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VENTANAS AL CONOCIMIENTO

Integration of use of information

and communication technologies in the teaching process

Axiological theory of open and distance education:

a transdisciplinary didactics

Other Subjects

Reading to understand: the impact of narrative texts in primary education

Emotional law based on justice and equity: a universal alternative for conflict resolution

Artificial intelligence

and academic fraud in the university context

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Editorial

Innovative reflections on education and society in the 21st century

In this special edition of our journal, we present a diverse and enriching collection of research aimed at addressing the complex challenges faced by the contemporary educational and social landscape. These contributions cover a broad spectrum of topics from multidisciplinary perspectives, interweaving theories, practices, and critical reflections that encourage the rethinking of traditional paradigms. Readers will find in these pages a blend of transformative knowledge that undoubtedly contributes to generating innovative ideas and practical solutions for today's challenges.

One of the most prominent contributions is the Axiological Theory of Open and Distance Education, developed by researcher Jairo Gregorio Ramírez. This approach highlights the relevance of adopting a transdisciplinary didactic methodology in university training processes, particularly in hybrid education contexts. Ramírez argues that this model not only responds to the growing need for flexibility and personalization in education but also promotes the integration of ethical values and innovative technologies to enhance learning. This work emphasizes how hybrid modalities prepare students not only to face technical challenges but also to address ethical and professional dilemmas in an increasingly globalized and interconnected world.

For her part, Natividad Bustos Rusinque invites us to reflect on the impact of experimental spaces in university biology education. Her research demonstrates that practical activities positively affect the development of critical thinking and creativity, consolidating theoretical knowledge and fostering scientific curiosity among students. Through her findings, Bustos challenges us to rethink traditional pedagogical methodologies to ensure that science learning is not only meaningful but also transformative.

In the legal field, Adriana Lourdes Bautista Jaimes introduces a revolutionary concept: emotional law based on justice and equity. This proposal, which combines elements of neuroscience and jurisprudence, suggests the need to understand and regulate emotions in legal processes as a tool for building fairer and more supportive societies. Bautista argues that empathy and proper emotional management in the legal sphere not only transform legal dynamics but also promote more equitable relationships among citizens.

In the technological realm, Deinny José Puche Villalobo and Savier Fernando Acosta Faneite address key challenges related to the use of artificial intelligence in education. Puche Villalobo examines the issue of academic fraud associated with these technologies, emphasizing the need to implement strategies that foster integrity and authentic learning. Meanwhile, Acosta Faneite explores the correlation between technological competencies and academic performance, highlighting that the effective use of these tools must be accompanied by a pedagogical approach that prioritizes ethics and meaning in learning processes.

In the economic domain, Luis Alejandro Lobo Caicedo presents a detailed analysis of the impact of inflation and free cash flow on business profitability, particularly in the food sector. His work provides valuable tools for strategic planning, highlighting the need to adopt resilient mana-

gement models that allow companies to navigate highly volatile economic contexts.

In primary education, Alexander Javier Leal Sulbarán, Adalegnis Avilés Rangel, and Lisbeth Villalobos Fernández examine how narrative texts influence students' reading comprehension. Their findings reveal that these texts not only enrich vocabulary and foster imagination but also promote empathy and critical thinking, making them an essential tool for the comprehensive development of children.

In higher education, Dilia Padrón reflects on the challenges and opportunities faced by the National Open University (UNA), emphasizing the importance of hybrid pedagogies and visionary leadership to meet future demands. Meanwhile, Juan Acacio Rosales Vivas explores how the integration of information and communication technologies (ICTs) into classrooms can enrich pedagogical experiences, fostering critical and creative skills among students through digital platforms and interactive tools.

Finally, María Auxiliadora Campos Medina takes us on an imaginary interview with Daniel Goleman, analyzing the transformative impact of emotional intelligence in personal and professional domains. Campos highlights how developing emotional competencies enhances leadership, communication, and conflict resolution skills, contributing to individuals' overall well-being.

Together, this edition of our journal offers an integral and profoundly enriching perspective for educators, academics, and social leaders. Each article and reflection presented here not only broadens the academic debate but also provides practical tools to address 21st-century challenges. We invite our readers to explore these pages, assured that they will find inspiring ideas and transformative perspectives that motivate them to actively contribute to building a more inclusive, sustainable, and emotionally intelligent future.

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Editorial

Reflexiones innovadoras en la educación y la sociedad del siglo XXI

En esta edición especial de nuestra revista, presentamos un conjunto diverso y enriquecedor de investigaciones que buscan dar respuesta a los complejos retos que enfrenta el entorno educativo y social contemporáneo. Estas contribuciones abordan un amplio espectro de temáticas desde enfoques multidisciplinarios, logrando entretejer teorías, prácticas y reflexiones críticas que invitan a repensar los paradigmas tradicionales. Los lectores encontrarán en estas páginas una amalgama de conocimiento transformador que, sin duda, contribuirá a la generación de ideas innovadoras y soluciones aplicables a los desafíos actuales.

Uno de los aportes más destacados es la Teoría axiológica de la educación abierta y a distancia, desarrollada por el investigador Jairo Gregorio Ramírez. Este enfoque pone de relieve la relevancia de adoptar una didáctica transdisciplinaria en los procesos de formación universitaria, especialmente en contextos de enseñanza híbrida. Ramírez argumenta que este modelo no solo responde a la creciente necesidad de flexibilidad y personalización en la educación, sino que también promueve la integración de valores éticos y el uso de tecnologías innovadoras para enriquecer los aprendizajes. Este trabajo resalta cómo las modalidades híbridas no solo preparan a los estudiantes para enfrentar desafíos técnicos, sino también para abordar dilemas éticos y profesionales en un mundo cada vez más globalizado e interconectado.

Por su parte, Natividad Bustos Rusinque nos invita a reflexionar sobre el impacto de los espacios experimentales en la enseñanza de la biología a nivel universitario. Su investigación demuestra que las actividades prácticas tienen un efecto positivo en el desarrollo del pensamiento crítico y la creatividad, consolidando los conocimientos teóricos y promoviendo la curiosidad científica entre los estudiantes. A través de sus hallazgos, Bustos nos desafía a repensar las metodologías pedagógicas tradicionales para garantizar que el aprendizaje en ciencias sea no solo significativo, sino también transformador.

En el ámbito jurídico, Adriana Lourdes Bautista Jaimes introduce un concepto revolucionario: el derecho emocional basado en la justicia y la equidad. Esta propuesta, que combina elementos de la neurociencia y la jurisprudencia, plantea la necesidad de comprender y regular las emociones en los procesos legales como una herramienta para construir sociedades más justas y solidarias. Bautista argumenta que la empatía y el manejo adecuado de las emociones en el ámbito jurídico no solo transforman las dinámicas legales, sino que también promueven relaciones más equitativas entre los ciudadanos.

En el terreno tecnológico, Deinny José Puche Villalobo y Savier Fernando Acosta Faneite abordan desafíos clave relacionados con el uso de la inteligencia artificial en la educación. Puche Villalobo analiza el problema del fraude académico asociado a estas tecnologías, subrayando la necesidad de implementar estrategias que fomenten la integridad y el aprendizaje auténtico. Por su parte, Acosta Faneite explora la correlación entre las competencias tecnológicas y el desempeño académico, destacando que el uso eficaz de estas herramientas debe ir acompañado de un enfoque pedagógico que priorice la ética y el significado en los procesos de aprendizaje.

En el ámbito económico, Luis Alejandro Lobo Caicedo presenta un análisis detallado sobre el impacto de la inflación y el flujo de caja libre en la rentabilidad empresarial, particularmente en el sector alimentario. Su trabajo ofrece valiosas herramientas para la planificación estratégica, destacando la necesidad de adoptar modelos de gestión resilientes que permitan a las empresas enfrentar contextos de alta volatilidad económica.

En el área de la educación primaria, Alexander Javier Leal Sulbarán, Adalegnis Avilés Rangel y Lisbeth Villalobos Fernández examinan cómo los textos narrativos influyen en la comprensión lectora de los estudiantes. Sus hallazgos muestran que estos textos no solo enriquecen el vocabulario y fomentan la imaginación, sino que también promueven la empatía y el pensamiento crítico, convirtiéndose en una herramienta esencial para el desarrollo integral de los niños.

En el ámbito de la educación superior, Dilia Padrón reflexiona sobre los desafíos y las oportunidades que enfrenta la Universidad Nacional Abierta (UNA), destacando la importancia de las pedagogías híbridas y el liderazgo visionario para responder a las demandas del futuro. Por otro lado, Juan Acacio Rosales Vivas explora cómo la integración de las tecnologías de la información y la comunicación (TIC) en el aula puede enriquecer la experiencia pedagógica, fomentando habilidades críticas y creativas en los estudiantes a través de plataformas digitales y herramientas interactivas.

Finalmente, María Auxiliadora Campos Medina nos transporta a una entrevista imaginaria con Daniel Goleman, donde analiza el impacto transformador de la inteligencia emocional en los ámbitos personal y profesional. Campos destaca cómo el desarrollo de competencias emocionales mejora la capacidad de liderazgo, comunicación y resolución de conflictos, contribuyendo al bienestar integral de las personas.

En conjunto, esta edición de nuestra revista ofrece un panorama integral y profundamente enriquecedor para educadores, académicos y líderes sociales. Cada artículo y reflexión aquí presentada no solo amplía el debate académico, sino que también proporciona herramientas prácticas para enfrentar los retos del siglo XXI. Invitamos a nuestros lectores a explorar estas páginas con la certeza de que encontrarán ideas inspiradoras y perspectivas transformadoras que los motivarán a contribuir activamente en la construcción de un futuro más inclusivo, sostenible y emocionalmente inteligente.

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Axiological theory of open and distance education: A transdisciplinary didactic approach

Teoría axiológica de la educación abierta y a distancia: una didáctica transdisciplinaria

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Abstract

This article presents an axiological theory of Open and Distance Education as a transdisciplinary didactic approach in university education, focusing on the Santa Bárbara Academic Program in Barinas, at the National Experimental University of the Llanos "Ezequiel Zamora" (Unellez). With a qualitative approach and a post-positivist interpretive paradigm, the phenomenological method was used to explore the subjective experiences of four participating faculty members. Conducted in a b-learning modality, the research integrated Information and Communication Technologies. In-depth interviews served as the data collection technique, and the analysis was performed using Atlas.ti 23 software through coding and theorizing. The findings indicate that faculty members play diverse roles and have significant, valuable experiences within the context of Open and Distance Education.

Keywords: Axiological theory, open and distance education, transdisciplinary didactics.

Resumen

Este artículo da a conocer una teoría axiológica de la Educación Abierta y a Distancia como didáctica transdisciplinaria en la formación universitaria, enfocándose en el Programa Académico Santa Bárbara de Barinas, Universidad Nacional Experimental de los Llanos "Ezequiel Zamora" (Unellez). Con un enfoque cualitativo y un paradigma interpretativo post-positivista, se utilizó el método fenomenológico para explorar la experiencia subjetiva de cuatro docentes participantes. La investigación, en modalidad b-learning integró Tecnologías de Información y Comunicación. Las entrevistas en profundidad fueron la técnica de recolección de datos, y el análisis se llevó a cabo con el software atlas.ti 23 mediante codificación y teorización. Las conclusiones obtenidas indican que los docentes desempeñan roles diversos y poseen experiencias significativas de gran valor en el contexto de la Educación Abierta y a Distancia.

Palabras clave: Teoría axiológica, educación abierta y a distancia, didáctica transdisciplinaria.

Introduction

Open and Distance Education has experienced significant growth in recent years, driven by advancements in Information and Communication Technologies. However, despite these technological developments, this educational modality still faces considerable challenges, such as a lack of social interaction and student motivation. Additionally, it has traditionally focused on knowledge transmission without sufficient emphasis on cultivating values and social skills.

In this context, the present article aims to address the issue of insufficient attention to values in Open and Distance Education and its impact on individual development. The purpose is to propose an axiological theory that integrates values into the educational process, promoting comprehensive individual development. To achieve this, a literature review is conducted along with an empirical study analyzing the perceptions of students and teachers regarding the importance

of values in Open and Distance Education. The objective is to advance university education by providing a solid theoretical foundation and an enriched understanding from a transdisciplinary perspective. This approach involves tackling the complexity of modern education and promoting a holistic approach to professional development.

Methodology

In this context, the purpose of this article is to address the problem of insufficient focus on values in Open and Distance Education and its impact on individual development. The aim is to present an axiological theory that integrates values into the educational process and promotes comprehensive individual development. To this end, a literature review is conducted, and an empirical study is performed to analyze students' and teachers' perceptions of the importance of values in Open and Distance Education. The objective is to advance higher education by providing a solid theoretical foundation and a rich understanding from a transdisciplinary perspective. This approach involves addressing the complexities of modern education and promoting a holistic approach to professional training.

This study examines reality within its natural context, capturing and interpreting phenomena as they unfold from the perspectives of those involved (Blasco & Pérez, 2007, p. 25). Adopting a holistic view of the environment and social actors, individuals, environments, and groups are seen as an interconnected whole. Participants were analyzed in the context of their past experiences and current situations. A post-positivist paradigm was chosen for its emphasis on subjective interpretation, acknowledging the influence of personal perceptions, attitudes, and well-established scientific theories. This paradigm is inductive and dynamic, presenting a human-centered, holistic approach that adapts to the needs of the research process.

The phenomenological method was selected to explore "the essential meaning of phenomena, including their significance and relevance" (Van Manen, 2003, p. 48). This method allowed the researcher to deeply examine the underlying motivations of events while acknowledging the dynamic and interactive nature of reality. Each participant was viewed as a communicator who shared meanings, and the researcher engaged in bidirectional communication. Individuals shaped their understanding of the situation by analyzing and valuing reality in a comprehensive, descriptive-analytical manner.

The primary data source comprised four key informants who participated voluntarily, contributing specific characteristics to the study. The research setting was the National Experimental University of the Western Plains "Ezequiel Zamora" (Unellez), specifically within the Santa Bárbara Academic Program, located in Santa Bárbara, Barinas state, on the main Zamora I campus, where Open and Distance Education is implemented using b-learning technology environments, known as Learning-Teaching Environments (EVEA).

A question guide was developed as a thematic reference, meticulously prepared, and reviewed to ensure that no questions could lead to responses or cause discomfort during interviews. In-

formants were selected based on specific criteria, and interviews were recorded and transcribed. Theoretical sampling was employed to define the necessary concepts to explore in further interviews. Data analysis techniques included coding, categorization, structuring, comparison, and theorization (Martínez, 1999, 2006). Theorization was the final stage, where theory was integrated and refined (Strauss & Corbin, 2002, p. 157).

Results and Discussion

Axiological foundations of open and distance education from a transdisciplinary and complex didactic perspective

Valuing holistic development: Education is recognized not merely as knowledge transmission but as a means to foster the comprehensive development of students, encompassing cognitive, emotional, social, and ethical dimensions (Dewey, 1998; Freire, 2022).

