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Abstracts

Accepted Papers 2024

The editorial team of the TE&ET Journal, together with the Postgraduate Administrative Secretariat, presents in this publication the Abstracts in English of the papers accepted and published in the 2024 issues of the TE&ET Journal.
We consider that this publication increases the visibility of papers and their authors.

In total there are 54 abstracts corresponding to numbers 37, 38 and 39 of the Journal. The 54 contributions mentioned have as authors teachers-researchers from Universities of Argentina, Brazil, Chile, Costa Rica, Cuba, Ecuador, Mexico, Peru, Uruguay, Spain and also from Science and Technology Institutions of these countries, linked to the topic of the Journal.

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Artificial Intelligence dresses in fashion. Reflections on its possibilities for the educational scenario.

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Artificial Intelligence (AI) is a branch of Computer Science that has been worked on and researched for many years. Currently, AI has gained popularity with tools that, with certain ease of use and access, offer opportunities to perform cognitive activities that people carry out daily, such as synthesizing, comparing, solving problems, creating, etc. And it is in this sense that debates, concerns and new training and education needs have been generated in order to be able to make proper use of these technologies. In the educational scenario, in particular, a tension has arisen between those who have been rapidly adopting some of these tools and those who view them with fear and distrust. This paper proposes an analysis of the subject and a critical reflection on the potential of AI for the educational scenario, with the idea of providing elements and examples for its use by teachers and students, paying attention to its limitations and possibilities.

Keywords: Artificial intelligence; Education; Generative AI, Machine learning.

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Active Methodologies with Artificial Intelligence and its relationship with mathematics teaching in higher education in Chile. State of the art.

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The following article presents a review of the state of the art of active methodologies with artificial intelligence and its relationship with the teaching of mathematics in higher education in Chile. The research was carried out with the purpose of knowing the implication of artificial intelligence in conjunction with active methodologies and how these contribute positively to the teaching and learning of mathematics. A qualitative and non-experimental approach is used, resorting to documentary review, through the Prisma method, specifically in publications of articles and scientific journals related to the current topic from 2019 to date. The research was divided into three stages, the first consisted of searching for academic publications. In the second stage, a process of inclusion and exclusion of academic articles and research was developed. And as a final stage, those investigations that met the criteria established in the previous stage were considered. The results show that the combination of artificial intelligence with active methodologies can significantly transform the way we learn, work and collaborate, improving the efficiency, personalization and quality of the educational experience in mathematics teaching.

Keywords: Active methodologies; Artificial intelligence; mathematics; Higher education.

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Artificial Intelligence in Ubiquitous Learning Environments: A systematic literature review

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Ubiquitous learning (u-learning) refers to learning anytime, anywhere. U-learning is spreading day by day, to the point that there are countries where it has become a conventional approach to teaching and learning, and many institutions adopt it when students cannot attend face-to-face classes. Computer Science, and specifically the field of Artificial Intelligence (AI), presents tools and techniques to support the growth of u-learning and provide recommendations, infer the context and learning situations, generate student profiles, and adapt the content, learning activities, learning paths, among other applications. The aim of this study was to conduct a systematic review of AI work in ubiquitous learning environments between the years 2013 to 2023, with the aim of gaining insight into the relevant literature, identifying gaps and providing a clear scope for this research area. To achieve this, a widely accepted and flexible approach was applied which consists of the following steps: planning, execution and summary of results. The papers were sourced from widely used databases, namely IEEExplore, ACM, Science Direct, Springer and Google Scholar. A total of 28 publications preselected for this study were finally reviewed among 993 articles identified through searches in the aforementioned database. To refine the need for the review, a two-dimensional analysis framework was proposed. It is composing of two different but complementary views that capture a particular aspect of u-learning systems in which AI can be applied. In turn, each view is broken down into facets to facilitate the understanding of a particular aspect. Considering each facet, the results obtained show that AI is mainly applied to recommend content to students based on different aspects, to detect the ubiquitous learning environment and react to changes in contexts, to recommend supervised learning routes and, to infer the student's level of knowledge on a topic. The main AI techniques used turned out to be: intelligent agents, Bayesian Networks, ontologies and Rules.

Keywords: Ubiquitous learning; Artificial intelligence; Systematic literature review; Learning context; Personalization; Recommendation.

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Possibilities for Using ChatGPT in Pedagogical Practices of Vocational Education and Training (VET): A Systematic Literature Review

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The recent introduction of the generative artificial intelligence of ChatGPT has sparked speculation about the use of this technology in various sectors, particularly in education. To investigate the potentialities in this context, a systematic literature review was conducted on the use of this resource in pedagogical practices to identify the possibilities of applying this technology in Vocational Education and Training (VET). For this purpose, 26 primary studies were identified in the Capes Journals, Science Direct, and Scopus databases. The analysis revealed that most practices were conducted in higher education, using multidisciplinary approaches to assess users' perceptions of ChatGPT performance in academic tasks. The methodologies employed in the practices indicate the tool's potential in supporting learning but emphasize caution for its responsible use. The identified characteristics also showed alignment with the assumptions of Professional Education, although they point to the need for further studies to better understand the applicability of artificial intelligence in this context.

Keywords: Vocational Education and Training; ChatGPT; Generative artificial intelligence; Pedagogical practices; Systematic literature review; VET.

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Literacy with AI tools: case study for the creation of educational activities

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The article systematizes a case study whose unit of analysis are AI tools and the contribution they provide to the field of education, especially in the face of the uncertainty generated in the educational sector by the changes that are taking place, and whose impact on humanity is still not fully known. The case is developed by the Educational Technologies for Learning Program of the Faculty of Education at the University of Costa Rica with a group of 8 teacher training students as a literacy process. Its goal is to explore and make use of generative artificial intelligence tools to analyze the contribution they provide to the teaching and learning processes carried out by teachers. The main conclusions focus on the need to carry out literacy processes that allow for the effective use of generative artificial intelligence in the classroom to support teaching and learning, and the teacher's role in terms of technical, ethical, and pedagogical issues. The study highlights its use to support teaching processes such as: the creation of personalized learning adaptable to students and the design of didactic activities.

Keywords: Liceracy; Artificial intelligence; Education; Teacher training; Educational strategies; Learning.

