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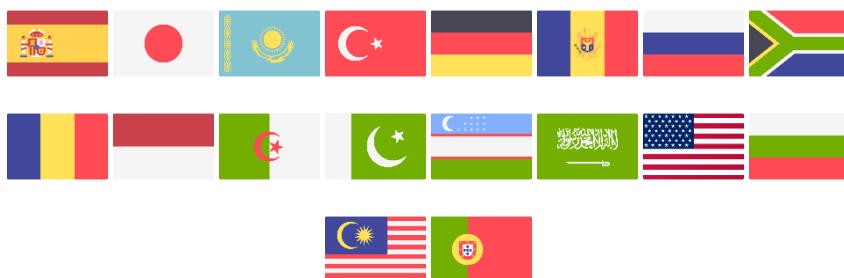


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**IMPLEMENTATION OF AN EDUCATIONAL ESCAPE ROOM FOR TEACHING
ENVIRONMENTAL SUSTAINABILITY IN THE SUBJECT OF ECONOMICS IN THE 1ST
YEAR OF SPANISH BACCALAUREATE**

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This paper studies the effectiveness of an escape room for teaching a specific topic on environmental sustainability in the subject of Economics in the first year of Spanish baccalaureate. In an educational context characterized by the disaffection of students towards traditional methods, literature agrees in attributing to the gamification methodology in general, and to the escape room activity in particular, the power to awake their motivation and involvement during the teaching-learning process. Taking into account the didactic potential of this tool and considering the inclusion of sustainable development in the curricula of new Spanish educational legislation (LOMLOE) -more aligned with European standards-, as well as the central role of education in the transition towards a new green economic paradigm, the educational escape room "Earth 2050" has been created and implemented as part of the theme "The new green paradigm in the EU economy", based on one of the lines of the EU-ECO-FINproject. The obtained results are in line with the theoretical issues analyzed, confirming the didactic benefits of the escape room.

Keywords: gamification, escape room, motivation, spanish educational legislation, sustainable development

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HIGHER EDUCATION AND TECHNOLOGY IN THE CONTEXT OF COVID-19: REALITIES OF INEQUALITIES IN SOUTH AFRICA

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The COVID-19 pandemic proved to be a multidimensional crisis which required collaborative approaches that cut across disciplines and sectors. After the World Health Organization (WHO) declared the outbreak of the virus on 11 March 2020, nobody knew that the disease would disrupt every aspect of human life. Less than a month into the malaise, the President of the Republic of South Africa reacted to what looked like a surge in the COVID-19 cases in South Africa by calling for the national shut down. When it became apparent that the situation was going to be a phenomenon that would co-exist with nations and societies for much longer than anyone could have thought, the education sector had to consider ways of dealing with the situation while not compromising education. This paper explores the inequalities that the pandemic exposed in relation to, amongst other things, institutions of higher learning as some establishments were ready to move to teaching online and continue with the academic term, while others faced severe constraints related to students' poor access to technology and poor socio-economic circumstances. It further highlights the much taken for granted disparities that continue to taint the image of South Africa almost three decades into its hard won democracy.

Keywords: higher education, technology, covid- 19, inequalities

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UPSKILLING HIGHER EDUCATION ENGINEERING TEACHERS ON TEACHING CREATIVITY ONLINE

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Creativity has been identified as a critical competence for future engineers and is said to rely on direct contact with others and on teaching environments that allow for face-to-face phronetic experiences. Against the background of the pandemic-caused amplification of online teaching, the main objective of the European project TICON - Teaching creativity online - was to identify the barriers in engineering higher education for teaching creativity online and to upskill teachers in digital teaching with appropriate pedagogical approaches. This is achieved through the TICON e-learning platform, which provides engineering educators with a targeted curriculum and a range of educational materials. The platform was developed using a user-centred design approach. Initial interviews and focus groups were conducted with engineering educators to understand the challenges and best practices of teaching creativity online. Based on these findings, a comprehensive curriculum, learning materials and e-learning platform were developed. The programme provides a targeted learning journey for upskilling engineering teachers and includes modules on understanding creativity in engineering, implementing online teaching sessions, managing online creativity teaching and insights from teaching experts. An extensive evaluation, involving both teachers and students, was carried out to assess the effectiveness of the platform and gather feedback for improvements.

Keywords: e-learning, online teaching, creativity, user-centred design

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THE DEVELOPMENT OF THE WORLD WIDE WEB

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This article provides a comprehensive overview of the development of the World Wide Web (WWW) and its significant impact on society. The emergence of the Web can be traced back to Tim Berners-Lee's visionary proposal in 1989, which introduced the concept of a global information sharing system. Basic protocols such as HTTP and HTML were then developed, laying the foundations for the Web as we know it today. This paper explores the rapid spread and evolution of the Web, thanks to advances in technology and the increasing accessibility of the Internet. The development of user-friendly web browsers such as Internet Explorer played an important role in popularizing the Web and making it more accessible to the general public. The ability to display graphical interfaces, images and multimedia content further increased the appeal of the Web. The rise of websites and the creation of user-friendly content management systems enabled individuals and organizations to establish a presence on the Web. The social impact of the Web has been profound. It has revolutionized communication, enabling people to connect and interact across geographical boundaries through email, social media and online forums. The Web has also empowered individuals by providing platforms for self-expression, creativity and entrepreneurship. In addition, the Web has facilitated the dissemination of knowledge, promoting education, research and innovation on a global scale. From an economic perspective, the Web has accelerated the growth of e-commerce, transforming the way businesses operate and consumers shop. Online platforms have created new opportunities for entrepreneurship, connecting buyers and sellers around the world. The Web has also revolutionized industries such as entertainment, media and advertising, providing new ways to distribute content and reach wider audiences. All in all, the development of the World Wide Web has been an extraordinary journey, revolutionizing the way we access information, communicate and do business. Understanding its history, growth and impact is essential to harness its potential and meet the challenges that arise in the digital age.

Keywords: new media, www, web 1.0

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BLACK STUDENTS' EXPERIENCES AT ELITE PREPARATORY SCHOOLS: STRADDLING TWO WORLDS

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Abstract: Black individuals are often underrepresented in elite spaces (Ashkenas et al., 2017). As a result, it is important to examine their experiences in elite spaces to determine ways to improve these experiences. This study attempted to describe how elite preparatory schools negatively impact Black students. We performed qualitative interviews on four Black individuals who had experiences in preparatory schools. The results of the study showed that preparatory schools negatively impacted Black students as they face difficult transitions and feel isolated in preparatory school environments, face tokenization, and struggle in their identity formation and emotional development. Our results showed minor instances and low levels of discrimination. The results of our study suggest that socioeconomic status plays a role in Black students' experiences at preparatory schools, however the degree to which it affects them is unknown. Despite having negative experiences at preparatory schools, preparatory schools also impact Black students positively, as they allow them to become more comfortable in elite environments, as well as prepare them for their futures. More research must be done to better summarize the experiences of all Black preparatory students. We hope this study encourages more Black preparatory school students to share their stories.

Keywords: black students, k-12

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THE RELATIONSHIP BETWEEN TEACHERS' ORGANIZATIONAL ALIENATION, EMOTIONAL LABOR, AND THEIR BEHAVIORS IN TEACHING-LEARNING PROCESS

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The aim of this study is to reveal the relationships between organizational alienation, emotional labor, and teaching-learning process behaviors of teachers based on their views. A total of 391 teachers working in secondary education institutions in the central district of Düzce province in the 2022-2023 academic year participated in the study. As a result of the research, it was found that a significant difference was found in favor of female teachers between their gender and the total score of their teaching-learning process behaviors and the positive behavior sub-dimension. A significant difference was found in favor of unionized teachers between their union membership status and the "normlessness" sub-dimension of organizational alienation. A significant difference was found in favor of teachers with over 21 years of professional experience between their length of service and the "social-isolation" sub-dimension of organizational alienation. A significant difference was found in favor of graduate teachers between their educational status and the "powerlessness" and "social-isolation" sub-dimensions of organizational alienation. A significant difference was found in favor of vocational high school teachers between their school type and the "normlessness" sub-dimension of organizational alienation and the "surface behavior" sub-dimension of emotional labor.

