adjustment in kindergarten in order to provide adequate support and a sense of security. Transition is closely related to transitional objects defined as objects, most often soft toys that are chosen by the child chooses and that are irreplaceable in the new situation because they provide comfort in the separation from the caregiver and security in this situation. The use of transitional objects eases the child's transitions. Previous research has shown that the educational system is aware of their use and their role in the social-emotional functioning of toddlers and preschoolers, which is evident in the practice of kindergartens and schools. However, the question arises as to how parents perceive their importance, which is also the main objective of this study. Therefore, an online survey with 29 questions was conducted among a sample of 100 parents (82 mothers) of preschool children in Croatia. The results of the survey suggest that the attitude of parents is positive, and through their partial agreement, positive experiences with transitional institutions and their great importance in moments of adjustment into the new environment, i.e. kindergarten, are highlighted. Parents emphasized the frequent, everyday use of transitional objects during transitions, as well as their facilitation of the whole process. Based on the survey and its results, the frequent use and variety of transitional objects such as stuffed animals, toy cars, cloths, pacifiers and bottles, and various toys is evident. Because there is a significant lack of empirical research on transition and the importance of transitional objects, the contribution of this article is evident in the context of increasing knowledge and sharing experiences of parents of early childhood and preschool children. With its diversity, it will contribute greatly to the progress of educational practice. The adjustment process itself is a big step in the life of every child and should be treated with a lot of respect and understanding.

Keywords: *Children of an early and preschool age, parents, transitions, transitional objects, well-being.*

DEVELOPMENT OF CRITICAL THINKING - WISHFUL THINKING OR REALITY IN ELEMENTARY SCHOOLS

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Abstract

One of the trends in the current curriculum design and goals of teaching methodology at all levels of education is the development of critical thinking as one of the highest priorities of educators. The authors of the article reflect on the extent to which the development of critical thinking is implemented in primary schools as part of the foreign languages teaching (FLT). In some countries of continental Europe, it reflects their long history of transmissive and encyclopedic education and its only very slowly weakening influence on the current training of future specialists. Is the development of critical thinking still just a teacher's wishful thinking or a phrase about cross-cutting competence in the school curriculum? What is the cause of this phenomenon? The article presents the results of a content analysis of current foreign language teaching curricula in the area of critical thinking implementation, and compares them with experiences with development of critical thinking of primary school teachers. The authors bring ideas for the development of critical thinking in the teaching of foreign languages in primary schools.

Keywords: *Critical thinking, educational curriculum, development, primary school teachers, teaching foreign languages.*

ENGLISH IN ALGERIAN PRIMARY SCHOOLS: PROSPECTS AND REALITIES

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¹Dr.; ²Prof.

Abstract

The teaching of foreign languages in Algeria is a subject that has raised a great deal of controversy. The case of the teaching of English at the primary level is one of the themes that have generated a dilemma. This small scale study tries to debate this decision taken by the government considering scientific and social facts all together with the feasibility of this project. The main objective of this study is to demonstrate whether Algeria is well prepared to successfully teach English to primary school pupils. Therefore, it endeavors to explore the following question: "Does Algeria possess all the required means to teach English at the primary schooling level?". To this end, the study is descriptive in nature, and uses a questionnaire to collect fifty (50) teachers' opinions and perceptions from the English department at Batna 2 University and Batna primary schools. The results obtained indicate that, indeed, the teaching of English at this level sounds rather hasty, for enormous efforts must be invested in the scientific framework to preparing both qualified teachers and suitable programs. A rethinking of the overall policy stands as a must.

Keywords: Teaching English, primary school, prospects, realities.

LANGUAGE CHALLENGES GRADE 11 LEARNERS ENCOUNTER IN LIFE SCIENCES INSTRUCTIONAL MATERIALS AND ASSESSMENTS

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Abstract

Language plays a pivotal role in enabling learner acquisition of scientific knowledge and skills. Whilst previous research indicates that proficiency in the language of learning and teaching (LoLT) does not guarantee learners' understanding of concepts taught, the current paper argues that learners who are proficient and fluent in the LoLT have an advantage in the science classrooms. Language affords learners to read the text in learning materials and assessments with understanding. Understandably science (Life Sciences) is a language on its own which is academic and authoritative which every learner grapples with despite fluency in the LoLT, the argument is that the challenge is compounded for those learners whose home languages are different from the LoLT. The current paper therefore sought to explore the language challenges grade 11 learners encounter in the teaching and learning materials and assessments in Life Sciences. In both qualitative and quantitative non-experimental designs, 28 grade 11 Life Sciences learners whose home languages were different from the LoLT, were purposively selected from a school where English is the LoLT. A 4-point Likert scale questionnaire was administered to learners through a google form. It sought learners' biographical information related to their home language and proficiency in English, challenges encountered in instructional materials and assessments, and their views about the use of code switching during the teaching and learning of Life Sciences. Focus group interviews were used to collect qualitative data. Quantitative data was analysed using Statistical Package for the Social Sciences (SPSS) software to obtain descriptive statistics and qualitative data was subjected to content analysis. Most of the learners (75%) indicated that the complexity and specialisation of the scientific language make it difficult for them to understand scientific concepts in the teaching and learning materials such as textbooks, activities, worksheets, and assessments. Whilst many learners pointed out that the use of English as the LoLT limits their acquisition of Life Sciences concepts, only 25% prefers to be taught in their home languages and the majority (72%) appreciated the use of English. They indicated that it places them at an advantage as all assessments are administered in English. Overall, the study found that three quarters of the learners (21 out of the 28) were of the view that code switching made the scientific concepts easier to understand. However, learners from other African countries (18%) who did not speak indigenous languages as homes language, were against code switching. The findings have implications for curriculum policy implementation and instructional materials design.

