Book of Abstracts
SCITEED 2024

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2ND INTERNATIONAL CONGRESS & EXHIBITION ON CURRENT TRENDS ON SCIENCE TECHNOLOGY EDUCATION

Oludeniz, Turkiye

APRIL 21-24, 2024

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Poulomee Datta	Macquarie University in Sydney, Australia

PLENARY SPEAKER

Id-155

Engaging in Science Action Activities through Open Schooling - Teachers' Perceptions Related to Raising the Students' Interest in Science

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Abstract: In the actual educational context, promoting *science actions* in schools by exploiting the *open schooling* concept is becoming increasingly relevant and valuable. The idea of a coherent and visible *open school* is defined not only through the existence of an accessible physical space but also through the presence of school open-minded brains that encourage exploration, discovery, and active involvement of students in the learning process. Thus, by promoting science activities, schools aim to provide tangible opportunities for students to stimulate their curiosity and creativity, to develop their skills - particularly science-related skills - but also to make them apply the knowledge they have learned in a practical and relevant way to everyday life.

In this respect, promoting science action in schools - by introducing the *open schooling* concept - can be done through activities involving: (a) organizing science exhibitions and events; (b) inviting STEM experts and professionals; (c) running science projects and initiating micro-investigations; (d) collaborating/partnering with institutions and representative organizations of the community; (e) widely integrating technology and digital media, impacting on students' scientific experiences.

In this context, the level of preparedness of teachers who wish to be engaged in science promotion activities through science action, through exploiting the *open schooling* concept, depends on several factors, including access to resources, technology, institutional support, involvement in dedicated training programs, and the personal commitment of each teacher.

The paper presents a series of results obtained in the HORIZON 2020 research project, no. 872814: "*CONNECT - Inclusive Open Schooling through Engaging and Future-oriented Science*", in which - following the implementation of a series of *open schooling* science promotion activities -, it was investigated the teachers' perception related to the importance of such activities for better understanding of science concepts, increasing students' motivation for learning science and understanding the importance of science in everyday life.

Acknowledgment: This research was funded through Horizon 2020 - EU.5.d. Programme - "Encourage citizens to engage in science through formal and informal science education, and promote the diffusion of

science-based activities, namely in science centers and through other appropriate channels", Topic: SwafS-01-2018-2019-2020 - "Open schooling and collaboration on science education", Grant number: 872814, DOI: 10.3030/872814

Keywords: Open Schooling, STEM Education, Science Action, Teachers' Feedback, CONNECT Project

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INVITED SPEAKER

Id-1

Towards Artificial Photosynthesis Promoting Photochemistry in Science Education

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Abstract: A fundamental demand on science education today is to communicate core principles of chemistry, physics, biology and informatics in close combination with everyday life experiences of students as well as with convincing applications from modern science and technology. Photochemical and photophysical processes are *par excellence* suitable to fulfill this requirement. Therefore, research in science education is challenged to develop experiments, concepts and teaching materials which help to interpret and communicate photoprocesses in a manner, that it is both, exciting and understandable.

In order to simulate basic features of the natural cycle of photosynthesis and respiration, a model experiment called **P**hoto-**B**lue-**B**ottle PBB has been developed. According to the title of this lecture, the experiment will be presented and interpreted in connection with basic contents from science education. In an extended version of the PBB experiment, even the evolution of hydrogen will be exhibited. Actually, this is a key step towards a prospective scenario in technology including the photocatalytic production of “green fuels” driven directly by solar light, without the bypass with photovoltaics and electrolysis.

The concept of electronically excited state, the “heart of all photoprocesses” (N. J. Turro), will be completed by further teaching experiments and concepts concerning up-to-date topics such as molecular switches. Their interpretation provides a reasonable theoretical background for teaching established and innovative contents of chemistry and related disciplines.

Keywords: Photo-Blue-Bottle PBB

INVITED SPEAKER

Id-4

Quality Science - Technology Education: Integrating the Voices of Stakeholders

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Abstract: Quality Science-Technology Education is invariably linked with the roles stakeholders play in setting benchmarks and expectations in the educational settings. However, because of the gap that exists between stakeholder expectations and a knowledge of the capabilities of existing higher educational institutions (HEI), quality education cannot be fully achieved.

The aim of this project is to model: (1) stakeholder requirements; and (2) existing HEI capabilities; to be able to identify how quality can be introduced at both ends and integrated to achieve an 'inclusive and equitable quality education that promotes lifelong learning opportunities for all'.

On the matter of quality education, Total Quality Management (TQM) concepts have been employed successfully in manufacturing and services industries to meet or exceed stakeholder (customer) expectations, but these are yet to be fully realized in the educational systems. Several studies have suggested that there is the need to deploy enhanced TQM techniques and their models to improve the overall quality of educational systems.

The main hypothesis for this project is that, 'stakeholder requirements can adequately be modelled and integrated with educational institution capabilities in a manner that the causal relationship between the two will trigger areas of improvement for enhanced quality education.'

The primary audiences are Higher Education Administrators, Faculty, Policy-makers and Government officials.

A four-stage research design using grounded theory methodology will be utilized to develop and elicit a theory, after which a single-case study design with embedded coding and analysis will be used to examine how stakeholder expectations and capabilities of HEI can be manipulated to achieve optimum quality education. This will have a significant impact on the realization of the Sustainable Development Goals (SDG) 4.

The Stakeholder theory with its value maximization proposition states that the education systems must create value for all by increasing the total long-term value of the stakeholder. Meanwhile stakeholders have struggled to clearly define the term 'quality education' in terms of their expectations. The expectation of the HEI is to promote and contribute to sustainable development and implement the SDGs through research, knowledge production, skills development and engagement. However, there is limited visibility between stakeholder expectations and institutional capabilities. The gap between these two: stakeholder expectations and institutional capabilities, is the major hindrance for achieving improved quality in students' performance at the workplace.

This project will lead to a broad inter-disciplinary academic, research and educational development merging the borders of education, quality management, digital science, artificial intelligence and social data integration. Through this research, HEI will be equipped to develop improved strategies that improve educational quality and maximize value for all stakeholders. It will lead on to a new academic course in education. Stakeholder-informed education will be suitable for undergraduate and postgraduate studies.

The findings of this project will guide policy-making; improve education standards and performance of graduates at work; define newer methods of teaching and learning to meet intended stakeholder requirements; and contribute new knowledge to the and community engagement to the educational discourse.

INVITED SPEAKER

Id-6

Mind the Gap: Analyzing Gender Disparities in STEM Interest Among Female Students and Strategies for Bridging the Divide

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Abstract: In the contemporary landscape of Science, Technology, Engineering, and Mathematics (STEM) education, there persists a noticeable and concerning gender disparity in the level of interest among female students. Despite significant advancements in promoting diversity and inclusivity, the underrepresentation of women in STEM remains a challenge that warrants rigorous examination. The urgency of this investigation is underscored by the realization that the future of innovation and progress depends on the active and diverse participation of all population segments. STEM fields, known for their transformative potential, stand to benefit immensely from the unique perspectives and talents that women bring. However, a closer look reveals that female students often encounter barriers that hinder their interest and participation in STEM subjects. Therefore, this research seeks to address this persistent gap and contribute valuable insights to advancing gender equality in STEM. This research approach uses a mixed method. The sample size was 55 respondents and 5 interview participants from junior high school. Data collection techniques include in-depth interviews and surveys. This research also discusses activities that can encourage female students to be interested and involved in STEM subjects. We found that male students had higher min scores (M= 3.57) than female students (M= 3.46) in STEM subjects. Qualitative results found that there were (1) stereotyping and bias, (2) limited real-world applications, and (3) family and cultural influences on female students. Therefore, strategies for bridging the divide are educational reforms, mentorship programs, and community outreach. The limitations involve sample representativeness affecting validity, potential bias from self-reporting in qualitative data, and limited generalizability of strategies, underscoring the need for tailored approaches based on diverse contexts.

Keywords: Barriers to Participation, Gender Disparity, STEM Education, Strategies for Bridging the Divide

INVITED SPEAKER

Id-21

Fostering Safe Learning Spaces in Teacher Education: Empowering Mathematics Teachers in Integrating Technology and Computational Thinking

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Abstract: This paper discusses a research project in teacher education focused on exploring how mathematics teacher educators can establish safe spaces for elementary teachers to experiment with incorporating strategic use of technology and computational thinking into mathematics instruction. The project is part of the larger "Computing Integrated Teacher Education (CITE)" initiative at the City University of New York, launched in 2022. The initiative aims to assist teacher education faculty in integrating computing content and pedagogical approaches aligned with state standards into essential education courses, fieldwork, and student teaching experiences.

The primary objective of this research is to examine how a graduate program in childhood mathematics education in New York City is addressing the demand for the strategic use of technology in teaching mathematics and adhering to national and state standards for integrating computational thinking and computing in K-12 education. Strategic use refers to the deliberate decision-making process where technology tools are employed while keeping mathematics as the instructional focus. Recognizing the complexity of integrating computational thinking into subjects like mathematics, the paper acknowledges challenges associated with the structure and teaching methods of these subjects in schools.

The research methodology involves a three-cycle sequence, encompassing a) whole-class teaching activities, b) lesson study investigations, and c) teacher action research. Data collection includes qualitative data from participants (interviews, focus groups, reflections, and journals) and classroom research data (implementation videos and elementary student work). Video and audio data analysis involves identifying critical events that demonstrate how professional development activities facilitate the integration of technology and computational thinking in elementary mathematics. These events are transcribed, and transcriptions along with reflection journals are coded. Following grounded theory methods, the data are sorted, resorted, and analyzed to construct explanatory schemes.

The paper presents examples of artifacts generated during each cycle and shares the results. The findings underscore the importance of providing ample opportunities in teacher education programs for teachers to experiment and reflect on integrating computational thinking into childhood mathematics education and practicing the strategic use of technology in teaching mathematics. Based on the findings, the paper discusses ideas and examples of how teacher educators can leverage each cycle to promote the integration of computational thinking and the strategic use of technology in K-12 instruction.

Keywords: Elementary Mathematics Education, Computational Thinking, Strategic Use of Technology, Teacher Preparation, Lesson Study, Action Research

INVITED SPEAKER

Id-23

Blockchain Technology as Trusted Certification Platform in Maritime Education – Challenges and Opportunities

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Abstract: Blockchain nowadays represents a widespread and most common term. There almost isn't a living person who hasn't encountered it at least once. Nevertheless, even taking into consideration its' implementation ranging from most famous Bitcoin cryptocurrency to all those new technologies (claiming to be) providing various new features and improvements to the blockchain world, one quite uncharted territory remains its' practical usage in the field of digital certification services. Certification services (authorities – CA) are a long know entities providing billions of users every day's secure Internet interconnections with various services but are unfortunately not quite compatible with blockchain although part of their working mechanism could be translated into blockchain certification framework. But what is it that comprises a blockchain and makes is so unique? The simplest answer would be – distribution. Distribution is the key factor to any blockchain success. And blockchain is either no fancy thing – it's actually "just" a distributed database. And distribution is actually the "key" which gives is so much potency in terms of usability or more precisely trusted usability.

We live in a "globalized" world where workforce migrations became a usual occurrence, and are actually quite incentivized by workforce skills and certifications meaning people with "higher/more" levels of education usually tend to follow better financial working conditions. Seafarers represent perhaps one of the most extreme examples of such "migrations" where certificates/certifications required for acquiring certain on-board positions according to International Convention on Standards of Training, Certification and Watchkeeping for Seafarers (STCW) might be issued in different countries and needed to be validated by entities in other countries. Taking into consideration many of those seafarers' certifications have a recurring validity and are not immune to counterfeiting, it becomes obvious why it would be convenient to have a global distributed trusted digitalized certification system bonding education institutions with maritime businesses.

Therefore, digitalization, certification, learning (elementary, high and higher education, PhD's), altogether for a fact represent well known terms. How is it possible then, there still is no available/applicable combination of terms blockchain, digitalization, certification and education? Why haven't they already been "mixed" together?

Keywords: Blockchain, Digitalization, Certificate, Trust, Maritime, Seafarers, Distributed, Network

INVITED SPEAKER

Id-25

The Impact of Technological Development on the Seafarers' Education

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Abstract: Growth of maritime transport has led to a rapid development of new, on board, technologies that have a significant impact on the seafarers' education. The rapid technological development and the seafarers' multidisciplinary field of work require all the competencies the seafarers need to be included in the study programmes at maritime education and training higher institutions. Although the implementation of new technology on board has a positive effect on task performance, it is important to emphasise that it changes the way the processes on board are carried out as well as the way the seafarers' perform their duties.