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Between humans and algorithms: teaching perceptions about exploration with IAG in Higher Education Teaching

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This study explores the perceptions of Generative Artificial Intelligence (GAI) among faculty members in higher education. Employing a qualitative methodology, it delves deeper into the opportunities and challenges presented by this emerging technology. The findings highlight GAI's potential to reshape pedagogical practices in higher education, while also unveiling concerns regarding ethical and academic integrity issues. Additionally, the study emphasizes the significance of ongoing teacher training and the creation of spaces for collective reflection to reconsider teaching practices within universities. It advocates for a situated and collaborative approach, acknowledging the diverse opportunities and intricate implications of integrating GAI into contemporary higher education.

Keywords: Generative artificial intelligence; Higher education; Teaching strategies at the university; Educational technology.

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Generative Artificial Intelligence in the Middle School. Training of trainers proposal

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The impact generated by the emergence of new Generative Artificial Intelligence (GAI) tools in all areas of everyday life has undoubtedly also shaken the teaching and learning processes within the formal educational system. With the intention of beginning to sketch answers to this challenge, we generated a training seminar for middle school teachers, which we implemented at the National School "Rafael Hernandez" of the UNLP and whose experience we want to talk about here.
In the introduction, we will begin with the motivation that led to the construction of this plan. Then we will define and talk about how IAG works. Then we will have a section on IAG in middle school (with tools and proposals for its use). Finally, we will present the practical application of the topics worked on in the workshop on the use of IAG in middle school, where we sought to build a pedagogical proposal with the use of IAG for the classroom. In addition, we will present a SWOT evaluation of these tools and describe their preliminary results.

Keywords: Generative Artificial Intelligence; GAI tolos; Digital technology in Middle School; Teaching GAI in Middle School.

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Koch Fractal: Analysis of the responses from generative AI and a Math teacher

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This work presents the results of exploring, analyzing and comparing the responses offered by generative artificial intelligence (GAI) models (ChaGPT 3.5, Bard and Bing Chat) and a Math teacher to a problem involving a fractal curve, that could be studied at the Argentine secondary level. The problem requires the calculation of the area and perimeter of a particular fractal curve, such as the Koch snowflake. This fractal has the particularity of being a curve with infinite perimeter, which encloses a region of the plane with a finite area. For each answer we analyze differences and similarities in the resolutions based on the following categories: Construction of the fractal, Calculation of its perimeter and Calculation of its area. It is concluded that there are significant differences between the procedures, graphic representations and validations of the responses obtained from the chatbots and the teacher. Thus, we encourage the use of resources from the IAG as long as the answers they offer are critically analyzed.

Keywords: Generative AI; Chatbots; Math teacher; Fractals.

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Reflections on the Use of AI in Higher Education: Two Comparative Cases

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The aim of this paper is to synthesises the first reflections on a comparative study of the use of Artificial Intelligence as a tool for learning in two subjects of higher education. The pedagogical proposals are developed in the curricular subjects: Linguistic Research Methodology (Bachelor's degree in Translation) and Computational Fluid Dynamics (Mechanical Engineering), both taught at the National University of Rosario, Argentina. In these subjects, the aim was to integrate the use of the ChatGPT from a constructivist perspective around its use for solving problems related to these two dissimilar areas of knowledge. The methodology employed is qualitative and is based on the use of three instruments: firstly, a survey aimed at the group of students to gather initial diagnostic information; secondly, participant observation in classes; and lastly, the evaluative analysis of final reports of practical work. These results are compared with the theoretical framework presented. The conclusions show possible uses from critical positions that imply not only a certain prior expertise of the students in the disciplinary subjects but also the deployment of related operational skills.

Keywords: Higher Education; Artificial Intelligence; ChatGPT; Linguistics; Engineering; Programming

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AI uses in food science teaching: potentialities, limitations and its application in the development of didactic proposals

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Despite the notable opportunities that artificial intelligence (AI) presents to improve teaching, its implementation in the academic field is progressing only gradually. The results of a survey carried out among teachers in the Biochemistry and Food Control Area indicate a positive attitude towards the integration of AI, but also point out obstacles, such as lack of familiarity of these tools and time limitations to explore new methodologies. Likewise, the quality of the information generated by AI also causes some concern. Considering this, in the present work an educational proposal was developed using AI for a specific topic in food science. The proposal included the use of ChatGPT as a search tool. Then the students had to contrast the information obtained by the AI with other bibliographic sources to encourage critical analysis of the results generated by the chat and promote their own autonomy. In conclusion, the integration of AI in higher education would be possible as long as its basis is focused on the development of activities advocated to critical thinking.

Keywords: ChatGPT; Higher education; Food science.

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Chat GPT and Google: Allies or enemies of teachers when developing content?

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The popularization of Chat GPT as a tool based on the language of Artificial Intelligence (AI) makes this system another resource in the classroom. The objective of this research is to determine, at the moment, to what extent it can be useful to teachers for the development of content outlines and whether or not it improves the experience offered by a traditional search engine such as Google. We also want to know if both tools help a teacher with no previous experience in a subject to elaborate quality content or if, on the contrary, the teacher's knowledge of a specific subject is decisive when managing the data offered by both tools in order to obtain an optimal result.

Keywords: GPT Chat; Artificial intelligence; Technological learning; New technologies education; ICTS; Technological teaching.

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Knowledge-Based System as a Tool in STEAM Learning of an Autonomous Mobile Robot

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This paper presents the development of a knowledge-based system that integrates the OpenAI API, applied to an autonomous mobile robot, aimed at STEAM education. The goal is to establish an interactive laboratory environment where students can experiment with concepts from Science, Technology, Engineering, Arts, and Mathematics (STEAM) through the robot's operation. Using the Scrum methodology, a system supported by a web platform and a mobile application was developed, facilitating active monitoring and support of the knowledge-based system. This integration, and experimental practice with the autonomous mobile robot enriched the educational experience. Initial tests carried out with 76 high school juniors showed a significant increase in their knowledge and skills in robotics and a growing interest among the students. This interactive approach improves the acquisition of technical knowledge and skills, achieving a 90% increase in test scores in more than half of the subjects, fostering critical thinking, creativity, teamwork, digital skills, active learning, adaptability, and interdisciplinary awareness, aligning them with the essential competences for the global economy and the challenges of Industry 4.0.

Keywords: Knowledge-based System; STEAM; Robotics; Industry 4.0; OpenAI API.