Keywords: Code switching, language challenges, life sciences, scientific language.

THE POWER OF HIGHER EDUCATION CURRICULUM IN SHAPING CHARACTER AND PERCEPTION: A SOCIAL CHANGE DIMENSION

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Abstract

This paper explores ways in which a higher education curriculum contributes towards social change by developing certain traits among students including a change in attitude towards the 21st century and thereafter using the WIL module as the impetus. The contribution of higher education is realised with the use of Work Integrated Module (WIL) as part of the curriculum in most of university of technology. Through WIL knowledge and skills are put into practice to enable students to look at the world as a unit. The study followed a mixed method approach to gather information wherein interviews including a questionnaire were used to assess how WIL contributes towards social change in enlarging students' horizon by strengthening their character including their future career. Semi-structured interviews were used to gather information about students' perceptions regarding their experiences on how to cope with changes in the world through the transfer of standards, skills, values, and technology acquired in both higher education and at the workplace. Qualitative data were systematically arranged and categorised into common themes. Inversely, quantitative data were analysed statistically. From a total of 50 students, a sample of 30 students, who enrolled for the Work Integrated module was used. The findings showed a change in perception amongst many students. They started looking at the world holistically and were enthusiastic in applying knowledge, technology, and values they have learnt. While their attitude changed, their soft skills improved too. This study concludes that the higher education curriculum through the integration of WIL shape up students' attitude by exposing them towards applying knowledge systematically, adopting technologies, skills, and ethical values that bring change in the society and better ways of solving problems.

Keywords: *Curriculum, higher education, social change, students' perceptions, WIL.*

UNCOVERING A PRESUMPTIVE LEARNING PROGRESSION ON ELECTRICITY AND MAGNETISM: A CASE STUDY OF MEANINGFUL SCIENCE TEACHING AND LEARNING IN SOUTH AFRICAN HIGH SCHOOLS

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Abstract

In the subject of science education, debates on topics such as "learning progression," "conceptual transformation," and "meaning making" have a long history, but they remain a vitally significant contemporary issue. Learning progression (LP) is a strategy designed to enhance three components of education: teaching and learning, assessment, and curriculum design. This study focused on building a learning progression of electricity and magnetism concepts that outlines how high school science students develop a more comprehensive grasp of electricity and magnetism concepts after instruction in order to depict a coherent progression of their conception. The constructivism theory and the conceptual change theory served as the theoretical underpinnings for this study. Using a mixed-methods research approach, science teachers and learners from three high schools were purposefully sampled. Interviews, document analysis, and learners' artefacts were used to collect data. The data were coded to characterise teachers' classroom practices and learners' learning experiences in order to ascertain learners' comprehension of the taught big ideas and their application to similar situations. The findings show that learners the high schools can incorporate concepts regarding electricity and magnetism to form a framework for learner understanding of these concepts if they receive appropriate instructional support.

Keywords: *Electricity and magnetism, learning progression, physical sciences, science learners, science teachers.*

REVIEWING THE LITERATURE ON THE INTERPLAY OF CREATIVITY AND CRITICAL THINKING IN EDUCATION

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Abstract

The significance of creativity in education is very well established in both research and literature. At the same time, a strong interest has emerged in exploring critical thinking and its role in educational settings. Importantly, recent literature has suggested a relationship between these two factors. To this end, we ran Google Scholar searches employing combinations of the keywords “creativity”, “critical thinking” and “education”. The co-occurrence of creativity and education or critical thinking and education in the title of publications returned about 4,270 and 2,010 results respectively. Notably, all three keywords yielded 64 publications. The latter involved mostly case studies, followed by good practices, empirical studies, primary research, theoretical advances, and secondary research. The focus is evenly distributed between teachers and learners. Furthermore, in terms of the learner-focused studies, these mostly concern higher education contexts. A rise is also observed in the interest of the combined examination of creativity and critical thinking in education, with an upward trend of publications in the last decade. Moreover, this body of literature primarily involves the consideration of creativity and critical thinking in a variety of educational scenarios and less the investigation of their interaction. Further tapping on the issue reveals an association between these factors and a possible impact of gender. Nevertheless, this interplay appears rather complex, also affected by several educational elements, such as personal and interpersonal stances, but also technological and methodological goals. Our findings indicate that even though creativity and critical thinking are widely considered as essential 21st century skills, their interaction in education is somewhat understudied in the literature.