Keywords: emotional labor, organizational alienation, teacher behaviors in teaching-learning process

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CHATGPT AND BEYOND: THE RISE OF AI ASSISTANTS AND CHATBOTS IN HIGHER EDUCATION

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Higher education has always been accompanied by challenges for professors and educators. However, technological advancements have also brought forth various opportunities in the form of educational aids. This study explores the opportunities and challenges of using ChatGPT and virtual assistants in higher education in Pakistan. Among these technologies, artificial intelligence (AI) has emerged as a transformative force, offering both opportunities and challenges. This paper delves into the application of AI-based tools, particularly ChatGPT and virtual assistants, in higher education advancement in Pakistan. It discusses the potential benefits and obstacles associated with their use, while also presenting and analyzing research findings on the utilization of ChatGPT by students in a higher education setting. The study highlights the advantages that ChatGPT and virtual assistants can bring to the learning process, such as personalized assistance and access to information. However, it also acknowledges the challenges, including the need for effective implementation and addressing privacy concerns. By examining the opportunities and challenges associated with these AI-driven tools, this study contributes to a better understanding of their role in enhancing higher education in Pakistan and provides insights for educators and policymakers in leveraging these technologies effectively.

Keywords: artificial intelligence, challenges, chatbots, higher education, virtual assistants

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PERCEPTIONS OF EDUCATORS REGARDING GOOD SCHOOL CRITERIA

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In the study, it was aimed to determine the perceptions of school administrators and teachers working at various school levels in the central district of Düzce province in the 2022-2023 academic year regarding the concept of "good school", the criteria of "good school" and their suggestions to determine the good school. In the study, a phenomenological design was used, which includes questions about the meanings that school administrators and teachers attribute to the concept of "good school" and its criteria. The collected data were analyzed using the content analysis technique. Maximum diversity sampling method was used in the study, which was carried out with the participation of thirteen teachers and six administrators. As a result of the research, it was revealed that teachers and school administrators have various perceptions of the concept of "good school" and "good school" criteria. To determine the good school, educators included suggestions such as providing good education to students, turning the school into a research center, developing physical opportunities, giving more weight to disadvantaged areas in socio-economic terms, developing student skills and academic success, having private teachers for courses that require special talent. In addition, suggestions such as providing students with social skills and moral values, cooperation and harmony of all stakeholders, election of administrators from competent people, receiving parent support in all matters, making teachers feel valuable and eliminating their financial concerns are also presented.

Keywords: good school, good school criteria, teacher opinions, administrator opinions

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EXAMINING THE RELATIONSHIP BETWEEN HIGH SCHOOL STUDENTS' PERCEPTION OF SCHOOL CLIMATE AND THEIR CRITICAL THINKING DISPOSITION

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The quality of our daily life, our work, and what we produce depend on the quality of our thoughts. Therefore, the path to achieving mental independence and progress passes through thinking education. According to some thinkers, the most advanced and developed form of thinking is critical thinking. It is observed that the skill of critical thinking has been increasingly discussed and valued in the field of education in recent years. All schools are institutions established to achieve a common goal, but the environment they are in can be different while achieving their goals. This situation, which is the distinguishing feature of schools, is referred to as the school climate. When studies on school climate are examined, it has been found that positive school climate contributes to students' academic achievement, adaptation to school, participation in classroom activities, peer attachment, and school and class attendance. Based on this, it is thought that schools with a positive school climate can contribute to students' critical thinking tendencies by providing a context that supports their critical thinking and encourages different perspectives. Therefore, the aim of this study is determine whether there is a relationship between high school students' perception of school climate and their tendency towards critical thinking. The study used a correlational survey model, attempting to determine the presence or degree of co-variation between two variables. Stratified sampling method, one of the non-probability sampling methods, was used to determine the sample of the study. "Delaware School Climate Student Survey" and "UF/EMI Critical Thinking Disposition Scale" were used as data collection tools in the study. The data obtained in the study were analyzed using t-tests, ANOVA, and Pearson correlation coefficients. According to the research results, a significant and positive relationship was found between the perception of school climate and the tendency towards critical thinking.

Keywords: thinking, critical thinking, school climate

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"WRITE AND IMPROVE" AS AN AUTOMATED WRITING EVALUATION (AWE) TOOL: EFL LEARNERS' PERCEPTIONS

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A modern educational paradigm has been adopted that prioritizes supporting the learning and teaching processes with technology. In Turkiye, where English is taught as a foreign language, technology-supported language teaching has not been left out of this trend due to the advantages it offers in accessing authentic materials and in many other aspects. Various digital tools, applications, and programs have been utilized to increase learners' success. In line with this aim, the study explores the perspectives and experiences of 43 first-year Turkish EFL learners regarding the implementation of the AWE tool "Write and Improve". Qualitative data are obtained through open-ended questions at the end of the 8-week implementation. The findings reveal that the use of this AWE tool significantly develops learners' writing performance, particularly in grammar and vocabulary. The findings also show that receiving immediate feedback on their writing is the most salient benefit, although learners dominantly prefer teacher feedback to the automated tool's feedback. Based on the findings, this preference is attributed to the need for clarification, which is frequently stated by learners who are uncertain about what exactly the highlighted parts refer to. Consequently, the impact of educational programs and teachers' role are discussed.

Keywords: awe, efl, writing skills, tertiary level

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THE USE OF VIRTUAL LABORATORIES IN SCIENCE EDUCATION: A STUDY ON CLASSROOM TEACHERS' EXPERIENCES AND PERCEPTIONS

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A virtual laboratory refers to a laboratory environment where experiments are performed virtually in a computer or internet-based environment. Instead of physical experimental equipment in traditional laboratories, experiments in virtual laboratories are performed through computer simulations or virtual environments. Virtual laboratories are effective learning tools used in education and research. Students can reinforce their theoretical knowledge with practical experiences and observe the results of experiments. In addition, virtual laboratories reduce costs and time, enabling experiments that are difficult or dangerous to perform in real laboratories to be carried out safely. With the development of technology and simulations, studies are constantly being conducted to increase the benefits and reduce the limitations of virtual laboratories. Considering that the knowledge, skills and attitudes aimed to be gained by students through virtual laboratory studies are directly proportional to the knowledge, skills and attitudes of teachers, the aim of this study is to investigate the ideas and opinions of classroom teachers about the use of virtual laboratory applications in primary school science course. The study was conducted with 20 teachers working in various provinces of Turkey. In the study, in which case study design, one of the qualitative research methods, was adopted, data were collected through a semi-structured interview form. The data obtained were started to be analyzed by content analysis, and the process of reporting in a detailed and consistent manner continues. For this reason, the results, discussion and recommendations sections will be given in the full text to be submitted to the symposium.