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Digital storytelling with artificial Intelligence Support

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This study explores the use of Artificial Intelligence (AI) in creating and illustrating stories, evaluating its effectiveness in enhancing students' writing and storytelling skills, and analyzing the ethical implications of its use in education. The quantitative methodology involved a survey of 23 Special Education Pedagogy students in Santiago Centro and Viña del Mar, conducted in the first semester of 2023. This semi-structured survey, administered online, featured both open-ended and closed questions. Results indicate a markedly positive response from students towards the use of AI tools in story creation. The study underscores the need for critical analysis to discern AI's influence and ensure these tools augment creativity without leading to plagiarism, where students might mistakenly take the generated content as their own. The findings suggest that AI can effectively improve writing and storytelling skills. However, a critical approach is essential to prevent plagiarism, and further research is necessary to fully understand AI's impact on education and creativity.

Keywords: Education; Multimedia Teaching; Story; Artificial Intelligence; Educational Computing.

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Adaptive and unsupervised learning path generator for professional training platform

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This article presents the creation of an unsupervised algorithm for generating learning paths based on the degree of difficulty, content priority and professional performance. A learning path is a structured, organized plan that outlines a series of educational or training activities designed to help individuals acquire specific knowledge or skills. Typically, it includes a sequential progression of topics and activities, such as reading materials, video lessons, and interactive exercises. All aimed at achieving learning objectives. One of the main difficulties encountered in its construction is associated with obtaining personalized trails that respond to the specific needs of each professional. When considering that an instructor must create trails for several students, the task becomes unfeasible to perform, requiring the use of algorithms that help in the automatic generation of these trails. The algorithm developed was incorporated into the qualification and continuous evaluation platform of the startup Xeduca and applied to a group of hospital cleaning staff with positive results that encourage the continuation of the project.

Keywords: Learning pathway; Educational platform; Corporate training; Virtual reality; Metaheuristics; Machine learning.

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Adapting the maze game with artificial intelligence assistance as a support in the development of fine motor skills

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Through the development of fine motor skills, the process of learning to write using different pencil stroke tools begins. This work presents a prototype that encourages the drawing of straight and curved lines to promote the development of fine motor skills using a maze built with a conductive track and various electronic elements. The system has olfactory feedback and visual indicator elements to promote progress along the trajectory. The algorithm that controls the prototype has been developed through a fuzzy inference system, embedded in a Sugeno-type multivariable structure and implemented on a card with an ESP32 microcontroller. The design of the controller system has been verified and validated through the "Fuzzy Logic Designer" application of the Matlab environment. Physical tests were carried out to corroborate the operation of the different scenarios that can occur during the use of the device. The prototype is of low cost and can be adapted to be incorporated in different contexts and scenarios, from developing fine motor skills in young students to adults requiring rehabilitation due to accidents and injuries.

Keywords: Artificial intelligence; Educational resource; Fine skills; Physical computing; Olfactory feedback.

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Empowering personalized Learning: Math solver as a flipped classroom support for adult evening learners

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In this research, we propose and evaluate a strategy to enhance personalized learning with the use of the Microsoft math solver artificial intelligence tool to support the flipped classroom in trigonometry content, with adult evening students of engineering careers at the University of Aconcagua, Chile. The initiative arises in the face of high failure rates and lack of context in the subject of Algebra in students with years without a continuous formal education and with work duties in parallel. The research had a quantitative approach, using a quasi-experimental design with experimental and control groups, each with 30 students. Digital skills, Pre and Posttest questionnaires were applied. The results reveal that the implemented model has a positive impact, improving competencies in the content addressed and academic performance. In addition, there is a potential to reduce dropout rates, promoting a more active role for adult learners in their educational process and optimizing their time. Teachers are encouraged to combine AI tools with active methodologies for greater impact.

Keywords: Personalized education; Artificial Intelligence; Evening student's workers; Academic performance; Custom tools.

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Didactic sequence that incorporates the use of Artificial Intelligence to demonstrate digital literacy skills in high school students

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The irruption of technologies such as Artificial Intelligence has led different educational agents to reflect on how to use it in the teaching and learning process. In this research, a techno-educational intervention has been carried out, which included the application of a didactic sequence that integrated two Artificial Intelligence applications to demonstrate the development of Digital Literacy skills, associated with the search for information on the Internet and the creation of a digital infographic. The study, subordinated to the quantitative method, pre-experimental modality, whose research design contemplated a Pretest and Posttest and a single group, allowed delineating the essential methodological aspects within the framework of the research. The data collection instrument corresponded to a Checklist validated by experts, whose purpose was to check the level of achievement of students in performance tasks related to the mentioned skills. The main results show that after the didactic implementation of the Artificial Intelligence applications, the students evidenced significant changes in the Digital Literacy skills (Wilcoxon, p-value < 0.05), also observing an average comparative increase from 39% (Pretest) to 90% (Posttest) in the achievement percentages of these skills (Wilcoxon, p-value < 0.05), with an average comparative increase from 39% (Pretest) to 90% (Posttest) in the achievement percentages of these skills (Wilcoxon, p-value < 0.05).

Keywords: Didactic sequence; Artificial intelligence; Digital literacy.

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Engineering Strategies and AI applied in the RIAA Procedures Manual to strengthen written communication

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Written communication is a challenging task, as it requires a deep knowledge of the subject matter as well as a domain of written communication techniques. However, engineering strategies and technologies, in this case Artificial Intelligence (AI), can help strengthen written communication, making it more efficient and effective. Thus, AI tools exist to correct spelling and grammar, analyze styles and provide recommendations on how to improve it, among other actions. This paper presents how to strengthen written communication in the procedures manual of the Open Access Institutional Repository (RIAA) of the Faculty of Technology and Applied Sciences of the National University of Catamarca (UNCA), implementing engineering strategies and integrating free AI tools. In addition, data engineering techniques were employed for the review of large amounts of written information, which contributed to detect trends and patterns that can improve writing. On the other hand, the use of AI tools has allowed technical editors to improve the work methodology of repository managers by standardizing processes.

Keywords: Written communication; Engineering strategies; AI; Procedures manual.

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Analysis of Artificial Intelligence Curriculum Designs in secondary education

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This research proposes the comparison and observation of the curricular designs on Artificial Intelligence (AI) of countries that participated in the International Computer and Information Literacy Study Meeting (ICILS, 2018), and was intentionally added to the Argentine Republic in order to know the status of the situation of this country. The sample affected by this study was selected because they were countries interested in educational quality related to Digital Literacy. The time in which the data was collected was from May 2023 to January 2024; and the object of study were those contents and competencies related to Artificial Intelligence, in the Basic Cycle (K12) of secondary schools. Among the main findings, we observe a poor development of an appropriate national framework with the priority content on the subject, which prevents an adequate and coherent development of this subject in the study plans of the different dependent jurisdictions.