Keywords: *Creativity, critical thinking, education, teaching and learning.*

“THAT’S JUST SOMETHING I WAS PLAYING WITH.” MATH TALK AND AVOIDANCE IN AN ART MUSEUM

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Abstract

This paper examines the findings of a project that brought art and math together in the context of an art museum for intergenerational families lead by custodial grandparents. The project brought together intergenerational families to explore the connections between math and art at art museum in the Southeastern U.S. The project consisted of six intergenerational sessions that promoted looking closely at the art through the integration of math into art museum experiences. Project activities integrated art and math content in ways that provided for a learning experience of greater complexity than art or math would alone. The project’s goals were to push families to think mathematically and to help them improve their attitudes and self-confidence toward math. We conducted a final group activity with the grandparents that combined a self-guided gallery tour, a hands-on creative activity, and a photo elicitation focus group. This paper examines how custodial grandparents’ spontaneous talk in the focus group explained how artworks brought together math concepts with art. We also examine the conversational strategies they used to contribute or to avoid math conversations. We found that participants spontaneously used a broad range of mathematical concepts without considering them to be math at the same time that they used strategies for math avoidance when math was explicitly mentioned. Based on these findings, we recommend supporting custodial grandparents’ development of broader understandings of what constitutes math.

Keywords: *ArtMath, informal math learning, intergenerational learning, photo elicitation, art museums.*

WRITTEN REFLECTION AS A “MOVEMENT” IN A QUALITY SERVICE-LEARNING PROCESS

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Abstract

Nowadays, Service Learning (SL) is considered as a form of experiential education. This perspective is based on the recognition and enhancement of experience as an ordering criterion of teaching and learning methods. In these terms, learning offers students the opportunity to experience a deeper understanding of personal competences. Thus, the central element of the SL is the link between personal and interpersonal development with cognitive development and the curricular path. Investing in authentic conditions of subjectivity and consequently promoting the production of significant knowledge towards research parameters encompass the possibility of collaborating and interacting with a plurality of actors with different interests and perspectives. Besides its strengths the knowledge processes in terms of feasibility and applicability to real community life. Written reflection is an essential element in a quality SL project, as on the one hand it helps students to connect what they observe and experience within the community, on the other hand, it allows teachers to understand if what they have taught so far manages to go "beyond" the classroom by generating effective strategies and possible significant learning. Thus, writing can be considered as an interesting means which constitutes a useful self-training approach relating to an experience from which to extract significant materials and traces of one's personal learning. In this research it was aimed to give voice and consistency to the actions and thoughts of the university students who, through Service-Learning activities, have enhanced the narrative training monitoring tool: the logbook. A sample of 153 students, enrolled in the fifth year of the Bachelor of Science in Primary Education (academic year 2021-22), at the University of Palermo, was asked to report in writing all the observations, challenges and achievements, as well as the desired prospects for the future. Writing, a source of strategic information to be able to identify the progress of experience and skills, is thus considered an engine-training effect for the construction of critical thinking and personal identity. Written reflection is the main pivot for transforming meanings, re-examining them and consolidating them in learning, knowledge of oneself and of the group, and at the same time awareness of one's role as active citizens. Therefore, this study aims at identifying good practices in the face of social commitment, analyzing the development of experiences and promoting a self-directed attitude.

Keywords: *Learning experience, learning environments, service learning, written reflection, self-direction.*

ANALYSIS OF BURTON'S MALE CHARACTERS: CONFRONTING GENDER STEREOTYPES IN FOREIGN LANGUAGE LEARNING

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Abstract

This conference paper aims at studying the use of a filmic text as a way of addressing gender equality and, more specifically, new masculinities in the Primary Education Classroom. To this end, we have carried out an analysis of the film *Charlie and the Chocolate Factory* (from now on, CCF), originally written by Roald Dahl (1964), but we have selected the last film launched, as there are two (the latter being directed by Tim Burton, 2005). To this end, we have applied the analytic-synthetic method to explore male identities in filmic texts. In addition, in order to triangulate our data, we have carried out the study taking into account the four sites as proposed by Kirkham and Thumim (1993). Our analysis examines the portrayal of the main character, Charlie Bucket, in different spheres, namely; his body, actions performed, as well as his fundamental concerns and fears (external and internal worlds). The core findings highlight the importance of working gender issues in the classroom while acquiring a foreign language throughout the exposure to the target language. In the same way, the use of CCF in the classroom will lead us to create safe environments while promoting children's self-development and creativity (Birthisel, 2014).

Keywords: *Gender equality, children's filmic texts, foreign language learning, new masculinities.*

DRAMATIC PLAY AS A DEVELOPMENTAL MEANS OF PRESCHOOL CHILDREN'S MOTOR CREATIVITY

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Abstract

The purpose of the research was to design, implement and evaluate an experimental program based on dramatic play which aims to develop the motor creativity of preschool children. In particular, we designed a mixed-methods experimental study using the integration technique. The following school year, follow-up research was conducted to check the preservation of the results. Statistical analysis results and qualitative analysis of the data revealed that the experimental program based on dramatic play had a statistically significant improvement in the children's fluency, originality, and imagination of their motor creativity. In addition, the results of the experimental intervention were preserved through time for the factor of imagination, but not for the factor of fluency and originality. The results of our research confirm that activities based on dramatic play are suitable for the development of preschool children's motor creativity, while creativity, movement, and dramatic play seem to be interconnected.