Emphasis on autonomy and responsibility: This approach promotes student autonomy in the learning process, encouraging self-regulation, decision-making, and a sense of responsibility toward personal development and the environment (Piaget, 1987; Kohlberg, 1984).

Orientation toward meaning-making: Learning is seen as an active, constructive process, wherein students build their knowledge and meaning through interaction with content, peers, and the virtual environment. In this process, the teacher serves as a mediator in the Zone of Proximal Development (Vygotsky, 2014; Bruner, 1966; Ausubel *et al.*, 2012).

Inclusion and equity: This perspective values diversity and aims to ensure equal educational opportunities for all students, considering their sociocultural contexts, needs, and individual characteristics. ICT is a key support for self-directed learning (Ladson-Billings, 2022; Nieto, 2019).

Adaptation to the environment and global challenges: It considers the current societal challenges and seeks to develop students who can understand and tackle complex issues, fostering global awareness, collaboration, and adaptability (Zhao, 2018; Reimers, 2017).

Promoting holistic development and Hhman growth: Open and Distance Education should go beyond the mere acquisition of technical knowledge and encourage students' holistic development. It is also essential to cultivate emotional, social, and ethical capacities, along with the ability to think critically and reflect on values and life's meaning.

Encouraging equity and inclusion: Education should transcend social inequalities, empowering students to understand and transform their realities. This approach also emphasizes the importance of active student participation and collective knowledge-building (Freire, 2022).

Decalogue of principles for open and distance education from a transdisciplinary and complex didactic perspective

Integration of nowledge: This principle promotes the integration of knowledge from various disciplines, recognizing that contemporary problems and challenges require multidimensional approaches (Morin, 2002; Varela et al., 1997).

Systemic approach: It begins with the understanding that reality is an interconnected system where elements and relationships influence each other (Capra, 2008).

Critical and reflective tinking: This principle encourages the development of critical and reflective thinking, involving the ability to question assumptions, analyze different perspectives, and evaluate evidence (Freire, 2004; Swartz *et al.*, 2014).

Problem-based learning: This principle emphasizes learning through solving authentic and contextualized problems. Additionally, the tutor focuses on designing learning processes that allow students to develop analytical, critical, reflective, and creative strategies, and problem-solving skills (Barrell, 1999; Barrows, 1986, 1994, 1996).

Dialogue and collaboration: This principle seeks to create spaces for the exchange of ideas, debates, and reflections, promoting diverse opinions and the collective construction of knowledge. Collaboration between teachers and students, as well as among students, enhances the construction of meanings and co-creation of knowledge (Senge, 2010).

Awareness of complexity: This principle involves recognizing that reality is complex and consists of multiple interconnected dimensions (Morin, 2009; Acevedo et al., 2005).

Holistic thinking: This principle aims to understand phenomena, rather than reducing them to individual parts. It encourages the integration of knowledge from different disciplines and the ability to establish connections for a more comprehensive, contextualized understanding of reality (Boff, 2011; Maturana & Varela, 2009).

Dialogicity: This principle promotes spaces for dialogue between teachers and students, as well as among students themselves, where ideas, reflections, and perspectives can be shared. This enables knowledge exchange and collective construction of meaning (Freire, 2022; Maturana & Varela, 2009).

Transversality: This principle implies transcending disciplinary boundaries and promoting the integration of knowledge and skills from different fields (Morin, 2001).

Ethics of complexity: This principle highlights the need to consider ethical values in the educational process and decision-making. It emphasizes the importance of promoting an ethics of solidarity, justice, and mutual respect (Morin, 2001, 2006; Boff, 1996; Niculescu, 1996).

Information and communication technologies: the key to success in open and distance education

Among the reasons considered in this axiological theory are the following:

Information storage: ICT enables efficient management of information and its transmission from one place to another, covering a broad range of solutions. This includes technologies for storing and retrieving information, sending and receiving information, or processing data to generate calculations and reports (Ortiz, 2004).

Access to education and information search: ICT breaks down geographical and temporal barriers, providing access to education for individuals who might otherwise be excluded. This is especially relevant in rural areas, remote communities, or for those with mobility limitations. ICT enables the delivery of educational content through online platforms, videoconferences, digital materials, and more (Alderete et al., 2017; Márquez, 2021).

Interactivity, participation, and communication Tools: ICT offers interactive tools that foster active student participation. Through online forums, chats, videoconferences, and collaborative platforms, students can interact with peers and instructors, share ideas, debate, and collaborate on joint projects, enriching their learning experience (Vaqueiro, 2006).

Flexibility in learning: Distance education is characterized by its flexibility, and ICT plays a vital role in creating flexible learning environments. Students can access materials, follow courses, and complete assignments at their own time and pace, adapting to their personal or professional responsibilities (Siemens, 2006; Correa & Juan, 2009).

Feedback and progress monitoring: ICT facilitates immediate feedback and progress tracking, which supports continuous improvement. Through online platforms, students receive individual feedback on assignments and evaluations, helping them identify areas for improvement and closely track their academic progress (Biggs & Tang, 2011).

Didactic experiences in open and distance education

Educators are encouraged to reflect on their teaching experiences, and Open and Distance Education (ODE) provides a rich landscape for this. In ODE, teachers play a fundamental role in promoting active student participation and strengthening their professional reputation. Consequently, the discussions and arguments presented in this construct reflect the sentiments, actions, and decisions drawn from the experiences of academic program colleagues where data has been explored.

Reflecting on didactic experiences and ODE requires revisiting its concept, as it is commonly framed in different educational levels, primarily in basic and secondary education in Venezuela. Thus, the perspectives on teaching implicitly refer to the role of the teacher, viewed from a

practical-reflective approach, as the teacher makes decisions on how to conceive teaching and its use as a complex, multidimensional activity. Teaching, then, is the teacher's specific activity, demanding an understanding of the semantic field of teaching and the educator (Cifuente, 2016).

Consequently, didactic experiences hold significant value, meriting analysis within this educational modality. Various studies support the empirical findings of researchers, and this axiological theory introduces key elements while acknowledging that others may closely relate to those presented here. These aspects include:

Valuing experiences: This theory emphasizes the need to acknowledge and value the prior experiences of both students and teachers in ODE as fundamental resources for the teaching-learning process. It involves considering students' prior knowledge, acquired skills, and personal experiences as starting points for constructing new knowledge, allowing students to learn flexibly and apply knowledge in real-world contexts (Monsalve, 2011).

Active participation: In ODE, active participation of students and teachers in knowledge construction within virtual environments is essential. This requires creating spaces for interaction, debate, reflection, and collaboration where all participants can contribute ideas, share experiences, and collectively build knowledge (Patru & Khvilon, 2002). Active student participation positively impacts their didactic experiences (Cifuentes, 2016), enhancing critical thinking and comprehension while providing more interactive learning activities compared to lecture-based courses. This positively influences the student experience, enabling knowledge transfer across any course (Evanick, 2023).

Active learning, where students engage in activities and reflection, is crucial in ODE (Artino, 2007). It involves students doing tasks and contemplating their actions (Bonwell & Eison, 1991). In ODE, students, following a constructivist learning design, tend to actively participate in various activities like forums, chats, and teamwork, where participation is especially impactful when activities require interactive reasoning and inquiry, such as open-ended questions and research project design (Izadora *et al.*, 2020).

Meaningful Learning: It is essential for didactic experiences to be meaningful to students, which requires designing activities and resources that connect academic content with students' realities, interests, and needs. The goal is for students to see the relevance and applicability of what they are learning. Distance education alone does not guarantee success; "its potential depends on how it is integrated into institutional development processes across academic, administrative, and technological areas" (Moreno, 2012, p. 26).

Flexibility and adaptability: Recognizing the importance of designing flexible and adaptable didactic experiences based on students' diverse circumstances and needs, as well as the demands of virtual environments. Therefore, options and alternatives should be provided so students can adapt the learning process to their own pace and style.

Learning community: Promoting online learning communities encourages interaction and collaboration among students and teachers, creating virtual spaces to share ideas, discuss, work on joint projects, and provide mutual feedback. Learning communities foster a sense of belonging, social knowledge construction, and peer support. These communities incorporate successful educational practices aimed at social and educational transformation. "Their foundation lies in the dialogical conception of learning, where knowledge is built through shared interactions" (Álvarez & Torras, 2016, p. 8).

Ethics and values: Considering the ethical dimension in didactic experiences fosters values such as responsibility, respect, empathy, and solidarity among participants. It is crucial to establish norms for ethical behavior and interaction in virtual environments, promoting responsible and ethical conduct in online collaboration. This element aligns with the first construct of this axiological theory.

Technology integration in open and distance education

Technology integration is a crucial aspect in today's digital era. It offers opportunities to expand access to education, foster active student engagement, and enrich teaching and learning processes. Some key points to consider in this axiological theory include:

Equitable access: Technology can help overcome geographical and socioeconomic barriers by providing educational access to people who might otherwise lack it. Open and Distance Education allows students to access educational materials, resources, and learning opportunities without physical restrictions. The concept of the networked society represents a new social paradigm that has transformed this educational modality, enabling both educators and students to enhance their performance and learning experiences according to their own interests through openly accessible resources (Castells, 2004, 2009a, 2009b, 2010). These authors are essential to understanding the role of the networked society in promoting access and equity in the digital age.

Digital resources and tools: Technology provides a wide range of digital resources and tools that can enrich the educational experience, including online learning platforms, multimedia materials, interactive simulations, mobile applications, and collaboration and communication tools. Effective integration of these tools can improve the quality and variety of meaningful learning experiences. Therefore, leveraging this communication potential in Open and Distance Education is essential for providing students with enhanced learning (Coll & Monereo, 2008).

Additionally, education must advance alongside technological progress, as society has become inherently technological, particularly in the post-digital context (De Laat & Dohn, 2019). However, it is essential to recognize that technology can influence educational values and practices, highlighting the need for responsible use of technology in educational contexts.

Personalization and adaptive learning: Technology facilitates personalized learning by allowing

students to progress at their own pace and access materials and activities tailored to their individual needs. Adaptive learning systems use algorithms to adjust content and teaching methods based on each student's progress and skills.

In this regard, personalization and adaptive learning enable the adjustment of content, activities, and resources to individual student needs and preferences, resulting in a more meaningful and engaging learning experience. This can lead to greater motivation and commitment to the educational process, as well as improved academic performance (González *et al.*, 2018).

It is crucial to acknowledge the vital role that educators play in addressing students' individual needs to implement Adaptive Learning, where Big Data and Learning Analytics play a key role (Bosco, 2019b). Currently, artificial intelligence enables personalized learning, improves evaluation efficiency, and fosters innovation in research (Frackiewicz, 2023).

Personalization and adaptive learning also help identify and develop each student's specific skills and competencies individually. This involves adjusting the pace, difficulty level, and types of activities according to each student's needs and capabilities, contributing to a more effective and meaningful learning experience. Adaptive learning is a tool for both the student and the educator (Morillo, 2016).

Collaboration and social learning: Technology provides tools that encourage collaboration and social learning in virtual environments. Students can interact with peers and instructors through discussion forums, video conferences, online collaboration spaces, and educational social networks. This fosters the exchange of ideas, joint knowledge construction, and the development of social skills (Wenger, 1998).

Assessment and feedback: Technology offers multiple options for assessment and feedback in distance education. Educators can use digital platforms to administer online tests, evaluate assignments, and provide prompt feedback to students. Tracking and analysis tools can also be used to collect data on student progress and performance, allowing for more effective adjustments to teaching (William, 2017)

Design of activities and assessment

EThe design of activities and assessment should reflect the interrelationship and integration of various disciplines and perspectives. It should encourage the exploration of complex problems and the pursuit of solutions from multiple dimensions (Morin, 2000, 2020). Assessment must be holistic, considering deep understanding, critical analysis skills, and the ability to address interdisciplinary challenges. Additionally, assessment should be formative and include continuous feedback to foster ongoing learning and improvement (Dylan & Leahy, 2015).

Similarly, activities should encourage the connection and application of knowledge and skills from different disciplines, promoting learning transfer. Assessment should be authentic and pro-

ject-based, allowing students to demonstrate their understanding and skills in real-world contexts. For this reason, effective feedback and self-regulated learning are essential to support growth and continuous improvement (Hattie, 2009). At the same time, activity and assessment design should be comprehensive and student-centered, involving multiple intelligences and fostering connections across disciplines to promote transdisciplinary learning (Gardner, 1995, 2000).

Development of cross-disciplinary competencies in students

From the researcher's perspective, developing cross-disciplinary competencies, such as learning to learn, autonomy, problem-solving, and effective communication, is essential (Perrenoud, 2007a, 2007b). Equally important is the relationship between students and knowledge within teacher training contexts, emphasizing the development of competencies like intellectual curiosity, reflective practice, and openness to diverse knowledge and perspectives.

Cross-disciplinary competencies should also include fostering a well-ordered mind capable of integrating diverse knowledge and perspectives, highlighting the importance of skills like critical thinking, reflection, and the ability to contextualize knowledge (Morin, 2020). Pedagogical competencies, such as creativity, collaboration, effective communication, and critical thinking, are also necessary from an innovative, technology-integrated perspective (Carbonell, 2014).

Additionally, in the learning construction process, content re-elaboration mediated by the student's cognitive structure—essentially reconstructing content—is an important competency (Onrubia, 2005). Another essential competency is joint activity or interactivity (Coll, 2004). Given the dynamic nature of education in a changing and complex context, the author underscores the development of transversal competencies such as adaptability, continuous learning, informed decision-making, and uncertainty management as fundamental aspects in student formation (Fernández, 2009).

Promotion of social values and global citizenship

The researcher suggests considering two key social values, supported by several authors: (a) Development of Digital Competencies and Digital Citizenship: Online education should address ethical, legal, and social issues related to technology use, preparing students for responsible and ethical participation in digital environments (Livingstone & Sefton, 2016). (b) Empowerment and Civic Engagement through Open Education: This educational modality offers equitable access to learning opportunities and promotes collaboration, participation, and knowledge exchange, thereby strengthening active citizenship and social commitment (Peters & Britez, 2015).

Teacher's role as facilitator and guide

The role of the teacher should evolve into that of a facilitator and guide to achieve the following:

Promotion of autonomous learning and knowledge Construction: Teachers should act as facilitators, creating a safe and supportive learning environment that encourages students to explore and discover independently, thus promoting meaningful and enduring learning. In this regard, autonomous learning and the student's knowledge construction are key considerations (Roger & Freiberg, 1996).

Guidance in the learning process and development of metacognitive skills: Teachers should act as guides, providing support and mediation to help students develop metacognitive skills like planning, self-reflection, and self-regulation, enabling them to manage their learning effectively (Vygotsky, 2014). Additionally, teachers may take on roles as researchers, designers of learning spaces, and, in some cases, as tutors

Conclusions

Regarding the purpose of understanding the theoretical and praxeological foundations of Open and Distance Education in the university context of the Unellez Santa Bárbara Academic Program, it can be concluded that there is a solid scientific basis supporting these foundations. This basis is continually evolving due to emerging technological advancements in education. Such technological progress requires teachers to incorporate new tools into the teaching process and students to adopt them to enhance their learning. During the pandemic, for instance, the usefulness of open-access resources became evident, as well as the widespread use of platforms and applications such as Zoom, Google Meet, Skype, Microsoft Teams, WhatsApp, Telegram, and virtual Classroom. These tools have facilitated interaction and the learning process in a distance education environment, allowing students to participate in online classes and access educational resources remotely.