The implementation of new technology very frequently requires the development of new competencies or the upgrade of the existing ones. The adaptation of the existing competencies and acquiring the new ones are crucial for successful implementation of new technology on board. They are also some of the greatest challenges maritime education and training higher institutions are facing with today. Change monitoring and timely upgrade of the existing competencies are very often not coordinated with the employers' needs, i.e. with the needs of the industry.

The International Convention on Standards of Training, Certification and Watchkeeping for Seafarers (STCW Convention) has regulated the seafarers' education on the international level since 1978. The STCW Convention consists of eight chapters and the Seafarers' Training, Certification and Watchkeeping Code (STCW Code), which has been an integral part of the STCW Convention since 1995. The STCV Convention prescribes competencies the seafarers' need to perform jobs on board. The term "competency" was introduced in the Convention in 1995.

All maritime education and training higher institutions in the countries that have ratified the Convention are obliged to include all the competencies prescribed by the Convention in their study programmes and curricula. Moreover, seafarers' study programmes and curricula have to be adapted to changes resulting from the technological development in order to offer the seafarers the adequate education, i.e. in order to train them for jobs on board. Therefore, the International Maritime Organisation has recommended the usage of IMO Model Courses when making and performing study programmes. The IMO Model Courses contains the curriculum, learning outcomes and required number of hours.

The aim of this paper is to find out how the development of technology on board influences the seafarers' education and their competencies. The paper analyses the changes in the maritime

industry brought about by technological development as well as how these changes have affected study programmes and curricula at maritime education and training higher institutions.

The research has revealed that the seafarers' traditional skills like navigation and ship management have changed due to the implementation of advanced navigation systems and automated control systems. Furthermore, new skills such as managing information systems, maintaining and repairing advanced technology on board as well as managing risks and safety have become important for seafarers.

Keywords: Technological Development, Maritime Education and Training Higher Institutions, Seafarers' Education, Competencies, The STCW Convention

INVITED SPEAKER

Id-28

ChatGPT in education - year after. Have the catastrophic scenarios come true?

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Abstract: Last year was strongly influenced by the release of ChatGPT – a generative language model developed by OpenAI. The strength of the tool was the ability to hold natural conversations while preserving and responding to the context of the discussion. ChatGPT has exceeded expectations in its abilities, leading to extensive considerations of its potential beneficial applications and misuse. The education sector was not left out either, as cases of misuse of this technology began to emerge, leading to its banning in selected schools.

In this talk, we first present the results of an experiment in which we tested the ability of ChatGPT version 3.5 to succeed in college tests focused on cybersecurity. We can reveal that the results were beyond all expectations. Based on the result, we then discuss how the education sector should respond to the capabilities of these new tools.

Although these capabilities carry some risks and are certainly already having an impact on teaching (there are known cases where text-based final theses have already been replaced by projects) we need to focus on the potential positive uses of this technology, which can bring significant benefits to both teachers and students. Moreover, graduate students can be expected to use these tools routinely in practice, just as we already routinely use AI-based compilers and proofreaders, so we need to prepare them adequately for this.

In this talk, we will further present the impact of this tool on the field of education in the months after the release of ChatGPT v3.5. There are plenty of papers discussing the use of AI in cheating, the issue of online testing, and the risks threatening testing in the event of a new pandemic requiring a move back to the online space, or in general the issue of student integrity in this new environment. Hopefully, there were also many papers devoted to the positive impacts of the application of AI in education discussing topics such as support for the creation of teaching materials, personalized learning assistants, tools for accelerating learning, and many others.

Security impact analysis should also be an integral part of AI applications in education. This is because there are many risks, such as private data leakage, that students and teachers need to be protected from.

Other types of AI should also be considered. These may not have such a dramatic impact, but if used appropriately they can again positively influence the learning process - as an example, we can use visual and voice deepfakes to enable real interaction with historical figures.

We will conclude by discussing future perspectives and the possibilities open to us. How far are we from AI helping us with corrections and assessments? Does it make sense to talk about a virtual avatar that will assist in teaching and look and talk like a child's parent?

Keywords: Academic Education, ChatGPT, Artificial Intelligence, Virtual Assistant, Computer Security

INVITED SPEAKER

Id-29

Challenges in Inclusive Education of Pupils with Special Educational Needs

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Abstract: Inclusive education can certainly be considered a strong and important issue in contemporary education in a global context, although this concept has not yet been clearly defined and it is rather difficult to find a common definition because the term 'inclusion' can have different meanings for different people. There are many views and opinions on how to define this phenomenon, which agree on some basic points. We believe that the idea of social inclusion and inclusive education is based on some specific values, such as fair access to opportunities for all, participation of all in community life, or respect for individual differences and equal human rights. One of the main characteristics of inclusive schools is a focus on heterogeneity, which includes different levels of need for support for individual pupils in the classroom. It is typical of inclusive education that pupils receive adequate support to achieve the highest level of results according to their individual potential, while teachers and other staff not only help them - they should also stimulate them to learn new things, promote respect for pupils' differences, their right to be educated in mainstream schools, prevent their school failure and strengthen cooperation between schools, families and NGOs. On the other hand, many teachers in mainstream schools also face new challenges in the current trend towards inclusive education. The greatest demands are placed on young teachers at the beginning of their careers, as they need to acquire not only all the traditional basic teaching skills, but also the skills to deal with the specificities of dealing with pupils with different types of special educational needs. In addition, inclusion in education is seen as a voluntarily accepted and meaningful educational model, associated with a certain level of personal enthusiasm on the part of those who implement it in school practice.

The implementation and development of inclusive school practice is strongly influenced by the cultural and historical context of each country or region, too. Therefore, the transition to inclusive education has not been an easy process, and in many countries we can still see a strong tendency to adapt each child to the educational system, rather than adapting the system to the needs of each pupil, as the inclusive approach assumes. Finally, inclusive education should not simply mean teaching all pupils together in a mainstream classroom, resulting in the 'physical inclusion' of different individuals and minorities in the mainstream school environment, where pupils with significant differences would not be well accepted by their peers and teachers. In such a case, emotional and social inclusion does not really occur.

In this contribution, I'll present the main results of some research studies focusing on some important topics of inclusive education (e.g. support for pupils with SEN, support for teachers in inclusive education, or comparison of experiences with inclusive education in some European countries) that have been carried out in recent years by our national and international research teams.

The paper is an oral contribution of invited speaker on topic of Special Education and Inclusion.

Acknowledgment: The research studies and the contribution in this conference are supported by the University of West Bohemia in Pilsen, Czech Republic.

Keywords: Inclusion, Inclusive Education, Special Education, Special Educational Needs, Support in Education

INVITED SPEAKER

Id-35

On Educating Critical Thinking

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Abstract: Critical thinking (CT) is one of the most important skills of the 21st-century. Thus, CT is frequently mentioned in society, business, research, and education as one of the skills that citizens need in the globalized, digitalized societies. However, many higher education graduates lack this skill and many educators do not explicitly address it in their teaching. Since students' CT skills hardly develop as a side-effect of higher education, it is the responsibility of HE institutions to promote students' CT in their educational programs and courses through the development and application of research-informed educational concepts and approaches. This talk addresses the gap in teaching CT skills in technical subjects, such as software engineering, by proposing an extension of the state-of-the-art T-CHAT educational approach. This extension explicitly targets the development of CT skills and the ability to transfer it to other tasks and domains. This talk focuses on teaching methods that are appropriate for teaching CT and embeds them into the educational process. The presented approach is based an educational experiments in which this approach was implemented. The results demonstrate a significant improvement and positive impact on the development of both students' perceived CT skills and CT dispositions. This is an important finding because it shows that the extended T-CHAT educational approach has led to more homogeneous perceptions of CT skills and dispositions across the student group.

Keywords: Critical Thinking, Educational Methods

INVITED SPEAKER

Id-38

Self-Assesment of the Students' Understanding of the COLREGs

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Abstract: The International Regulations for Preventing Collisions at Sea (hereinafter the COLREGS) are a set of rules made to prevent collisions at sea. The authors have analysed the understanding of the COLREGS, by the maritime high school students.

The research was based on the questionnaire carried out in the maritime high school. The students were personally contacted, with a 100% return rate. The results were analysed individually for each student, and then summarized to obtain aggregate data. Based on the questionnaire, the frequencies and percentages of responses referring to understanding and application of the COLREGS were calculated. Using the survey method, data, information, attitudes, and opinions about the subject of the research were collected. The appropriate mathematical and statistical methods were used to process the results of the empirical research so that they could be analysed and compared with other research results.

Fourth grade students at maritime high schools acquire knowledge of the COLREGS through the subject called Ship Manoeuvring and the Regulations to Avoid Collisions at Sea. In order for students to acquire basic knowledge of ship manoeuvering and the application of the Regulations for Avoiding Collisions, 64 teaching hours are planned, of which 43 are lectures, three exercises, seven revisions, 10 knowledge tests and one teaching hour is for determining the final grade. Teaching methods and methodological forms of work used are frontal, individual and group work. Teaching aids and tools include a textbook, the PISM computer programme, a projector, a computer with Internet access, a blackboard, chalk, a simulator, and a checklist. The subject correlates with Maritime Law and the STEM field subjects such as Physics, Maritime Communications, General Ship Knowledge, Safety at Sea, Terrestrial Navigation and Meteorology. Lessons are held in a specialized classroom as well as in the IT classroom.

The aim of the research was to identify the lack of understanding the COLREGS by testing them. Students were asked to self-assess their understanding of the COLREGS. Most of the students estimated that they understood more than 80% of the COLREGS. Seven students think they understand all the COLREGS. In order to examine the concordance between the actual knowledge and assumptions about knowledge of the COLREGS, a correlation analysis was conducted. Due to the small number of respondents, Spearman's correlation coefficient was calculated, which is Rho= -0.25, ss=26, $p>0.05$. It can be concluded that the correlation between the assessment of the understanding of the COLREGS and the actual knowledge is not statistically significant, which is interpreted in a way that the students perceive their level of knowledge poorly.

The research results show that many of the basic COLREGS' principles are not understood and applied. High rates of negative responses in very important parameters for the evaluation of understanding the COLREGS do not instil confidence in the quality of the implementation of the current teaching programme. It has also been proven that students perceive wrongly their level of knowledge. Therefore, the authors advocate various teaching methods that make teaching more stimulating for both, students and teachers since multiple teaching methods give better effects and adequate memorization of teaching contents.

Keywords: The COLREGS, Self-assessment, Understanding, Level of Knowledge

INVITED SPEAKER

Id-40

Education of Senior Medical University Students in Various Groups

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Abstract: There are many recommendations for conducting student education at various universities. The form of study, education options, size of training groups and much more affect the results of mastering educational material. There are opinions and studies of many researchers and teachers from various universities that distance education can be equated with traditional face-to-face form education, the question of analyzing the quality of knowledge gained in distance education is open. This study was conducted on the basis of the Department of Medical Cybernetics and Informatics named after S.A. Gasparyan of Russian National Research Medical University. N.I. Pirogov for the period from September 1, 2021 to December 6, 2023 and included results of answers of two variance of test on the

same topic. The responses of students who missed the lecture were not included in the processing. For 556 students with distance education, the lesson was held remotely using ttps://meet.google.com and for 1429 students the lesson was performed in face-to-face form education. Students' answers to test tasks were collected using the Google form https://docs.google.com/forms/… The data base statistical assessment and statistical description were done in Microsoft Excel 2010

and IBM SPSS Statistics programs version 23. In this study were shown the results of assessing the learned material for distance education and traditional face-to-face form education and comparison of learning material learning depending on the size of groups.

Keywords: Education at a Medical University, Distance Education, Face-to-face Form of Education, Assessment of Learning, Volume of Student Groups

INVITED SPEAKER

Id-43

Universities as Ecosystems: Flourishing and Thriving not just Coping and Surviving

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Abstract: The theme of wellbeing has gained significant attention in educational policy in recent years, with a marked increase in investment in mental health awareness and quality care. To meet the needs of students, universities worldwide have developed a range of support services that focus on remedying deficits. These can include counselling services, disability services, student advisors, and academic leaders. However, this surge in support aimed at helping students cope and survive has led to a decline in attention to academic opportunities for students to flourish and thrive, resulting in academics being underutilised to make a meaningful impact in this area. Consequently, there has been a proliferation of tokenistic and bolt-on initiatives that prioritise meeting remedial targets through signposting. Drawing on Aristotle's work and theories of thriving, I will present data from recent research that supports embedding health and wellbeing practices within the curriculum to underpin collective, everyday ways of working. These findings are both relevant and timely and may be critical to the development of informed and effective pedagogy that supports student learning, engagement, and wellbeing. The results provide insight into features of curriculum design that have not been foregrounded in previous studies and contribute to a developing understanding of ways to support students in their studies, provide opportunities to thrive and as a result achieve academic success.