Keywords: *Motor creativity, dramatic play, preschool children.*

IMPLEMENTATION OF MATLAB GUIDE TEMPLATES FOR CHEMICAL ENGINEERING STUDENTS TO SOLVE COMPLEX MATERIAL AND ENERGY BALANCES

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Abstract

Chemical engineering involves activities that require specific skills, such as analyzing, calculating and simulating real problems to develop the profession adequately. During the training stage, students of the Chemical Engineering Degree must transform real problems into mathematical equations that respond to the demands of a system. As a result, a complex system of algebraic equations is involved, which students must be capable of solving and getting numerical solutions. In order to facilitate the resolution, a mathematical software called Matlab is employed. In this regard, Matlab is a powerful tool widely used in engineering, but it is not very intuitive for users. The programming window is simple, and students should program in an empty editor using Matlab functions with a certain complexity. Moreover, the introduction of the proper Matlab functions and the mathematical equations and restrictions of real problems based on material and energy balances requires time that is not available in the classroom. To overcome these disadvantages, students from Chemical Engineering Degree are provided with Matlab templates. This guide allows students to solve material and energy balances using a specific methodology to obtain a mathematical solution. These Matlab templates consist of two files: the first one, called *template.mlx* is developed using the *Live Script* mode. This mode allows solving the low interaction and possible customization of the Matlab programming environment. In this language, it is possible to include equations, comments and even images that allow a better understanding of the students. The second file is called *steady_state_balances_solver.m*. This file works as a “black box” and contains the “solve functions” needed to solve all equations introduced by students in the *template.mlx*. Therefore, in addition to providing a way to solve complex algebraic equations in a more student-friendly programming environment, the use of templates gives students a better understanding of solving material and energy balances. Anonymous surveys were done by students to determine the degree of satisfaction and to determine possible improvements and solve the weaknesses of the new methodology proposed.

Keywords: *Matlab, guide template, chemical engineering, student-friendly, material and energy balances.*

MEASURING INQUIRY ABILITIES OF YOUNG LEARNERS USING A PERFORMANCE-BASED ASSESSMENT

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Abstract

Scientific inquiry abilities and the nature of scientific inquiry (NOSI) are critical in building a scientifically literate citizenry. However, little information is available regarding the inquiry abilities of young learners between the ages of 5-7 years, though it is widely agreed that children are born inquirers. Among the reasons why inquiry abilities in young children are not explored is the need for reliable research instruments to measure these abilities. Most existing research excludes the measurement of young learners' inquiry abilities but tends to report more on the inquiry abilities of middle and high school learners. This study aims to adapt an existing performance-based assessment (PBA) and apply it in measuring the inquiry abilities of young learners aged 5 to 7 years in the South African context. The study aims to report on learners' innate abilities that develop naturally without formal instruction at kindergarten (grade R) and early primary to inform early science interventions. Three Afrikaans schools were conveniently selected as samples. Afrikaans is one of eleven official languages spoken in South Africa, and with no existing literature on Afrikaans learners' inquiry abilities in the foundation phase, a gap was explored. Data for the study was qualitatively gathered from 120 foundation phase learners (pre-schoolers to third graders) through an orally presented Performance-based Assessment of Kindergarteners' Scientific Inquiry Abilities (PAKSIA). Audio-recorded oral assessments were transcribed and translated into English. Transcripts were then scored using an adapted rubric to generate numerical scores on learners' performance. The numerical data were then analysed to provide descriptive statistics of participants' inquiry abilities. Of the four inquiry abilities assessed, high scores were realised in the experimentation and observation abilities. The results suggested that young learners have innate abilities to engage in inquiry activities. A multisensory and "play" approach to the adapted PAKSIA supported learners' engagement with tasks using their senses. Younger learners aged 5 and 6 struggled with more abstract questions, such as predicting or measuring without a measuring instrument. However, learners aged 7 displayed adequate abilities to predict, plan, design, investigate and communicate their results. The PAKSIA is a baseline assessment for educators to identify what inquiry abilities need more implicit nurturing and development. Some implications and recommendations for foundation phase learning are also made herein.