From a praxeological perspective, it is concluded, based on interview data, that informants recognize multiple roles performed by teachers, including: (a) Designer role: Teachers must have design skills to create instructional materials and organize the virtual environment. They should also develop activities that encourage self-directed learning, following the constructivist approach of Open and Distance Education. (b) Facilitator role: Teachers act as facilitators of learning, promoting interaction between students and teachers, encouraging collaborative work, and fostering active student participation in the learning process. (c) Guide role: Teachers guide students through the learning process, providing constant feedback on their performance. Also notable is: (d) the role of researcher: Teachers continuously seek new ways to improve the teaching and learning process, adapting to students' needs. (e) Mediator role: Teachers act as mediators, facilitating communication between students and teachers and resolving conflicts that may arise in the learning process. (f) Tutor role: Teachers provide individualized support to students, guiding them in their learning journey.

Concerning didactic practices from the experiences of students and teachers associated with Open and Distance Education within the Academic Program, Unellez Santa Bárbara, the following significant elements are noted: (a) A multimodal education is offered because it presents

various teaching models, including distance, open, and blended approaches. These flexible models adapt to the individual needs of students. (b) It is an inclusive education because it provides access to education for a broad group of individuals who cannot attend educational centers in person. Through electronic means, such as computers and the internet, participation and interaction between teachers and students are facilitated.

It is also concluded that: (c) It is an interactive education that fosters interaction between students and teachers, promoting dynamic and participatory learning. Through technological tools, voice, image, and visual contact exchange is encouraged in class sessions. (d) It is a flexible system that promotes ubiquity by offering flexibility in learning format, with options for blended learning and fully online education. Students can connect and participate in the learning process from anywhere and at any time, allowing for ubiquity in their educational experience.

In relation to the educational values in the Open and Distance Education teaching-learning process viable for professional training in the context of higher education in the Unellez Santa Bárbara Academic Program, it is concluded, based on interview testimonies, that this educational modality significantly fosters each participant's individual autonomy. Students have the opportunity to take an active role in their learning process, making decisions, setting goals, and managing their time responsibly. Moreover, this autonomy transcends the academic realm and is reflected in all areas and dimensions of students' lives. This approach contributes to the development of autonomous, independent, and responsible individuals who not only excel in their professional training but also grow as committed citizens and holistic human beings.

Similarly, it is concluded that Open and Distance Education has gained popularity in recent years due to its flexibility and accessibility. However, for this modality to be effective, a theory that supports its practice is necessary, one that establishes pedagogical principles and strategies to guide its implementation. In this sense, the emerging axiological theory focuses on the comprehensive development of students, the promotion of ethical and social values, equity, and adaptation to current challenges. This holistic and integrative vision is based on reflection on the values and ethical principles that should guide the teaching-learning process. Finally, it is emphasized that the transdisciplinary and complex perspective of this theory goes beyond mere knowledge transfer. The importance of values and ethical principles as fundamental guides in this process is acknowledged, promoting comprehensive education centered on the human being and their relationship with the environment. Values such as responsibility, honesty, solidarity, and respect for diversity contribute to forming critical citizens committed to their surroundings

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Experimental spaces for the teaching of biology in university education

Espacios experimentales para la enseñanza de la biología en la educación universitaria

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Abstract

The study presents an analysis of the importance of experimental spaces in the teaching of biology in university classrooms, specifically in the Bachelor's Degree in Education, Biology emphasis, and Animal Production Engineering. The methodology used was quantitative in nature, with a descriptive type of research and a non-experimental cross-sectional design, involving a population of twenty (20) students. The technique employed was a survey, complemented by observation. The results revealed weaknesses in practical biology activities, particularly in field trips and experimental work. These findings suggested responses to real challenges in the biological field, through the development of skills using tactical elements that foster abilities in thinking, observation, analysis, integration, organization, creativity, decision-making, problem-solving, reflection, and evaluation. This was achieved through the planning of objectives, practical exercises, familiarization with phenomena, illustrative activities, concept learning, and research.

Keywords: Biology didactics, university education, experimental spaces, fieldwork, biology teaching.

Resumen

El estudio presenta un análisis sobre la importancia de los espacios experimentales en la enseñanza de la biología en las aulas universitarias, específicamente en la Licenciatura en Educación mención Biología e Ingeniería en Producción Animal. La metodología utilizada fue de enfoque cuantitativo, con una investigación de tipo descriptiva y un diseño no experimental de tipo transversal, en una población de veinte (20) estudiantes. La técnica empleada fue una encuesta, complementada con observación. Los resultados revelaron debilidades en la actividad práctica de biología, especialmente en las salidas de campo y el trabajo experimental. Estos hallazgos permitieron sugerir respuestas a los desafíos reales del campo biológico, a través del desarrollo de destrezas con elementos tácticos que fomenten habilidades de pensamiento, observación, análisis, integración, organización, creatividad, toma de decisiones, resolución de problemas, reflexión y evaluación, mediante la planeación de objetivos, ejercicios prácticos, familiarización con fenómenos, actividades ilustrativas, aprendizaje de conceptos e investigaciones.

Palabras clave: Didáctica de la biología, educación universitaria, espacios experimentales, trabajos de campo, enseñanza de la biología.

Introduction

University processes have evolved in response to emerging expectations and needs over time, adapting their methodologies to the changes that arise. A clear example of this evolution is biology, whose development has been significant since its popularization in the 19th century. The term "biology" was promoted by the French naturalist Jean-Baptiste Lamarck, who sought to integrate various disciplines related to the study of life forms. However, the foundations of biology date back to Aristotle's era, around 350 B.C., when the groundwork for studying living organisms was already laid.

As biology is a natural science dedicated to the study of life and associated phenomena, its teaching relies on a combination of theory and experimental applications, often materialized in laboratory practices. This ongoing evolution in the field requires constant adaptation of educational strategies to keep pace with scientific and technological advancements. Thus, the need to reconceptualize pedagogical methodologies in biology becomes essential, ensuring that education in this science adequately reflects current developments and prepares students to face contemporary challenges.

However, today, many universities face economic challenges that hinder the provision of suitable laboratories and spaces for practical biology teaching. In this context, it is crucial for educators to find ways to bring students closer to authentic scientific experiences through creative adaptations that simulate these learning environments. In this way, the loss of praxis in this fundamental area for understanding vital phenomena can be avoided.

Moreover, biology laboratories must be flexible in their use of biological materials and the application of experimental practices. Nowadays, various accessible and recyclable resources, adapted to the institution's environment, are employed to fulfill the empirical procedures necessary for student training. Therefore, experimental activity plays a crucial role in biology teaching, providing a solid theoretical foundation while developing practical skills and abilities, as noted by López & Tamayo (2012).

A fundamental strategy in biology, from a pedagogical perspective, is experimental work, which becomes a key tool when teaching biology and natural sciences in general. Its importance lies primarily in the ability to corroborate, in some cases simply and appropriately, many of the biological phenomena studied in theory. Additionally, it allows students to approach biology not from the abstractness of science but from a perspective focused on real and everyday experiences.

When students can engage in experimental activities, they not only confirm concepts but also construct their knowledge through action, a process that enables them to pose problems, enhance qualitative analyses, formulate hypotheses, design experiments in a planned manner, interpret results, rethink ideas, acquire multidisciplinary contributions in other fields of knowledge, and preserve scientific records, among other epistemological criteria in professional training, which they will later experience as educators if they enter the field of education, as described by Lorenzo (2020).

From this perspective, it is essential for practices to become indispensable elements for students, who will, in the future, become presenters of the experiences their training allowed them to live in order to face the challenges of the professional field, promoting a deeper and more lasting understanding of the principles. Therefore, it is established in both secondary and undergraduate education curricula to include theoretical and practical hours. However, this praxis implies a symbiosis of traditional didactic models, discovery-based, and constructivist approaches, with the latter giving it a sense of social construction, making it a flexible process in open spaces, as Guirado (2016) states.

According to Parada (2023), different paradigm shifts have promoted educational methodologies where the student is an active element with collaborative construction. The empirical process, as part of this shift, allows for the intertwining of didactic models with relevant strategies, aiming to achieve, at a minimum, the generic competencies of "skills that enable students to respond to the needs of the context in which they find themselves" (Pineda, 2021, p. 10). These are part of a compendium of didactic strategies at the upper secondary level with approaches to reality, searching, organizing, selecting information, discovery, extrapolation, transfer, problematization, creative divergent and lateral thinking processes with collaborative work, as noted by Caicedo *et al.* (2017).

It is now about approaching a space for practice from the epistemology involved in the empirical educational function, as this is where teachers contribute to reflective action on science, from pedagogical and meta-scientific thinking, within their role as observers, as Zorrilla et al. (2022) indicate. This is evoked as biology graduates, who are teachers, are called to venture into diverse spaces—natural conditions, origin, development, structure, heredity, and other aspects of plant and animal organisms. Hence, experimental activity is an inescapable aspect, though the problems and challenges of university situations in Venezuela are numerous, including the lack of laboratories in new areas or the need to equip existing ones:

> At present, it is not a metaphor to say that the infrastructure of our universities is falling apart, as the advanced state of deterioration and abandonment of university facilities by the authorities is undeniable. This is to the point where even classrooms do not meet the minimum conditions for the exercise of teaching functions (Leal, 2019, p. 1)

Considering the author's statement, it is evident that laboratories, sports facilities, cultural spaces, and production areas, among others, require new alternatives for their use as strategies, understanding that the university faces a complexity of different approaches that are not strictly budgetary but also involve other aspects. In this case, it is of interest to address teaching practice, where efforts must be directed towards new experiences that require adjustments in time, resources, didactic content, and even attitudes to give laboratories the place they demand in science learning.

In this context, the National Experimental University of the Western Plains "Ezequiel Zamora" (Unellez), as a university institution in the Llanos region, faces the challenge of revitalizing its learning spaces. Although the facilities lack fully equipped laboratories, the Education degree with a mention in Biology and the Animal Production Engineering program offer a variety of subprojects covering key areas of biology, such as general biology, ecology, biochemistry, genetics, microbiology, cell biology, plant biology, biotechnology, and animal biology.

These subprojects integrate both theoretical and practical content and represent a valuable experiential alternative for experimental learning. Despite current limitations, these efforts seek to make the most of available resources, adapting teaching methodologies to provide enriching experiences that compensate for the infrastructure and resource deficit and adequately prepare students to face challenges in the field of biology.

This article focuses on analyzing the importance of experimental spaces for teaching biology in university classrooms and the strategic direction that can be given through contextualized modules, as key elements in the educational field where there is a lack of laboratories. First, experimental spaces are highlighted as places dedicated to activities involving objects and phenomena, based on didactic dimensions, functioning, and indispensable resources. The foundation is based on the existence of curricula with biological subprojects in the Biology Education and Animal Production Engineering programs, where a lack of praxis is anticipated.

Secondly, the study of biology is addressed as a conceptual and empirical component that deals with living organisms and their characteristics, through experimental work involving elements such as objectives, exercises, familiarity with phenomena, illustrative activities, learning concepts, and investigations, as adapted from Leite and Figueroa's (2004) classification. They emphasize the accessibility of understanding theoretical explanations through practical work and the increasingly prominent presence of such work in university classrooms.

Finally, the need for teachers to adopt routes for experimentation is discussed. This can be achieved through the development of modules that can be used as experimental spaces, thus expanding the range of flexible options available in biology. "It is essential to conceive educational activities that are attractive and challenging for students" (Puche, 2024, p. 7). This is all grounded in operational work with dimensions quantified and reinforced by observation as a means to highlight student experiences in university classrooms, within the framework of discussion and result analysis.

Methodology

The research adopts a quantitative approach, in line with Hernández *et al.* (2014), using numerical and graphical measures to analyze relevant variables. This is a field study based on data collected directly from the real-world environment and is descriptive in nature, providing detailed interpretations of the observed phenomenon, according to Palella & Martins (2012). The methodological design is non-experimental, as per Hernández & Mendoza (2018), which means the objective is to analyze the state of a variable through description; it is also cross-sectional, allowing for the observation of phenomena in their natural context: Unellez, El Nula Extension, and the collection of data at a single point in time.

The census sample consists of 20 students from the Animal Production Engineering program and the Biology specialization in the Education degree, representing areas of biology with experimental activity. Data collection was carried out using a structured questionnaire with 25 items, focusing on variables such as experimental spaces and aspects of experimental work in biology. The questionnaire covers didactic, functional, and resource dimensions, with closed-ended questions for precise and detailed evaluation.

From the perspective outlined above, validation was carried out through content expert judgment. This means the measurement instrument designed for information collection was submitted for consideration and analysis by three experts with knowledge in the area of study and

research methodology, to assess criteria such as relevance, coherence, clarity, dimension, and indicators, as well as proper wording.

It is important to highlight the use of processing techniques for information analysis at its initial logical stage, with bibliographic reviews of previous research related to the studied dimensions. The methodological phase allowed the structuring of the instrument to operate in terms of organizing, tabulating, and analyzing the data obtained through descriptive statistics. Therefore, the significance of experimental spaces is addressed by the logical connection found between the reality in university classrooms and the theoretical structures presented by some authors, alongside the empirical need in biology teaching.

Results

The following tables present the results of the dimensions and indicators in frequencies, percentages, and interpretations according to the emphasis of the structured items in the survey.

Table 1
Didactic dimension.

Indicator	Emphasis	Yes (%)	No (%)
Strategy	Use of experiments.	40	60
	Presence of field trips.	30	70
	Promotion of experimental work.	40	60
	Consideration of experiential learning.	80	20
	Strategies applied to acquire empirical knowledge.	55	45
Technique	Presence of experimental activities as a pedagogical technique.	35	65
Contents	Development of programmatic content in a theoretical-practical manner.	55	45

Source: Developed by the author (2024). Note: Information from the instrument applied to students.

The data in Table 1 shows significant variability in students' perceptions of the didactic dimension of their education. In terms of "strategy," only 40% of students believe that experimentation is used effectively in the teaching process, while 60% feel otherwise. The frequency of field trips is even lower, with only 30% of students reporting them, compared to 70% who do not. Additionally, the promotion of experimental work is also insufficient, with 60% of negative responses compared to 40% positive. However, 80% of students highly value the inclusion of experiential learning, contrasting with the 20% who do not consider it relevant. Regarding strategies for acquiring empirical knowledge, 55% of students acknowledge their use, while 45% do not.

In the "technique" category, only 35% of students report the inclusion of experimental activities as part of pedagogical techniques, while 65% do not observe them. Concerning the develop-

ment of "content," 55% of students believe that it is addressed through a theoretical-practical approach, compared to 45% who do not perceive it that way. These findings indicate an urgent need to strengthen the integration of experimental strategies and techniques into teaching, as well as to improve the implementation of experiential and practical activities in the curriculum. Addressing these areas could help align teaching with students' expectations and foster more meaningful and effective learning.