Keywords: science, virtual laboratory, primary school

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WOMEN'S HEALTH IN EUROPEAN COUNTRIES

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The COVID 19 crisis highlighted that health for individuals cannot be approached through a monolithic approach. Instead, it has to be dissected through a stratified lens, that does so across race, gender, socioeconomic status, age, ethnic, geographic regions and religious strata. One geographic area that has experienced severe scrutiny over the last two years is Europe, where the COVID crisis originated. However, even then, the focus was not by strata, but from an overarching perspective, looking at the population as aggregates, even when discussing health data. This form is both unfair and non productive, especially in such a region as Europe, where issues of health for women have long occupied a critical, but often ignored agenda (Agarwala, 1966. This paper takes a step back from much of the documents that have been produced on the overall health status in European countries and zeroes in on the specific health status of women in European countries. It does so with a look at key statistical indicators that speak to the core of what it means to maintain a satisfactory health status for women - not just in European countries, but with implications overall globally, across many countries.. This paper thus strives to carve out a niche by looking at women's health in European countries. It looks at specific health data such as: age structure of the population, median age, mother's mean age for first child's birth, maternal mortality rates, infant mortality rates, life expectancy, fertility rates, contraceptive rates, physician density, hospital bed density, HIV rates, obesity and underweight children. The primary aim of this accumulation of data is to provide a synopsis of what this made in terms of inferences for other inferences.

Keywords: health educatiuon

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EXAMINATION OF MATHEMATICS TEACHER'S OPINIONS ON OUT-OF-SCHOOL LEARNING ENVIRONMENTS IN MATHEMATICS TEACHING

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Out-of-school learning environments allow students to discover the production, culture, art and geographical capacity of their own regions in line with the subjects and achievements within the scope of education/training programs; recognize plant and animal species, local characteristics, game and folklore; In these learning environments, students actively participate in activities involving real-life situations. Out-of-school learning environments, which have become popular in our country in recent years, have become an official process with the Ministry of National Education's (2019) Out-of-School Learning Environments guide. It is aimed to plan the activities in out-of-school learning environments in a way that is related to the curriculum. Thus, learners can realize the relationship between the concepts learned in formal education environments such as schools and real life. In general, studies show that out-of-school learning environments have a positive effect on students' academic success and increase the level of associating academic knowledge with daily life. From this point of view, it is important to use out-of-school activities especially in mathematics teaching. The aim of this study is to examine the opinions of mathematics teachers about what can be done about out-of-school learning environment in mathematics teaching. In accordance with the purpose of the study, qualitative research approach was used in the study and the interviews were divided into codes and categories using content analysis. The study group consists of 14 mathematics teachers working in a province located in the Southeastern Anatolia Region of Turkey. The data of the study is in the analysis phase and in the study, sample interview transcripts belonging to each category will be examined in detail and interpreted with quotations. In addition, the results obtained from the research will be compared with the existing studies in the relevant literature and suggestions will be presented to the researchers interested in the subject.

Keywords: mathematics education, out of school education, math teacher

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EXAMINING THE RELATIONSHIP BETWEEN TEACHERS' PATIENCE LEVELS AND PROFESSIONAL RESILIENCE

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The purpose of this research is to examine the relationship between teachers' patience levels and their professional resilience. In this research, which was designed in a relational survey model, the “Teacher Patience Scale” developed by Meriç and Erdem (2022) and the “Teacher Professional Resilience Scale” developed by Näswall, Malinen, Kuntz, and Hodliffe (2019) and adapted into Turkish by Limon (2022) were used as data collection tools. The sample of the research consists of 404 teachers working in public schools in Kartal and Tuzla districts of Istanbul. According to the research findings, it was found that the teachers' patience levels and professional resilience levels were high. In addition, while the patience and professional resilience levels of teachers do not show a statistically significant difference according to the gender of the teachers, their educational status and the number of teachers working in their schools, they show statistically significant differences according to their professional seniority and educational levels. These differences are in favor of teachers working in primary and secondary schools and teachers with lower seniority. According to another finding obtained from the research, there is a positive, high and significant relationship between teachers' patience levels and their professional resilience levels. As a result of the regression analysis, it was seen that teacher patience was a significant predictor of professional resilience. Teacher patience explains 73% of professional resilience.

Keywords: teacher, patience, resilience

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THE RELATIONSHIP BETWEEN SCHOOL HAPPINESS AND DIGITAL GAME ADDICTION

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The purpose of this research is to examine the relationship between primary school students' school happiness and digital game addictions. The study group of this research, which was designed in the relational survey model, consists of 204 fourth-grade primary school students studying in the Pendik district of Istanbul. In the research, the "School Happiness Scale for Primary School Children" developed by Özdemir, Yılmaz-Hiğde and Sağkal (2021) and "The Digital Game Addiction Scale" which was developed by Lemmens, Valkenburg & Peter (2009) and adapted into Turkish by Yalçın-Irmak & Erdoğan (2015), and later whose validity and reliability analyzes were made for primary school children by Hiral-Oral and Arabacıoğlu (2019) were used. According to the research findings, it was found that the students' school happiness was at a moderate level and their digital game addiction was at a high level. Students' school happiness levels and digital game addiction levels do not show significant differences according to their genders. Similarly, the digital game addiction levels of students do not differ statistically according to the gender of their teachers, but the school happiness levels of students with female teachers are statistically significantly higher than those with male teachers. On the other hand, while the digital game addiction levels of the students do not differ significantly according to the school success of the students, the school happiness levels of the students with medium school success are significantly higher than the students with low or very high school success. According to another finding obtained from the research, there is a negative, low and significant relationship between students' school happiness levels and digital game addiction levels. As a result of the regression analysis, it was seen that school happiness was a significant predictor of digital game addiction. School happiness explains 3% of digital game addiction.

Keywords: school happiness, digital game addiction, primary school, student

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**THE IMPLEMENTATION OF ROBOTICS AND AUTOMATION IN IMPROVING
WAREHOUSE EFFICIENCY AMONG LOGISTICS OPERATORS IN MALAYSIA**

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Warehouse operations in Malaysia are still largely rely on manual processes, resulting in surface-level and backward technology implementation. The use of manual methods to manage large inventories often leads to human errors and such inaccuracies in inventory management can have a significant impact on warehouse efficiency. This research aims to investigate the potential impact of robotics and automation on improving warehouse efficiency among the Malaysian Logistics operators. The Logistics sector in Malaysia plays a vital role in supporting the country's economic growth. As such, advancements in robotics and automation hold immense potentials to enhance operational efficiency, increase productivity, and achieve cost-effectiveness within warehouse facility operations. By adopting and integrating robotics and automation, warehouses can streamline their processes, reduce manual labour, and mitigate the risks associated with human errors. Literature reviews have been gathered to explore existing studies and best practices in the field of warehouse technology. To further conduct this research, primary data have been collected by distributing self-administered, online questionnaire to a sample of warehouse operators in order to gather their perceptions on the current challenges, technology utilization, and potential benefits of adopting robotics and automation. The collected data have been analyzed using IBM SPSS Statistics software for in-depth statistical analysis and identification of significant patterns and correlations. By examining the relationship between robotics and automation implementation and warehouse efficiency, this research will be able to provide valuable insights into the potential benefits and challenges of adopting robotics and automation in Malaysian warehouses.

Keywords: robotics and automation, warehouse efficiency, logistics and supply chain management, technology adoption, malaysia

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THE PATH LESS TAKEN: THE REFLECTIVE AND THE INTUITIVE IN DESIGN

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The main argument in this paper is that we might think about design approaches that enable ways of addressing absence and indetermination, as means of creation. Further to a theoretical framing, we try to contextualize and to conceive experimental pieces that enable us to reflect on outcomes that are driven by intensive, rather than extensive, design strategies. We put forward a concept of atmosphere that structures a framework that might enable valid and fruitful pragmatic explorations and reflections in design. On the overall, we try to make contributions to the research of possible relations between the extensive and the intensive qualities and approaches to design. And by doing so, between body and object. We think that the approach present in this study is relevant in the sense that it might allow to question some constraints that we identify in contemporary design. Thus to question forms of thinking that might escape static and purely formalistic project methodologies. We try to contribute on alternative ways of thinking design that are contrasting to pure Cartesian, extensive and quantitative approaches. And we try to balance a theoretical course of investigation with an operative and pragmatic side constituted by two case studies. We focus on two experimental pieces that result from an intuitive and intensive approach to design. So, and on the overall, we put forward the question: - Is it possible to think about absence – of form, of an extensive character – as a method of creation in itself?