Keywords: Artificial intelligence; Curriculum designs; Education; Middle School; k12; Study plans; Computer's science

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From innovation as a product to innovation as a process: challenges and strategies for the transformation of teaching at the university

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The need to foster innovation processes in teaching practices at the university level is indisputable. However, it is impossible to think that such a task falls entirely on teachers, but that the joint work of different actors is essential. On this occasion, part of the transformation process that took place in Physics teaching practices at the university is communicated, as a consequence of the collaboration between university professors and researchers in science education, and challenges and strategies that are assumed as potential are identified. for innovation at the level.

Keywords: Innovation; University; Collaborative work; Science education.

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Teaching and learning at the university in a time of transitions. Old questions. New challenges

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This article written by members of the TecMovAE research group, which for more than twelve years has been investigating the educational application of digital technologies in the university, within the framework of the ongoing PID 8435 research project, addresses the current post-pandemic educational scenario. Characterized by transitions in which re-configurations occur, with new challenges and uncertainties. The authors reflect and bring theoretical contributions about the way in which technology has generated new forms of reading and writing, modifying social practices related to teaching inside and outside the university. The article proposes to make visible what has been learned during the social isolation required by Covid-19, overcoming distances from the construction of an effective presence to offer students new learning opportunities. It ends by formulating new questions that the authors are addressing in the aforementioned research project.

Keywords: New ways if reading and writing; Teaching presence; Post-pandemic education; New learning opportunities; Pedagogy.

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Artificial Intelligence to personalize Mathematics learning. A look at an ALEKS course for secondary education teachers in Uruguay

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The article is derived from research involving the three authors whose primary objective was to understand and describe teaching practices related to the use of the Artificial Intelligence-based personalization components of the ALEKS platform to promote mathematical learning in secondary education. The methodological design was mixed, incorporating both quantitative and qualitative instruments (a digital survey administered to 86 teachers and 11 in-depth interviews). Three usage strategies (practice, construction, and reinterpretation) were identified based on the platform areas that teachers promote in the classroom and the pedagogical actions they pursue. Teachers' use of the AI component is limited, as 6 out of 10 teachers primarily employ strategies for practice. Statistically significant differences were found between the strategies deployed by male and female teachers ($\chi2=18{,}486, p={,}000$), but not in relation to variables such as postgraduate education ($\chi2=1{,}023, p=,600$), age group ($\chi2=1{,}297, p=,862$), and experience ($\chi2=5{,}427, p=,246$) regarding the strategies selected by teachers using ALEKS.

Keywords: Artificial intelligence; Personalization of learning; Educational platforms; Teaching of mathematics; CEIBAL.

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Perspectives on multiple literacies in the era of artificial intelligences in initial teacher training in the province of Buenos Aires during the post-pandemic period.

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This work is part of the research project: Multiple literacies in teacher training in state-run institutes of region IV of the Province of Buenos Aires in the post-pandemic: Curriculum and purposes for teaching. It attempts to make visible the role that multiple literacies acquire in initial teacher training. This implies configuring a scenario where information and social communication technologies (SCT) provide meaning and legitimacy in the field of teacher training policies. Thus, it is interesting to take as a point of reference the anchoring that enables us to redefine the stance on the approaches that make it possible to think and frame teaching training in initial teacher training based on the use and access to digital education. In this sense, emphasis is placed on strategies that are implemented in a specific context and linked to teacher training. It is important to appreciate how they are resignified in order to contribute to the construction of proposals for the integration of multiple literacies. In this way, the characteristics assumed by digital literacies are made explicit, as well as the challenges involved in teaching proposals in specific contexts of initial teacher training in the province of Buenos Aires during the post-pandemic period.

Keywords: Multiple literacies; Initial teacher training; Strategies; Integration proposals; Digital education

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Gamification Based Learning

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This paper considers the concept of gamification as a tool that uses game principles to enhance student motivation and engagement in learning. Gamification games and activities have a high retention capacity in students' memory and allow for the acquisition of knowledge in a more enjoyable and effective way. Using this concept, the paper describes a model of Gamified-Based Learning (GBL), as well as the design and implementation of an online course aimed at providing teachers with the necessary tools to use gamification effectively and creatively in their classrooms. The paper emphasizes the importance of gamification in the current context where digital learning has become increasingly relevant. The course focuses on working with gamified resource templates from the Genially platform that can be adapted to different levels and educational themes. The paper highlights that gamification games and activities must be designed coherently with learning objectives and teaching methodology. Gamification is not a tool that can be used in isolation, but rather must be part of a comprehensive pedagogical approach.

Keywords: Ludificación; Gamification; Educational Innovation; Gamified-Based Learning; Genially; MOOC; Online Course.

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Mobile APP for training and self-assessment: Generalizable solution

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The circumstances experienced worldwide during the Covid-19 pandemic compelled educational institutions to consider distance education as a viable alternative, supported by Information and Communication Technologies (ICTs). However, the quality of distance education presents additional challenges due to the lack of direct teacher supervision and student motivation. It is crucial to leverage ICTs for interactive training and to encourage the application of knowledge and self-assessment. Mobile devices are suitable tools for this purpose, given their widespread availability and user-friendly nature. This paper discusses the development of a mobile application functioning as a trainer for students, providing a question-and-answer system to practice theoretical concepts and assess performance. This approach is crucial to ensure a high-quality learning process in distance education and to capitalize on the advantages offered by ICTs. To validate the proposal's generalizability, a case study was conducted with two units of analysis where the application was utilized: in an academic context and in a boiler operators' training context.

Keywords: Distance education; Mobile devices; Training; M-learning; Case study

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CatBoost: Ensemble machine learning for the analysis of socioeconomic factors that affect school performance

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The academic performance of children is an important task for schools and is attractive from the field of data science that addresses this multifactorial problem with various data mining techniques on increasingly complete data sets that address socioeconomic factors such as possible conditions. We present a method that improves the accuracy of the prediction of school performance by combining the application of the ensemble learning algorithms CatBoost with the explanation and improvement of the transparency of the classification that it performs, by scoring the characteristics based on the SHAP values. (Shapley Additive exPlanations). Four types of averages are available: Master the Learning Requirement (DAR), Meet the Learning Requirement (AAR), Close to Meeting the Learning Requirement (PAAR), and Not Meet the Learning Requirement (NAAR). How the PAAR and NAAR types of averages constitute minority classes were balanced with respect to the DAR and AAR majority classes. An accuracy and precision of 91% were achieved. The characteristics with the greatest impact on the prediction are social skills, the father's occupation, family income, gender, possible disability, behavior, family structure, and number of siblings, among others.