Table 2
Functionality and resources dimension

Indicator	Emphasis	Yes (%)	No (%)
Structure	Presence of an adequate structure for experimental activities.	0	100
Didactic materials	Availability of necessary materials for conducting biology practices.	0	100
	Need for physical space and materials to carry out experiments..	90	10
Human resources	Availability of specialized teachers in biology or natural sciences.	25	75
	Teachers respond assertively to experimentation.	85	15
Financial resources	Availability of financial resources for experimental activities.	0	100

Source: Developed by the author (2024). Note: Information from the instrument applied to students.

Table 2 shows the realities of the conditions of the "functionality and resources of experimental spaces" dimension. Regarding the "structure" indicator, 100% of students acknowledged the absence of adequate structures for experimental activities. The same occurred with the "didactic materials" indicator, where 100% of students perceived a lack of necessary materials for conducting biology practices. Additionally, 90% of students expressed the need for a physical space and materials to conduct experiments, while 10% did not see this as necessary.

For the "human talent" indicator, 25% of students noted the presence of biology or natural sciences specialist teachers, compared to 75% who did not observe this potential. These results highlight a significant deficiency in human resources, which is crucial for making experimental spaces functional. Among the few existing teachers with this specialty, 85% were positively rated for their effectiveness in experimental activities, according to the students, while 15% lacked this skill set in biology. As for the "financial resources" indicator, all students (100%) reported the absence of financial resources for experimental activities.

These findings reveal a lack of didactic materials, human talent, and financial resources, which undoubtedly exceed the influence of individual teachers to resolve. However, exploring alternatives in different contexts is the closest approach to integrating direct contact with experimentation, aiming to reconceptualize learning through solutions adapted to the institutional context.

Table 3
Experimental work dimension

Indicator	Emphasis	Yes (%)	No (%)
Objectives	Experimental work contributes to achieving objectives.	100	0
Exercises	The development of experimental exercises allows for understanding the proper use of laboratory implements and equipment.	90	10
	Integration of activities with the exercise of experimental work.	40	60
Familiarization with phenomena	Familiarization with important biological phenomena.	45	55
	Replication of experiments by biologists to become familiar with their experiences.	35	65
Illustrative activities	Presence of illustrative activities to explain experimental work.	40	60
	Illustrative activities help in acquiring knowledge.	100	0
Learning concepts	Experimental work contributes to the significance of concepts.	100	0
	Learning concepts strengthens vocabulary in biology.	85	15
Research	Experience with some experimental study of a biological phenomenon.	0	100
	Research contributes to self-learning.	65	35
	Conducting research as part of content development.	45	55

Source: Developed by the author (2023). Note: Information from the instrument applied to students.

Table 3 highlights the results of the "experimental work" dimension. For the "objectives" indicator, 100% of students affirmed that experimental work contributes to achieving specific goals, demonstrating the connection between these practices and essential objectives guiding such actions. Following this, the "exercises" indicator showed that 90% of students believed this work aids in the proper use of laboratory equipment, while 10% disagreed. This is directly related to the low percentage of engagement in exercises involving phenomena, with only 40% confirming their participation, compared to 60% who did not perceive this integration in the teaching process.

The "familiarization with phenomena" indicator revealed that 45% of students felt familiar with important biological phenomena, whereas 55% did not observe this practical potential. Furthermore, the lack of repeated experiments to gain familiarity with these experiences is significant, with only 35% engaging in such practices, while 65% did not. Regarding "illustrative activities," 40% of students recognized the presence of such activities for explaining experimental work, contrasted by 60% who did not. However, 100% of students considered these illustrative activities as helpful in acquiring knowledge.

Concerning the "concept learning" indicator, all students (100%) acknowledged that illustrative activities contribute to acquiring knowledge in experimental practices. Additionally, 85% viewed this learning as a strength in building biological vocabulary, compared to 15% who disagreed.

Lastly, the table reflects the "research" indicator, where 100% of students admitted not conducting biological research to resolve issues, especially in environments like the university, where there is a shift from pedagogical to andragogical processes. Moreover, 65% of students believed research contributes to self-learning, while 35% did not. This aligns with the low occurrence of research as part of content development, with 55% acknowledging its presence and 45% affirming that research plays a fundamental role in professional training.

These data reveal low levels of empirical skills, where students miss opportunities to connect theoretical and illustrative content through problem-solving, research, and authentic inquiry.

Next, as an annex to the indicators specified above, a table is presented detailing specific modules suggested for planning experimental spaces, emphasizing contextualized approaches:

Table 4
Suggested Modules as Routes for Experimentation

Modules	Emphasis
Curriculum study for teachers to design experimentation routes.	Identify within the curricula of the Bachelor's programs in Biology and Animal Production Engineering the subprojects with biological applications, so that teachers can outline viable spaces for experimentation in subprojects such as General Biology, Cellular Biology, Plant Biology, Animal Biology, Biochemistry, Ecology, Genetics, and Microbiology.
Experimentation work in natural environments.	Hikes, field explorations, direct observations, construction of insectaries or other types of biological samples.
Experimentation in local processing companies.	Guided tours, direct observations, handling of raw material processing equipment (water, dairy, meat...), extraction of biological samples, and connection with public and private entities related to hygiene and food handling.
Experimentation work with household items.	Homemade experiments, direct observation of illustrations, videos, consultations of digital materials.
Experimentation work under the microscope, in external environments.	Case studies, requests for permission to access nearby environments with microscopes, direct observations in clinical and animal medicine laboratories, collection of biological samples.

Source: Developed by the author (2024).

Table 4 shows the results of suggested modules for practical activities, involving the creation of routes that integrate natural spaces and industries processing raw materials, such as meat, dairy, water treatment, and food production, among others. Additionally, it emphasizes the use of household or everyday materials to represent biological processes, leveraging the resources available within the university's institutional environment. For more complex biological processes, the need arises to collaborate with other facilities, such as educational, analytical, or veterinary medicine laboratories, as these environments are essential for developing specific content. The invitation is undoubtedly to seek social elements to integrate into experimental activities, both within and outside the institution.

Discussion

The results reveal that a significant majority of students identify weaknesses in the practical biology activities, particularly in the use of experiments, field trips, and experimental work. These deficiencies are largely attributed to the lack of adequate infrastructure, didactic materials, reagents, financial resources, and specialized biology personnel. This finding underscores the dependence of experimental practice on both academic infrastructure and the availability of material and human resources, as noted by Muschietti *et al.* (2017).

Furthermore, the limited planning of didactic elements for biology practice reflects a deficiency in techniques, strategies, and content. The selection of these elements should not be rigid but adaptable based on the teacher's knowledge, conceptions, and values, as argued by Bermúdez & Ocelli (2020). The lack of systematic planning and adequate resources reinforces the insufficiencies observed in experimental practice. The role of the teacher involves adapting content to the social, ecological, and cultural realities of the students, responding to an educational context, as outlined by Aragón & Cabarcas (2023).

Experimental activity must go beyond merely transmitting curricular content for the teaching-learning process in science due to its theoretical foundation and contribution to skill and competence development, according to Gener *et al.* (2022). It is crucial that experimental practice is not limited to demonstrating phenomena but rather facilitates experiences that connect concepts to problem-solving. This involves creating new learning contexts, utilizing experiential elements, and even digital devices to rethink experimentation through the lens of nature and society.

The factors associated with studying biology through experimental work, such as objectives, exercises, familiarization with phenomena, illustrative activities, and concept learning, are present but in minimal conditions. These elements should be promoted in teaching practice to strengthen procedural and conceptual learning, using sensory and instructional processes to test and contrast results. Zorrilla *et al.* (2022) highlight the importance of this approach in improving experimental activity.

The construction of knowledge in experimental spaces should be based on problem-posing questions that challenge the information obtained by confronting it with prior knowledge. Research suggests that this approach is key to problem-solving, allowing students to formulate strategies and methodologies grounded in result validation and procedure reformulation, thereby bringing them closer to scientific practice. The teacher's proposal should involve teaching through the representation of disciplinary content as a technique, skill, or attitude, within the context of educational processes (Lorenzo, 2020).

Finally, considering the scenarios proposed as routes for experimentation, we can refer to Puche's (2024) criteria: the inclusion of contextualized learning with content that connects with students' realities and experiences creates a link to their immediate environment and everyday life. This fosters a deeper and more meaningful understanding of the topics discussed.

Conclusions

It is concluded that experimental spaces are vital because they establish a connection between didactics, resources, and teaching plans. Therefore, in natural sciences like biology, the combination of strategies with traditional models, discovery-based learning, and constructivist approaches allows educators to explore student potential beyond the mere integration of unilateral content.

In response to the study of biology from both a conceptual and empirical perspective, the presence of experimental spaces in university classrooms revealed that having a specialist teacher in the area is essential. A teacher who comprehensively understands the subject matter can clearly discern the flexibility or inflexibility of biological phenomena in contextualized spaces. This is particularly important because complex biological processes often require specific conditions for their management.

It was found that teachers strive to relate experimental pedagogies with theoretical foundations. However, the lack of resources and insufficient planning systems in terms of strategies and techniques in biological subprojects results in theory dominating over practice in the development of programmatic content. Additionally, students have limited connection with activities that develop skills, procedural knowledge, and conceptual learning, particularly in relation to familiarization, illustration, and scientific methodologies when studying biological phenomena.

In terms of establishing functional areas within experimental spaces, external vectors were mapped, highlighting the institution's potential through the study of modules aimed at fostering a marked exponential curve in the acquisition of practical knowledge. There should be an inclusion of natural and social environments to open up practices through alternative routes. The idea stems from an invitation extended to biology teachers to make experimental spaces a cornerstone in shaping the graduate profile.

Indeed, the importance of experimental work in the education of undergraduate students in the Bachelor's Degree in Education with a specialization in Biology or in Animal Production Engineering lies in the fact that practical activities develop skills that allow students to perceive tactical elements that enhance their abilities in thinking, observation, analysis, integration, organization, creativity, decision-making, problem-solving, reflection, and evaluation. This makes experimental work a necessary activity for those training to become future professionals, particularly in the educational environment, enabling them to transcend the cognitive idea of experimentation into countless other environments.

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Emotional law based on justice and equity: a universal alternative for conflict resolution

Derecho emocional basado en la justicia y equidad: una alternativa universal para la resolución de conflictos

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Abstract

This article is based on my doctoral thesis that arose as a new construct epistemic legal called emotional law. Emotional law correlates in the base of justice and equity and is a universal alternative for resolving conflicts. It involves the participation of neurolaw which is rooted from neuroscience. The article focuses on the connection between law, reason, and emotion and how, through justice and equity, conflicts of any nature can be prevented and resolved using empathy. I discuss the evolution of these concepts and highlight the close link between emotion and law. The aim is to better understand society as an emotional entity composed of human beings.

Keywords: Emotional law, justice, equity, conflict resolution, empathy, neurolaw.

Resumen

El presente artículo se origina como producto de una tesis doctoral, en la cual se generó un nuevo constructo epistémico jurídico, denominado derecho emocional; fundamentado en la justicia y equidad que es aplicable como medio alternativo universal para la resolución de conflictos; comportando la participación del neuroderecho, como raíz de la neurociencia. Por tal motivo, desde una investigación netamente hermeneútica, se fijará posición con relación a la conexidad entre el derecho, la razón y la emoción; y cómo con base en la justicia, equidad, se pueden prevenir y resolver conflictos de cualquier naturaleza, aportando una forma particular e inédita de regularlas con base en la empatía. En tal sentido, se estimará bajo un análisis cualitativo cómo estos conceptos han evolucionado; se establecerá que la emoción y el derecho están estrechamente vinculados, y se interpretarán para comprender mejor a la sociedad, que es netamente emocional por ser conformada por seres humanos.

Palabras clave: Derecho emocional, justicia, equidad, resolución de conflictos, empatía, neuroderecho.

Introduction

Daily, we observe a diversity of events across all social strata and on a global scale—from conflicts fueled by ideologies, romantic entanglements, and addictions to various elements that, when taken to extremes, degrade human character, such as alcohol, drugs, sex, and gambling. These are dangerous behaviors that can escalate to borderline criminal acts and, in many cases, become actual crimes. Such situations, commonly referred to as societal issues, are addressed by institutions responsible for safeguarding individual and collective rights, activating formal social control mechanisms enforced by the State through competent bodies. However, the role of informal societal regulation—through family, educators, and friends—is often overlooked, despite being the setting where many of these conflicts arise.

This area is precisely where state public policies should focus, aiming to prevent rather than punish, by fostering self-awareness and inner knowledge. This enables individuals to recognize and understand themselves, to observe and appreciate their strengths as well as their weaknesses, and to acknowledge

that their actions often have an immediate or subtly latent emotional drive. The type of emotion that materializes in the external world will determine whether the resulting act is peaceful or contentious.

In this context, acknowledging that the participants and instigators of conflicts are ultimately people, my epistemic-juridical construct of Emotional Law emerges. This concept proposes regulating behavior through empathy, aligning facts with the law, and recognizing the individuality, essential traits, and special characteristics of each involved party, thereby offering a fair and equitable approach to resolving disputes.

Consequently, neuroscience enters the field. As a discipline studying the nervous system, neuroscience is vital to understanding the link between human behavior and the psyche. This is crucial for Emotional Law, as it incorporates Neuro-Law—a branch of neuroscience that examines aspects relevant to judging an individual's criminal actions. Clinical brain studies of the offender can be considered as mitigating or aggravating factors for penalties or sanctions.

Moreover, the concept of neuro-rights is essential within the framework of Neuro-Law. Neuro-rights encompass subjective findings from cerebral observations conducted on individuals, often without their or their guardian's consent. Neuro-rights emerge as a mechanism for protecting human rights, particularly in verifying crimes, where one element is the externalization of an action—a physical manifestation of a thought carrying an emotion. Thus, no one can be found guilty or held criminally liable based solely on their thoughts

Methodology

This article utilized the hermeneutic method applied to legal documents to analyze and unpack their content in depth. This approach enabled not only the interpretation of legal texts but also the derivation of various conceptual categories that provided a clearer understanding of the topics addressed. Hermeneutics, as an interpretive method, focused on understanding the underlying meanings within these documents, requiring a detailed process of analysis and reflection on the context, intent, and structure of the texts.

Through this work, key categories were extracted and interpreted in light of legal principles and the theoretical framework applied, offering a broader and deeper view of the legal implications within the documents studied. This interpretive process allowed greater clarity regarding the meanings and applications of legal texts, thereby enhancing the understanding of regulations and their possible implications in various contexts.

Results

Considerations on law, reason, and emotion

Law originates from the groups and forces that operate unequally in each context; therefore, there is a connection between the contents of legal relationships, various social relationships, and the

factors that shape them. Law consists of norms establishing duties, granting rights, and setting the conditions for social coexistence, aiming to provide society with security, equity, justice, and freedom.