Keywords: design, body, experimental, intensive, atmosphere

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**CHARACTER ACCENTUATION AND REFLECTION FEATURES OF
ADOLESCENTS AGED 14-17**

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The article presents data on the study of computer and Internet addiction in the adolescent and student environment (Alekseeva E.B., Tverdokhlebova D.A., Kupriyanova A.A., Brilyuk V. V.). The specificity of Internet addiction in these individuals is shown, the main aspects of prevention in the context of the studied issue are analyzed. The results of the study of the relationship between the protective reflection of adolescents (modification of the projective technique "Cognitive-emotive test" Yu.M. Orlova, S. N. Morozyuk) and the severity of the types of character accentuation (test questionnaire S. Shmishek, modification of the methodology "Definition of personality-characterological accentuations K. Leonhard"). The analysis of the results obtained both in the group of boys and in the group of girls is given. The obtained results allow us to conclude that for adolescents aged 14-17 years (both boys and girls), such types of character accentuations as: emotive, pedantic and excitable are more characteristic. The main mechanisms of psychological defenses during the experience of negative emotions for these types are the following: the volume of protective reflection during the reproduction of guilt, protection from guilt, protection from envy and self-deprecation of the Ego. Among the less common defense mechanisms in these groups are: rationalization by circumstances, withdrawal from the situation, volume and protection from fear of failure, volume and protection when experiencing a sense of shame. Thus, character accentuations can become a significant obstacle in a person's development of new, more effective forms and methods of activity and behavior. And the optimization of character traits through the development of reflexive culture (mastery of sanogenic thinking) makes it possible to increase the efficiency of human activity, promotes awareness of the available means and grounds for activity, better management of one's own condition.

Keywords: character, adolescents

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SANOGENIC REFLECTION AS A FACTOR OF EMOTIONAL WELL-BEING

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The report will reveal the content of the concepts of "sanogenic thinking" and "sanogenic reflection". The role of reflection in ensuring the psychological well-being of the individual, the dependence of human health on his life philosophy is shown. The mental mechanisms generating emotions are revealed. Our method is sanogenic thinking as a way to achieve psychological well-being. In everyday life, we are often disturbed by various negative emotions (resentment, guilt, shame, fear of failure, and others), which can become a source of chronic emotional stress. The so-called psychosomatic diseases are the result of excessive and prolonged negative emotions: resentment, guilt, envy and other experiences. Any emotion, arising from the unconscious, takes over the management of thinking and behavior, the purpose of which is to reduce the suffering from the experienced situation. From the point of view of the theory and practice of sanogenic (healing, realistic) thinking (SGM) Y. M. Orlov, emotion is an affective result of mental automatism. Negative emotions are the experience of various types of internal conflicts between expectation and reality. The discrepancy between our expectations, that is, the mental habits of attributing a predetermined behavior to another person, and the reality of communicating with him just causes unpleasant experiences. Peace in the soul depends on the thoughts in the head. And remember, "The best way to change your life is to change your thoughts, feelings, words and actions for the better every day."

Keywords: sanogenic reflexion, sanogenic thinking, pathogenic reflexion

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THE FUTURE OF EDUCATION: EXPLORING EMERGING TRENDS IN INTERNATIONAL TEACHING PARTNERSHIPS

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In an era characterized by the interconnectedness of the global community and the rapid evolution of education, this research paper embarks on an exploration of the future of education through the lens of emerging trends in international teaching partnerships. As the world becomes increasingly interconnected, educational institutions are reimagining their role on the global stage, forging collaborations that transcend borders and cultures. This study delves into the contemporary landscape of international teaching partnerships, analyzing the current state of affairs and revealing the transformative potential of these collaborations. It unravels the tapestry of emerging trends, ranging from the integration of technology and virtual learning environments to the cultivation of cultural competency and global citizenship. Furthermore, the paper assesses the benefits reaped from these partnerships, such as enriched learning experiences, expanded research horizons, and faculty development. While celebrating the successes, it also confronts the challenges and intricacies inherent in such endeavors. As we navigate the ever-changing landscape of global education, this research sets forth policy implications and recommendations, envisioning a future where international teaching partnerships play an integral role in shaping a more interconnected, culturally enlightened, and globally competent generation of learners and educators.

Keywords: partnership, education, sustainability, innovation, digitalization.

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THE STEEL IND. CHALLENGE DECARBONIZATION SOLUTIONS AND PATHWAYS FOR GREEN STEEL

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The iron used in the steelmaking process is currently chemically reduced from iron ore through the use of fossil resources – natural gas or coal. This process is known as Direct Reduced Ironmaking (DRI). Carbon combines with the oxygen in the iron ore, producing metallic iron and a carbon-rich process gas. Currently, for every tone of iron that is produced from iron ore, on average 2.25 tons of CO₂ is emitted. It is also possible to reduce iron ore using hydrogen instead of carbon; in this case the waste gas produced is water, as per the following reactions: $2\text{Fe}_2\text{O}_3 + 3\text{C} \rightarrow 4\text{Fe} + 3\text{CO}_2$; $\text{Fe}_2\text{O}_3 + 3\text{H}_2 \rightarrow 2\text{Fe} + 3\text{H}_2\text{O}$; $\text{FeO} + \text{H}_2 \rightarrow \text{Fe} + \text{H}_2\text{O}$. The transition to a low-carbon world requires a transformation in the way we manufacture iron and steel. There is no single solution to CO₂-free steelmaking. The 2020 technology roadmap, the IEA suggests that green hydrogen is introduced as a primary reducing agent at a commercial scale in the mid-2030s. Use expands to 14 Mt/year by 2050. While this represents a fast scale up and deployment of a new technology, the IEA's modeling suggests that by 2050 under 9% of total steel production will rely on electrolytic hydrogen as the primary reducing agent (or 15% of primary production). We analysis multiple technological pathways to reduce CO₂-emissions, different steelmaking routes were analyzed in terms of feedstock consumption, energy demand and carbon saving potential. The goal of this work was to point out possible CO₂-reduction potentials of the considered routes and the additional energy demand required for the direct reduction with hydrogen. Hence, the availability of sufficient amounts of renewable energy to produce green hydrogen plays a dominant role for the decarbonization of the steel industry.

Keywords: steel; hydrogen; reduce co₂; decarbonization; ironmaking

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THE CHALLENGE OF THE FORMATION OF THE ARTISTIC-AESTHETIC CULTURE IN THE CONDITIONS OF INCREASING THE ACCESS TO THE VIRTUAL ENVIRONMENT

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The education system must keep pace with the tendency to digitize society, and we, teachers, are subject to continuous improvement to meet the requirements. The formation of an artistic-aesthetic culture becomes a challenge given that the virtual space becomes a reality of the living and learning environment. Ensuring the ability to select the value of kitch is a current theme in the society in which we live today, because it exerts a strong influence on the development of the student's personality. A sustained effort is needed to create favorable conditions for stimulating and promoting creativity in line with society's expectations and individual skills. The game becomes the best method by which both virtual and real space can be creatively configured. This paper aims to identify the most effective methods and procedures that can be used to identify and use the expressive potential of plastic language elements, in visual communication and highlighting the contribution of artistic-esthetic activities in the development of students' personality.