Keywords: Health and Wellbeing, Academic Wellbeing, Higher Education

INVITED SPEAKER

Id-45

Motivating Learning with Gamification

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Abstract: In a society full of endless entertainment options, a need arises for digital and entertaining services that aim to increase intrinsic motivation to learning. Students are normally extrinsically motivated by getting grades and passing exams but motivating students intrinsically for learning and achieving knowledge leads to better and more sustainable results. A well-known approach to increase intrinsic motivation is gamification, i.e. the use of game elements in non-game contexts. Typical game elements are among others:

Levels: The gradual unlocking of functionalities

Quests: different, varied missions for the players

Leaderboard: A ranking of all players or of players who are slightly better/worse than the player himself

Badges: medals as rewards for certain activities

Through a targeted combination of game elements, the user or player can be intrinsically motivated to continue, i.e. to learn more in the course context or to internalize the knowledge better.

The psychological basis for gamification can be found in Self Determination Theory (SDT). SDT describes a continuum of motivation, ranging from intrinsic motivation, where activities are undertaken for pure enjoyment and satisfaction, to extrinsic motivation, characterized by actions influenced by external rewards or pressures. SDT states that people are motivated when the three basic needs of competence, social inclusion and autonomy can be met. This theory has profound implications for education, where it advocates for autonomy-supportive teaching methods.

I want to present here a blended learning course we built in the LMS Moodle [Moodle] that is a fully gamified solution where we applied different combinations of gamification elements like quizzes, badges etc and short videos and quizzes to support motivation of the students. We built this course considering motivation and the SDT and we used the gamification framework MDA to build it. The course is used for undergraduate students of computer science, e-commerce and related topics to teach them agile Methods and Scrum. As agile methods are widespread also in non-IT contexts, the course can also be used in non-IT contexts.

We evaluated the course several times and found out that it motivates the students in different ways but there is also room for improvement. From the basic needs of SDT, competence is supported best, but autonomy and social inclusion could be supported better. All gamification elements are perceived motivational by the students and the online-course is seen as a good support for the discussion sessions in the blended-learning concept and for overall learning of agile methods.

Keywords: E-learning, Gamification, Motivation, Agile

INVITED SPEAKER

Id-51

Agile Innovation Methodologies Applied to Teaching and Research. The Experience in Silicon Valley and Costa Rica

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Abstract: This conference takes a tour of the research experience developed in Silicon Valley (California, USA) with the purpose of exploring agile innovation methodologies within learning and research processes. During this immersion in the world's leading innovation ecosystem, a recognition was made of the trends and good practices that are generated in Higher Education institutions (e.g. Stanford University) and in business environments of international prestige (e.g. Google, NASA, Viant).

This qualitative research included a documentary review in specialized databases, as well as interviews with experts (Delphi Method), academic visits and field observation. The information collected was processed with the support of the Atlas.ti Program (Version 23.08.0). The main results support a didactic proposal aimed at university students and professors, where seven agile innovation methodologies are addressed (e.g. Triz, Storytelling, Design Thinking, SCRUM, among others) and a playful strategy called “Agile Stellar Mission” is developed. These resources become a roadmap to guide and energize the insertion of agile innovation methodologies in teaching and research, as well as facilitate the design and development of projects and initiatives that integrate this learning in university training (and even at other educational levels). In this way, it is about contributing to the improvement of the academic training and professional profiles of university students, especially in the field of Business Administration, as contextualized in a pilot experience at the University of Costa Rica.

Acknowledgment: To the authorities and collaborators of the University of Costa Rica, specifically the Rector's Office, Vice-Rector's Office for Teaching, Faculty of Economic Sciences and School of Business Administration, for their endorsement and support for the development of the Sabbatical Leave in Silicon Valley (January- June 2023). To the experts who shared their knowledge, time, and experience in the field of innovation. In their daily work in Silicon Valley, they are architects of the construction of a culture and an ecosystem that pulsates with excellence, will, commitment, but particularly, vision of the future to advance and open new paths. In a special way, to Eng. Manuel Palacios, Global Hardware Quality and Reliability Engineering Manager at Google Cloud; Dr. Govind Ramu, Professor at Stanford University, Google engineer and distinguished member of the ASQ; Dr. Andrés Mora, Robotics expert at the NASA AMES Center and prominent Costa Rican scientist; Eng. Harold Sequeira, project director of Viant, a leading medical device company; to Dr. Nayra Mendoza, Stanford graduate and professor at TEC de Monterrey; to Dr. Austin Li, an expert in quality and innovation in different companies and instances such as ASQ, Amazon and Google, among other specialists who contributed throughout these months of research. To the faculty

and students of the DN-0115 Research Workshop Chair of the School of Business Administration, particularly to Group 01 and 04 of the Rodrigo Facio Campus, for their talent, motivation and active participation in the pilot experience.

To my family, friends and collaborators for their unconditional support.

Keywords: Agile Innovation Methodologies, Teaching, Research, Silicon Valley, Costa Rica

INVITED SPEAKER

Id-60

Academic Mobility Process as a System at the Language Faculty of the Pedagogical University

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Abstract: The main idea of modern education is to build competences as a produce of educational process. This equally relates to any level of higher professional education. We consider mobility competence, a structural component of a professional pedagogical competence, one of the most important competences of an intending foreign language teacher. Academic mobility today is the requirement of the Ministry of Education of the Russian Federation to pedagogical universities. To meet this task is difficult if not to form at a University a complete vision of the problem at hand, not to develop a concept of academic mobility of students, teachers, and administrative staff. For several years we have been investigating the problem of organizing the system of academic mobility at the Faculty of Foreign Languages of the Novosibirsk State Pedagogical University, of training a mobile teacher in the specially created cross-cultural digital educational environment with the use of the technology of developing academic mobility of intending teachers on the basis of cross-cultural approach; the technology is designed by the authors of this paper. To assess the readiness of an intending teacher for the academic mobility the pedagogical tools are worked out: four readiness levels are offered (optimal – a high level of readiness, admissible – middle level of readiness, critical – low level of readiness, inadmissible – absence of readiness), to determine the level the criteria are developed (cognitive, motivation- and value-based, activity-reflective) and their descriptors. The methods to trace the current professional changes of the personality of an intending foreign language teacher during the monitoring process (incoming, intermediate, and final) are the following: observation, interlocution, testing, questioning, expert review, interview, generalization of independent characteristics, pedagogical experiment, and mathematical statistics. The experimental data received allow making the conclusion about the effectiveness of the created system of developing academic mobility of an intending foreign language teacher at the faculty of foreign languages of the Novosibirsk State Pedagogical University and the possibility to extrapolate this experience on the University scale.

Keywords: Mobility Competence, Intending Teacher, Cross-cultural Digital Educational Environment, Technology, Academic Mobility

INVITED SPEAKER

Id-63

Enhancing Quality in a Multilingual Online LSP Teacher Education Course

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Abstract: With a rapid increase in digital technologies, online educational resources have become widely used for teaching and learning purposes. Developing a quality online course is a highly challenging task. One way to ensure the quality of the developed materials is piloting, which provides online course designers valuable information from the pilotees, who tend to be the future potential users of the online materials. In this talk, I will be presenting the outcomes of a large-scale piloting of an LSP (Languages for Specific Purposes) multilingual online course that has been developed on a transnational collaborative basis to allow future and early career LSP teachers to develop the competencies needed to successfully teach languages for specific purposes.

Keywords: Multilingual, Online Course, LSP (Languages for Specific Purposes), Teacher Education

INVITED SPEAKER

Id-64

Exploring Lecturers' Challenges and Acceptance of the use of Moodle Learning Management System Functionalities

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Abstract: Lectures in higher education institutions face challenges in engaging and tracking students' participation in e-learning using Learning Management Systems (LMS). For example, a Modular Object-Oriented Dynamic Learning Environment (Moodle) is an LMS with various functionalities that are useful for the visual learning environment (VLE). An LMS can be used as a virtual hub where students can take ownership of their learning by interacting through sharing information within the VLE, accessing courses' resources, participating in different learning activities as well as completing and submitting different assigned tasks. Students' success within an LMS such as Moodle rests on lecturers' knowledge of various functionalities. Moodle has proven to be an effective and popular LMS due to its enhanced online learning flexibility and interactive nature. However, lectures' challenges and acceptance of the use of Moodle as an LMS are crucial for effective and efficient utilisation. This study seeks to explore lecturers' challenges and acceptance of Moodle LMS functionalities. The study will be designed within a Qualitative Preferred Reporting Items for Systematic Reviews and Meta-Analysis (PRISMA) of 2020. The collection of data will be systematically done by identifying research studies on Google Scholar within a decade from 2012 to 2022. The principle of inclusion and exclusion of studies in this paper will be observed by selecting the most relevant studies. The qualitative inductive thematic data analysis will be used to analyse data from the relevant studies that encompass the purpose of this study. The results of this study revealed that Moodle LMS is not user-friendly as lecturers struggle to navigate the platform. The lecturers need continuous training on Moodle functionalities with the facilitation of follow-up sessions to minimise challenges faced by the lectures and ensure their acceptance of Moodle LMS implementation. The modular structure of Moodle can enable lecturers to add new functionalities in support of students' learning. Moreover, the use of multimedia tools for content delivery is constantly transforming to foster student support. Lectures are expected to be innovative and continuously adapt to the new path of integrating multimedia tools to deliver content because before they reach the mastering level of the current one the new one shall have been introduced.

Keywords: Acceptance, Challenges, Functionalities, Learning Management System, Lecturers, Moodle, Students

INVITED SPEAKER

Id-67

Development of Digital Storytelling Comic Media In Learning Science In Elementary School In Indonesia

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Abstract: Science education is very important to educate individuals with the knowledge, skills, and mindset that are required in the 21st century [1]. It is essential to have a foundation in education which promotes scientific literacy, not only improves academic performance but also nurtures curiosity, scientific methods, and develops skills for both classroom and field studies [2],[3]. Science education is needed to help students understand scientific ideas, so they can keep up in a technology-driven world and make a positive impact in the future [4]. However, most of the problems that students have with learning science are related to the availability of learning media. Digital storytelling which is a modern version of traditional storytelling, is becoming more popular as an teaching tool. It improves science learning by combination of media and storytelling which makes learning more interesting while still encouraging students to be creative, think critically and understand the complex concepts. This study identify classroom needs and challenges to explore digital comics utilization as an innovative teaching tool for elementary school students. This research uses a 4D model (define, design, develop, and disseminate) with 30 fifth-grade students and 4 homeroom teachers reviewing and evaluating comic media involving experts' validation. This study employs qualitative descriptive research using questionnaires and interviews. The result of this research was very feasible, as shown by the validation result of 91.83% from the media expert and 92,71% from the material expert, students' questionnaire responses aligned with the study's objectives, with a mean percentage of 91.27%, while teachers' responses were slightly higher at 91.818% and confirmed the need and potential of incorporating digital comics and storytelling into science learning. This concludes that digital comics with visual storytelling can be used as creative teaching tools to help students get better understanding and learning the science concepts.

Keywords: Digital comic; Storytelling; IPAS Book; Fifth grade students; innovative teaching tool.

INVITED SPEAKER

Id-69

Is Online Assessment Reliable?
The Experience forced by the Covid-19 Pandemic at the University of Milan

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Abstract: During the lockdown imposed by the Covid-19 pandemic, Universities had to face the problem of online examining students at the end of the various courses planned in their bachelor's and master's degrees. The approach initially proposed – i.e., oral exams – quickly revealed too limiting for the State University of Milan: besides the presence of exam sessions where hundreds of students have to be assessed in a few days, it is also very difficult to ask students to solve problems requiring (even a short) autonomous work, as well as to find a set of equally difficult questions to allow a fair assessment. For the above reasons, written exams are generally considered the best way to assess students in the University of Milan. Just to give a feeling of numbers, the University has more than 60.000 registered students and more than 150.000 graded written exams per year. After several investigations and tests, we identified two scenarios for written exams: in case of huge exam sessions (100 or more students to be examined) AI-based automated proctoring by (costly) commercial products has been adopted; for less than 100 students, the proposed scenario has the following characteristics: students proctoring is performed by teachers/collaborators using web conference platforms to monitor groups of 20-30 students at a time; students connect to the web conference using their smartphones, positioned behind their workplace to let the teacher monitor both students and their desktop; exams are taken by students using the exam.net platform, implemented by the Swedish company Teachiq AB. This work concentrates on the results of the application of the above scenarios for the pandemic year (from May 2020 to April 2021) compared with a normal, non-pandemic academic year (from May 2018 to April 2019). In particular, the following aspects are analyzed in detail: number of exams handled in the different ways, during the various months and by the teachers belonging to the different faculties/schools of the Milan University; average grades (i.e., measure of her/his level of competence, ranging from 18/30 to 30/30 cum laude in the Italian system) attributed to students, again during the various months and by the teachers belonging to the different faculties/schools; average grades attributed to students belonging to different degrees (bachelor vs. master) and to different degree years; different types of exams chosen by teachers before and during pandemic. The above results allow to state the reliability of the assessment adopting the scenarios described above, usable also after pandemic (e.g. for lifelong learning courses followed by employed students, definitely preferring remote assessment to avoid trips to the University and/or need to request days off from work).