Consequently, law, reason, and emotion share a long, complex relationship in the history of philosophy and justice. This discussion suggests that the legitimacy and effectiveness of law improve when reason and human emotion are intertwined, as these are foundational components of fair legal systems. Some academics may apply these precepts, acknowledging or not, the importance of addressing law, emotions, justice, equity, and conflict resolution, thereby proposing an unprecedented method to regulate them based on empathy.

To understand law, it is essential to understand society, as it comprises people with emotions; thus, law should serve as a suitable tool to regulate emotions for the common good

Statement of an empirical reality

Optional conflict resolution mechanisms involve reflection on the conflict itself, law, and emotions. Their importance arises from analyzing individual behaviors within social interaction, aiming to understand and interpret their actions. Humanity's inherently social nature has led to the establishment of boundaries—both of sovereignty and individual personality traits. These boundaries, to some extent, inspired the creation of law, as a means to regulate outward actions with the goal of fostering harmonious and peaceful coexistence. The law offers a normative framework that can protect but also reprimand, thus providing individuals a sense of security.

Within the framework of law as a protective and regulating mechanism, it is essential that its application aligns with the principles of justice and equity. The simultaneous application of these principles has driven nations over time to adopt new conflict resolution forms tied to the law. Justice can be understood as the fair distribution of what is due to each person, assigning to each their rightful due. Based on this, it can be said that justice aims for equal distribution among individuals of goods or property claimed as their own. However, this statement is also relative, as it raises questions about how property rights are assigned and how to fairly distribute shared goods, given that some may belong to the common good.

The concept of justice is among the most frequently referenced, yet it remains one of the most complex to define, often being used lightly, irresponsibly, or analogously. Thinkers like Ross (1997) argue that claims to justice often evoke emotional responses to unfavorable situations, leading to both rational discourse and emotional expression.

According to Squella (2010):

> Justice is often identified as the highest goal that law should achieve or at least help to achieve. It is often said that law exists to realize justice, and whenever such a claim is made, the focus is on the content of norms, principles, and other legal standards, rather

> than on the formal methods or procedures involved in creating and applying those norms, principles, and standards (p. 175).

In this light, justice can be seen as an ultimate ideal and an aspiration for individuals, as it can be valued and assessed. Therefore, applying justice as a virtue requires understanding the formation of the state. Aristotle similarly referred to justice as giving each their due, aligning what belongs to each citizen with their contributions to society, their merits, and their needs.

All such definitions pursue the common good, which is closely linked to law's purpose of peace, allowing societal members to resolve issues without violence. Justice is directed at providing equal treatment, not as simple distribution of resources, but as the decision-making process that rightfully assigns resources to individuals. Justice thus implies equity, honesty, and ethics, leading to respect for individual rights, while also demanding respect for others' rights.

Accordingly, all are equal before the law and have the right to its protection against any discrimination infringing on human rights as established in relevant legal instruments.

Likewise, equity encompasses aspects of justice related to goodwill and intention. It serves as the ethical foundation that, from a normative standpoint, should align with the principle of justice, protecting interests and meeting the needs of diverse groups, especially the less privileged and vulnerable.

Hernández (2008) explains:

> Equity is not the same as equality. Equity involves assessing inequalities through a lens of justice. The type of assessment used has political implications in both daily decisions and public policy. There are deep links between ethical positions and the technical developments that support policy, so technical neutrality on this matter is impossible, despite the efforts of technicians. Furthermore, the predominant type of assessment is historically contingent on each society (p. 73).

Ruiz (2017) adds:

> Equity serves as a way to overcome the impersonality of justice without leaving the formal realm of justice. It also reflects the influence of friendship within justice, even if particular motivations of friendship or love may not determine its use or exercise in every instance (p. 175).

In this sense, justice and equity are interwoven, as justice involves establishing equity itself, giving each person their due based on their merits, qualities, and the holistic understanding of their emotions and feelings. Equity stems from legal determination and judgment, adjusting norms and legal decisions to meet natural law imperatives and principles of justice, offering a sensitive view of human reality that aligns with its roots and needs.

Therefore, equity aims to recognize equality between men and women and respect their fundamental rights. For this reason, it is crucial to incorporate law as a regulator of emotions in situations of contradiction, establishing a regulatory mechanism for behaviors that channels emotions through empathy, thus offering a significant theoretical contribution to the universality of law.

Conflict resolution

Conflicts are inherent in the social factors that influence how society transforms. They arise from the development of incompatible actions or differing emotions; they reflect an emotional state that creates tension and frustration, arising from differences in behavior, as well as social, familial, or personal interactions. Internationally, conflict may be inevitable, linked to the human condition; however, reality shows that coexistence is increasingly complex.

Likewise, the resolution and management of conflicts have become prominent as ways to reduce disagreements and dissatisfaction, preventing conflicts through actions that resolve differences while prioritizing general interests and focusing on specific situations that generate disputes.

In another sense, controversial situations have prompted actions to address problems and mechanisms to face them, highlighting the importance of viewing them as opportunities for learning. Conflict can be an intellectual and emotional challenge that fosters enriching experiences and drives societal evolution, encouraging non-violent processes that promote transformation within communities.

Achieving harmony, peace, and common good are among humanity's most vital pursuits. Accordingly, various methods for resolving conflicts and maintaining harmony—such as negotiation, conciliation, mediation, and arbitration—have been established.

Conflict resolution as a key aspect in international disputes

In resolving disputes within international law, the Permanent Court of International Justice defines a dispute as "a disagreement over a point of law or fact, a conflict of legal views or interests between two persons." The function of international law depends on the nature of the dispute and the parties' stance, with two main mechanisms for dispute resolution: international agreements (achieved through negotiation or diplomacy) or third-party decisions that enforce international legal standards.

The United Nations Charter and international law urge states to settle disputes peacefully without prescribing specific methods, allowing states to choose their approach. This highlights international law's primary role as behavior-based, seeking dispute resolution through amicable methods.

While conflict resolution in international settings is broad, the essential point is that international conflicts do exist and are resolved in accordance with international law and alternative methods. These aim to achieve harmonious resolutions, often influenced by particular interests rather than justice and equity.

Neuroscience as a tool for analyzing emotions

The human brain, weighing approximately 1.5 kg, contains around ten billion neurons that communicate via electrical impulses, triggering chemical changes that enable complex functions such as thought, emotion, language, and behavior. Neuroscience, the scientific study of the nervous system, examines the brain's molecular and cellular structure, focusing on neurons responsible for synaptic transmissions.

Neuroscience origins trace back to prehistoric trepanning practices, with debates over whether the brain or heart governed sensory, motor, and mental functions. The discovery of the nervous system's electrical activity in the late 18th century led to advances in neurophysiology.

Today, research continues to confirm brain plasticity, where repeated learning strengthens synaptic communication. According to Sinergia Medical Journal, this process helps the brain adapt by forming new synaptic connections, enhancing neuronal transmission.

Neuro-law and its implications

The link between neuroscience and law, though nascent, has gained attention. Technologies such as CT, PET, MRI, and MRA scans have made it possible to explore the brain extensively, leading to the emergence of terms like neuroeconomics, neuropolitics, and neurolaw.

In 2008, Narváez (2014) defined neurolaw as "the reflection on how various aspects of understanding, producing, and applying law are affected by the empirical study of the brain as a core element in explaining behavior."

Neuroscience could help the legal field by determining truthfulness in human behavior; however, its application raises concerns about potential infringements on fundamental rights like freedom, dignity, and privacy, or the risk of suggestion-based techniques that could lead to false memories.

Thus, neuroscience continues to advance, and much remains to be understood about the brain. Within law, neuroscience should be explored from two perspectives: first, as a way to understand human behavior based on the nervous system, particularly emotions, to clarify truths in legal conflicts (neurolaw); and second, as a means of protecting the brain's integrity to safeguard inherent rights—i.e., upholding human rights and viewing science as a revolutionary tool serving humanity (neuro-rights).

Generative product

Understanding law is part of understanding the world and the beings within it, achievable through empathy, a capacity we should strive to possess. Consequently, I believe emotions should also be regulated within the framework of law as an alternative and mechanism for conflict resolution, oriented towards justice and equity. Based on experience and research data, I have observed that people make decisions according to their feelings, are aware of their emo-

tions, the reactions these generate, and their resulting consequences. Nevertheless, they recognize that justice and equity must always be unified in conflict resolution.

Thus, grounded in the general concept of law, I propose the creation of "emotional law," which I define as a necessary regulation of behaviors in societies, guiding humans toward the ethical, permissible, respectable, and harmoniously desired. This framework would account for the physiological reactions provoked by emotions when making decisions rooted in justice and equity. Legally, emotional law could be seen as a set of fair and equitable rules designed to analyze and protect the emotive behaviors of individuals in controversial situations, aiming to achieve a balance between the common and individual good.

As Goleman (1996, 2001) indicates, emotional intelligence allows us to empathize, make sound decisions, and live in harmony. Likewise, Bisquerra (2000, 2001) highlights that children should be educated in emotions from an early age, yielding improvements not only in educational settings but also personally as they develop. This inspired the idea of creating a new epistemic legal construct, "emotional law," as a balanced regulatory framework for human conduct in contentious situations, involving participants in judicial processes and all actors in diverse conflict types, with the objective of reaching fair and equitable decisions.

In implementing emotional regulation in the legal realm, participants must first recognize the importance of emotions in achieving fair and just outcomes, a concept that may seem irrational due to the mechanical practice of law. The decision-making process can be complex, depending on perspective. Yet, by analyzing alternative conflict resolution methods such as mediation, conciliation, arbitration, and negotiation, one finds that these inherently contain elements of emotion and principles of justice and equity.

Thus, as a universal alternative, emotional law could regulate the emotions of participants in both national and international judicial processes. This could yield outcomes where parties feel satisfied, having been acknowledged as individuals with strengths and weaknesses, virtues and flaws, all of which influence their perspectives and desires.

This concept could prove invaluable in international law, where, by exercising the UN-granted power of conflict resolution, states might appoint an emotional law mediator. Such a mediator, using expertise in emotional intelligence, emotional education, and even neuroscience, could achieve favorable, harmonious, and peaceful results for all involved parties. However, we must acknowledge that implementation may be complex. As society evolves, new tools emerge, such as technology, alongside enduring values like love, respect, and empathy.

Thus, the establishment of emotional law, globally implemented first empirically in academic and judicial settings, would transform negative terms like "problems" or "conflicts" into "situations" or "issues to clarify," fostering a justice-based and empathy-grounded approach that considers individual characteristics. Secondly, from necessity, humans continually seek to understand others and themselves. From the perspective of self-knowledge, emotions can be educated and

channeled, forming a harmonious blend of reason and heart.

Finally, by understanding that we are accountable for our actions and their outcomes, we recognize that actions produce consequences that impact our surroundings, whether at a micro or macro level. The "Empirical Theory of Emotional Law" (EDEN), which gives life to emotional law, begins with "Experience," whereby the involved parties share their factual and legal grounds. It integrates "Law," traditionally devoid of emotion, yet applied by emotional beings. "Empathy," the conscious ability to understand others' feelings, plays a role, as does "Neuroscience," analyzing the nervous system and applied here to neuro-law.

Conclusions

In summary, from the interactions and situations gathered by the researcher, it is reflected that if every action generates a reaction, then every emotion, as a consequence of an external or internal event, similarly produces a reaction. Thus, if we empathized with our fellow human beings, we could better understand the daily challenges they face and likely act with more respect, care, tolerance, and kindness, potentially avoiding fruitless arguments that lack peaceful outcomes between parties.

In this context, emotional law seeks to educate legal professionals, primarily to understand themselves and recognize their counterparts, applying the law as a norm grounded in emotional intelligence with a balanced approach to justice and equity. This is because, at the root of every rational thought, there is an emotion, and professionals should be able to understand the emotions experienced by the parties in a legal process—particularly if they are mediators, negotiators, or arbitrators—in order to harmonize the situation and guide the involved actors, despite differing views, toward a balanced resolution where both feel they have won.

This is not a sign of weakness but rather the empathy that should emerge in every human being. It is the capacity and quality that we must possess to value others' emotions and feelings, founded on the recognition and acceptance of each individual with their unique traits. This does not mean always agreeing with what others say or do but reflecting on their actions, as empathy is the primary foundation for preventing violence.

Finally, based on the points presented and with an understanding of the numerous scientific studies demonstrating that emotions can be educated, that reason and heart must be in balance, and that the law can indeed serve as an alternative for conflict resolution, a stance is established on emotional law, grounded in the Empirical Theory of Emotional Law (EDEN).

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Artificial intelligence and academic fraud in the university context

La inteligencia artificial y el fraude académico en el contexto universitario

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Abstract

The study arises from the growing observation of the use of AI in education and the inability of students to explain their processes, suggesting the misuse of AI in their work. The objective was to determine the relationship between the use of AI and academic fraud in the university context. The methodology was positivist, with a quantitative approach and correlational level. A virtual questionnaire was used, with a reliability of 0.980 and validated by five experts, applied to a sample of 144 faculty advisors (48 from Venezuela, 48 from Colombia, and 44 from Peru). The results showed a Pearson correlation of 0.980 between the use of AI and academic fraud, indicating a very strong positive relationship.

Keywords: artificial intelligence, academic fraud, correlation.

Resumen

El estudio surge de la observación creciente del uso de la IA en la educación y la incapacidad de los estudiantes para explicar sus procesos, sugiriendo un uso indebido de la IA en sus trabajos. El objetivo fue determinar la relación entre el uso de la IA y el fraude académico en el contexto universitario. La metodología fue positivista, con enfoque cuantitativo y de nivel correlacional. Se utilizó un cuestionario virtual, con una confiabilidad de 0.980 y validado por cinco expertos, aplicado a una muestra de 144 docentes tutores (48 de Venezuela, 48 de Colombia y 44 de Perú). Los resultados mostraron una correlación de Pearson de 0.980 entre el uso de la IA y el fraude académico, indicando una relación positiva muy fuerte

Palabras clave: inteligencia artificial, fraude académico, correlación.

Introduction

Artificial Intelligence (AI) is having a significant impact on education, revolutionizing academic processes and presenting numerous advantages for both students and teachers. Its impact on academic processes is becoming increasingly significant, offering numerous advantages and opportunities for both students and educators.

In this regard, Jofre (2023) highlights that the importance of AI in the educational field is evident in several aspects, as it allows teaching and learning processes to be adapted to the individual needs of each student, offering personalized study plans and individualized feedback. Additionally, it can automate administrative and repetitive tasks, freeing up time for teachers to focus on more important aspects.

According to Granero (2021), AI systems act as intelligent tutors, providing personalized assistance to students anytime and anywhere. At the same time, they can analyze data to identify patterns that might indicate learning difficulties, enabling early interventions. AI systems can continuously assess students' progress and provide detailed information to teachers and parents.

In this same context, Alonso & Quinde (2023) argue that AI can facilitate access to quality education for students in remote areas or with limited resources, as well as promote inclusion in the classroom by providing tools and resources that support students with special educational needs. It also helps drive educational research and development by providing tools to analyze large data sets and assess the effectiveness of different teaching strategies.