Keywords: education, artistic-aesthetic culture, gam, gaming, virtual space

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CATHODIC ADSORPTIVE STRIPPING VOLTAMMETRY OF CD AND ZN COMPLEXES WITH CUPFERRON UNDER DFT INSIGHT

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A sensitive adsorptive stripping voltammetry method was used in order to determine cadmium Cd and zinc Zn in the presence of an organic ligand; N-Nitroso-N-phenylhydroxylamine (Cupferron) as a selective complexing agent. The different parameters influence such as; pH, the nature of supporting electrolytes, concentration of ligand, pre-concentration time and the applied potential were investigated and, under these experimental conditions, the study shows that detection limits were 0.058 ng/mL for Zn and 0.092 ng/mL for Cd, respectively [1]. The possible organometallic complexes of cupferron-zinc as well as cupferron-cadmium were theoretically investigated using density functional theory (DFT) calculations. The concept of detection limit (LOD) in electroanalysis was revealed then by different quantum chemical approaches applied to the obtained complexes [2,3]. The formation of the organometallic complexes studied, their stability, and the interaction between the organic ligand with the two kinds of metal were analyzed and explained. A good accordance between experiment and theory has been found.

Keywords: detection limit, cadmium, zinc, cupferron ligand, dft.

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ON THE LIMIT OF DETECTION OF COPPER AND CADMIUM WITH LUMINOL LIGAND INVESTIGATION WITH DENSITY FUNCTIONAL THEORY METHOD

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The adsorptive stripping voltammetry method is widely employed to determine the presence of trace of toxic metal elements like copper and cadmium in food samples. The adsorptive characteristics that have the complexes of a given metal with a ligand are the main cause of their interaction with the mercury drop. The copper and cadmium reaction with 3-aminophthalhydrazide (luminol) gives rise to the formation of coordination complexes. Using adsorptive stripping voltammetry, these complexes have been characterized and the optimum reaction parameters and conditions studies were investigated. The experimentally revealed limit of detection was 0.04 ng/mL for Cu^{2+} and 0.02 ng/mL for Cd^{2+} . The interaction of the organic ligand with the two studied metals was depicted by different approaches of density functional theory (DFT) analysis. The DFT approach justified that the obtained complexes are favored thermodynamically and a relationship between limit of detection and theory has been found and established. Satisfactory commitment results have been found between the experimental and theoretical findings.

Keywords: luminol ligand, cadmium, copper, adsorptive stripping voltammetry method, dft.

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ENGLISH CONVERSATIONAL LEARNING IN FIRST MIDDLE SCHOOL BASED BOARDING SCHOOLA PEDAGOGIC ETHNOGRAPHIC RESEARCH

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Support from environmental situations that support the process of learning English is one of the important factors that influence the success of learning English, especially speaking skills. In many ways this condition cannot be realized in learning English in class-based formal schools. The purpose of this study was to gain an in-depth understanding of the English conversation learning process in boarding school-based junior high schools. This research is a qualitative research using the ethnographic method of the Spradley model with a purposive technique sampling. This research was conducted in September 2021 up to September 2022. Data collection was carried out through direct participation in research settings by conducting interviews, direct observation, documentation studies and field notes. The results of this study indicate that (1) The general objective of learning English at SMP Budi Luhur Boarding School is for students to be able to communicate in English. The specific goal is for students to master language skills, especially conversation in English. (2) The strategies used by students in learning English are: cognitive strategies, metacognitive strategies, social strategies and resource management strategies. The methods used at Budi Luhur Boarding School Middle School are the direct method, the grammar-translation method, the reading method, the listening method and the communicative method. (3) The English language learning curriculum at Budi Luhur Boarding School Middle School is the government curriculum, and the Budi Luhur Middle School curriculum own boarding school. The curriculum and syllabus for learning English used at SMP Budi Luhur Boarding School use a separate curriculum (separated curriculum)..

Keywords: learning, english conversation, boarding school, ethnography

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THE IMPORTANCE OF CREATIVE DRAMA IN SCIENCE EDUCATION

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Creative drama, as an educational tool, holds significant importance in science education for several reasons. Integrating creative drama into the science curriculum can enhance learning experiences, foster a deeper understanding of scientific concepts, and promote critical thinking and communication skills. Creative drama actively engages students in the learning process, making science more enjoyable and interesting. Through creative drama, students can experience scientific concepts in a hands-on and immersive way. Creative drama helps contextualize abstract scientific concepts by placing them in scenarios that students can relate to. Complex scientific concepts can be simplified and made more accessible through dramatic activities. Drama encourages students to communicate effectively, articulate their thoughts, and express themselves clearly. Creative drama encourages students to think critically and solve problems creatively within the context of science. Drama often involves group activities, promoting teamwork and collaboration. Incorporating creative drama into science education can significantly enhance students' appreciation and understanding of science, making the subject more engaging, enjoyable, and relevant to their lives.

Keywords: creative drama , education, science education

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GLOBAL ISSUES WITHIN THE SCOPE OF SUSTAINABLE DEVELOPMENT IN SCIENCE EDUCATION; GLOBAL WARMING, AIR POLLUTION AND RECYCLING

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Integrating global issues within the scope of sustainable development into science education is crucial for preparing future generations to understand, address, and contribute to solving pressing environmental challenges. Global warming is an environmental issue and having accurate information about it increases individuals' environmental awareness. Science education is a fundamental tool for building and strengthening this awareness. Science education includes the principles and practices of sustainability and teaches green technologies. This contributes to the development of environmentally friendly technologies needed to combat global warming. Science education lessons on air pollution are extremely important for raising environmental awareness, strengthening scientific understanding and finding effective solutions to combat air pollution. Science education teaches the scientific basis of air pollution. Students learn to understand the sources, effects and solutions to air pollution from a scientific perspective. Recycling is also very important in science education because it not only provides environmental benefits but also plays a critical role in developing sustainability and scientific thinking skills. Science education emphasizes the importance of sustainable living and provides students with an awareness of sustainability. This enables students to adopt environmentally friendly lifestyles individually and collectively.

Keywords: sustainable development , science education, global warming, air pollution , recycling

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EDUCATIONAL ETHICS IN THE DIGITAL AGE: ADDRESSING CONTEMPORARY CHALLENGES

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In the rapidly evolving landscape of education, the pervasive integration of digital technologies presents educators, students, and institutions with a myriad of ethical challenges. This research paper delves into the intricate web of ethical considerations that arise in the digital age of education, emphasizing the paramount importance of addressing these contemporary dilemmas. It scrutinizes key facets of educational ethics, including data privacy and security, academic integrity in the face of online cheating, digital citizenship and responsible online behavior, and the critical issue of inclusivity versus the digital divide. Through a comprehensive review of literature, case studies, and best practices, this study underscores the urgency of establishing robust ethical frameworks and policies to guide educators, administrators, and policymakers in navigating these complex challenges. Furthermore, it envisions the future of education and technology, highlighting emerging trends and providing practical recommendations for fostering a digital educational environment that is both technologically advanced and ethically sound. This exploration underscores that, in an era of ever-advancing digitalization, addressing ethical concerns remains an imperative to ensure the integrity, fairness, and inclusivity of educational processes and outcomes.

Keywords: ethics, education, technology, innovation, digitalization.