Keywords: *Inquiry abilities, performance-based assessment, foundation phase, scientific literacy.*

ORGANIZATIONAL ISSUES

THE ROLE OF PEACE EDUCATION IN POST-CONFLICT ZONES OF CYPRUS' FOREIGN LANGUAGE EDUCATION POLICY

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Abstract

Cyprus has attracted the attention of several civilizations from past to present due to its geopolitical location in the Mediterranean. The fact that different states ruled in the island throughout its history has left a variety of traces in social, cultural, economic and political life. Due to the background of Cyprus, which goes deep into history, it is possible to see the different characteristics of the powers that ruled there, especially the traces of the education policies formulated by the British, who held the administration of the island in the 19th and 20th centuries, among the islanders today. Cyprus, one of the former British colonies with prolonged conflicts resulting in geopolitical division, has unique cultural characteristics compared to other British colonies (in Africa and Asia). In addition, it is seen as a place where different colonial policies were applied, since the political structure greatly influenced the educational structures and practices after the British period. The education system in Cyprus has always been intertwined with changing political developments both at home and abroad. In this island with two different ethnic groups which is governed from outside, education system inevitably became the reflection of debates and disagreements. As a result, in addition to being an effective institution where political outlooks and interests are reflected, education should be considered as one of the mechanisms through which governments can be successful in the post-conflict period. Therefore, the purpose of this study is to explain the importance of peace education in a post-conflict environment, in the light of the foreign language education policies pursued in Cyprus from past to present, and to define a few strategies that post-conflict societies can implement. This study is based on the qualitative analysis of governmental archives and empirical studies taking into consideration political developments at the focus of foreign language education policy. As a result, education in conflict-affected situations is more than providing services to the community. Because it is a means of socialization and identity development through transmitting knowledge, skills, values, and attitudes across generations. Education can hence be both a driver of conflict and a way to contribute to conflict transformation and peacebuilding.

Keywords: Foreign language education policy, post-conflict zone, peace education, Cyprus.

REDUCING ACCESS BARRIERS, HIDING LEARNING BARRIERS: AN ETHICAL (KANTIAN) CRITIQUE OF THE OPEN ADMISSIONS MODEL USED IN MOOCS

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Abstract

Massive Open Online Courses (MOOCs) is an innovative instructional technology that promises to democratize education. For more than a decade, highly reputable universities and companies have created MOOCs and offered them on online platforms such as Coursera, EdX, and Future Learn. The MOOCs platforms use an open admissions model: Users can enroll in a course with a click of a button and without applying for admissions. The fees for enrollment vary from platform to platform but they all tend to be relatively low. The open admissions model appears to be empowering learners by removing access barriers such as high costs and selective admissions. However, there is extensive empirical evidence that MOOCs have high dropout rates and that the completion of a MOOC requires strong academic and self-regulation skills, skills that not all learners have. This reality raises ethical concerns about whether MOOCs platforms are deceiving learners by encouraging them to enroll and pay for courses without giving them information about the learning barriers that they will likely encounter. In this article, I analyze the open admissions model of MOOCs platforms based on the Kantian theory of morality.

The Kantian theory of morality rests on the concept of rational freedom and the duty to protect and promote rational freedom. Correspondingly, my analysis examines the extent to which MOOCs platforms are promoting and/or constraining rational freedom. I first argue that the open admissions model can positively contribute to the freedom of learners by giving them access to opportunities for developing their talents. I then argue that while the open admissions model facilitates access to learning, it is currently not supporting learners in understanding the barriers that they will likely encounter in a MOOC (such as the tendency of novice learners to overestimate their competences, the absence of expert guidance in MOOCs, and the need for high levels of self-regulation to succeed in a MOOC). To support learners in making free rational decisions as opposed to rushed uninformed decisions, MOOCs platforms should help them better assess their readiness for a course. This could be achieved by requiring learners to complete an assessment prior to enrolling in a course. Automated feedback on the assessment can support learners in better understanding the competences they need to have and the time commitment they need to make to successfully complete the course.

Keywords: *MOOCs, online learning, Kantian ethics, rational freedom, deception.*

IMPLEMENTATION OF ORGANIZATIONAL MODELS THAT PROMOTE PUPIL ATTENDANCE AND CREATE SOCIAL VALUE? AN INTERDISCIPLINARY PROCESS STUDY

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Abstract

That pupils succeed in school is an essential protective factor for their social establishment as adults. For pupils to complete school, efforts are not only required within the school. It is also about prevention and promotional efforts outside the school's responsibility. More precisely, it is about coordinating efforts primarily by actors other than the school. Collaboration models are about creating a lasting structure to better coordinate the government sector regarding pupils who must function beyond individual government assignments and policy areas. The overall purpose of the present study is to investigate cross-border coordination and collaboration between professionals in Sweden that strive to create added value for pupils in the school who have norm-breaking behavior. In this context, it means harmful and destructive behavior that, in various ways, means that the rules and norms of the society in which the individuals' lives are violated. It can be anything from seriously breaking parents' rules, truancy, stealing, stealing, and doodling (non-aggressive norm-breaking behavior) to more serious offenses such as fighting and threatening staff and other pupils in school. More precisely, the study aims to explore the implementation process of two organizational models that intend to provide increased support to pupils with norm-breaking behavior in school and contribute to completed schooling and social justice. One model has been created on a national level and a local level. The study also intends to investigate whether public, group, and individual cooperation can create representative added value for the pupils. RQ 1) what organizational processes can be identified locally at school? RQ 2) What organizational processes can be identified on the regional level in the municipality? RQ 3) In what way do the levels connect? RQ 4) If and how does cooperation create social value for the pupils?