Considering the aforementioned points, it can be seen that the authors believe AI can foster creativity and critical thinking in students by providing them with tools to explore ideas and solve problems creatively. AI-driven education can help students acquire the necessary skills to thrive in a workplace transformed by AI.

However, the indiscriminate and unconscious use of AI can lead to adverse consequences in learning levels and intellectual production, as the responsibility of extracting information from these programs is often delegated without analyzing or questioning its accuracy. This suggests that while its impact on teaching and learning processes offers numerous benefits, new concerns arise related to the potential misuse of AI for academic fraud.

In this regard, García *et al.* (2024) point out that one form of academic fraud involving AI includes plagiarism, identity theft, the creation of false content, and data manipulation. This is significant, as it undermines academic integrity, affects educational equity, hampers the assessment of real learning, and discourages creativity and critical thinking.

According to Mayta *et al.* (2023), combating academic fraud in the AI era requires promoting a culture of academic integrity, implementing fraud detection measures, designing more innovative assessments, encouraging responsible use of AI, and fostering collaboration between educational institutions and technology developers.

Thus, the author of this study considers that AI presents both challenges and opportunities for education. It is essential to address the risk of its misuse for academic fraud by promoting academic integrity, implementing effective detection measures, designing robust assessments, and educating about the responsible use of AI. AI should not be seen as a threat but as a tool that, when used responsibly, can contribute to strengthening education and promoting honest and meaningful learning.

After reviewing some postulates and theories on this topic, the researcher believes that understanding the relationship between AI use and academic fraud is of great importance for maintaining academic integrity, which is a fundamental pillar of education, particularly at the university level in postgraduate studies. Understanding how AI can influence academic fraud helps institutions preserve high ethical and quality standards in learning and research, ensuring that academic achievements truly reflect students' abilities and efforts.

Additionally, this study aims to identify this relationship, as it allows educational institutions to develop clear policies and guidelines on AI use. Establishing limits and standards for its utilization ensures that AI is used ethically and responsibly. In this sense, these policies not only prevent

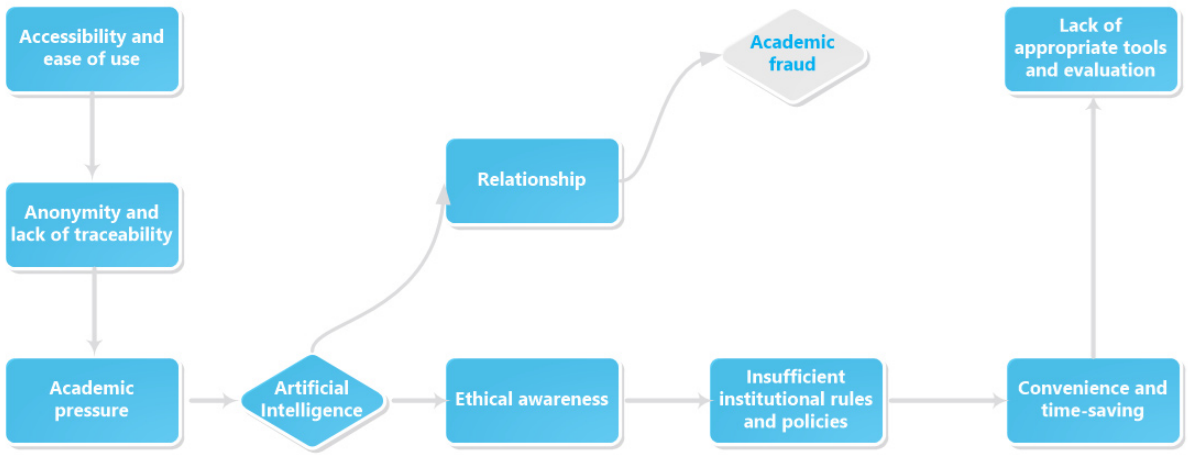
fraud but also promote the constructive use of technology in educational processes.

Moreover, understanding the risks associated with AI misuse is important for offering ethical education and training programs. It is also considered that understanding the relationship between AI and academic fraud can drive the development and improvement of plagiarism and fraud detection tools.

Furthermore, understanding how AI can affect the quality of education allows institutions to take proactive measures to ensure that students receive an authentic and valuable education. Universities have the responsibility to train ethical and competent professionals, and understanding the challenges posed by AI in terms of academic fraud is essential to fulfilling this social responsibility. In this sense, a figure is presented that, according to the researcher, gathers the factors that can influence academic fraud through the use of AI.

Figure 1

Factors that may influence academic fraud through the use of AI.



Fuente: Elaboración propia (2024).

Figure 1 shows that, according to the researcher, the relationship between AI use and academic fraud may be linked to the accessibility and ease of use of AI. These tools allow students to use content generation tools, such as chatbots and text generators, without the need for advanced technical skills. Additionally, academic pressure is another significant factor. Students may feel intense pressure to achieve high academic performance, which may lead them to resort to AI to complete tasks more quickly and efficiently, albeit dishonestly. Furthermore, the lack of proper education on the ethical use of AI and the consequences of academic fraud can cause students to underestimate the severity of using AI for dishonest purposes.

On the other hand, considering Puche's (2024) argument, the absence of clear policies and institutional guidelines on the use of AI in education can create an environment where students do not know what is allowed and what is not, making it easier to commit fraud.

In another line of thought, Alonso & Quinde (2023) suggest that current plagiarism detection tools may not be fully equipped to identify AI-generated content, allowing fraud to go unnoticed. AI can provide a convenient and quick way to generate academic content, which may be tempting for students seeking to save time and effort.

Similarly, Alonso (2024) argues that students who use AI to complete tasks may not be engaged in the learning process, resulting in a disconnect between acquired knowledge and the work presented. The perception that teachers do not thoroughly review assignments or fail to detect AI use may encourage fraud, as students feel they will not be caught. Moreover, the absence of assessment methods that focus on the process rather than just the final product may allow academic fraud to go unnoticed.

Thus, the study's author infers that by addressing these elements through clear educational policies, ethical training programs, and the development of better detection tools, institutions can mitigate the risk of academic fraud associated with AI use. It is important for educational institutions to take a proactive approach to face these challenges and ensure academic integrity in the era of artificial intelligence. In this sense, the study aimed to determine the relationship between artificial intelligence and academic fraud in Venezuela, Colombia, and Peru.

Methodology

The study's methodology adheres to the processes of the positivist paradigm, which aims to be as objective as possible in the pursuit of knowledge, employing orderly and disciplined procedures that allow the researcher's ideas about the nature of the phenomena under study to be tested (Acosta, 2023). Additionally, the quantitative approach was considered, defined by Arias (2019) as one that is based on the idea that all things or phenomena studied by science are measurable.

The study is descriptive in nature, as Hernández & Mendoza (2018) state that descriptive research aims to describe the characteristics or properties of a phenomenon, situation, or area of study without manipulating variables or establishing causal relationships. Its focus is to provide a detailed and accurate representation of what is being studied.

It also presented a correlational level, as Hernández & Mendoza (2018) affirm that this type of study seeks to assess the relationship between two variables to examine the degree of correlation between them. This approach focuses on discovering how one variable changes as the other changes, analyzing the direction of movement and the strength of the relationship. It is important to note that correlation does not imply causality, meaning it does not establish a cause-and-effect relationship between variables.

According to Arias (2019), in this type of research, statistical tools are used to measure and understand the degree of correlation between the studied variables. For example, correlation coefficients, such as Spearman's coefficient, can be employed to analyze the obtained information and draw conclusions about the relationship between the variables.

The sample consisted of 48 teachers from Venezuela, 48 from Colombia, and 44 from Peru, all at the university level. The inclusion criteria required a teaching experience of over 5 years at the university level, a master's or doctoral degree, and involvement in teaching thesis seminars at the university level, selected from various universities in each country.

The survey technique was applied using a multiple-choice questionnaire (always, sometimes, never). This questionnaire was validated by 5 experts with doctoral degrees (2 from Venezuela, 2 Colombians, and 1 Peruvian) using Cronbach's alpha coefficient, which yielded a reliability score of 0.980. Regarding ethical considerations, transparency was ensured; the study's objectives were made known, the data was safeguarded for academic and scientific use only, and the identity of the universities and participants was protected. Data were processed using descriptive statistics, with results presented in frequency tables. Additionally, inferential statistics were used to analyze the correlation between the study variables.

Results

Table 1
Elements influencing academic fraud

Dimensions	Indicators	Answer options					
		Always		Sometimes		Never	
		F	%	F	%	F	%
Negligence in supervision	Lack of proper instruction and guidanc.	93	66.42	37	26.42	10	7.14
	Lack of student progress monitoring.	88	62.85	40	28.57	12	8.57
	Lack of communication with teachers.	112	80.0	23	16.42	5	3.57
Facilitating behavior	Not challenging or questioning students' work.	91	65.0	39	27.85	10	7.14
	Not penalizing fraud.	124	88.57	16	11.42	0	0
Conflicts of interest	Close personal relationships with students.	99	70.71	20	14.28	21	15.0
Total		140	100	140	100	140	100

Note: Author's own work (2024).

Table 1 reveals the elements influencing academic fraud. The first dimension corresponds to "Negligence in supervision," with the first indicator being the lack of proper instruction and guidance. It was observed that 66.42% of respondents indicated that this always occurs, 26.42% noted that it happens sometimes, and 7.14% stated that it never happens. Regarding the lack of student progress monitoring, 62.85% of participants reported that this lack always occurs, while 28.57% said it happens sometimes, and 8.57% mentioned that it never occurs. Finally, concerning the lack of communication with teachers, 80.0% of respondents believe that this lack always exists,

16.42% indicated that it happens sometimes, and 3.57% stated that it never occurs.

Referring to the dimension "Facilitating behavior," which is analyzed through two indicators: not challenging or questioning students' work and not penalizing fraud. For the first indicator, 65.0% of respondents said that challenging or questioning students' work is always avoided, 27.85% indicated that it happens sometimes, and 7.14% mentioned that it never happens. Regarding not penalizing fraud, 88.57% of participants reported that this behavior always occurs, 11.42% said it happens sometimes, and no respondents stated that it never happens.

In relation to the dimension "Conflicts of interest," it was observed that, according to the results, 70.71% of respondents indicated that these close relationships between tutors and students always exist, 14.28% said they occur sometimes, and 15.0% noted that they never occur.

In this context, the researcher considers that the results indicate that negligence in supervision, facilitating behavior, and conflicts of interest are significant problems in the evaluated academic environment. Additionally, the lack of proper instruction, insufficient monitoring of student progress, and poor communication with teachers are commonly reported practices, suggesting inadequate supervision. Furthermore, the lack of penalties for fraud and the absence of questioning students' work reflect permissive behavior that can negatively affect academic integrity. Finally, close personal relationships with students reveal potential conflicts of interest that may compromise fairness and impartiality in dealing with students.

Table 2
Common Frauds Committed Using AI

Dimensions	Indicators	Answer options					
		Always		Sometimes		Never	
		F	%	F	%	F	%
AI-assisted plagiarism	Generate complete works using AI tools.	123	85,41	17	11,80	0	0
	Paraphrase existing text to avoid plagiarism detection.	110	46,38	23	15,97	7	4,86
AI-assisted creation of false content	Use AI tools to create interview responses.	40	27,77	50	34,72	50	34,72
AI-assisted creation of false content	Fabricate data or research results.	70	46,61	35	24,30	35	24,30
AI-assisted misappropriation of ideas.	Present AI-generated work as one's own.	92	63,88	38	26,38	10	6,94
	Fail to properly cite AI sources.	140	100	0	0	0	0
Total		140	100	140	100	140	100

Note: Own elaboration (2024).

Table 2 reveals the results for analyzing the most common frauds committed using AI. Concerning the dimension "AI-assisted Plagiarism," specifically regarding the indicator of generating complete papers using AI, 85.41% of respondents indicated that students always engage in this practice, while 11.80% believe they do it sometimes. Additionally, regarding the practice of paraphrasing existing text to avoid plagiarism detection, 46.38% of respondents noted that students always use AI for this purpose, 15.97% said they do it sometimes, and 4.86% stated that they never do it.

Regarding the dimension "AI-assisted Deception," 27.77% of participants mentioned that students always use AI tools to create responses in interviews, while 34.72% do it sometimes. Additionally, 34.72% believe that students never engage in this practice.

When analyzing the dimension "AI-assisted Creation of False Content," specifically regarding fabricating data or research results, it was found that 48.61% of respondents indicated that students always engage in this practice, 24.30% said they do it sometimes, and another 24.30% believe they never do it.

Finally, concerning the dimension "AI-assisted Misappropriation of Ideas," it was observed that 63.88% of respondents said that students always present AI-generated work as their own, 26.38% do it sometimes, and 6.94% never do it.

According to the researcher, the results suggest a significant reliance on AI tools to produce academic work without authentic personal contribution. It is also observed that, according to the surveyed teachers, there is a significant prevalence of misuse of AI tools by students for committing plagiarism and deception.

Table 3
Correlation Coefficient Between Variables

			Artificial intelligence	Academic fraud
Spearman's Rho	Artificial intelligence	Coeficiente de correlación	1	0,980**
		Sig. (bilateral)		0,000
		N	140	140
	Academic fraud	Coeficiente de correlación	0,980**	1
		Sig. (bilateral)	0,000	
		N	140	140

Note: Own elaboration (2024).

Table 3 shows a Pearson correlation between the variables AI and academic fraud, indicating a Pearson correlation of 0.980, which signifies a very strong positive relationship. This means that as the use of artificial intelligence in education increases, academic fraud also tends to rise. However, it is important to emphasize that correlation does not imply causation. In other words, just because two variables are correlated does not mean that one causes the other.

Discussion

Considering the results regarding teachers' perceptions of students' use of AI when conducting research, Cáceres & Ulloa (2023) suggest that students often misuse AI, largely due to negligence in supervision, which negatively impacts the quality of education by allowing students to deviate from learning objectives without timely correction.

In line with this, Granero (2021) argues that when supervisors do not adequately monitor student performance, students may develop poor study habits, lack direction in their projects, and in extreme cases, resort to dishonest practices such as plagiarism or the use of AI to create false content. This lack of oversight fosters an environment where academic standards decline, and students fail to reach their full potential.

Moreover, Granero (2021) also highlights that inadequate instruction and guidance prevent students from clearly understanding academic expectations and how to meet them. According to García *et al.* (2024), without proper guidance, students may feel lost and resort to quick fixes, such as using AI tools to complete assignments. This not only hampers their learning and skill development but also perpetuates a culture of dependency, rather than encouraging critical thinking and problem-solving. The absence of clear instruction undermines students' confidence in their abilities and the educational system as a whole.

Similarly, Crawford (2023) posits that the lack of monitoring of students' progress hinders timely identification of challenges and areas for improvement, leading to late or nonexistent interventions. Without continuous monitoring, students' academic and personal struggles may go unnoticed, increasing the risk of demotivation, underperformance, and even dropout. García *et al.* (2024) assert that the absence of constructive feedback leaves students without guidance on how to improve, affecting both their academic and personal development. This lack of attention can lead to a general decline in educational quality and student success.