Keywords: Machine learning; CatBoost; Shapley; Academic performance; Assembly methods.

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Teacher Training in Brazil on Computational Thinking: a Systematic Review of Literature

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Computational Thinking (CT) can help the development of competencies to solve problems in different contexts. Although there is still no specific consensus on its definition, its development must be provided to students in K-12 education. In Brazil, the National Curricular Common Base (NCCB) proposes the development of CT as part of the Mathematic disciplines. Therefore, it is necessary that the teacher has mastery over these skills, as well as use methodologies that favor the development of CT by the students. This article aims to present a study carried out through a survey of theses and dissertations that address how the training of teachers working in K-12 education is being carried out in this new context. The data collection took place in two Brazilian databases. Only eight works fit as field research involving the initial or continuing teachers education, pointing out the need to expand studies on this subject. We emphasize the importance of training to provide the teacher with the reconstruction of knowledge from the perspective of the Technological Pedagogical Content Knowledge (TPACK), to develop practices that focus on the CT in a transversal way, so that students can assume themselves as the protagonist of their learning.

Keywords: Computational thinking; Teacher training; TPACK; NCCB

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The workshop exercise as a didactic device for the curriculum integration of the Architecture career. Challenges of teaching in virtual environments.

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Within the framework of the gradual implementation of the new 2018 Study Plan of the FAU - UNNE Architecture career, the results of an integrating exercise between the second-year level subjects are presented, from the approach of the Chair Architecture II - Pedagogical Unit "B" project practice. It was developed in virtual modality due to the lengthening of the health emergency by COVID-19 in the year 2021, which, in turn, meant a relevant change in the workshop practice. The particularities of the experience are analyzed and, based on selected cases, the application of the axes defined by each subject in the construction of a design problem and its solution through a concrete proposal is verified. The results are discussed from different teaching-learning process dimensions of interest, through reflection on the teaching practice itself, contrasted with an opinion poll carried out on a student sample. The experience made possible an approximation to the interdisciplinary approach that seeks to avoid content fragmentation, evidencing critical points on which new lines of action are enunciated, from the integrative approach.

Keywords: Pedagogical strategies; Integrative approach; Project process; Virtual workshop.

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Emerging Functionalities to Tutoring in Virtual Learning Platforms

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Individual tutoring in teaching-learning, especially on a large scale, is a demand that requires qualified professionals and high costs to be carried out. The aim of this study is to analyze strategies to provide possibilities for emerging functionalities to support tutoring for students in Virtual Learning Environments (VLE). For this, SWOT analyzes were used in order to identify the points of greatest impact in the context of using a virtual environment of an educational social network. The results obtained indicate that platforms tend to offer generalist and little individualized experiences. The implications of this study point to the need to propose a design of virtual environments that allows a qualified offer of personalized tutoring, in view of individual needs, but with emphasis on interpersonal skills and the constructive process of students.

Keywords: Individualized tutoring; Virtual Learning environments; Emerging technologies.

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Metaverse in the Chilean educational system: state of the art

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The following article presents a review of the state of the art on the concept of the metaverse and its application in the Chilean educational field. The research was carried out with the purpose of understanding the addition of the metaverse as an element of innovation in educational institutions in Chile, its implementation and contributions to the teaching-learning process. A qualitative and non-experimental approach is used, resorting to documentary review, specifically in publications of articles and scientific journals related to the metaverse, distributed from 2019 to date. The research process was divided into three phases, the first in the compilation of academic publications that address innovation and the metaverse in academic processes; the second, in the discrimination of academic articles and research that do not consider innovation; and finally, the elaboration of the following work that, according to the results and discussions, the metaverse has a transformative potential in Chilean education, offering immersive learning experiences; contribute to the quality of education, encourage active learning and strengthen the skills of the 21st century in students, as long as there is the availability of resources and teacher training, in addition to promoting their use and necessary support.

Keywords: Metaverse; Challenges; Innovation in Chile; Educational System; Learning spaces.

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Use and adoption of digital technologies by Spanish-speaking adults during the COVID-19 pandemic

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The COVID 19 pandemic caused changes in several aspects of daily life, among them, the use of technology to satisfy labor, academic, entertainment, health and consumption needs. This study was carried out with participants between 18 and 65 years old, who were studying a university or postgraduate degree and completed an online questionnaire of 57 questions. The aim was to determine which digital tools and platforms were most frequently used in the pandemic and for which activities. It was shown that some virtual platforms such as WhatsApp, Youtube, Zoom and Facebook were adopted for multiple uses, expanding their originally designed functionalities: entertainment and communication. These platforms are currently being used for education, work, health, safety and online shopping; the results also showed that technology users spend an average of 6 hours per day on the internet. Based on their experience during the pandemic, more than half of the participants consider continuing to use technology in the future for trade, work, health and safety, thus demonstrating that technology has been useful to meet complex needs, such as human interaction or medical and psychological health care.

Keywords: Technology; COVID-19 pandemic; Internet; Communication; Interaction; Virtual life

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Th3_0ff1c3: an educational board game for teaching information security concepts

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This paper presents a modern educational board game with the theme of Information Security called Th3_0ff1c3, the game simulates attacks by several types of Malware and cybercriminal actions. It is a turn-based strategy board game where students need to work collaboratively in defending a large office against Malware and cyber-attack action. The game stands out for the great interaction between players and the ability to elucidate various concepts of Information Security.

Keywords: Educational technology, Information security, LGPD, Board game, Th3_0ff1c3.

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The new face-to-face and ICT: Perspectives of Peruvian teachers

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This article addresses current education using Information and Communication Technologies by secondary school teachers, who, after having used the majority of technological tools during the time of confinement caused by COVID-19; Nowadays, there has been a return to traditional education where these digital resources are no longer used due to many factors such as the lack of connectivity in educational institutions in rural areas and the lack of training on ICT. The research aims to identify the use of ICT in secondary level teachers in the teaching- learning process; the hermeneutic phenomenological method corresponding to the qualitative paradigm was used. The sample that represented the study was focused and intentional and consisted of 6 secondary school teachers, who were interviewed based on a question guide. According to the answers obtained from the interviewees, it was concluded that teachers have a basic level of knowledge about ICT, with the digital tool WhatsApp being the most used and the lack of internet signal connectivity being the most important limiting factor.

Keywords: Trainings; Connectivity; Electronic equipment; Knowledge level; TIC.