The project is built around three types of data collection: focus groups, semi-structured interviews, and document analysis. Regarding Poole and Van de (2004), planned and emergent organizational change is often seen as the opposite. Still, studying the processes of relationships can also be fruitful since each other can stimulate and initiate them (Jacobsson, 2017). A narrative strategy involves constructing a detailed story based on the data collection. According to Pentland (1999), the narrative is a step to create a chronology, organize the data, and interpret it theoretically for further analysis according to Poole and Van de Ven's (2004) four ideal types. We will use Pickering's (1995) concepts; intention, resistance, and support from Jacobsson's (2017) activity, actions, change, and improvement. The construction of these concepts derives from Van de Ven (2007), who argues that process studies are built up around events and activities that lead to organizational change.

Keywords: *Implementation, narrative, organization, pupils, social value.*

ATTEMPTS TOWARDS ALLEVIATION OF SOCIAL INJUSTICES WITHIN SOUTH AFRICAN UNIVERSITIES

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Abstract

Education is viewed as a tool that is used in South Africa to achieve equity, eliminate historical inequalities and promote national growth. The South African education system is characterised by socio-economic disparities which serve to perpetuate social injustices in relation to the provision of quality education. The South African Department of Higher Education (DHET) advocates for strongly for a social justice intent, through its Open Learning Policy Framework. The DHET's Open Learning Policy is built around the constructs of pedagogy, access to learning and mechanisms of success. The DHET's primary goal is to improve access to higher education to all South Africans. The COVID-19 pandemic, resulted in an increased distance between student and contact universities, consequently widening already existing social injustice. A generic qualitative study was undertaken to explore, the approaches adopted by one South African university to determine the mechanisms applied by the institution's faculty of education, to alleviate social injustices through open learning. Purposeful sampling was followed for participant selection. Data was then collected in the form of interviews, public facing documentation and institutional reports. Guided by Nancy Fraser's social justice theoretical framework, results emanating show that universities understanding of "open learning" is shaped by their contextual readiness for open learning. The results emanating from the study indicate that South African universities are creating opportunities of greater access, through alternative routes to learning to school leavers and as well as some working professionals. This is achieved through the development of a Virtual and Augmented Reality (VAR) hub at a South African university. The VAR hub serves as a tool to address the articulation gap between the schooling and post schooling sector through parity of participation within the broader South African context. The hub creates opportunity for access to students for the sustainable integration of VAR applications in the field of science education thereby enhancing epistemic and epistemological access in science education. Thus, the use of VAR applications has the potential to alleviate socio-economic injustices.

Keywords: *Access, education, open learning, science, social justice, virtual reality, augmented reality.*

CORPORATE UNIVERSITY THE LIGHT OF THE EDUCATIONAL PSYCHOLOGY IN ORGANIZATIONS: AN EXPERIENCE REPORT

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Abstract

Currently, educational psychology is directed at children and youth, and organizational psychology treats people as recourses for production, which reduces the possibilities of psychological intervention. The Corporate University increases competitiveness in the job market, transmitting the organizational culture and providing training based on the company's objectives, having employees better instructed. The report is related to an experience of a Corporate University in the metallurgic sector in Brazil, where the training took place between 2021, September, and 2022, August. Objective: Evaluate the impact of internal training on employees' daily lives based on responses in satisfaction assessments applied at the end of training and personal reports at graduation. Methodology: Three satisfaction surveys were rated, totaling 44 responses, from three different training courses (Technical Drawing Basic –TD-, Lean Level 1 –LL1- and Laser Cutting Machine Operation –LaserOp), which followed the UniMemo Methodology, developed by participating industry's training sector (UniMemo), after each training graduation, was collected the data through a questionnaire accessed by a link sent by UniMemo to the graduated participants. Additional data assumed were the employee's reports during each training's graduation. Thus, all participants could say what the experience represented in their personal and professional lives. Results: The DT satisfaction survey had 14 responses, LL1 had 22, and LaserOp had eight. The reports and responses in the surveys showed that the training is therapy for introducing a sense of belonging to the company and

valuing the employee himself. In addition to the subjective results, a financial return was developed from the application of projects to reduce production costs, improve processes and reduce production stops. The projects also improve work conditions by reorganizing the fabric areas and co-construction knowledge, having a better training team, and with less doubt. It provided an increase in the possibility of replacing people with unexpected absences. Conclusion: Good learning, productivity, and personal development results have been obtained with the application of Rogers and Vigotsky's knowledge within the organizational context, considering the evaluated industry. Although the results are still preliminary, they indicate the possibility of a new psychological perspective to be explored in the educational/corporate interface.

Keywords: *Corporate university, educational psychology, organizational psychology, job market.*

ECODIDACTICS: AN ECOLOGICAL EDUCATIONAL PERSPECTIVE

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Abstract

Within an epistemological and didactic framework inspired by ecological perspectives in the Batesonian sense, the work proposes to advance an innovative framework of understanding and educational design of the connection between environmental education and the ecological perspective through the configuration of the ecodidactic perspective. Through a discussion of an analytical methodological approach, the essay identifies and defines the peculiar aspects that make up the ecodidactic proposal: it is understood as an activist, democratic, eco-feminist education that fosters the development of empathy in a biophilic sense, aimed at fostering the development of ecological intelligence through ecoliteracy paths that aim to promote biospheric egalitarianism. The intent of the work is to pave a way, to indicate a direction for a possible fruitful cross-fertilisation between ecology and didactics by outlining a guiding framework within which educational professionals can organically and consciously inscribe their activities.