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SUSTAINABILITY EDUCATION: INNOVATIVE PRACTICES FOR ENVIRONMENTAL AWARENESS AND ACTION

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In an era defined by environmental challenges and the imperative for sustainable living, this research paper delves into the realm of sustainability education, spotlighting innovative pedagogical practices that foster environmental awareness and inspire concrete action. With global environmental issues growing in urgency, the need for comprehensive and transformative education is paramount. This study explores a multifaceted approach to sustainability education, encompassing innovative teaching methods, technology integration, curriculum design, community engagement, and assessment strategies. Through a thorough examination of exemplary programs and initiatives, this research underscores the potential of education to empower students with the knowledge, skills, and motivation needed to address pressing environmental concerns. It illuminates the role of technology in facilitating immersive and interactive learning experiences, while also emphasizing the significance of community involvement and cross-disciplinary approaches. Furthermore, this paper scrutinizes the challenges in implementing innovative sustainability education practices and presents best practices and policy implications to guide educational institutions and policymakers. Ultimately, it advocates for a paradigm shift in education that places environmental awareness and action at its core, shaping future generations as stewards of a sustainable and resilient world.

Keywords: sustainability, education, environment, innovation, digitalization.

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MANAGING THE RISK: IT IS PART OF SUSTAINABLE, TECHNOLOGICAL AND INDUSTRIAL DEVELOPMENT LOGIC

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In varying degrees, every facet of human society finds itself exposed to a multitude of risks owing to the intricate interplay between society and the environment. The occurrence of various calamities serves as a stark reminder of the intricate nature of these interactions and the monumental consequences that may ensue. Some of these risks have the potential to yield severe repercussions for businesses, assets, and lives, while others can result in unnecessarily exorbitant expenditures. Consequently, the concept of security has increasingly become a paramount concern within our society. However, given that effective risk management demands ingenuity and adaptability, as emphasized by scientific research, the pursuit of heightened security in various domains remains an ongoing and perpetual endeavour. There is no ultimate endpoint to this quest; it is an intricate, diverse, dynamic, evolving, and ceaseless process that necessitates the relentless pursuit of optimal efficiency in our undertakings. It represents an unwavering commitment to a journey of continuous enhancement. Nevertheless; to advance and excel in this endeavour, empirical evidence highlights the imperative need for the establishment of robust occupational safety management systems, capable of proactively identifying and rectifying all undesirable events—be they malfunctions, failures, accidents, incidents, or others. This is the primary objective of the work at hand.

Keywords: feedback, risk management, economic efficiency, priority actions and continuous improvement.

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**ATTENTION! THE FAMILY IS A FUNDAMENTAL AND CRUCIAL PRINCIPLE OF
SUSTAINABLE DEVELOPMENT**

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Nations are currently engaged in extensive deliberations about the need to reconsider their way of life, aiming for a future that is not only sustainable but also characterized by positivity, equity, and safety. Consequently, the multifaceted aspects of sustainable development and the strategies to attain it have risen to the forefront of national agendas, with sustainable development serving as the focal point of discussions. Societies are in the process of redefining themselves in order to confront the threats stemming from the irresponsible behaviours exhibited by certain individuals towards the family—the fundamental building block of nations. These irresponsible actions have far-reaching and detrimental implications for the future. Consequently, the adoption of thoughtless behaviours that deviate from established and universally accepted natural principles, guided by divine laws, can trigger a domino effect with irreparable consequences for the very essence of our world. This, in turn, could lead to catastrophic outcomes for future generations and, by extension, the very nations we seek to protect and nurture through our efforts. In light of this, our intervention is aimed at safeguarding not only the well-being of future generations but also the integrity and resilience of nations themselves. Our collective commitment to sustainable development and responsible behaviours is paramount in ensuring a harmonious and secure future for all

Keywords: sustainable development, marriage, family, future generations, ethical and responsibility

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DIFFICULTIES OF EDUCATION IN SMALL-CLASS RURAL SCHOOLS: DIDACTICS OF INTER-AGE LEARNING

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This article explores learning and teaching strategies in the context of inter-age learning in small-class rural schools (SCS) in Kazakhstan. The study presents a detailed analysis of various approaches and concepts of teaching in the practice of developed countries, in order to study the effectiveness of inter-age didactics in educational institutions with limited resources. The article highlights several approaches to inter-age learning, such as task-based, differentiation and individualization, grouping, peer-assisted learning and assessment. The authors emphasize the importance of flexible grouping of different ages, support for tutoring and creating conditions for teaching different age groups of students. The article also discusses the transferability of inter-age learning strategies in SCS to other forms of heterogeneity, such as classes with diversity or inclusiveness. Teacher strategies for adapting and individualizing learning are discussed in the context of inter-age didactics. The study offers an updated theory of adaptive learning and teacher development in SCS based on a variety of strategies and approaches to inter-age learning. It focuses on the flexible application of general principles in different learning situations and proposes promising approaches for teacher development and educational effectiveness in SCS and similar contexts.

Keywords: inter-age learning, small-class rural schools, learning strategies, adaptive learning, didactic approaches

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A SYSTEMATIC REVIEW OF THE LITERATURE ON THE TEACHING OF NOS BASED ON FAMILY RESEMBLANCE APPROACH

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Nature of science (NOS) refers to epistemological and social characteristics about science (e.g., Lederman, 1992). NOS is a core component of scientific literacy (e.g., Lederman, 2007), and understanding NOS is one of the goals of science education in many countries (e.g., NGSS Lead States, 2013). For many years, NOS has been discussed using a framework called consensus view (CV), which is a list of features common to the fields of science (e.g., McComas, 2020). However, in recent years, criticism of CV has led to a more comprehensive and meta-organized scientific framework, the family resemblance approach (FRA), is gaining attention (e.g., Erduran & Dagher, 2014). The purpose of this study is to conduct a systematic review and organize the characteristics of NOS teaching based on FRA in previous studies from the perspective of FRA philosophy. Searching the same criteria as in the previous review on FRA study (Cheung & Erduran, 2022), we extracted one theoretical article aimed at proposing an educational model for NOS and 10 empirical articles aimed at educational interventions for NOS. The review revealed that visual tools on NOS are an effective means of teaching the meta-level concepts of FRA. However, we also find two challenges in reflecting the FRA philosophy in NOS teaching. First, many studies do not reflect FRA's philosophy of explaining science in meta-level categories. Second, few studies address the domain-specific conceptualization of science that different scientific disciplines form a family resemblance. As a solution to these challenges, Petersen et al. (2020) have attempted to connect CV and FRA, based on a proposal of Kampourakis (2016). These results indicate that research on NOS teaching based on FRA is still in its developmental stages and that a collaborative relationship can be sought beyond the conflict between CV and FRA.

Keywords: science education, nature of science, family resemblance approach, systematic review, teaching

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A STUDY OF SMALL GROUP CONVERSATIONS STRUCTURE IN SCIENCE: COMPARISON OF MIDDLE SCHOOL STUDENTS AND UNIVERSITY STUDENTS

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In today's society, much problem solving is carried out by teams. Cooperative problem-solving skills, the ability to collaborate with others in making efforts to unknown challenges, are gaining significant importance in such a society (OECD, 2017). On the other hand, activities which students carry out in small groups are commonplace in classrooms around the globe (Howe, 2021), and in Japan, students in science classes often engage in experiments and discussions in groups of about four. Although conversations are a vital component in cooperative problem-solving situations, few studies have explored the quality and structure of conversations. This study aims to clarify the types of conversations that facilitate meaningful discussions in middle school students' classes. We conducted a survey involving 20 students in public middle school and 8 students in a national university, comparing the results to unveil the actual state of middle school students' conversations. Group work was carried out in this study, and the ensuing discussions were recorded. Analysis of the recorded dialogues using Berkowitz and Gibbs' (1983) conversation classification revealed the following: a) a variety of conversations, irrespective of whether they represent "operational transactions," attempting to integrate and transform each other's ideas, or "representational transactions," simply stating one's arguments, can initiate meaningful discussions; b) "expansion," an operative transaction, is more likely to initiate meaningful discussions than other types of conversations; and c) compared to college students, middle school students are more inclined to use "expansion" conversations, one of the operative transactions, as triggers to activate meaningful discussions. These findings contribute to enhancing interactive teaching for more meaningful and/or effective conversations.