Keywords: Online Written Exams, Assessment Results Evaluation

INVITED SPEAKER

Id-71

The impact of Generative Artificial Intelligence on Academic Integrity and Education Policy

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Abstract: Generative Artificial Intelligence (Gen AI) burst into public consciousness in November 2022 with the launch of Chat GPT 3. In a relatively short period of time the public availability of and access to Gen AI has changed the educational and legal landscape through the necessity of consequential assessment and curriculum review and the need for a regulatory response at Institutional and state level though revised and new polices. This presentation will focus on such a response by the ETINED platform of the Council of Europe through the legal instrument published in July 2022 on Countering Education Fraud and subsequent work to monitor and review state responses evidence by the ETINED report published in December 2023. The 2023 guidance and advice of the UK Quality Assurance Agency will also be addressed including their forthcoming publication on the impact of Generative AI in an education academic integrity environment. Likely Institutional responses will also be considered.

Keywords: Education Fraud Generative AI Academic Integrity Education Policy

INVITED SPEAKER

Id-79

Designing an Outdoor STEAM Makerspace in a Preschool School Garden: Reflection from Preservice Teachers

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Abstract: This research, which was conducted to examine the processes of designing an outdoor STEAM Makerspace and the experiences of preservice teacher regarding the process, is a case study in a qualitative research design. The study group of the research is the preservice teachers who designed a kindergarten garden and an outdoor STEAM Makerspace in Bartın, affiliated with the Provincial Directorate of National Education, who were selected using easy sampling and criterion sampling techniques. The data collection process of the research includes the stages of selecting a STEAM Makerspace area, selecting materials and designing a STEAM Makerspace, and the experiences of preservice teachers regarding STEAM Makerspace design. As data collection tools, the school garden information/observation form and photographes/documents of the stages of the design process and a semi-structured interview form are included. Descriptive analysis was made in the data analysis, the findings were divided into two themes: physical space and teacher experiences, and eight sub-themes (physical field in three sub-themes: pre-design process and post-design, teacher experiences in five sub-themes: education, design process, area selection, material, other) has been revealed.

Keywords: STEAM education, Early Childhood Education, Makerspace

INVITED SPEAKER

Id-80

Formation of Research Competencies Students of Pedagogical Master's Degree

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Abstract: The report “Formation of research competencies of pedagogical master’s students” examines the possibilities of classroom and extracurricular tools for developing the basic research competencies of master’s students. An analysis of the experience of developing research competencies of master's students in the "Business Pedagogy" program of the Department of Economics and Management of the Institute of Economics, Management and Law of the State Autonomous Educational Institution of Higher Education Moscow State Pedagogical University within the framework of organizing and conducting research practice is proposed. Research analytical competencies are necessary for students to successfully implement a master's program, conduct their own desk and field research, and prepare the text of a final qualifying thesis (master's thesis). However, as the practice of developing the master’s program “Business Pedagogy” of the State Autonomous Educational Institution of Higher Education Moscow State Pedagogical University from 2013 to 2023 shows. Every year, it is the research competencies of master's students that are in acute shortage. In practice, this means a lack of not only developed competencies, but also the very ideas about scientific research, collection and analysis of information, the choice of tools for desk and field research, processing the data obtained, the ability to independently write a review of sources on the research topic, an abstract and a scientific report. There may be several reasons for the problem that has arisen, but annual student surveys show that the difficulties that students face in preparing to conduct their own research and write a master’s thesis eloquently indicate that the vast majority have no special training, perhaps special requirements when receiving their first higher education (and bachelor's and specialist's degrees). Therefore, every year the management and teachers of the master's program "Business Pedagogy" with each new intake are faced with the task of developing and supporting the research competencies of master's students necessary for the successful implementation of the program. Let's take a closer look at them. First of all, we note that by competence we understand a unit of activity, a purposeful, motivated sequence of actions in a certain context. A distinctive property of any competence is the sequence or algorithm of actions. It is the competencies with the described steps and algorithms that are the subject of training master's students in research activities. The research competencies we are developing include: formulating the topic of a master's thesis, formulating and justifying the problem and research hypotheses, defining the object and subject of research, formulating key words and concepts, searching, selecting and analyzing information using keywords, preparing an analytical review of sources on the topic of the dissertation, compiling a bibliographic list of sources, correctly citing sources, developing the design (goals, objectives)

of field (experimental) research, choosing field research methods, analyzing the resulting data array, forming the structure (table of contents) of the dissertation text, writing the dissertation text, formulating intermediate and final conclusions. Over the past decade of work of the master's program "Business Pedagogy", various classroom and extracurricular tools for developing and supporting the research activities of master's students have been identified and tested. The main classroom tools for stimulating students' research activities, first of all, include the organization and conduct of a special practice-oriented course "Methodology and methods of scientific research in the humanities," aimed at developing scientific vocabulary, basic conceptual approaches and methods for conducting modern pedagogical research. An equally important and effective classroom tool for developing the research competencies of master's students has become the design and research seminar (PRS), which is organized as a discussion expert platform for all students and all teachers of the program for a step-by-step discussion of the results of research activities of master's students. All master's students speak and discuss the results of their research work in a design and research seminar at least 7 times during two years of study. Participation of students in a design and research seminar allows you to maintain a stable research schedule, adjust the research structure, analyze and discuss the results obtained In the second year, research practice is 6 credit units and lasts 4 weeks. The tasks of research practice duplicate the tasks of master's students preparing their own research and the text of the master's thesis (MSD). The specifics of organizing students' extracurricular independent work cover the need to prepare, on the one hand, a schedule of thematic individual and group consultations by academic supervisors and, on the other hand, the development of methodological recommendations, instructions, practice diaries, aimed primarily at students mastering each research competency. Thus, the development, implementation, and constant analysis of various classroom and extracurricular tools allows us to solve the problems of developing students' research competencies. The development of research competencies is manifested and assessed in the process of their gradual development and successful completion of the course "Methodology and methods of scientific research in the humanities", making presentations at design and research seminars, filling out reporting documentation on research practice, but most importantly - in constant growth quality of conducted research and texts of master's theses.

Keywords: Research Competencies, Pedagogical Master's Students, Developing Research Competencies, Conducting Research Practice

INVITED SPEAKER

Id-83

Generative AI's Impact on Academic Integrity and Digital Fluency in Higher Education

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Abstract: The global spotlight on Artificial Intelligence has been particularly intensified, with Generative AI, such as ChatGPT, revolutionizing human-computer interaction, fostering more natural and intelligent conversations. As the Associate Deputy Vice Chancellor, Learning Teaching and Quality for the STEM College at RMIT University, Australia, I am responsible for strategic leadership and direction in Learning and Teaching so its imperative to navigate the influence of disruptive technologies on education. Generative AI, specifically ChatGPT, has opened new horizons in higher education, spanning content creation, communication, and learning. Its potential to transform teaching is evident in assisting educators with generating instructional materials, creating marking rubrics, and evaluating assessments. However, the capabilities of Generative AI also raise valid concerns about potential misuse, particularly in the creation of sophisticated counterfeit content, challenging the authenticity of academic work. This prompts contemplation on whether restrictions should be imposed on its use. In response to the escalating prominence of AI, particularly ChatGPT, there is a heightened focus on academic integrity and the integration of digital fluency into educational curricula. This emphasis aims to equip individuals with essential skills to responsibly, ethically, and proficiently engage with AI. Recognizing the evolving demands of future employment, which increasingly rely on workers adept at leveraging AI for enhanced productivity and quality, RMIT University acknowledges its responsibility to instill capability and ethical behaviour in students regarding the use of these tools. This presentation outlines the robust policies, frameworks and resources implemented by RMIT University (Young et al., 2023), and experts in assessment, academic integrity, and AI (Lodge et al. 2023) to uphold academic integrity in the digital age. Additionally, it provides examples illustrating how RMIT academics have embraced the utilization of generative AI in assessments, showcasing a balanced approach that aligns with the institution's commitment to responsible AI use. Participants will have an opportunity to ask questions and share examples from their own contexts.

Keywords: Generative AI, Academic Integrity, Digital Fluency, Higher Education, Assessment

INVITED SPEAKER

Id-89

Gender Inclusive Chatbot for Stem Education

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Abstract. Our objective is to make STEM education more gender inclusive for the women, to achieve their career aspirations through the application of Generative AI technologies. This is the result from our investigation on Software Engineering and AI, where we were studying the application of intelligent chatbots to design software and have applied it to address a more gender inclusive science, namely the iCHAT-GENDER - An Intelligent Chatbot for Gender Inclusive Science. The more general scope of our investigation is how to design responsible Generative AI technology for gender equality, i.e., address how Generative AI technology supports inequalities. The challenge is to design technology for women to support engagement, that is: 1.developing a framework where R&D happen based on intelligent chatbots that initiate the discussion to unlock gender bias, and 2. using shared wearable IoT applications for debating and investigating technology for engagement of women and girls in STEM. This implies to: Adopt a participatory, user-driven approach, rather than a technology-driven approach, in research, knowledge production and technology development that takes gender into account and is tailored to the local context. Systematically include gender analysis, and consult with women on design, use and deployment of technologies that support women's needs in all tasks they undertake. One of the aims of this project is to tackle diversity and inclusion of girls in science through the digital living mentoring and learning hub. The project builds on bringing informal learning into the classroom, driving engagement through co-design thinking principles building on the practical informal maker-style activities to develop resilience in learners and mentoring guide to provide important guidance and the process of "instrumententalising". Hence, to take ownership of materials and adopting and adapting and repurposing the artefacts into 'instruments'. These 'instruments' of bring an act of learning to an owned artefact, enable capacity building [3]. The Research Methodology and Approach as well as the Originality and innovative aspects of the research programme will also be addressed, as well as a scenario of usage of the chatbot "mentor-me" as an illustrative example of application of the research concepts.

Keywords: Chatbot, Gender Inclusive Science, Generative AI, IoT, STEM

Acknowledgment: The author acknowledges Patricia Charlton and Yijun Yu, Open niversity, UK, for the support to the initial results of the research.

INVITED SPEAKER

Id-97

How "Real" is Virtual Reality as a Learning Tool?

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Abstract: This study compares student receptivity in a three-dimensional virtual reality (VR) campus to that of other two-dimensional modalities, particularly videoconferencing where participants see each other on flat screen. The overall objective is to assess potential of VR as a tool to enhance learning experiences, particularly collaboration among remote participants, in higher education and management training. We are utilizing qualitative and quantitative research methodologies to assess variations in perceived responsiveness by students who have completed the Train-the-Trainer courses offered by Edstutia (Edstutia.com). The preliminary findings confirm previous research indicating that virtual reality (VR) delivers a more informative and immersive experience. Participants reported a higher sense of spatial presence with others in VR campus, compared to their interactions in other two-dimensional modalities. Consequently, this led to some individuals feeling overwhelmed. However, during the focus group discussions, participants expressed that there was a greater openness to critiques when interacting with a VR avatar, as it introduces a sense of detachment. Furthermore, group dynamics, specifically feedback acceptance and collaboration, appeared to be improved over the virtual synchronous modality. A few users of earlier version of Edstutia VR campus, especially those with disabilities, reported challenges. Therefore, we also looked at platform adaptations and changes made for such users. We present *Empathetic VR development framework* as we summarize the steps taken to enhance the accessible interplay between the end users and the interface of VR technology. To sum up, our results advance understanding of VR as a learning tool and propose a framework for accessibility enhancements.