Keywords: *Ecodidactics, ecopedagogy, environmental education, ecological education.*

STUDENTS PERCEPTIONS ABOUT THE INFLUENCE OF SCHOOL ENVIRONMENT ON THEIR ACADEMIC PERFORMANCE IN PHYSICS

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Abstract

This study aimed to determine students' perceptions of related school environment factors and their influence on their performance in science at the school level. Data were collected from over 400 high school students from 5 secondary schools in a local education district in Nigeria. Correlation and descriptive analyses were the primary means of data analysis. The findings from the study showed that students perceived their parents' attendance at school to check on their progress as more influential on their academic performance in physics ($M=2.85$, $SD=1.673$). In addition, students considered their physics teacher's frequent connection of what they are learning to real-world experiences outside of the classroom ($M=2.77$, $SD=1.469$), provision of instructional material and resources to aid physics lessons ($M=2.74$, $SD=1.496$), physics teacher giving individual attention and extra help to students when they need it ($M=2.60$, $SD=1.180$) and students unlimited access to the school library ($M=2.55$, $SD=0.632$) as important predictors of school climate factors influencing their academic achievement in physics. In addition, a statistically significant correlation exists between students' perceptions of their school environment and achievement in physics. Implications for educational stakeholders are discussed.

Keywords: *Achievement, attitude, perceptions, science, high school students.*

The background features a vertical gradient from purple on the left to orange on the right. A network of white lines connects various circular nodes, some of which are highlighted with a glowing effect. Scattered throughout are small white icons: a globe, a cloud, a Wi-Fi symbol, and a four-pointed starburst.

WORKSHOPS

TEACHERS AND STUDENTS

SELF-CARE AS A KEY COMPETENCY FOR FUTURE SOCIAL WORK PROFESSIONALS

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Abstract

The field of social work offers a broad and fulfilling range of employment for people with a desire for a varied, challenging and responsible profession. Its enormous importance has resonated not only since its systemic relevance during the Covid 19 pandemic. For several years, social science research has focused on the consequences of professional conditions. The extent to which social work suffers from an alarming condition is evident in the findings. The following should be emphasized: ambiguity about the professional role, acting in uncertain situations, self-sacrificing work, high socioemotional commitment, unpaid overtime, insufficient room for maneuver and decision-making and time pressure. Social work is successful when the workforce is highly motivated, committed and skilled. This reveals the urgency of equipping professionals not only with specialist knowledge but also with competencies that will enable them to work professionally in the long term, right from the study phase. In addition to the focus on the training content, universities as organizations are also required to support students in their life situations, which is sought through diversity and equality concepts. The following questions will be discussed in a workshop: (1) What are the specifics of social work? (2) How can self-care contribute to staying healthy and productive in the long term and to supporting clients professionally? Which possibilities can already be taught to students during their training at universities? To what extent are anchoring in teaching and the implementation of a diversity and equality concept suitable for the acquisition of self-care competence?

Keywords: *Social work, self-care, diversity, teaching, curriculum.*

TEACHING AND SERVING STUDENTS OF HIDDEN AND APPARENT DIVERSITY: THIRD CULTURE KIDS AND CROSS CULTURE KIDS

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Abstract

Increasingly students live mobile lives, whether they move across countries or travel daily across borders or cities. The outcomes of these unique experiences may result in challenges with a sense of belonging and interruptions in academic progression. Consequently, educators have a responsibility to understand the complexity and interrelatedness of learning, education, and culture (Hofstede, 2001) and adapt accordingly to support student success. If every “experience has a formative effect on the constitution of the human being” (END, 2023) and we accept that education is one of those experiences, it is necessary to recognize and address the influence of cultural experiences on student educational outcomes. This paper discusses the need for educators to identify and understand students who are living in transitions between their parents’ home and host countries and cultures. These individuals referred to as Third Culture Kids (TCKs) have similar challenges as students of other cross cultural life experiences. Such as those from less dominant cultures living in their passport country or children of immigrants, referred to as Cross Culture Kids (CCKs). The terms hidden diversity, TCKs, and CCKs are defined below. The challenges facing these student populations, including their needs and strengths that emerge from their unique cross cultural and transitional growing up experiences are presented. Teaching and serving students of hidden and apparent diversity is based on research in the fields of cross-culture and third culture kids, global transitions, cultural diversity, cross-cultural and international education. incluKit©, a game from diversophy®, that engages educators and staff to explore dealing with diverse cultures in education will be introduced and critical incidents will be presented in a gamified manner to be discussed in small groups during the workshop.