Belda (2019) adds that the lack of communication with professors creates a gap in the educational process, where students do not receive the necessary guidance for their academic and personal development. Without effective communication, teachers cannot identify students' individual needs or provide adequate support. This can result in an incomplete understanding of the material, unresolved difficulties, and a lack of direction in learning. The disconnection between students and professors can also lead to decreased motivation and engagement with their studies.

In this context, Soria *et al.* (2022) and Vries (2023) argue that facilitator behaviors, such as not challenging or questioning students' work, contribute to poor educational quality by failing to promote critical thinking and self-assessment. Mayta *et al.* (2023) suggests that when students are not challenged to justify and reflect on their work, the opportunity to develop analytical and reasoning skills is lost. This lack of academic rigor allows students to settle for minimal effort, failing to reach their full potential and perpetuating a culture of mediocrity rather than excellence.

On the other hand, Puche (2024) emphasizes that failing to sanction fraud creates an environment where academic dishonesty can proliferate without consequences, undermining the integrity of the educational system. The lack of clear and consistent sanctions sends a message that fraud is tolerated, which may encourage more students to engage in dishonest practices. This not only affects fairness and justice in academia but also devalues degrees and certifications, harming both honest students and the reputation of the educational institution.

Continuing the analysis of the study's results, Vander & Cury (2024) argue that conflicts of interest, such as close personal relationships with students, can compromise impartiality and objectivity in academic evaluation and supervision. These conflicts may lead to favoritism, where certain students receive preferential treatment or unjustly positive evaluations, affecting classroom fairness. Moreover, these relationships can make it difficult to enforce disciplinary sanctions and base academic decisions on merit. The presence of such conflicts erodes trust in the integrity of the educational process and can create an environment of distrust and resentment among students.

In the same vein, Zuñiga & Polanco (2023) highlight that AI-assisted plagiarism occurs when artificial intelligence technology is used to copy and present others' work as one's own. This manifests in texts or assignments containing entire phrases or paragraphs that match existing sources without proper citation, which can be easily identified through plagiarism detection software.

However, Alonso & Quinde (2023) point out that these works often exhibit inconsistent or unnatural writing styles, as the copied parts do not integrate well with the rest of the original content. The use of AI tools to paraphrase or reword content without significantly altering its meaning is another key indicator. These elements reveal the reliance on AI to create academic or professional work that is not entirely original.

Regarding AI-assisted creation of false content, Franganillo (2022) explains that it involves using artificial intelligence technologies to generate texts that are not authentic. Jofre (2023) asserts that this seriously impacts educational quality by flooding the academic environment with inaccurate or misleading information, making it difficult to distinguish between real and fabricated facts. This can lead to the spread of erroneous knowledge among students and teachers, compromising the integrity of learning and research.

According to Villalobos (2024), it fosters a culture of distrust in information sources and reduces the value of genuine academic work, while also discouraging critical thinking and rigorous fact-checking. These effects erode the credibility and effectiveness of the educational system in its mission to educate informed individuals capable of positively contributing to society.

Contrasting these results with Gallent et al. (2023) theory, which posits that AI-assisted misappropriation of ideas occurs when AI tools are used to take others' original ideas and present them as one's own, this is evident in project proposals, research, or presentations that reflect ideas or concepts previously presented by others without proper acknowledgment. The study data reveal a significant weakness concerning this dimension (AI-assisted misappropriation of ideas).

In this context, Díaz (2023) argues that works showing advanced or detailed knowledge that does not align with the author's level of experience are also suspect. Alonso (2024) adds that using AI to explore research databases and then slightly rephrase the findings without crediting the original authors is a common practice. This reveals that discrepancies between the author's knowledge of the subject and the quality of the work presented indicate possible dependence on AI to misappropriate others' ideas.

Considering the results obtained, it is evident that students are not using AI appropriately. Instead of employing it as a support tool to enrich and facilitate their academic work, students are delegating the construction and writing of every element of their research to AI. This is based on the high level of correlation determined between the analyzed variables, suggesting an excessive dependence on AI for tasks that should be completed by the students themselves.

In this regard, the misuse of AI has serious implications for educational quality, as students are not developing the critical skills necessary for their academic and professional growth. The lack of personal involvement in the research and writing process can lead to a superficial understanding of the content and an inability to apply acquired knowledge in real-world contexts.

To address this issue, a meeting was held with faculty members (research supervisors) who participated in the survey and shared their observations and concerns. By consensus, some guidelines were established to curb the misuse of AI. These guidelines aim to promote the responsible and ethical use of technology, ensuring that students develop the skills necessary for their academic success.

In this context, it was considered essential to incorporate mandatory workshops or modules in postgraduate programs to educate students on the responsible use of artificial intelligence in research and thesis writing. These programs should address the scope and limitations of AI tools for writing and content generation, as well as the ethical and academic standards related to the integrity of intellectual work.

Additionally, it is important to inform students about the consequences of plagiarism and the misuse of AI, guiding them in its proper use. This virtual assistant can aid in searching and organizing information, analyzing data, generating visualizations, and writing and reviewing academic texts. A series of activities were proposed as part of the solution to this problem.

Table 4
Suggestions for addressing the misuse of AI in committing academic fraud.

Activity	Description	Benefits for preventing misuse of AI in theses
Fomentar la educación sobre la IA y la ética académica	• Incorporate mandatory workshops or modules into graduate programs. • Educate students on the responsible use of artificial intelligence in research and thesis writing, including: (a) The scope and limitations of AI tools for writing and content generation. (b) Ethical and academic standards related to intellectual integrity. (c) The consequences of plagiarism and misuse of AI in thesis preparation. • Promote the use of AI tools for learning and research: • Guide students in the appropriate use of AI tools to support their learning and research process, such as: searching and organizing relevant information; data analysis and generating visualizations; writing and reviewing academic texts. • Emphasize the importance of critical thinking and originality: encourage students to develop critical thinking and analytical skills to evaluate information obtained through AI and generate their own ideas and arguments. • Define the types of allowed AI tools: Specify which AI tools may be used by students in the development of their theses, considering their impact on the originality and academic value of the work. Establish limits on AI usage: Determine the amount of AI-generated content that can be used in a thesis, ensuring that the primary work is conducted by the student Require transparency in AI usage: Require students to clearly cite any AI tool or resource used in the preparation of their thesis, including a description of its function and impact on the final content.	• Helps students understand the capabilities and limitations of AI in the academic context, promoting responsible and ethical use. • Provides students with tools and strategies to effectively leverage AI in their learning and research processes without compromising the originality of their work. • Encourages the development of critical thinking and analytical skills, essential for evaluating information, formulating arguments, and generating original knowledge.

Establish clear guidelines for the use of AI in thesis development	• Define the types of allowed AI tools: Specify which AI tools may be used by students in the development of their theses, considering their impact on the originality and academic value of the work. Establish limits on AI usage: Determine the amount of AI-generated content that can be used in a thesis, ensuring that the primary work is conducted by the student Require transparency in AI usage: Require students to clearly cite any AI tool or resource used in the preparation of their thesis, including a description of its function and impact on the final content.	• Provides students with clear guidance on what is expected regarding the use of AI in their theses, preventing confusion and potential violations of academic standards. • Ensures that the majority of the thesis work is carried out by the student, promoting the development of their research and writing skills. • Encourages transparency and traceability in the use of AI, allowing evaluators to understand the thesis preparation process and the student's actual contribution.

Note: Own elaboration (2024).

Conclusions

The study results reveal a Pearson correlation of 0.980 between the use of AI and academic fraud. This value indicates a very strong positive relationship, suggesting that as the use of AI in education increases, academic fraud also tends to increase. However, it is important to highlight that correlation does not imply causation. Although the two variables are strongly related, it cannot be concluded that AI use directly causes academic fraud. Other factors may be influencing this relationship.

These findings underscore the need to implement regulations and educational policies that address the ethical use of AI. Additionally, educating students about the responsible use of AI tools and establishing clear guidelines can help mitigate the risk of academic fraud. Promoting the development of critical thinking and analytical skills in students is crucial for them to use AI ethically and responsibly. These skills will help them evaluate AI-generated information and develop their own arguments and conclusions.

In this context, it is also inferred that implementing fraud detection and evaluation strategies, such as plagiarism detection software and peer reviews, is essential to ensure academic integrity. These measures can help identify and prevent AI-related academic fraud. Additionally, fostering a culture of academic integrity is fundamental to reducing the incidence of academic fraud.

It is also important to inform students about expectations, ethical standards, and the consequences of fraud, along with recognizing and rewarding ethical behavior, to encourage honest and responsible academic conduct. Therefore, while the study revealed a very strong positive relationship between AI use and academic fraud, it is crucial to address this issue from multiple angles, including education, regulation, evaluation, and the promotion of a culture of academic integrity. Only through a holistic and multifaceted approach can the challenge of academic fraud in the context of increasing AI use be effectively addressed.

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Inflation, free cash flow and profitability in companies in the food and beverage sector of the municipality of San Cristóbal, period 2014-2018

Inflación, flujo de caja libre y rentabilidad en las empresas del sector de alimentos y bebidas del municipio San Cristóbal, período 2014-2018

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Abstract

The objective of the research was to determine the relationship between inflation and free cash flow with the profitability of companies in the food and beverage sector, San Cristóbal municipality, Táchira state, period 2014-2018. The research is descriptive, supported by descriptive-correlational, field research that uses the inductive method. The selected population was made up of 115 food and beverage outlets in restaurants, cafes and other establishments with table service and counters, the sample was made up of the same population, the main data collection technique applied was the interview combined with review of documents, where the financial statements of the companies were used, supported by the interview used with the general managers. Frequency distribution tables, bar and dispersion graphs, and correlations were used to analyze the data, which determine the behavior of the variables.

Keywords: Inflation, profitability, free cash flow.

Resumen

La investigación tuvo como objetivo determinar la relación entre la inflación y el flujo de caja libre con la rentabilidad de las empresas del sector de alimentos y bebidas, municipio San Cristóbal, estado Táchira, periodo 2014-2018. La investigación es de tipo descriptivo, apoyada en una investigación descriptiva-correlacional, de campo, que utiliza el método inductivo. La población seleccionada estuvo constituida por 115 establecimientos de expendio de comidas y bebidas en restaurantes, cafés y otros establecimientos con servicio de mesa y mostradores, la muestra estuvo dada por la misma población, la técnica de recolección de datos principal aplicada fue la entrevista aunada a revisión de documentos, donde se utilizaron los estados financieros de las empresas, apuntalada con la entrevista empleada al gerente general. Para el análisis de los datos se emplearon tablas de distribución de frecuencia, gráficos de barras y dispersión, correlaciones, que determinan el comportamiento de las variables.

Palabras clave: Inflación, rentabilidad, flujo de caja libre.

Introduction

The present research reflects that inflation in Venezuela has a direct impact on the daily operations of businesses, especially those in the food and beverage sector, as the National Consumer Price Index (NCPI) generally shows an upward trend during the study periods. This is due to the limited availability of foreign currency resulting from the decline in oil prices, affecting the level of imports and thus goods and services.

Inflation is an economic phenomenon related to the progressive increase in population. Meanwhile, national and global policy measures have brought unexpected changes to the economy, such as the rise in prices of basic basket products, oil prices, and international conflicts, which have affected Venezuela in recent decades.

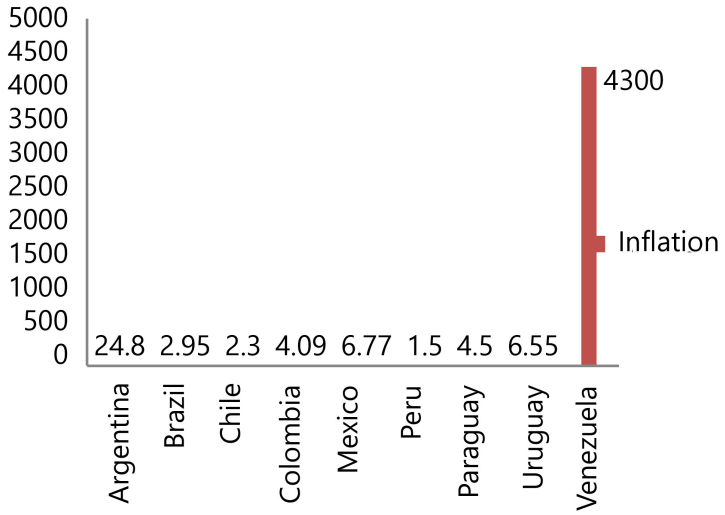
The level of inflation in Venezuela affects the performance of companies in the food and beverage sector, as they strive to remain competitive in the market and achieve efficiency and effectiveness in their core processes to benefit their management. Therefore, their financial situation was analyzed, which in most countries constitutes an activity that contributes to the economy and is beneficial for the population.

Currently, one of the main issues in the global financial sphere is inflation, as explained by Behar (2015). Although a decrease in product and/or service prices is not what is needed, several nations were showing signs of deflation, as seen in the case of Colombia's inflation, which was 0.19% in July 2015. This provided hope for the Banco de la República, which decided to maintain intervention rates at 4.5%, with a strong expectation that the Consumer Price Index (CPI) would begin to decrease and stabilize close to target values in 2016.

Moreover, paraphrasing Behar (2015), this is not an isolated event in Colombia, nor in Latin America, except for isolated incidents like Venezuela, Brazil, and Argentina, with macroeconomic incidents and problems.

According to historical data from the World Bank for the years 2016-2017, average inflation worldwide decreased from average levels of 3.7% in 2012 to 2.5% in 2014, and although the trend appears to stabilize, it continued to decline more slowly. In this regard, the behavior in Latin America for the years 2016-2017 showed stable conduct, except in countries like Argentina, Mexico, and Venezuela, as can be observed in Graph 1.

Graph 1
Inflation (%) for the year 2017



Note: Compiled with data taken from the International Monetary Fund, 2020.

As shown in Graph 1, inflation in Venezuela displayed behavior well above the global average, which leads to the understanding that the effect of the devaluation of money over time was worsening in both social and business aspects. In this regard, Behar (2015) states that "the business activity of any country is exposed to economic factors that influence its development and, consequently, its results, as is the specific case of inflation." This phenomenon has been an ongoing economic reality in Venezuela for years, affecting prices, costs, wages, salaries, property values, and all money-related aspects.

However, because of the strict control over inflation being implemented by the Central Bank of Venezuela (BCV), there has been a significant contraction in the supply and demand of economic activity. Consequently, López (2017) asserts that an uncontrolled increase in prices has been observed in Venezuela. The state of Táchira, during the period 2013–2017, experienced higher rates compared to other regions of the country due to its proximity to the Colombian border.

In 2018, according to Castro (2018), the state of Táchira was significantly impacted in the areas of food and beverages, as the closure of the border affected the region's legitimate commercial activities. On the contrary, it increased informality and financial crimes.

Regarding the case of Mora's Restaurant, located on Carabobo Avenue in the San Cristóbal municipality, data provided during an interview with the general manager revealed that, during the first quarter of 2018, although sales increased in monetary terms, the profit margin did not reflect the same growth. This resulted in reduced cash flows and profitability. Table 1 below shows the sales figures and profit percentages for the first quarter of 2018.