Keywords: Virtual Reality, VR, Higher Education, Management Training, Students with Disabilities

INVITED SPEAKER

Id-103

Co-creating Interdisciplinary Integrated Powerful Knowledge for Informed Decisions and Changes in Practices

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Abstract: Interdisciplinary and Integrated Powerful Knowledge (IIPK) is the outcome of integrating several disciplines and approaches to formulate strategies to face challenging real-world issues. Using effectively IIPK innovate ideal technology that essential for problem-solving. Creative use of innovation, including the technical advances and breakthroughs that require careful, imaginative, and innovative application of a wide range of disciplinary knowledge. It is especially relevant when addressing life connected socioscientific issues, which require a comprehensive understanding of scientific, social, and ethical dimensions. Collaborative as well as cooperative and committed interdisciplinary work among people with diverse backgrounds and expertise is necessary to advance IIPK, including professionals from different academic fields, policymakers, stakeholders, and community members who bring various perspectives and values to the table. The creation of IIPK could inform policy-making, support informed decision-making, and lead to more comprehensive, effective, and sustainable solutions. Theoretical underpinnings and practical applications of co-creating IIPK are based on several principles with the potential to impact current practises. Informed decision making using IIPK could be an essential component of the sustainable existence and its dynamic equilibrium of biotic, abiotic factors and mechanism of this planet. Abiotic elements, such as water and carbon dioxide, along with solar energy in green leaves, fundamentally drive photosynthesis in plants which in turn allows for the creation and maintenance of various kinds of life. In terms of some of the socioscientific issues, such as health and well-being, the management of natural resources, and the efficient application of technology in energy consumption, there is a call for an integrated approach to problem solving and the development of new practices. To achieve this, administrators, practitioners, and policy makers should engage in the development of IIPK. By effectively utilizing IIPK, evidence-based decision making can lead to technological advancements, protocols, and systems that solve complex scenarios. Using IIPK and expertise can also lead to improvements in how things are done now and in the future. It can be used as a useful framework to help people understand and make decisions about complex situations, especially in socio-scientific issues where evidence from discipline knowledge is important. Effective utilisation of these knowledge bases requires building and integrating IIPK into existing practices, providing a rich platform for reform. While IIPK already plays a role in everyday experiences and changes in practices, its effective use can lead to better decisions and practices. Overall, the following approach to be considered for coherently integrating to formulate a scope for generating and cocreating IIPK by Participation, Policy,

Procedure, Process, and Practices (5P approach): Participation: people's participation in identifying and formulating an acceptable knowledge base to make informed decisions. Policies: needs to be formulated with the engagement of all stakeholders involved in polluting activities, such as industry, agriculture, religious activities, sewage, etc., to formulate strict public norms. Procedure: to identify norms to develop devises and people friendly platforms. Process: of engagement could be based on the norms identified and formulate sustainable actions of engagement. Practice: is for achieving acceptable practices and could be a cooperative venture willingly undertaken by all stakeholders based on a knowledge base and norms created above.

Keywords: Co-Creating Powerful Knowledge, Informed Decisions, Changes in Practices

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Abstract: The objective of the work is to substantiate the need for contextual learning in higher education and to present its effectiveness in training personnel for the country. The need for students to study in the context of human interaction with the world was due in stages to three reasons: the Russian labor market crisis at the beginning of the XXI century has made vocational education meaningless; the acceleration of changes in Russians' working and living conditions has put graduates of higher education to quickly solve non-standard professional tasks and adapt to changing working and living conditions; increasing the information availability and expanding the information space have led to a decrease in students’ creativity and thinking independence in their studies process. A person depends on the outside world, because it's changeable, and a person is forced to adapt to new living conditions. Whenever a person encounters the outside world unknown phenomena, he first studies them, then thinks, how to influence them, and finally comes up with measures to influence the outside world effects. Cognition, comprehension and impact on the world are cyclically repeated throughout the entire historical development of mankind. The solution to these problems becomes possible when the educational process is designed as a model of interaction with the world. Cognitive actions are performed in a sequence: 1) modeling of actually observed objects and processes; 2) consideration of theoretical problems as objects models; 3) their solutions as process models by analogy with previously performed models. In this sequence, cognitive activity is transformed from external activity into internal and internal into external. Since a person learns about the world in situations, students' cognitive activity is performed on three situational levels: 1) educational tasks, 2) problem situations simulating professional activity; 3) real-world problem situations requiring professional intervention. In this sequence, cognitive activity is performed alternately in the external and internal planes, alternately there is a transformation of external activity into internal and internal into external. The model of contextual learning has been used more than twenty years. The results were evaluated using the methodology of limiting meanings, content analysis. Statistically reliable results were obtained. Students' cognitive activity in the context of human interaction with the world generates personal and life meanings: cognition acquires the meaning of orientation in the world; the need to influence the world stimulates the meaning of self-knowledge; cognitive activity acquires the meaning of influencing the world. As a result, a meaning invariant of human interaction with the world is formed, and the problem of education meaningless is solved. The identification and solution of real-world problems increases students' readiness to solve non-standard tasks in the changing conditions of the outside world. Based on contextual learning, a model of

students' cognitive activity and a conceptual model of students' interaction with the information world have been created and experimentally tested. An experiment was conducted on the linguistic picture of the world transformation among bilinguals.

Keywords: Contextual Learning, Human Interaction with The World, Students Cognitive Activity

109

The Understanding of Medical Informatics among Dental andMedical Students

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Abstract: thcare professional's formation in medical informatics results crucial for their everyday practice. However, should add

Author:

INVITED SPEAKER

Id-111

Role of Intervention in Foreign Language Text Reading Comprehension

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Abstract. The notion of literacy is usually understood as a set of skills that enables a person to achieve their goals in work and life, skills which will serve them well in their professional carriers. Literacy is closely connected with an individual's ability to read, write, and speak, to compute and solve problems in order to achieve one's goals, to develop one's knowledge and potential, and to participate in society. Key role among literacy skills plays reading literacy, or the skill of reading comprehension - understanding, using and reflecting on written texts. In the Information Age of the 21st century the notion of literacy is undergoing profound changes and the position of the reader in the process of acquiring information to reach their full potential has been upgraded to heights never seen before. The reader of today must become proficient in

the literacies of the 21st century technologies which include such literacies, like information literacy, web literacy, multiliteracies, digital literacy, and others; readers must be able to find and recognize the needed information, identify what information would address a particular problem, organize and evaluate the information found, and use the information effectively to address the specified problem. The literacy of the 21st century has by far exceeded that of the previous centuries in its complex demands on the reader who must act as interpreter, evaluator, contender, analyser and definer of texts and message to be read; the skill of reading comprehension has become the procedural skill of simultaneously extracting and constructing meaning through interaction and involvement with written language. The reader ideally brings to the act of reading their cognitive capabilities (attention, memory, critical analytic ability, the process of inferring, visualization), motivation (interest in reading and its content, self-efficacy as a reader), knowledge (topic knowledge, vocabulary knowledge, linguistic and discourse knowledge, knowledge of comprehension strategies), and experiences. However, as various testing exercises show, this does not always happen and far from all readers. That is why the skill of reading comprehension has to be systematically developed and supported. Being aware of the above mentioned predictors for reading comprehension in general, including reading comprehension in foreign languages, we have developed specific intervention programmes for the development of predictors supporting reading comprehension of texts in mother tongue (Slovak and Hungarian) and in 4 foreign languages at A2 level of proficiency of learners in German, French and Spanish and at A2 and B1 level of proficiency of learners in English. The Program, its structure, tasks and strategies, and the work with it will be subject to presentation in the conference.

Acknowledgment: This work has been supported by the Cultural and Educational Grant Agency of the Ministry of Education, Science, Research and Sport of the Slovak Republic under the project No. KEGA 21UKF-4/2023.

Keywords: Literacy; Reading Comprehension; Intervention Program; Predictors; Skills.

INVITED SPEAKER

Id-112

Application of Universal Design for Learning in an Assessment Format

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Abstract: The traditional format for neuroanatomy lab practical exams involves stations with a time limit for each station and inability to revisit stations. Timed exams have been associated with anxiety, which can lead to poor performance. In alignment with the Universal Design for Learning (UDL), *Timed Image Question* and *Untimed Image Question* exam formats were designed to determine which format supports student success, especially for those who performed poorly in the traditional format. Only the *Untimed Image Question* format allowed students to revisit questions. All three formats were administered in a randomized order within a course for three cohorts of medical students. When all students' scores were analyzed together, the type of format had no effect. However, when analyses were conducted only on students who performed poorly in the traditional format, the type of format had an effect. These students increased their score, on average, by at least one grade level in the *Untimed Image Question* format

compared to the traditional format. Students who performed well in the traditional format maintained their A, on average, in the two new formats. More students indicated *Untimed Image Question* as their most preferred format after experiencing all three formats. Most students associated the inability to revisit questions with high levels of anxiety. A neuroanatomy lab exam format was therefore identified as consistent with the UDL framework such that all students, regardless of test anxiety levels, can equally demonstrate what they learned. This format allowed for unlimited time per question and ability to revisit questions.

Keywords: OSPE; Neuroanatomy Education; Lab Practical; Universal Design for Learning; Student Assessment; Anatomy Lab Practical Examination; Untimed Test; Timed Test; Backward Navigation; Revisit Question

INVITED SPEAKER

Id-116

Examining the Effects of Early STEM Educational Program on the Scientific Process Skills of Preschool Children Between 60-66 Months

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Abstract: The aim of the research is to examine the effect of Early Stem Educational Program (ESTEMEP) on children's scientific process skills. The ESTEMEP is prepared in accordance with data gathered from literature review. The methodology pf the research is quasi experimental design model. Participants of the study were attending from a kindergarden which is under the umbrella of a govermental university, in İstanbul, in 2017-2018 education year. There were experimental and control group in the study. The experimental group consists of 15 children (4 girls, 11 boys) and the control group consists of 11 children (6 girls, 5 boys). Total number of participants is 26. Within this study, Science Process Scale For 60-72 Months Old Children was used to gather data. ESTEMEP is prepared by the researcher. While preparing program it is taken into consideration that science (density, solar system etc.), technology (usage of technological materials), engineering (finding solutions to problems, product creation etc.), and mathematics (weight, numbers, ranking, grouping etc.) skills are actively supported by ESTEMEP activities. Necessary

permissions of paretns, school director and university are taken to conduct this study. After that, pre-test is made to both groups (experimental - control) before applying ESTEMEP. After that, STEM program applied to the experimental group for 10 weeks, as two times a week. Control group proceed on usual daily routine at the same time. At the end of 10th week, post-test is applied to both experimental and control groups. Because the number of participants is smaller than 30, non-parametric statistical tests were used. For comparing pre-test and post-test score means of both groups, Wilcoxon signed rank test was used. Fort he aim of finding out differences between post-tests of experimental and control groups Mann-Withney U test was used. Furthermore, Wilcoxon signed rank test was used to examine whether the skills acquired by children thanks to ESTEMEP were permanent or not. Findings of the study show that, although at the beginning both groups were similar to each other in terms of scientific process skills, after the application of the ESTEMEP, significant difference between groups occurred for the benefit of experimental group. According to permanency test, the significant difference is long lasting. Which means that ESTEMEP has positive and long-lasting effect on children's acquisition of scientific process skills.

Keywords: STEM, Early Childhood Education, Scientific Process Skills, FeTeMM

INVITED SPEAKER

Id-121

Current Innovations in the Maritime Higher Education Curriculum Development

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Abstract: With the current advent of the maritime industry toward decarbonization and digitalization, a critical shift is needed in the approach to the development of maritime higher education curricula. The fast and drastic developments in the industry, which shifted from the industry of pure technical operation to an industry of decarbonization, sustainability, and digitalization, require a shift in the fundamental methods of developing a curriculum whose aim is not just to produce a competent seafarer but is also a global maritime professional (GMP) and a global maritime citizen (GMC) as well. The only way to the development of such a resilient and sustainable curriculum is through the use of frameworks that will ensure that the graduates comply with the requirements of the International Convention on Standards Training, Certification, and Watchkeeping for Seafarers (STCW) while being equipped with real shipboard practical skills that lead to a lifelong learning towards a holistic development. Thus, in the formulation of a new maritime curriculum, a triumvirate mapping was used in the development of a new conceptual framework with the use of the STCW Code, the Book of Knowledge (BoK), and the Training Record Book (TRB). A qualitative methodology with

an exploratory design was used wherein the STCW Code was cross-referenced with the other two frameworks, resulting in another framework that will ensure graduates become GMPs. However, being a global maritime professional is not adequate in today's day and age, what is required on top of being a GMP is becoming a GMC which will ensure that the industry will abide by the 17 Sustainable Development Goals (SDGs) set forth by the United Nation to ensure that the industry will be equitable, just, and environment friendly. Thus, the triumvirate framework is being supplemented by another framework, which is the Global Citizenship Education (GCED) framework, which ensures that graduates will be able to approach things from a paradigm of sustainability. In this study, an example of the application of the framework through the development of an elective course is shown. The course was specifically designed for a maritime program that tackled the most important SDG that the industry is prioritizing today. With the integration of the STCW-BoK-TRB framework into that of the GCED framework, the maritime curriculum would evolve from producing not only GMP but GMC merchant marine officers in the future.