Keywords: education, science, junior high school, transaction

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**RESEARCH REGARDING BLUE ENERGY EXTRACTION OPPORTUNITIES IN THE
DANUBE RIVER – BLACK SEA REGION**

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Given the need to reduce the share of fossil fuels in the national energy balance, as part of the measures to mitigate climate change and other issues, various types of low-carbon energy sources become more attractive. The overall research aim is the study of energy generation technologies from salinity differences between two bodies of water, technologies also known as “blue energy”. This study investigates the application of pressure retarded osmosis (PRO) processes using waters from the local geographical area with the highest application potential from Romania. The largest local available freshwater and saltwater resources in proximity to each other are in the area of the Danube River discharge into the Black Sea. A laboratory level experimental demonstrator was created to provide pressurised salt water (feed) and freshwater (draw) to PRO membranes immobilised in research cells of various constructive designs and to measure and record the relevant process parameters such as the pressure, salinity and flowrate in various relevant measuring points upstream and downstream of the experimental PRO cell. This demonstrator will allow experimentations on various ways of pre-treating natural aqueous influents in order to minimise their fouling effect on membranes. This laboratory-level research will aid the identification of some of the challenges that may be encountered in the designing, construction and operation of future pilot plants necessary to ascertain, in as close to real conditions as possible, the realistic blue energy potential available to be exploited in the Danube River discharge into the Black Sea general area.

Keywords: blue energy, pressure retarded osmosis, laboratory experimentation

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ADDIE MODEL AND FIVE ESSENTIALS FOR MATERIAL DESIGN IN ENGLISH LANGUAGE TEACHING

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Designing tools and materials in second language education is a process that requires a high degree of attention and care. In this process, teachers need to make right decisions and appropriate choices so as to effectively apply language teaching and learning principles in a practical way. In this sense, this article aims to provide language teachers with the guidelines for designing materials in English Language Teaching on the model of ADDIE. Within the principles of effective material design and the steps of ADDIE model, the paper presents the student teachers' experiences related to the processes of their material design and its application. The data collection was carried out through the use of reflection papers, CEQ (Course Experience Questionnaire) forms, and focus group interviews. Based on the gathered findings, it can be concluded that the use of an instructional model and guiding the process with five essentials fundamental for designing language materials have positive and significant effects on the process of material design and professional development of the student teachers recruited for the study.

Keywords: material design, addie model, language education, instructional materials

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DEVELOPING SCIENCE PROCESS SKILLS IN CHEMISTRY USING VIRTUAL REALITY

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This study reports on an investigation of the effectiveness of virtual reality (VR)-based laboratories in developing science process skills. Using the virtual reality application VXRLab. The main aim of the study was to evaluate science process skill mastery in a virtual learning environment as a pre-requisite tool for actual practice in a traditional chemistry laboratory. A quasi-experimental design was considered in mixed-method research to investigate 85 first-year students in a science teacher education program. Students participated in the intervention where basic and integrated science process skills like measuring, observations, inferring, classifying, and experimenting were learned in a VR lab space. An adapted Technology acceptance model (TAM) instrument was used to assess several constructs of students' acceptance of VR technology within lab-based learning. Findings for the analysis of the TAM indicated a strong correlation between perceived enjoyment and attitudes towards using a VR laboratory for developing science process skills. Follow-up semi-structured interviews revealed that using the VXRLab VR application, students were able to complete their own investigations, measure reagents, experiment, and make observations and inferences based on their observations. Students further demonstrated curiosity and interest towards investigating other chemical reactions and classifying different substances as acids or bases using indicators. Though a few limitations were reported from a technical point of view, key gains in the experience seemingly overruled the reported shortcomings. Based on the findings of the study, VR laboratories are recommended as a safe space for trial and error in laboratory-based chemistry learning and the development of science process skills. Some guidelines for integration in science teacher practice are provided, as well as recommendations for future research.

Keywords: laboratory-based learning, virtual reality, chemistry, science process skills, guided inquiry

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ASSESSMENT OF HEAVY-ENERGY USAGE INDUSTRIES IN SAUDI ARABIA USING THE SPECIFIC ENERGY CONSUMPTION INDEX

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The current and future internal consumption of oil in Saudi Arabia is one of the main concerns that govern the energy policies in the country. Almost one-third of the oil production is used locally and it is expected to increase annually. The objective of this paper is to investigate energy consumption in some heavy industries and produce an appropriate energy index to describe that. The focus is mainly on the electricity consumption in those industries, which requires the use of a specific energy consumption index. Extensive surveys for a decent sample of represented factories were arranged for data collection to gather the required data for index calculation. The paper presents the important findings that are needed by researchers and indicates, specifically, that in the majority of the industries under study, the electrical energy consumption is almost steady regardless of the annual production increase; however, other industries show different trends. In addition, the opportunities for energy savings in such industries are significant for both the investors and the service provider

Keywords: heavy industries, specific energy consumption index, saudi arabia, energy intensity, energy efficiency.

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ARTIFICIAL INTELLIGENCE IN STEM EDUCATION: NEW PATHS TO LEARNING

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Artificial intelligence has gained an important place in many sectors in recent years. It is actively used in many fields such as disease diagnosis and drug development in the health sector, autonomous vehicles and traffic management in the transportation sector, recommendation systems and customer service in the trade sector, intelligence analytics and security applications in the defense industry. The potential of this technology is also attracting increasing attention in the education sector. STEM (science, technology, engineering and mathematics) education is an important approach that aims to provide students with the basic skills to prepare them for the innovative world of the future. It provides students with critical thinking, scientific creativity, problem-solving abilities and opportunities to adapt to technological advances. STEM education gives students the skills to analyze and solve complex problems, making them competitive in the business world of the future. Integrating AI into STEM education can further improve the quality of this education. AI offers advantages such as providing students with customized learning experiences, teachers understanding students' learning behaviors, and automatically assessing STEM learning performances. In conclusion, it is seen that the use of artificial intelligence in the field of education is on a rapid increase. STEM education is an important part of this development.

Keywords: stem education, artificial intelligence, ai

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EXAMINATION OF MOBILE ADDICTIONS OF PARENTS LIVING IN THE EARTHQUAKE REGION

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Mobile addiction, which is people's desire to use mobile devices constantly and uninterrupted, is one of the new generation addiction types that harms the individual physiologically, psychologically, sociologically, and in many areas. Mobile addiction may be due to a person's inability to spend quality time in his/her daily life, or it may develop purely for the purpose of satisfying the feeling of pleasure. Individuals are sometimes unaware of their mobile addiction, so features such as screen time restrictions are integrated into mobile devices to protect individuals. Mobile addiction, which causes disconnection from the real world, also affects the parenting roles of individuals. The aim of this research is to examine the mobile addictions of parents whose children are at the basic education level living in the earthquake zone after the Kahramanmaraş earthquakes, which were the disasters of the century. The research was carried out with the quantitative research method. The participants of the research consist of parents whose children attend preschool education and primary school in the 2023-2024 academic year. The data of the research were collected with the "Mobile Addiction Scale" developed by Fidan (2016). The reporting process of the research is ongoing and the research results and recommendations will be included in the full text.