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The contributions of students with disabilities and their support teachers in the development of a techno-pedagogical device in terms of accessibility

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This paper presents a proposal that seeks to contribute to the processes of inclusive education of students with disabilities mediated by digital technologies in virtual learning environments. It is based on the Foucauldian concept of device, to recognize the heterogeneity of the elements involved; on the techno-pedagogical design, where the use of technology is defined by the learning objectives, while recognizing the limits and possibilities of these technologies; and on the concept of accessibility, as an inherent condition for student participation.

The proposal is structured around four closely related dimensions: hardware, software, content and pedagogy. In order to design the necessary accessibility conditions in each of them, the contributions of students with disabilities and their support teachers are taken from a research that addresses the access and use of digital technologies by people with disabilities in the context of secondary education in the city of Salta.

Keywords: Device; Techno-Pedagogical approach; Accessibility; Disability; Inclusive education.

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Virtual emergency classes. The challenges of educational inclusion in university history teaching

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In this article we analyze a university virtual teaching proposal developed within the framework of the Covid-19 pandemic. Specifically, we study the case of the subject Problems of Argentine History, which is taught at the Arturo Jauretche National University, during the period between March 2020 and December 2021. Based on surveys, records of interventions in the campus and interviews with teachers, progress is made, initially, in a review of the teaching proposal and the design of the virtual classroom. Then, the teaching strategies deployed by teachers are investigated. The selection of resources, the design of weekly activities and the forms of communication they chose to teach, answer questions, make returns and generate feedback with their students are analyzed.

Keywords: Virtual emergency classes; History teaching; Teaching practice; Virtual classroom.

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An experience of returning to the classroom

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Since February 2020, the COVID-19 pandemic spread throughout the planet, affecting all areas of our lives, including education. We were forced to give up our physical classrooms to teach our classes remotely. This change had different effects depending on the way in which each teacher had been dictating their subject. After two years, the pandemic passed and we returned to the classroom but in a different way. This paper reports the experience of going through the pandemic and returning to the classroom in a Software Engineering subject taught at the National University of Tres de Febrero. Together with the experience, we include a summary of the lessons learned and a set of reflections for the future.

Keywords: Flipped classroom; Virtual classroom; Student centered education; hybrid education; COVID-19.

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Educational Experience with Hearing Impaired People through the use of 3D Virtual Environments in OpenSim

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This paper describes an educational experience developed with hearing-impaired participants exploring 3D Virtual Environments (EV3D). This paper describes the creation of a teaching and learning EV3D using OpenSim; and the realization of inquiry sessions within the virtual world with three different groups of participants, among which we differentiate groups that worked purely at a distance with synchronous and asynchronous meetings, and a group that worked face-to-face. The results obtained from ad-hoc questionnaires and the recording of the sessions are presented. Intrinsic motivation was measured using the Intrinsic Motivation Test (IMI), which considers the following dimensions: interest/fun, perceived competence, perceived choice, and pressure/strain. The participants expressed that the results of configuring their avatars were very stimulating. Also, they positively valued the communicational elements used during the experience: informative videos in Argentine Sign Language (LSA) within the 3D scenes, and the internal chat enhanced with the use of emoticons associated with animations of the avatar to express different types of emotions.

Keywords: 3D virtual environments, OpenSimulator, Hearing Impairment, Educational Experience, Metaverse. Virtual Worlds, Deaf, Disability, Accessibility, Technology

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Educational Technologies and ABP in Multigrade Classrooms

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Technological innovations generate cultural habits and enable new ways of communicating, teaching and learning. In the school educational scenario, they challenge the different segments to take ownership of transformations and innovate: a dynamic, non-linear path that requires looking at specificities. This article presents an excerpt from a study that aimed to analyze the process of integrating digital technologies in enhancing Project-Based Learning (PBL) in a multigrade class in the Initial Years of Elementary School at a Rural School. It is characterized by qualitative research, using action research procedures. Based on the studies of William Bender, it proposes the combination of methodologies and technologies in offline and online activities. The data was collected in the process of preparing a portfolio with the constructions carried out during the project and verified through Discursive Textual Analysis. The results indicate that the use of technology in PBL contributes to active learning as it enhances access to information and communication, authorship/co-authorship in valuing the heterogeneity of the field. The experiences of a multigrade class with spaces, strategies and cultures, in a hybrid way, can contribute to the development of skills necessary for interaction in virtual environments and spaces.

Keywords: Digital Technologies; Project-based learning; Country school; Multigrade class.

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Computational Thinking and Creative Insubordination Actions: Perceptions of a Math Teacher

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This article presents a section of a research study for a Master's degree in Mathematics Education completed in 2023. The objective of the article is to present and analyze the final stage of the research, which involved an interview with a Mathematics teacher working in Basic Education. The research utilized theoretical frameworks presented by authors discussing ideas about Computational Thinking and Creative Insubordination. Through a qualitative methodology, the theoretical framework of Laurence Bardin's Content Analysis was employed for the analysis of the interview. As a result of the analysis, the interview data suggests that a significant number of the mentioned actions of Creative Insubordination were possible to carry out because the interviewee had the opportunity to work with various materials not only in academic training but also in continued education in Educational Robotics. On the other hand, it was found that the difficulties in implementing Computational Thinking ideas mentioned by the interviewee are related to the technological resources and materials available in schools.

Keywords: Content analysis; Mathematics Education; Math Teachers Training; Creative Insubordination; Computational Thinking.

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The teaching of mathematics and the interactions provided by GeoGebra for problem solving

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The article presents a descritive and participant research in an experience report format that details a didactic sequence applied by the teacher-author in a 9th grade class of the final years of elementary school in a public school in the city of São Paulo, in 2022. The research cenario is the get back at school time after the social isolation demanded by the COVID-19 pandemic, emphasizing the use of the remote modality. This report seeks to reveal the findings achieved when using the GeoGebra software as a motivating digital interaction tool for problem solving and also the Teaching-Learning-Assessment methodology for teaching factoring special products. The theoretical framework supported the development of the experience, the activities developed and the chosen teaching strategies. In the results, it was observed that the participation of the students, mainly in the collaborative constructions stage, there were moments in which the students stopped being susceptible and started to participate by questioning during the learning process, while the professor take on the knowledge mediator role by pushing students into new discoveries. The insight from this research is that the Teaching-Learning-Assessment methodology and the GeoGebra software proved to be efficient for teaching and learning Mathematics, contributing to the importance of working with innovative methodologies and TDIC in Basic Education.

Keywords: GeoGebra; Mathematics; Teaching; Learning; Assessment; DTIC; Active methodologies.