Keywords: Maritime Higher Education, Global Maritime Professional, Curriculum Development, Global Citizenship Education

INVITED SPEAKER

Id-125

The Challenges of Curriculum Adaptation in the Context of the School for All

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Abstract: Launched with UNESCO support through the Jomtien Declaration in 1990, then resumed in the context of an international implementation framework through the Salamanca Declaration (1994), the idea of "School for all" has proven to be an important challenge for the education of the 21st century. Although for over three decades the concept of the inclusive school (School for all / education for all) has been reconfigured by the social dynamics marked during this period by the progress of science and technology, but also by the permanent confrontation with socio-economic problems (wars, poverty, pandemic), it claims a non-negotiable contemporary reality, a reinstatement in the natural rights of our fellows in the context of the diversity of manifestations of the human nature. Curricular adaptation is considered to be one of the efficient practices for personalizing learning and, implicitly, a way to facilitate educational inclusion. But in certain contexts, this can be turned into a barrier to learning and participation, especially when teachers lack the necessary resources for application. In order to widen the range of accessible tools that allow

curricular flexibility, this article brings to attention an open access resource, the TactileImages.org platform, which offers the possibility to develop self-described personalized educational materials in an interactive and multisensory format.

Keywords: Barriers to learning and participation, Curricular adaptation, Inclusion, educational platforms, Special educational needs.

INVITED SPEAKER

Id-134

Empowering the Next Generation: Cross-disciplinary Learning Pathways in Electronics and Sustainability for High School Students

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Abstract: Nowadays, youngsters are more and more conscious of the rising need for a green transition to face climate change. In response to environmental concerns, digitalization is indicated as a powerful tool to accelerate the shift towards a more sustainable future, and is expected to be the basis of emerging green professions. On the other hand, the field of electronics is rapidly evolving to meet energy efficiency and sustainability needs.This work presents an overview on cross-disciplinary learning pathways sized for high schools where the key role is played by some

lessons addressed to focussing on different aspects of innovation in electronic devices: eco-friendly materials, efficient manufacturing processes, development of novel components. These lessons have been elaborated by researchers and directly present topics at the forefront of innovation, being funded by the European Institute of Innovation and Technology (EIT), the Horizon 2020 Programme, and the Erasmus+ Programme. All the learning pathways consist in a series of one to three lessons, an experimental activity, and an output produced by the students. In particular, three lessons were developed, as follows:1) “Don’t throw away your Mobile!”, a lesson introducing the variety of materials used in electronic devices, and some of the issues in their supply chain [1]. This lesson was developed in the frame of the project Raw Matters Ambassadors at Schools [2], which aims at raising awareness on the environmental, social, and economic impact of the production of the raw-materials required in our everyday life and involves students in the communication of the innovative strategies put in place in Europe to increase their sustainability. The lesson title has been chosen because mobile phones are attractive for youngsters and are widely accessible devices which exploit many innovative technologies. The lesson can be either stand-alone or combined with an experimental activity comparing different materials used as transparent conducting coatings in screens and photovoltaic solar cells. This is an entry-level lesson that requires only the knowledge of electrical conductors and insulators. The take-home message is the importance of advancing knowledge on novel materials for the sustainability of electronic devices. The output, as proposed by the project giving framework to this activity, is the production of fancy dissemination material, such as videos or comics, and eventually, the participation in science dissemination events, such as the European Researchers Night. 2) The lesson entitled “SinCe you are a driver” is a more advanced lesson providing an unconventional example of material replacement to satisfy the need of reducing processing costs. The material to be replaced is hexagonal silicon carbide, a semiconductor that is used in electric motor drives. The replacement can be operated by using a material, constituted by the same elements, i.e. Silicon (Si) and Carbon (C), with atoms placed in a different spatial arrangement, i.e. cubic crystal. The optimization of this material, 3C-SiC, was the object of a H2020 project. The advantages of using such a material, by comparing the properties of hexagonal and cubic SiC were presented in the lesson. Moreover, the lesson introduces elements such as crystalline solids, semiconductors, and the operating principle of electric motors. Since it is very specific, it is necessary to relieve the burden by coupling it with a more practical activity such as, for example, involving students in science dissemination live events]. 3) The lesson called “Materials in electronics and planned obsolescence” aims to stimulate a reflection on an ethical issue, i.e. consumerism, basing on scientific and technical knowledge. This lesson is complementary to a

more articulated pathway, that is the object of the Erasmus+ project CHANGE, whose goal is to promote the development of digital and green competences in Vocational Education and Training (VET), starting by CO_2 monitoring in classrooms. The experimental activity proposed in the CHANGE pathway is a practical example of reuse of old hardware as an interface for mini computers of the Raspberry PI series. The output, in this project, is a laboratory report providing data, metadata and conclusions, from continuous CO_2 monitoring in classrooms. In a citizen science perspective, the collected data, upon verification, will be hosted on an open portal , thus contruting to the advancement of knowledge in the field of indoor air quality. The cross-disciplinary learning paths connect electronics with sustainability and climate change in order to raise the students' interest on scientific topics, convey the importance of being informed citizens, and empower them with sustainability thinking and competences. In this contribution, the learning results obtained by the students are analysed in term of their output and the solutions to tackle the issues encountered in transmitting the message will be presented and discussed.

Keywords: High schools, STEM, Raw materials, Electronics, Sustainability, Climate change

INVITED SPEAKER

Id-140

Telagogy: Learning in Society 5.0 and Beyond Domination

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Abstract: Increasingly particularly in the next ten years, learning would stream along the lines of Netflix and would be asynchronously accessed. Students would take greater control of their learning, curating their own personal curriculum similar to building a music playlist and streaming at own time, own pace, anywhere and anytime without pressures of strict timetable schedules. Students would also take online assessments as and when they are ready which eliminates panics in learning. However, telagogy is more than just learning in deep cyberspaces where students would select educational courses from across all universities in the world which would compel universities to develop a universal accreditation system and governments to fund students in lieu of universities. Over more than two hundred years, Europe pushed a narrow agenda of domination via coloniality, practices intended to assert artificial classification of humans along racial lines and declared Europe as the blueprint and model of global civilisation. This coloniality project in places such as Africa involved evisceration of Africans of their cognitive content and imposing a Eurocentric cognitive

content in taking advantage that humans are born bereft of cognitive content which they ought to acquire externally. Humanity is now entering the cognitive age marked by what the Japanese government called society 5.0 in 2016 which, in turn, applies capabilities that combine physical and cyberspaces to offer humanity a world prosecuted by advanced technologies such as chat-GPT variants. This society celebrates difference and considers it as a strength whereas coloniality treated it as a weakness and an excuse to create a racially dominated world. Society 5.0 is about a domination-free, just societal dispensation. Continents such as Africa as part of dealing with their perennial, egregious woundedness seek rescission of laws that protect Europe against accounting for violation of human rights so that its governments can be taken to the International Court of Justice to account for wounds they visited upon Africans. Wounds of an epistemic kind, wounds of slavery, wounds of belief, wounds of an economic kind, wounds of a psychological kind, wounds of semiosis. This, I argue, would be a good starting point of asserting a domination-free, just society that is driven by advanced technologies.

Keywords: Learning, Telagogy, Tech-assisted education, Asynchronous, Society 5.0

1

1

Development of Students' Music Teaching Professional Competency by Using SPOC Based on Signature Pedagogy

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Abstract: The global wave of digitalization has ushered availability of technological tools, requiring from teachers all over the world to be competent for providing education in remote way effectively, while after emergency situation COVIDD-19 pandemic online interaction in educational environments is being considered as the new normal. In such a context the revision of pedagogical technologies for online teaching in higher schools requires significant improvement. Development of future music teachers' professional competency needs designing of online resources that provide the knowledge of subject matter, training skills, and engagement of students in professional practice. In these frameworks for enhancing students' professional preparation a signature pedagogy approach (Shulman, 2005) which was implemented in digital environment by the means of small private online course (SPOC) was suggested. The main purpose of the

research was stated: how professional competency of future music teachers is affected in the process of studying SPOC based on signature pedagogy? The research was conducted at Kazan Federal University. During the educational process students were training professional competency in blended mood, using SPOC, designed by the teacher, as a supplement to the classroom. The main characteristic of SPOC includes free access to web resources, systematized by a teacher, subject content, targeted to professional training needs, close interaction with a teacher and other peers, stimulating learning activities, creating professional networks (Fox, 2013). The applying of signature pedagogy required the frames of connectivist approach for the design of SPOC. In total 92 undergraduate students were involved in studying during one academic semester for analyzing the dynamic of music teachers' competency development in pretest-posttest experimental work design. The methodology was based on the mixed methods approach resourcing mainly to questionnaire, interview, documental analysis, and observation as data gathering methods, and descriptive statistical analysis, as data analysis techniques. The obtained results demonstrate the effectiveness of the developed online course that allowed to significantly improve students' music teacher professional competency, which definition was clarified as a personal capacity to possess a set of competences, including knowledge, activity, and attitudes. The contribution of the study brings the detail characteristic of the signature pedagogy in music education, and the way of its implementation by the means of online tools. The principles of structure of small private online course based on signature pedagogy was determined and described as a powerful instrument of professional pedagogy, that can complement the classroom study by providing platform of acquiring knowledge, training music performing skills, and enhancing aesthetic awareness remotely.

Keywords:

MTSO

INVITED SPEAKER

Id-142

Enhancing K-12 Education through Integrated STEM in China

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Abstract: This presentation will introduce some innovative instruction examples for implementing integrated STEM education in mainland China in recent years. The initial segment illustrates the integration of technological tools, such as virtual LEGO into key subjects including Mathematics, and Physics. The aim is to bolster instructional technology and enrich learning outcomes. The following section delves deeper into our research on STEM education, highlighting various areas. These include, Chinese traditional culture, which connects STEM concepts with real-world issues, fostering critical thinking, and problem-solving. We also discuss the development of a STEM curriculum designed specifically for female students, addressing the importance of inclusivity and gender equality in STEM fields. Furthermore, we showcase our efforts in organizing informal STEM camps, both online and F2F, to provide hands-on learning experiences and encourage students' interest in STEM. Additionally, we explore the integration of AI education into our curriculum, recognizing the significance of preparing students for the future of technology. Through this

presentation, our goal is to shed light on the significant progress we have made in ICT and STEM education. Finally, the presenter will conclude by proposing the essential core framework for STEM schools.

Keywords: Integrated STEM Education, Innovative Instruction, K12 Education.

INVITED SPEAKER

Id-144

A Combined E Learning Approach to Teach Undergraduate Surgery Students

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Abstract: The gradual shift towards e-learning is seen which will see more medical educators taking on the role of facilitator and assessor of competency. So there is an urgent need to reschedule and revise the teaching activities for undergraduate surgery students. Therefore, with this background, we plan to propose certain web-based, distant learning novel strategies to keep the training of undergraduate surgery students rolling. These novel strategies include adopting social media platforms and flip classroom concept to replace in-person lectures, involvement of undergraduate surgery students in telemedicine consultation to substitute didactic clinics, use of multimodal computer-based programs, and use of high-end surgical videos for learning of basic surgical skills. These web-based, distance training modalities can be collaged to form training modules for undergraduate surgery students they can use these e-technologies for patient care and patient education also. It was concluded that proposed web-based strategies may be of use to role training

of undergraduate surgery students. As some of them may be future GPs/primary care physicians of tomorrow, they can use this concept of e-technology in patient care and patient education.

Keywords: E Learning Undergraduate Surgery.

INVITED SPEAKER

Id-148

Profiles and Practices of Higher Education Teachers: Changes and Challenges in Recent Decades

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Abstract: European Higher Education has undergone significant transformations resulting from a period of deep massification, based on the adherence to the principles of the Bologna Declaration (e.g., Almeida et al., 2012; Cerdeira & Cabrito, 2018); the uncertainty and changeability of the everyday life; the demands of a competitive and constantly changing labour market.

As a result, there have been profound changes in the training offer (Cerdeira & Cabrito, 2018), in the teaching-learning processes and in the profiles and practices of teachers and students (Cruz et al., 2019; Egan et al., 2017).

In Portugal, from the teachers' point of view, recent decades have seen an increase in demands and pressures, with workflows and practices that lead to greater productivity, but also increased difficulties in

managing time and teaching/research tasks. In addition to these challenges, teachers have been faced with the need for constant technological updating (Ribeiro et al., 2021), situation lived particularly during the SARS-CoV-2 pandemic (Araújo et al., 2021; Brito et al., 2021).

In the post-pandemic era, teachers have integrated many of the learnings and possibilities that have been opened during the pandemic experience. However, the changeability of the academic and social life force them to continually adapt, reinvent and overcome.

Using a qualitative methodology, an investigation was carried out with the aim of accessing the views of senior teachers on the changes and continuities that have taken place over the course of their professional practice, and how they see the future of higher education.

Focus groups were held in public higher education institutions in the areas of Science and Technology, Education and Social and Human Sciences. The data collected was transcribed and processed using content analysis.