Keywords: earthquake, mobile addiction, parents, early childhood

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ENHANCING STUDENT ENGAGEMENT AND LEARNING OUTCOMES THROUGH GAMIFICATION IN EDUCATION

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Gamification, the integration of game elements into educational contexts, is increasingly recognized as a transformative approach to enhance education. This paper explores the concept of gamification and its growing significance in contemporary educational settings, focusing on its potential to boost student motivation, engagement, and learning outcomes. Drawing from a comprehensive review of the literature, it delves into how gamification leverages game elements like rewards and challenges to tap into learners' intrinsic motivation. Through diverse case studies, it showcases successful gamification implementations across various educational levels, highlighting its adaptability to different subjects and age groups. Moreover, the research systematically analyzes empirical evidence to demonstrate the positive impact of gamified approaches on learning outcomes, including improved retention and problem-solving skills. In conclusion, this study underscores the potential of gamification to revolutionize traditional teaching and learning methods, offering valuable insights for educators, instructional designers, and policymakers seeking innovative strategies to optimize the learning experience and ultimately enhance student engagement and academic achievement.

Keywords: gamification, education, technology, student engagement, digitalization.

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DEVELOPMENT OF A MOBILE ADDICTION SCALE FOR PRIMARY SCHOOL STUDENTS

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The aim of this research is to develop a valid and reliable mobile addiction scale for primary school students. The research was carried out with the quantitative research method. In accordance with the literature review, a draft item pool was generated and the draft item pool was provided to a total of six expert opinions in order to assess the items in the draft item pool and verify content validity, and a pilot application was carried out following the adjustments indicated by the experts. The scale form and consent form were then applied to the primary school students, and the construct validity of the resulting data was first investigated using Exploratory Factor Analysis (EFA). After EFA the scale structure was further validated with Confirmatory Factor Analysis to support EFA. DFA analyses were performed using the lavaan (v. 0.6-16) and semPlot (v. 1.1.6) packages of the R program. An alpha significance level of $p < .05$ was adopted for hypothesis testing. The maximum Likelihood (ML) method was used for Confirmatory Factor Analysis (CFA) parameter estimates of the measurement model. Cronbach Alpha internal consistency coefficient was calculated for the reliability of the scale. The acquired fit index values were judged to be excellent and within the acceptable range in the confirmatory factor analysis results and as a result of the test-retest analysis of the mobile addiction scale for primary school students, it has been determined to be resistant to time.

Keywords: mobile addiction, scale validity and reliability, primary school students

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BEYOND ALGORITHMS: MATHEMATICS TEACHERS' VIEWS ON THE IMPACT OF ROBOTIC CODING IN MATHEMATICS EDUCATION

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A growing number of educators and students are adopting robotic coding as an instructional strategy because it fosters both creative thinking and hands-on experience in the development of STEM (science, technology, engineering, and mathematics) skills. In order to address the question, "What contributions can robotic coding make to mathematics education?" this study is conducted as a case study that was carried out with 12 elementary mathematics teachers who were working in different Science and Art Centers in Turkey. The teachers were chosen using criterion sampling technique. The data for this research was collected through a semi-structured interview form developed by the researchers. According to the results obtained from the research, the participants have noticed that students' creative thinking and problem-solving abilities have fostered and improved their capacity to grasp abstract mathematical concepts by applying them in real-world scenarios..Furthermore, the participants noted that the integration of robotic coding technology elevated students' motivation to learn mathematics and improved their collaboration and communication skills. These results align with the anticipated outcomes and literature. The conclusions of this study are based on the experiences and observations of the teachers. The participants' experiences and observations regarding interactive robotic coding activities Reinforce the understanding that effective utilization of robotic coding in mathematics education positively impacts student achievement and motivation. The study demonstrates that robotic coding not only enhances problem-solving and creative thinking skills but also aids in concretizing complex mathematical concepts. Consequently, these findings serve as a substantial foundation for future research endeavors, guiding the exploration of innovative methodologies in mathematics teaching and technology integration.

Keywords: robotic coding, mathematics education, stem, technology integration.

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AN ANALYSIS OF THE 5TH GRADE SOCIAL SCIENCES QUESTIONS IN THE NON-PAID BOARDING SCHOLARSHIP EXAM ACCORDING TO VALUE CLASSIFICATION

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In this study, it was aimed to analyze the 5th grade social studies test items of the Ministry of National Education Non-Paid Boarding Scholarship Examination (PYBS) held between 2018-2023 according to the value classification by using the document analysis method. Within the scope of the research, 100 social studies test items asked at the 5th grade level in PYBS were analyzed by taking a 5-year section between 2018-2023. For the classification of the items, it was determined that the national and universal values within the purpose of the study were present in the test items. Accordingly, 33 of the 100 items included items with national and universal values (33%). Of these items, 22 were universal values (66%) and 11 were national values (33%). It was observed that national and universal values were not homogeneously distributed while preparing exam questions in central exams such as PYBS, whose results enable disadvantaged groups to receive a more equitable education, and that the items related to value education were homogeneously distributed in the test items according to the current social studies course curriculum. In the future PBYS exams, studies can be conducted to increase the items that include national values.

Keywords: pbys, 5th grade, document analysis, universal values, national values, values education

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UTILIZING CHATGPT IN MIDDLE SCHOOL MATHEMATICS EDUCATION: AN ACADEMIC REVIEW

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This academic review delves into the integration of ChatGPT, an AI-powered language model, within middle school mathematics education. Highlighting its potential advantages and challenges, the study explores the impact of ChatGPT on student engagement, personalized learning, and teacher support in the math classroom. Middle school mathematics education is crucial for shaping students' mathematical abilities and fostering a lifelong appreciation for the subject, and AI tools like ChatGPT offer novel possibilities for enhancing this learning process. The benefits of ChatGPT in middle school math education are multifaceted. Firstly, it engages students through interactive and conversational learning experiences, making math more approachable and enjoyable. Secondly, by tailoring explanations and exercises to individual student needs, ChatGPT provides a personalized learning journey, addressing knowledge gaps and promoting better understanding. Additionally, it offers continuous assistance, enabling students to seek help outside traditional classroom hours, and serves as a supplementary resource for teachers to explain complex concepts, freeing up class time for interactive discussions. However, challenges must be considered in the integration process. Privacy, data security, and responsible AI use are paramount to protect students' information and rights. There's a risk of students becoming overly reliant on ChatGPT, potentially impeding the development of problem-solving skills. Moreover, unequal access to technology among students may create disparities in learning experiences. In conclusion, while ChatGPT's application in middle school mathematics education presents exciting opportunities, ethical considerations and inclusivity challenges must be addressed. The potential benefits, including enhanced engagement, personalized learning, and teacher support, make ChatGPT a valuable tool for educators and students. The review emphasizes the need for further research and responsible implementation to fully harness its potential, suggesting that future developments should focus on refining AI algorithms and ensuring equitable access for all students.

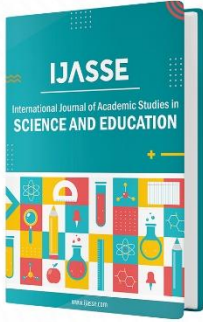
Keywords: chatgpt, ai, mathematics education



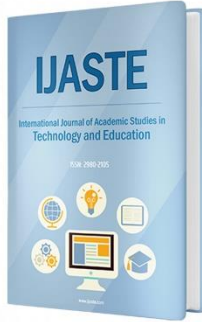
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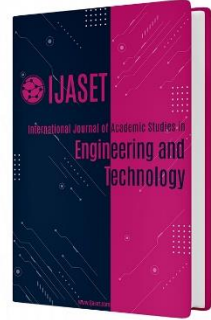
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