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Student self-perception and teacher evaluation of the skills learned in the Communication Protocols subject TCP/IP

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University education based on models based on a conception of content as primary learning objectives is being modified due to the rapid change in knowledge and, consequently, the provisionality of knowledge. Higher education must address the training of individuals who adjust to changing circumstances and problems in a varied and effective way, Competence-Based Education being an alternative for this. This paper describes the way in which the determination of the self-perception of acquisition of capacities by the students in a subject of the computer engineering career was carried out, the evaluation of these by the teachers of the same, a comparative analysis of both and concluding in this regard, to finally explain how to continue with the improvement of the procedure with future works.

Keywords: Educational quality; Skills; Perception; Evaluation.

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Teaching clinical reasoning through scripts in virtual learning environments

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Introduction. Clinical reasoning skills training is a fundamental purpose of medical education. The aim of this work was to establish a method to improve clinical reasoning skills through the design and development of a scripts teaching methodology, combined with online learning strategies through the Moodle environment. Material and methods. A prospective study was undertaken. Every student attended the usual theoretical-practical activity and had access to theoretical content in PDF format and multimedia book about Infant respiratory disease within the Moodle virtual learning environment. A Control Group and a Multimedia Instructional Group were incorporated. In the Multimedial Instructional Group, 4 online classes were incorporated: an introductory class, followed by three short classes in which the information of the module was organized in scripts with self-assessment questions with immediate feedback at the end of each of them. The students were evaluated by means of a Multiple Choice Test (MCT) and a Script Concordance Test (SCT). Results. Instructive Multimedia Group obtained better results than Control Group (89.1±6.2 vs 76.3±11.4; $p < 0.001$) in MCT. Instructive Multimedia Group obtained better results than Control Group (67±10.9 vs 55±11.6; $p < 0.001$) in SCT. Discussion. Learning clinical reasoning skills is more effective when the construction of Disease Scripts is promoted.

Keywords: Undergraduate medical education; Educational technology; Clinical reasoning; Computer instruction; Pediatrics.

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Gamified proposal to promote the use of ICT in future teachers

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The use of ICT in the classroom is unavoidable, and students of teacher training programs are who need to appropriate them, as well as powerful motivational strategies such as gamification. This paper presents the design of a teaching proposal for Physics and Chemistry teacher training students using a gamified scenario as a strategy to promote and motivate the use of ICT. This proposal is versatile and can be easily adapted for students of other disciplines. The results of its implementation in an elective course of the Universidad Nacional del Comahue for students of both disciplines are also included.

Keywords: Gamification; Information and communication Technology; Higher education; Teacher training courses.

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Demonstrating learning with the incorporation of Augmented Reality in the understanding of the hominization process through a didactic sequence

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Currently, there is an increased interest in the incorporation of Augmented Reality in the educational field due to the benefits that technology can bring to the teaching process, especially when in some cities there are no physical and tangible learning environments - a museum or field trips - that allow an adequate understanding of the process of hominization, dispersion around the planet and American settlement in the subject of History, Geography and Social Sciences. Thus, Augmented Reality incorporated into a didactic sequence emerges as an alternative to recreate meaningful learning experiences for students. The educational research was circumscribed to the positivist paradigm and considered the quantitative method, pre-experimental modality as an inquiry strategy and the pretest and posttest research design with an intact group to answer the research question. By means of the inferential analysis, and by means of the statistical t Student test for related samples, it was evidenced that elementary school students achieved significant changes in their learning with the incorporation of this emerging technology.

Keywords: History teaching; Emerging technology; Augmented reality; Interactivity; Digital information.

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Disruptive technologies for disruptive teaching: six outstanding web resources for learning English

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For decades, technologies have been part of the educational process, either as complements in face-to-face classes or as mediators in completely virtual pedagogical practices. In the case of the English teaching and learning processes, educational innovation consists mainly of the incorporation of disruptive technologies available on the Web, with a wide variety of possibilities that establish a trend when deciding how and what to teach. There are resources which foster interactivity and collaborative work, among others, and enable the learning process to be more accessible and entertaining for students. For instance, there are mobile apps and online platforms which offer the opportunity to practise pronunciation, grammar content, etc., and to develop linguistic skills via interactive exercises with immediate feedback, using AI (artificial intelligence) or through gamification. This paper explores some disruptive technologies and current tendencies provided by the internet in the field of English language teaching and learning. It also proposes six web resources which can be highly useful for teachers when planning their pedagogical practices.

Keywords: Disruptive technologies; Disruptive teaching; English; Web Resources.

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Exploring the perception of future teachers about the use of ChatGPT in the educational context

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This article aims to explore the perception of future teachers regarding the use of the Generative Pre-Trained Transformer-ChatGPT technological tool in the educational context, seeking to understand the level of knowledge, acceptance, previous experiences, perceived effectiveness and challenges in its use. Methodologically, the research is classified as descriptive and exploratory, with qualitative and quantitative approaches, carried out with the support of the IRaMuTeQ and Jamovi software. The sample was intentional and of convenience, made up of a class of twelve undergraduates, who attended the subject of Technologies applied to the teaching of mathematics II, of the mathematics degree course, in the second semester of 2023. The results indicate opportunities and challenges associated with the use of this technology. While the undergraduates recognize the potential of ChatGPT to enrich teaching, personalize learning and offer support, they also express concerns related to student dependence, highlighting the importance of teacher guidance and preparation to ensure ethical and effective use of this tool. Finally, this analysis has led to the conclusion that it is necessary to implement teacher training programs that cover the functionalities and limitations of ChatGPT in detail, in order to train teachers to integrate this tool in a reflective and strategic way into their teaching practices.

Keywords: ChatGPT; Artificial intelligence; Students' perceptions; Teaching; Learning.

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Presentation and validation of the digital game Gametum: an interactive approach to teaching meiosis

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This study aims to present and discuss the validation process of the digital game Gametum. To achieve this, exploratory qualitative-quantitative research was conducted, using questionnaires that allowed for grading different aspects and providing discursive responses. Eight teachers and nine undergraduate students in Biological Sciences participated in the validation. Through Content Analysis, we interpreted the comments by relating them to the grades given to the aspects. The results confirmed that the game is suitable in terms of content, language, and attractiveness, being able to capture players' attention; and provided insights for making changes to the character designs, revising the text of hints, and realizing the need for creating an instruction manual. It is hoped that this resource will assist educators and trainers in the teaching-learning process of Genetics.

Keywords: Biology teaching; Digital game; Teaching Resource, Cell division.