The results mainly highlight the transformation of the: a) teaching-learning processes, with a very evident focus on the importance and opportunities that digital tools and worlds assume now and in the future, but which should not substitute a face-to-face context; b) knowledge production and research, demanding currently huge efforts and investments; c) organizational action, with a significant increase in administrative and bureaucratic tasks standing out; d) social action, with higher education institutions seeking to contribute to the building of progressively fairer, more inclusive and developed societies. All of these forced an increasing complexity and diversity of the teachers' roles and functions.

Given that this study was carried out in Portugal, are the results in line with the experiences of other higher education realities around the world? What reflections and understandings can be made about the challenges and opportunities that we are currently experiencing and that lie ahead?

Keywords: Higher Education, Teachers, Changes, Challenges.

INVITED SPEAKER

Id-151

Addressing the Challenges of Research Conduct: Introducing NETSEARCH, an Innovative Platform for Enhanced Learner Engagement and Plagiarism Prevention in the Era of Generative AI

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Abstract: Navigating the intricacies of research poses considerable challenges, especially for early career learners with limited domain expertise. From selecting a topic to formulating effective search queries across diverse academic repositories, the initiation of a research project is complex. The 21st century learners is not only expected to harness technology as a research tool but also to seamlessly integrate it into the processes of research, organization, evaluation, and communication, alongside active knowledge creation. This amalgamation of expectations weaves a complex tapestry of challenges for both project supervisors and students.

Complicating matters further, the advent of generative AI introduces a new dimension to the challenges faced by educational institutions. With students increasingly turning to AI tools to complete assignments, colleges grapple with the threat of plagiarism and the obscured processes employed by learners in acquiring research materials. While plagiarism detection services like TurnItIn aim to dissuade passive research practices, they operate only at a superficial level, leaving supervisors unaware of the intricacies involved in procuring research articles.

This talk presents NETSEARCH, an innovative research platform designed to tackle the multifaceted challenges inherent in conducting and managing research projects. The platform not only facilitates efficient engagement with research papers but also visualizes learners' interactions within a digital ecosystem. This visualization enables the identification of struggling or disengaged learners early in the research process, allowing for timely intervention. Moreover, by digitizing the research process, NETSEARCH aims to mitigate the risk of plagiarism, offering a comprehensive solution to the evolving landscape of academic challenges posed by generative AI.

Keywords: Generative AI, Plagiarism Prevention, Engagement, 21st Century Skills, TurnItIn.

INVITED SPEAKER

Id-152

From E-learning to Smart Education Systems Impacted by the Utilisation of Artificial Intelligence in Higher Education

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Abstract: Utilising the modern teaching and learning technologies is considered as one of the most significant factors in shaping the quality of the learning and education for students and learners at educational institutes. Different educational delivery schemes exist in higher education. Each scheme comes with different requirements that have pros and cons, or obstacles and opportunities. Therefore, driving the appropriate pedagogical approaches and digital tools would have a substantial impact on learning outcomes. Building robust and solid educational programme could be achieved by equipping the environment with modern and cutting-edge technologies to develop the educational standards and levels. After the pandemic, the comparison among different educational systems like physical, E-Learning, online,

blending and hybrid learning system with the utilisation of digital solutions is becoming essential to provide an efficient, economic, and productive approach in education system. It is always the challenge to decide the right style of learning that bring the best learning opportunities to students and learners. Many different aspects and principles need to be critically analysed and measured leading to reach the best decision on how to build or develop the learning environment. BNU university is a case study to demonstrate the adoption and integration of different learning approaches to reach one of the best students' satisfaction level for the teaching and students support in the UK.

Keywords: E-learning, Artificial Intelligence, Higher Education.

INVITED SPEAKER

Id-154

Reflection on the Suitability of Blended Learning as a Method of Delivery for Competency-based Programmes Involving Work-based Learning

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Abstract: The speaker will discuss whether blended learning is an appropriate approach when competency training is involved in higher education programmes where work-based learning (WBL) is also a key component. A model used in an allied-healthcare case study discussed in Chandan et al. (2022) and the data obtained from a tripartite group of stakeholders will be reviewed. The quality assurance strategies put in place for WBL in this case study will be explained. Pedagogical considerations for blended learning

programmes will be discussed including the advantages and limitations of both synchronous and asynchronous methods of online delivery.

The Covid-19 pandemic has accelerated the development of both online and blended learning programmes yet there are a wide-range of considerations and challenges to designing such programmes. Strategies to address the considerations and challenges when designing blended learning programmes involving WBL will be explored as well as mechanisms that can help build effective blended learning programmes.

Keywords: Blended Learning, Online Learning, Work-based Learning, Competency, Allied-healthcare.

INVITED SPEAKER

Id-159

Measuring the Intrusiveness of Automatically Gauging Students' Engagement in Synchronous Virtual Learning Environments

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Abstract: The perception of students' engagement during face-to-face lectures is mostly obtained from the natural and subconscious observation of students' behavior (i.e., face and body language) in the classroom. However, in synchronous virtual learning environments such subconscious perception process is not as straightforward due to the virtual barrier that separates students from instructors during the lesson development. That is, it is uncomfortable and unnatural to check the 20 or 30 miniature pictures of students

(some of them having the camera turned off) in a laptop screen that is also being used to share the slides of the lesson and, on top of that, infer the current level of engagement in students. In fact, perceiving students' engagement in synchronous virtual learning environments has become one of the major challenges identified by teachers exposed to this kind of instruction. Indeed, the virtual nature of these environments does not allow such natural subconscious observation of students and, thus, teachers struggle to (1) obtain real-time feedback from students, (2) know if students understand the training materials, or (3) acknowledge whether they are motivated towards the topic they are lecturing. It is worth noting that this feedback from their students, is used by teachers to adapt the training session discourse and activities to the needs of students in order to improve the overall teaching quality and learning experience.

This study explores the practical application of a software tool designed to automatically and non-intrusively measure up to 20 multimodal aspects associated to student engagement in synchronous virtual environments. These aspects include attendance, camera usage, voice interactions, hand raising, screen sharing, chat interactions, sound analysis, facial expressions, mouth movements, eye gaze, and more. Surveys conducted with 14 teachers who used this tool revealed that 35.7% found it slightly intrusive, while 50% did not find the use of this tool intrusive at all. Also, 85.7% of teachers reported a significant improvement in teaching quality—compared to the same session of previous editions of the course—thanks to the insights provided by the tool. Similarly, surveys with 414 students who attended sessions taught by teachers using the tool showed that only 6% considered it highly intrusive, while 22.2% found it somewhat intrusive, 26.8% were undecided, 22.5% thought it slightly intrusive, and 22.5% believed it was not intrusive. These results suggest a generally positive acceptance and potential of the tool. Therefore, this software can potentially alleviate some of the challenges in adapting teaching techniques to enhance student engagement during virtual lectures. As future work, this research points to studying how these results can be exported to face-to-face learning environments, where some researchers have tried computer vision techniques to gauge the level of students' attention.

Acknowledgment: This work has been partially funded by the Aristos Campus Mundus (ACM) program under grant number ACM2023_15 and Programme Erasmus+, Knowledge Alliances, Application No 2020-1-PL01-KA226-HE-096456, HOTSUP: Holistic online Teaching SUPport.

Keywords: Remote Instruction, Students' Engagement Monitoring, Intrusiveness, Teaching Quality, Learning Experience.

INVITED SPEAKER

Id-161

Cocreating Ethical AI in Higher Education: The Role of Knowledge Cafés

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Abstract: The rapid advancement of generative Artificial Intelligence (AI) presents both unprecedented opportunities and ethical challenges for Higher Education Institutions (HEIs). As HEIs strive to integrate these technologies into their curricula and administrative processes, there arises a critical need for a shared understanding among academics and staff on how to leverage AI ethically and effectively. The Russel group issued guidelines on the ethical use of AI in HEIs and proposed that all staff be empowered to be trained on how to develop materials to creatively use generative AI. However, given the uncertainty of the ethical use of generative AI in HEI, this paper explores the potential of a Knowledge Café as an innovative

platform for co-creating an understanding of the use of generative AI in HEIs. Knowledge Cafés, characterized by their informal and inclusive discussion settings, foster open dialogue among participants, enabling the exchange of diverse perspectives and experiences, without the power dynamic which can exist, and allowing all participants to have a voice. This paper outlines a framework for utilizing Knowledge Cafés to address key areas: ethical considerations in AI application, strategies for successful AI integration into teaching and learning, and approaches for skilling students with AI literacy and competencies. Through qualitative analysis of case studies, the paper highlights how these discussions can lead to actionable insights and collaborative development of best practices for AI use. The findings suggest that Knowledge Cafés not only facilitate a deeper understanding of ethical AI usage among academic and HEI staff but also enhance collective capacity to prepare students for a future where AI plays a central role. This paper contributes to the discourse on AI in education by demonstrating how Knowledge Cafés can serve as effective tools for community-driven learning and the co-creation of knowledge, ultimately supporting the ethical and successful integration of AI in higher education.

Keywords: Generative Artificial Intelligence (AI), Higher Education, Knowledge Café, Ethical Considerations, AI Literacy and Competencies.

INVITED SPEAKER

Id-165

Using Ontology based Methodological Approach to Improve Conceptual Understanding

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Abstract: Drawing on our experience and available science and technology studies in the realm of the effects of artificial intelligence using in higher education, now we can state that there is a danger of consolidating some undesirable trends in the use of AI in educational process. First of all, this concerns lack of proper control over how and to what extent students use intelligent services. In the learning process, application of modern methods and tools of AI instead of helping the students, can completely or significantly

replace their mental work, thereby reducing their cognitive skills, abilities for analysis, conceptual modeling and decision- making. The main objective of the paper is to demonstrate an original methodical approach to use ontology engineering methods to improve students' skills in system analysis, conceptual thinking, understanding and modeling, which help them in solving research problems as a part of their specific research work. The paper presents the original ontology model developed by us to tackle mentioned above problems. The usefulness of the suggested model is confirmed not only by the fact that it has been repeatedly successfully applied in practice to manage the process of students' research work, but also for the development of ontology driven software application within the framework of the discipline "Artificial Intelligence Systems", as well as for implementing real commercial projects. In accordance with the curriculum and the educational and methodological complex for the discipline "Artificial Intelligence Systems" developed at Perm State University, students specializing in the Computer Science profile, while studying this discipline, must master the skills of development of ontology driven applications enabled performing semantic ranking the unstructured text documents' collection related to the topic of Master's thesis. Some results of this work such as glossary of used terms, graphical ontology representation must be directly included in the content of Masters' Degree Thesis. Thus, our approach is useful not only for organizing and managing students' research work, but also for students to acquire skills in developing ontology driven applications. As practice has shown, applying our ontology model and using the methodological recommendations to correct formulation (or selection) of definitions of presented in the ontology concepts and building relationships among them, choosing semantic metrics as well as to step-by-step development of ontologies greatly contribute to the success of designing ontology as "formal, explicit specification of a shared conceptualization" (Gruber, 1993). In many ways, this success is explained by using the special teacher's technique to control the designing process to provide such important advantages of the ontology as semantic coherence, logical consistency, reusability and documentability. The paper demonstrates our models, tools and applications and shows the real examples how the proposed approach can help students to organize and structure the research work and not only receive knowledge in accordance with educational standards and training programs, but also independently improve knowledge and skills of conceptual understanding, analyzing and summarizing the information received during ontology designing that help them to prepare a literature review on the topic of Master's thesis.

Keywords: Conceptual Understanding, Cognitive Skills, Students' Research Work, Ontology Based Methodological Approach, Ontology Engineering Methods.

INVITED SPEAKER

Id-167

Statistic, Generative Artificial Intelligence and e-Learning Systems: Facing Data New Challenges and Risks

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Abstract: Statistic involves collecting, analyzing, interpreting and presenting data to make informed decisions, conclusions and predictions, and plays a vital role across disciplines due to its diverse methods and global scope of applications. Entering the new millennium, artificial intelligence has revolutionized many

fields, and formal education is one of them, mainly because of the dynamic update achieved. Such advancements have enabled the development of Generative AI, which refers to AI systems that provide immediate feedback and support, and that can create new content, such as images, text, or music, rather than simply analyzing statistically existing or simulated data. Additionally, Generative Artificial Intelligence Models (GAIM) can generate a new type of data called “synthetic data” to improve risk analysis processes that identify, assess, and prioritize potential hazards to minimize their impact on a project, system or organization. GAIM plays a key role in the field of e-learning education, a system that allows students to access educational content anytime, anywhere and at their own pace. This flexibility is particularly beneficial for students studying mathematics because it allows them to practice and engage with the material in a way that suits their learning style.