Keywords: *Diversity, culture, education, third culture kids, transitions.*

GEOQUEST TROPOMAG DIGITAL ADVENTURE PATH: WHEN SCIENCE IS A GAME

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Abstract

Game is a powerful educational tool able to involve students and keep their attention high, promoting cognitive development, discoveries, reasoning, and thinking. It is also an effective active form of learning which consolidates the acquired knowledge and carries out an authentic assessment through reality tasks and immediate feedback typical of the use of the digital games. Our *gamy-learning* experimentation focuses on new methods and practices of science communication, with the aim to face the challenge of educating about natural risks and climate change. The goal is to facilitate the automatic choice of good practices, by stimulating mind, intuition and logic in the perspective of team building in school-based civic education. The proper application of technological tools is a valuable aid for conscious communication for the next generation. A *Computer Supported Collaborative Learning Education* is experienced, in order to test the efficacy of our *GeoQuest TROPOMAG* digital adventure, and pave the ground for the implementation of the storytelling in an integrated table game. Our climate change role-playing videogame explores phenomena related to the possible effects of changes in the Earth's magnetic field on the atmosphere. The virtual adventure path is played on smartphones and follows alternative paths chosen by the players to develop the storytelling. As a result, students play not only “just for fun”, but also to actively participate in their learning process and acquisition of new knowledge, skills and competences in environmental issues.

Keywords: *Gamification, digital game based learning, computer supported collaborative learning education, educational competition, climate change.*

PROJECTS AND TRENDS

ARTIFICIAL INTELLIGENCE (AI) IN HIGHER EDUCATION: TOOL OR TRICKERY?

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Abstract

With the release of ChatGPT in November 2022 by OpenAI, the field of higher education was rudely awakened to the revolutionary impact of generative AI on the traditional means of assessing academic performance. New – and ever-improving – “large language models” (LLMs) are now capable of on-demand generation of coherent, comprehensive and academic-grade content - be it in the form of (long-format) text, code or mathematical symbols. Many universities have, as yet, not officially positioned themselves with respect to these new developments and those that have, did so in strikingly diverse ways, from outright bans on any form of AI to investigating how AI can be leveraged by students and staff alike to enhance the academic learning process. This workshop aims to guide participants in the process of 1) gaining awareness of the potential, limitations and pitfalls of AI tools; 2) critically assessing these tools within the framework of participants’ (domain-specific) practices for teaching, learning and assessment; 3) comparing observations and sharing opinions with co-practitioners in the domain; and 4) developing a position towards these new technologies and translating this position into (tentative) policy guidelines, either on a personal or institutional level.

Keywords: *Artificial intelligence, generative AI, academic integrity, AI literacies, higher education policy.*

TEACHING AND LEARNING

THE APPLICATION OF CRITICAL THINKING IN LITERATURE EDUCATION

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Abstract

Purpose: The workshop 'conscious critical thinking' provides insight into the concept of critical thinking and the importance of this basic skill for literature education at secondary schools. Background: The student who reads a text formulates a judgment: immediately and instinctively. By using the academic skill of critical thinking in the lesson, the teacher can make the student think more deeply about his own judgment and the meaning of a literary work. The workshop focuses on the primary response when reading a literary text: participants experience the influence of this primary reaction on the reasoned final judgment on a literary text. Key Points: Critical thinking is an extremely useful tool that allows the teacher to strengthen the students in three areas: knowledge about literary conventions, the application of critical thinking as an academic skill and the understanding of the individual thought process. Procedure: After a general introduction, the participants are asked to read a short text and to give a first reaction in specific places in the text using keywords. These responses are then compared with the results of an intervention in students from the upper classes of secondary education. The ensuing discussion focuses on the general tendency in these responses and the influence that the primary reading experiences can have on the further thought process. Description participants: The workshop is aimed at researchers as well as language teachers with a maximum number of 25 participants.

Keywords: *Critical thinking, literature, secondary education.*

CRITICAL REFLEXIVITY AS A TOOL FOR ADDRESSING INEQUITIES IN EDUCATION AND BEYOND

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Abstract

Society, perhaps more than ever, is open to disrupting racist, colonial, and oppressive policies and systems. Engaging critical reflexivity (CR) in education spaces is one potential way to move this work forward. CR is “an ‘unsettling’ of the basic assumptions, discourse, and practices used in describing reality” (Pollner, 1991, p. 370). It involves examining assumptions underlying our actions and examining how these assumptions and related actions influence meaning and contribute to creating, sustaining, and/or transforming “realities” and ourselves (Cunliffe, 2020, p. 3). CR can expose contradictions, uncertainties, and possibilities within ourselves and in relation to the world around us (Cunliffe, 2020) while also enhancing our ability to explore positionality and power dynamics. The purpose of this workshop is to engage with CR as an intervention to deconstruct the existing power hierarchies in one’s work environment, education, and knowledge base. CR is a potential tool to help educators foster inclusive, equitable, and safe learning environments for their students. This session will provide a safe space to engage with CR and to work toward addressing the disconnect between “talk” and “application” in education, with an aim of bridging the gap between theory and practice.

Keywords: *Critical reflexivity, education, positionality, social justice.*

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