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Assessment of university learning: a study of interactive concept maps with Mindomo

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The article presents the experience related to the use of interactive concept maps as a learning evaluation technique in the university context. This research was carried out in the 2019-2020 academic year, with students taking the Research Methodology subject. The study was carried out through a pedagogical experiment with a pretest and posttest design, with the objective of verifying the effectiveness of computer applications for the preparation of interactive concept maps as a technique for evaluating learning in students of pedagogical careers. The analysis of the results of the pre- and post-test, through a numerical scale, allowed us to compare the level of learning; as well as the depth and durability of the content achieved in the sampled students. The resulting conceptual maps showed the traceability of the evolution of students' knowledge based on the graphic expression of interrelation processes, contributing to the quality of feedback, as a key element for formative learning.

Keywords: formative evaluation; Mindomo; university teaching; Interactive concept maps.

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Leadership and Teacher Training in the Digital Age: A Contemporary Analysis

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The purpose of this work is to present a theoretical review of the most relevant aspects that contribute to a new research perspective oriented towards leadership in teacher training in the digital age for educational organizations. The need to identify and define the characteristics and qualities of a teacher training leader according to the current digital phenomenon present in Educational Institutions (IE) is raised, emphasizing the importance of Information Technology (ICT) using the TPACK model (Technological Pedagogical Content Knowledge) as a distinctive element in training and in the search for competencies within leadership. It is concluded that it is important to think and establish the patterns that make leadership in teacher training within educational organizations be considered a leader in the technological context.

Keywords: Leadership; Teacher training; ICT; Leadership Styles; TPACK model.

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Didactic-Technological Resources as a Teaching Strategy in the Accounting Course in the midst of the COVID-19 Pandemic

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This study aimed to identify which didactic-technological resources are used as a teaching strategy in the disciplines offered by an Accounting course at a federal university. A descriptive research, with a quantitative approach, and a documental analysis was carried out. The study sample consists of 32 teaching plans from the course curriculum, designed specifically for the emergency calendar, the period of the COVID-19 pandemic. For data analysis and subsequent presentation of results, descriptive statistics were used with the application of relative frequency. The results showed that the most used resources in the Accounting course analyzed were the virtual learning environment (AVA Moodle) and the web conference system (Mconf), characterized as educational platforms. The other resources used were applications, handouts, e-books, Microsoft Excel, forums and/or chats, podcasts, quizzes, slides, software, videos and video lessons. It could also be seen that all disciplines used at least two of the aforementioned technological resources. The results of the study also indicated that professors with a doctorate made more use of technological strategies, in addition to these being the most contemporary. It was found that there is a relevance of didactic-technological resources as important requirements for students to develop skills and competences.

Keywords: Accounting Teaching; Teaching Plans; Didactic-Technological Resources.

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Virtual university education: Challenges associated with the COVID-19 pandemic

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The COVID-19 pandemic has radically transformed education, posing challenges for students and teachers in the face of distance learning. Educators have embraced digital methods, especially "e-learning," as an effective solution. However, the need for regulations for a successful generational transition became evident. This study focused on the experience of university students during the pandemic, using a virtual survey. Of the 840 participants, mostly Mexicans, 72.3% came from public universities, and 46.3% were in the first two years of their degree, with an average age of 28.97 years old. Most dedicated between 2 and 5 hours to online classes per day. Despite challenges such as internet quality, 47.1% expressed being "very satisfied" or "satisfied." Difficulties varied by field of study, being more pronounced in medical-biological areas. Students, overall, praise e-learning but express concern about the lack of acquisition of clinical and technical skills. In summary, the diversity of careers presents particular challenges, highlighting the need to enrich the experience in medical-biological areas.

Keywords: COVID-19; E-learning; Satisfaction; University; Teaching methods

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Geometric Interpretation of the Double Integral in 3D using GeoGebra

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The cognitive difficulties observed in the students, at the time of approaching the concepts of Multivariate Mathematical Analysis, come from the lack of articulation between the different representations of the same mathematical object, particularly between the algebraic register and its respective geometric representation in the double integrals, imposing, consequently, the use of algebraic techniques without understanding the concepts. Based on the Theory of Semiotic Representation Registers, the use of a didactic sequence using GeoGebra is proposed. For its design, an application contextualized to civil engineering was chosen and then a sequence of activities was generated where the mathematical object was explored from a graphic register to an algebraic register, that is, the student starts from three-dimensional geometric elements of the graphic register of a "solid" to then perform the articulation of representation to the algebraic register of the double integral to then solve the application. Finally, the didactic sequence was evaluated affirmatively in aspects such as the geometric comprehension of the mathematical object and the pertinence of the characteristics of the didactic sequence.

Keywords: Double integral; Semiotic registers; Mathematical object; Didactic sequence.

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Characterization of perceptions about mobile phone use in old age in Argentina: comparison between three cities

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The purpose of this study is to describe the perceptions that older people in Argentina have in three different cities about the use of cell phones, and to analyze the significant variance that the perceptions have according to the city of residence of the sample. In turn, a description of the sociodemographic profile of the Argentine elderly was made. Design/methodology: A study with a non-experimental, cross-sectional, correlational design is presented; A non-probabilistic sample of 138 intentionally selected older adults was formed. Results: Previous experience in the use of technology, self-efficacy and facilitation conditions are the perceptions that present the most differences between the cities (Mar del Plata, San Salvador de Jujuy and Miramar). In addition, it was found that older people in general have a certain degree of anxiety when using the cell phone even though they have factors that facilitate its use. Originality: This research has instructions for those aimed at improving functional health in the elderly. Understanding the perceptions of the elderly in relation to technology will enhance its usefulness to promote an autonomous lifestyle and social integration in old age.

Keywords: Elderly; Gerontechnology; Use of smartphones; Perceptions.

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Analysis of Curriculum Contents with BERTopic from an Interdisciplinary Perspective

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Interdisciplinarity challenges educators to rethink their educational approaches, aiming to integrate knowledge and methods from different disciplines to promote a more holistic and meaningful understanding of study topics. This work aims to use and evaluate BERTopic in topic modeling, clustering, and classification, employing an integrated high school course project as the corpus, seeking points of convergence between curriculum units. After an exploratory data analysis, the results showed promise in identifying information that can provide a better understanding of curricular components, highlighting the relationships between different disciplines. Such results can also help in the development of new teaching methodologies that highlight the potential of an interdisciplinary approach in education.

Keywords: BERTopic; Topic Modeling; Course Curriculum; Interdisciplinarity.

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