Statistic can be very useful for educators on track student progress, evaluate the effectiveness of teaching methods, and make data-driven decisions to improve educational outcomes, while both the educators and administrators can use Risk Analysis to identify potential challenges or obstacles that students may face in their academic journey, and develop proper strategies to support them. On the other hand, Generative AI can be used to create personalized learning materials, adaptive tutoring systems, automated grading, and efficient resource allocation, cater to individual student needs.

Overall, these tools and techniques can play a valuable role on the Education future forefront, by enhancing the quality and efficiency of educational practices, mainly in e-learning systems. There are, however, certain statistical risk patterns that need to be evaluated to ensure the ethical and responsible use of AI in education, which will be further discussed.

Keywords: Statistic, Risks, Synthetic Data, Generative Artificial Intelligence, E-learning Systems.

INVITED SPEAKER

Id-168

Learning Analytics and Artificial Intelligence in E-learning Environments

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Abstract: Learning Analytics (LA) and Artificial Intelligence (AI) represent two distinct areas, often interconnected, that have played important roles in education and learning processes. LA is dedicated to collecting and analysing data and interpreting results in educational contexts and learning processes, with a view to improving them through more assertive decision-making in the educational area. It allows for more

detailed conclusions about student performance, the identification of learning patterns, as well as the prediction and personalization of teaching strategies. LA integrates several components, namely data collection that can be done, for example, through online teaching platforms, statistical analysis, and data visualization, and finally action based on the insights obtained. Artificial Intelligence (AI) is an area of computer science that is dedicated to the development of systems capable of carrying out tasks that would usually require human intelligence. AI is already used to personalize teaching, namely offering automatic feedback as well as creating automatic learning environments. Machine Learning (ML), as a subfield of AI, with the ability to analyse patterns in large sets of educational data. The integration of the two areas LA and IA allows us to enhance results and benefits. Through data collected through LA, AI algorithms can be activated, obtaining predictions about learning, the possibility of obtaining personalized interventions and improving educational strategies. There are, however, some challenges inherent to the use of AI, relating to ethical, privacy and data security issues. The union of the two areas points to great potential for a profound change in the way we learn and teach, providing more personalized and efficient approaches in area of education. Some application perspectives in curricular units that integrate courses operating in an e-learning environment at Universidade Aberta (public distance learning university in Portugal) will be discussed.

Keywords: Learning Analytics, Artificial Intelligence, Statistics, E-learning.

ORAL PRESENTATION

Id-33

Exploring the Impacts of STEM Undergraduate Research Experiences on Students in the Global South Context

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Abstract: The experience acquired by students who have undertaken research projects when attending colleges or universities, pursuing a bachelor's degree, and majoring in STEM-related fields are well

researched in the Global North Context. For example, Zhang and Swaid (2017), Burt, Stone, and Motshubi (2019), and Birney et al. (2021) studies inform that research experiences for STEM undergraduates have been viewed as positive experience that has several benefits. Though research projects are key components in STEM undergraduate programmes in the Global South Context as well, yet the undergraduate research experiences of STEM students in the Global South remain unexplored. Thus, this study aims to explore the impacts of STEM undergraduate research experiences on students. The qualitative study was based on a narrative inquiry carried out in two higher education institutions (HEIs) for teacher education in two countries in the Global South, one HEI in South Africa and one HEI in Mauritius. The sample included 65 students, 43 from the South Africa HEI and 22 from the Mauritius HEI, enrolled in either undergraduate or postgraduate courses in any one of the STEM subjects. Data was collected through a questionnaire administered to the 65 participants, and an in-depth interview carried out with 6 participants to probe deeper into the impacts of their undergraduate research experiences. Our findings have revealed that though the participants encountered various challenges during their STEM undergraduate research, they deployed student agency to overcome these challenges. Amongst others, two major challenges involved the need for requisite knowledge of one or two other STEM subjects (such as Chemistry, Mathematics or Physics) over and above their area of specialization, and the need to develop advanced ICT skills in the use and application of software that they have never come across before. Our research has clearly pointed out that their undergraduate research experiences have had major impacts on the participants. Development of 21st century skills was one of the most prominently stated gains from the undergraduate research experiences in STEM. Some of the 21st century skills which have been clearly spelt out by participants include critical and creative thinking, technology/ICT skills, problem-solving skills and teamwork amongst others. Furthermore, in attempting to overcome the challenges encountered during their undergraduate research, the students engaged in interdisciplinary and peer learning, and were also able to acquire advanced ICT skills and to develop further understanding of the real-life applications of STEM. Acquisition of indigenous knowledge, and the opportunity to create a professional network were also found to result from the undergraduate research experiences. In conclusion, findings from the study indicate that engaging in undergraduate research has endowed the STEM students with a whole gamut of skills and competencies that would empower them as 21st century citizen, problem-solver and lifelong learner.

Keywords: STEM, Undergraduate Research Experiences, 21st Century Skills, 21st Century Citizenship, Global South.

ORAL PRESENTATION

Id-39

The Understanding of Literacy in the Context of Inclusive Learning and Education

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Abstract: The contemporary understanding of literacy happens in an environment defined by an easy access to brief information. This leads to systematic changes that affect: reading time; the ways in which information is processed; the types of needs that motivate the search of information, and the consecutive reading. This paradigm also affects the societal expectations of the type of literacy the educational institutions are to deliver and form in the new generations.

In recent years, we speak more and more of functional literacy, which intends to serve the individual in his/hers immediate interactions with the society. This inevitably challenged the supporters of the classical understanding of literacy, which led to numerous heated debates. As a result, there has been a lack of focus on the understanding of literacy for children with special educational needs, which affected in a negative way the ongoing process of their integration in the educational process.

This paper will present trends in the understanding of literacy and its impact on the process of organizing and implementing an inclusive learning environment. The analysis will be made on the basis of the data obtained from the last three TALIS and PIRLS international reports.

Keywords: Literacy, Functional Literacy, Basic Literacy, Inclusion, Special Education.

POSTER PRESENTATION

Id-162

Simulation Design: Pedestrian Skills Safety Training using Virtual Reality

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Abstract: This research focused on the combination of emerging technologies used to digitize traditional Applied behavioural Analysis intervention principles. The objective of the simulation is safety skills acquisition using Virtual Reality and eye-tracking features. Pedestrians' street crossing skills training used and compared performance in the natural environment. The immersive technology development encouraged the automatization of therapy session tasks with programmed and controlled conditions as an

"artificial environment" to include many possibilities and scenarios that may occur to our patients during an intervention session. Meanwhile, Eye-tracking data are used as evidence in VR and the natural environment in the generalization phase to verify intervention outcomes.

Acknowledgment: This Research was partially funded by King Salman Center for Disability Research (KSCDR), Grant Number R-20200003

Thanks to Dr Laura Barcelos Nomicos for feedback and review and to colleagues at the center for using the simulation in training sessions.

Keywords: Virtual Reality, Simulation, Training, Autism Spectrum Disorder, Applied Behavior Analysis.

POSTER PRESENTATION

Id-166

Promoting Steam Vocations for Children: Explaining Computer Programming and AI Basics Through Robotics

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Abstract: Robotics gives children an exceptional chance to actively explore STEM concepts across diverse areas, such as programming, computational thinking, and hands-on skills. The main goal of this research is to promote STEAM vocations for children learning computer programming and Artificial Intelligence (AI) basics through robotics within a social educational context. In this regard, we have (1) identified the main challenges and limitations on training young students in these two fields (i.e., teachers knowledge, students background, educational resources and facilities), (2) select the most suitable AI topics and platforms to be taught to children in the year range of 12 to 14 (i.e., classification with k-Nearest Neighbors and Decision Trees, forecasting with Linear Regression and Neural Networks), and (3) proposed a set of six activities and challenges adapted to children in this age range not only focused on the programming discipline but also on framing them within a social context (e.g., programming an AI algorithm in a robot to help the elder people taking the correct pills) to stimulate their interest. The proposed educational platform combines two well-known robotic environments, KIBO and LEGO SPIKE, which provide promising results in the field of education. The development of each activity is as follows: First, students are exposed to a challenge related to a social concern. An example of such challenges would be the implementation of a waste management system or a smart bin in the context of sustainable smart cities. Another example would involve the development of an automatic crop planting system in a field for promoting environmentally friendly agricultural practices. After presenting these challenges, students are equipped with the foundational knowledge of an AI algorithm that could be suitable for addressing the given task. For instance, a Decision Tree classifier may be recommended for the aforementioned waste management system challenge. These algorithms are elucidated through visual and interactive mediums, such as short videos or scratch scripts, to enhance understanding and engagement. Finally, students are asked to connect what they have just learned with a potential solution that could come up with a directed brain storming. Later, students are in charge of putting all of this into practice by programming the robotic environments, which have a similar Integrated Development Environment as the scratch scripts that they have seen before (e.g., Lego Education Spike). This hands-on application of theoretical concepts empowers students to translate their learning into practical solutions, fostering deeper comprehension and skill development in programming and AI. In conclusion, this work proposes a multimodal approach to develop an educational platform that integrates engineering and pedagogy, aimed to introduce children to the field of programming and AI through engaging and active learning activities. Future work directions aim to implement these activities on pilot studies in schools in order to (1) validate and improve the platform by collecting students and instructors' feedback and (2) assess the impact of these educational activities in the students' development.

Acknowledgment: This work has been funded by the Aristos Campus Mundus (ACM) program under grant number ACM2023_08.

Keywords: Educational Robotics, Computational Thinking, Artificial Intelligence, STEM, Challenge Based Learning.

All Submissions & Topics

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1 - Curriculum & Instruc	121 - Current Innovations In The Maritime Higher Education Curriculum Development
2 - Educational Technolo	23 - Blockchain Technology As Trusted Certification Platform In Maritime Education – Challenges And Opportunities
	45 - Motivating Learning With Gamification
	63 - Enhancing Quality In A Multilingual Online Lsp Teacher Education Course
	64 - Exploring Lecturers' Challenges And Acceptance Of The Use Of Moodle Learning Management System Functionalities

	67 - Development Of Digital Storytelling Comic Media In Learning Science In Elementary School In Indonesia
	97 - How "Real" Is Virtual Reality As A Learning Tool?
	140 - Telagogy: Learning In Society 5.0 And Beyond Domination
	141 - Development Of Students' Music Teaching Professional Competency By Using Spoc Based On Signature Pedagogy
	151 - Addressing The Challenges Of Research Conduct: Introducing Netsearch, An Innovative Platform For Enhanced Learner Engagement And Plagiarism Prevention In The Era Of Generative Ai
	152 - From E-Learning To Smart Education Systems Impacted By The Utilisation Of Artificial Intelligence In Higher Education.
	162 - Simulation Design: Pedestrian Skills Safety Training Using Virtual Reality
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7 - Assessment & Evaluat	69 - Is Online Assessment Reliable? The Experience Forced By The Covid-19 Pandemic At The University Of Milan
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8 - Teacher Education &	21 - Fostering Safe Learning Spaces In Teacher Education: Empowering Mathematics Teachers In Integrating Technology And Computational Thinking
	43 - Universities As Ecosystems : Flourishing And Thriving Not Just Coping And Surviving.
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	80 - Formation Of Research Competencies Students Of Pedagogical Master's Degree
	148 - Profiles And Practices Of Higher Education Teachers: Changes And Challenges In Recent Decades
	154 - Reflection On The Suitability Of Blended Learning As A Method Of Delivery For Competency-Based Programmes Involving Work-Based Learning
	161 - Cocreating Ethical Ai In Higher Education: The Role Of Knowledge Cafés
11 - Cognitive Aspects &	111 - Role Of Intervention In Foreign Language Text Reading Comprehension
	165 - Using Ontology Based Methodological Approach To Improve Conceptual Understanding
12 - Diversity, Inclusion	125 - The Challenges Of Curriculum Adaptation In The Context Of The School For All
13 - Student Engagement	159 - Measuring The Intrusiveness Of Automatically Gauging Students' Engagement In Synchronous Virtual Learning Environments
17 - Generative AI	28 - Chatgpt In Education - Year After. Have The Catastrophic Scenarios Come True?
	71 - The Impact Of Generative Artificial Intelligence On Academic Integrity And Education Policy Professor Michael Draper
	83 - Generative Ai's Impact On Academic Integrity And Digital Fluency In Higher Education
	167 - Statistic, Generative Artificial Intelligence And E-Learning Systems: Facing Data New Challenges And Risks
18 - STEM	1 - Towards Artificial Photosynthesis Promoting Photochemistry In Science Education
	6 - Mind The Gap: Analyzing Gender Disparities In Stem Interest Among Female Students And Strategies For Bridging The Divide
	33 - Exploring The Impacts Of Stem Undergraduate Research Experiences On Students In The Global South Context
	38 - Self-Assessment Of The Students' Understanding Of The Colregs

	79 - Designing An Outdoor Steam Makerspace In A Preschool School Garden: Reflection From Preservice Teachers
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