Table 1

Income and profit margin for the first quarter of 2018

Month	Revenue Bs	Incremento (%)	Profit margin %)	Decrease %
January	32.000.000	21,88	31	4
February	48.350.000	93,40	25	10
March	66.000.000	164,00	32	3
April	48.783.333	93,09	29,33	5,66

Note: Data provided by the company owner.

Therefore, the increase was determined based on the fixed value for december 2017, which amounted to 25,000,000 Bs, concerning the months of january, february, and march. Meanwhile, the decrease was calculated using a profit margin of 35% for December 2017. It was concluded that, although the company increases its monthly revenue by an average of 93.09%, it experiences an average decrease of 5.66%, with average monthly sales of 48,783,333 Bs.

From this perspective, the main objective of this research was to analyze the relationship between inflation and free cash flow, as well as between inflation and profitability, during the 2014–2018 period for the food and beverage sector in the municipality of San Cristóbal, Táchira state. This analysis was subsequently subjected to simulation using different inflation rates applied to the revenues and expenses generated by the investment. This approach may serve as a useful tool for decision-makers in an inflationary context.

The research is justified from three aspects: methodological, practical, and theoretical. Firstly, by correlating macroeconomic variables with internal variables, recommendations can be derived to improve the financial conditions of the company, thereby fostering growth in the sector and/or subsector under study. Maintaining sustainable economic activity at the local, regional, and national levels is crucial, as it promotes employment and development.

It should be noted that in the city of San Cristóbal, approximately 21,003 companies were registered in 2017 (34% of the total in the state). However, only 315 of these are classified as industries, while the rest are engaged in commercial activities. According to the Chamber of Commerce and Industry of Táchira State, commercial activity began to decline in 2018, mainly due to financial issues and government policies.

For the companies studied, this research provides financial strategies that can ensure their sustainability in a complex market such as the food and beverage sector in the municipality of San Cristóbal, Táchira state. Moreover, all social organizations must fulfill their basic financial objectives, and the correlation between external and internal variables can facilitate this process. Lastly, this research will serve as a methodological framework for future studies on inflation, cash flow, and profitability in the food and beverage sector and other areas of economic activity.

On an international level, Macas & Luna (2014) conducted a thesis titled Analysis of Inflation and Economic and Financial Profitability in the Marketing and Export Company of Bioaquatics for the Periods 2012–2013 at the National University of Loja, located in Loja, Ecuador. Their objectives included analyzing inflation and economic and financial profitability in the company, determining the behavior of inflation, identifying trends in profitability, and proposing improvements for the company.

The research methodology employed was fieldwork, utilizing a questionnaire as the instrument under the survey technique, which was applied to a total of 55 workers. Among their findings, they observed a correlation of 0.91 between inflation and profitability, significantly impacting the company's financial environment. Their strategy focused on reducing administrative expenses by at least 8%, targeting costs not essential to the organization's core activities.

For this research, this precedent provides guidance on the type of research to use, as well as the techniques and instruments for data collection. It facilitated the development of analy-

ses, data processing, and the identification of relevant aspects.

Similarly, at the national level, Arias (2012) conducted a thesis to obtain a master's degree in business management, specializing in Financial Management, at the University of Zulia. The thesis was titled "Inflation and Budget Management in Mixed Companies of the Oil Sector in Zulia State." Its objective was to analyze the impact of inflation on budget management in mixed companies of the oil sector. The study examined the behavior of the inflation rate, budget management, budget deviations, and the relationship between the inflation rate and budget management in mixed companies of the oil sector.

Methodologically, the research was descriptive and field-based, with a non-experimental design. The population consisted of three employees from a mixed oil sector company in the municipality of San Francisco, Zulia state. For data collection, a questionnaire containing 55 multiple-choice items with four alternatives was designed. Reliability was calculated using Cronbach's Alpha coefficient, achieving a very high magnitude of r = 0.925.

The study concluded that in Venezuela, the root cause of high inflation is primarily the fiscal deficit monetized by the Central Bank of Venezuela (BCV). Inflation was measured by the variation in the Consumer Price Index (CPI). The correlation obtained was r = 0.353, classified as low, positive, and non-significant. Therefore, it was affirmed that there is no consistent relationship between inflation and budget management.

This research will serve as methodological support, particularly regarding the techniques and instruments used for data collection, such as descriptive, non-experimental research and the use of a questionnaire featuring both closed and open-ended questions.

Methodology

Regarding the level of this research, given the characteristics of the problem and the formulated objectives, it was considered descriptive in nature. This study was of a descriptive level since, for the systematic development of the objectives, it was necessary to collect information to identify and define the key aspects of inflation, free cash flow, and profitability for companies in the food and beverage sector in the municipality of San Cristóbal, Táchira state, during the period 2014–2018.

The research design was field-based, with data collection conducted within the defined population over a specific period, without manipulating variables. This was achieved through the interview technique and the questionnaire instrument. Additionally, a documentary review was conducted to describe, characterize, and analyze the behavior of the variables: inflation, free cash flow, and profitability. The population in this case consisted of food and beverage establishments located in the municipality of San Cristóbal, Táchira state.

For this research, an intentional sampling method was used, representing 115 establishments

that met the requirement of belonging to the food and beverage sector in the municipality of San Cristóbal, Táchira state. Initially, the interview technique was employed. The data collection instrument was an interview guide. Quantitative data analysis was performed using tables and graphs.

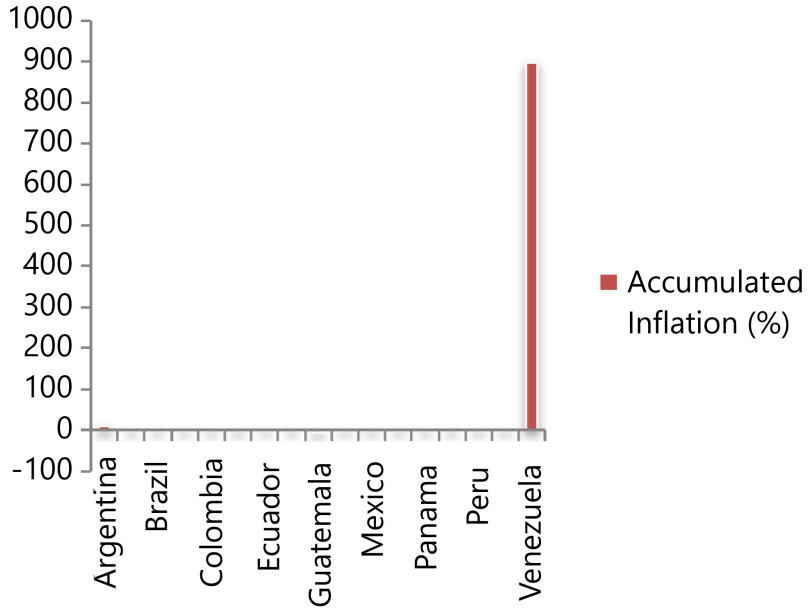
Results

In this analysis of results, it is important to consider the behavior of inflation for the period 2014-2018. In this regard, it is worth noting that according to the World Bank (2018):

> For the fifth consecutive year, the Latin America and Caribbean region faces a decline in growth as a result of an adverse external environment, especially for exporters and companies in the food and beverage sector. A contraction of 1% is expected for the year 2018" (p. 912).

This is primarily affected by the slowdown in the Venezuelan economy, which experiences economic instability and such high inflation compared to other countries that it only drives away foreign investors. Graph 2 shows the accumulated and monthly inflation of the main countries in Latin America. Similarly, in Graph 2, the percentage variation of inflation in Venezuela for the period 2014-2018 can be observed.

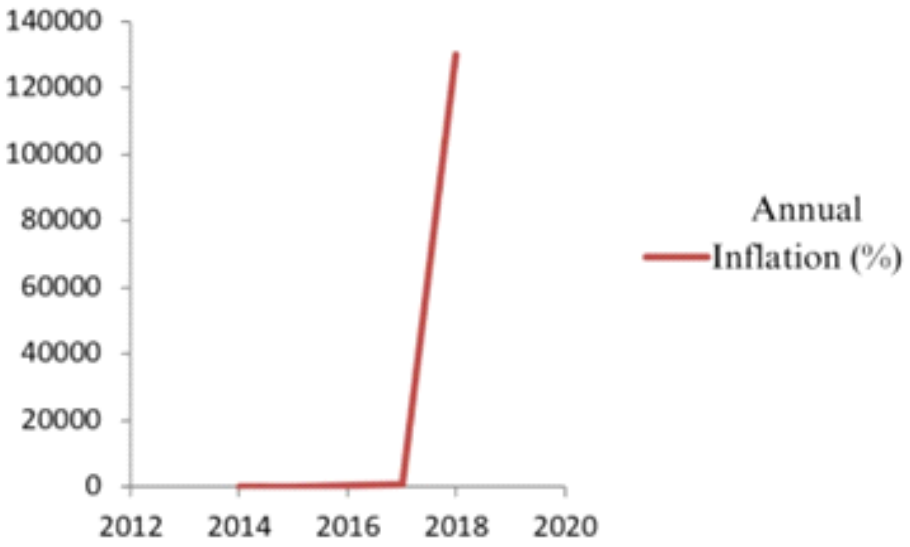
Graph 2
Behavior of accumulated inflation in Latin America for the period 2014-2018



Note: GlobalScope (2019).

For the case of Venezuela, Figure 4 shows the inflation during the period 2014-2018.

Graph 3
Percentage variation of inflation in Venezuela for the period 2014-2018.



Note: BCV (2019).

The main cause of hyperinflation is the growth of the money supply, defined by Marshall (1890) as "the total amount of money in circulation in an economy" (p. 189). According to the Central Bank of Venezuela, the money supply for the study period 2014-2018 behaved as shown in Table 2.

Table 2
Money supply in Venezuela for the period 2014-2018).

Decrease %	Money supply (%)	Variation (%	Trend
2014	70,90		
2015	62,80	-11,42	Baja
2016	101,40	61,46	Alza
2017	161,30	59,07	Alza
2018	1.129,60	600,31	Alza

Note: BCV (2019).

Now, it is necessary to demonstrate the existence of a correlation between the macroeconomic variables of inflation and money supply. Before carrying out the statistical correlation process, it is essential to observe the data of the related variables. Therefore, Table 3 provides a summary of the nominal values of the study variables.

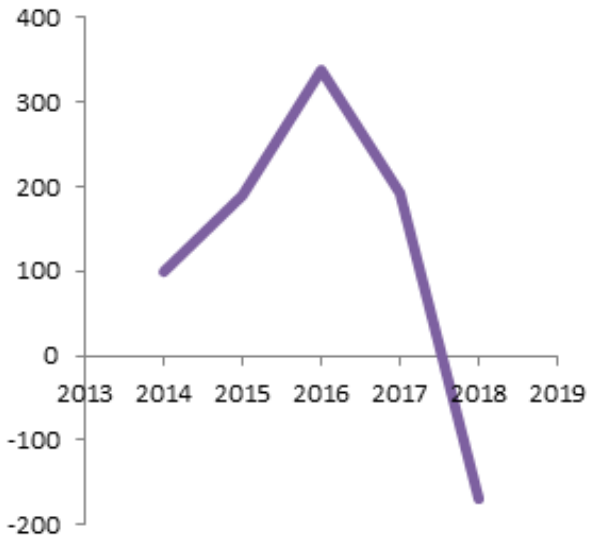
Table 3
Summary of inflation and money supply in Venezuela for the period 2014-2018

Year	Inflation	Money supply
2014	68,50	70,90
2015	180,90	62,80
2016	242,60	101,40
2017	862,60	161,30
2018	130.060,20	1.129,60

Source: BCV (2019).

Regarding the behavior of free cash flow in the food and beverage sector of the municipality of San Cristóbal, Táchira state for the period 2014-2018, Graph 4 indicates the Operating Net Working Capital (KTNO) for the food and beverage sector of the municipality of San Cristóbal, Táchira state, during the period 2014-2018. Meanwhile, in Graph 5, the free cash flow is calculated and represented for the study period.

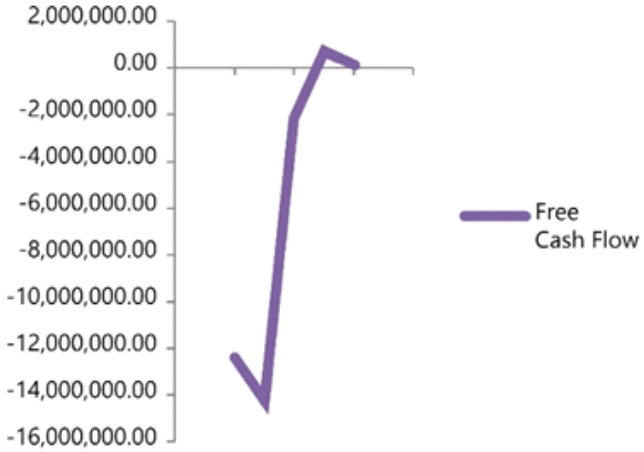
Graph 4
Net Operating Working Capital (NOWC) for the period 2014-2018



Note: Mora's (2014-2018).

Graph 5

Free Cash Flow (FCL) for the period 2014-2018



Note: Mora's (2014-2018).

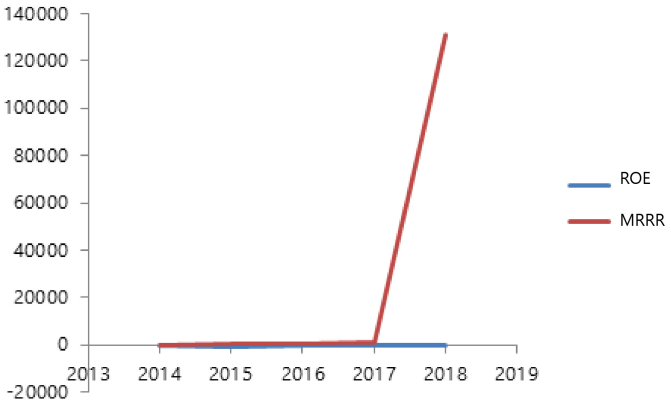
It is noteworthy that regarding the profitability behavior in the food and beverage sector of San Cristóbal municipality, Táchira state for the period 2014-2018, and specifically the financial status of Mora's C.A., the necessary data were obtained to analyze the profitability behavior in the food and beverage sector of San Cristóbal municipality, Táchira state during the period 2014-2018. Additionally, it is crucial to calculate the financial indicators that serve as tools to observe the performance of the resources available to the company to operate normally and thus visualize the profitability behavior. It is pertinent to highlight that profitability, according to García (2010), is a closely related inducer to value creation in an organization, thereby facilitating an understanding of the value generation in the studied company.

Graph 6

Operating Profitability Before Taxes (OPBT) and Return on Equity (ROE) for the period 2014-2018

Note: Mora's (2014-2018).

Graph 7
ROE and MRRR for the period 2014-2018

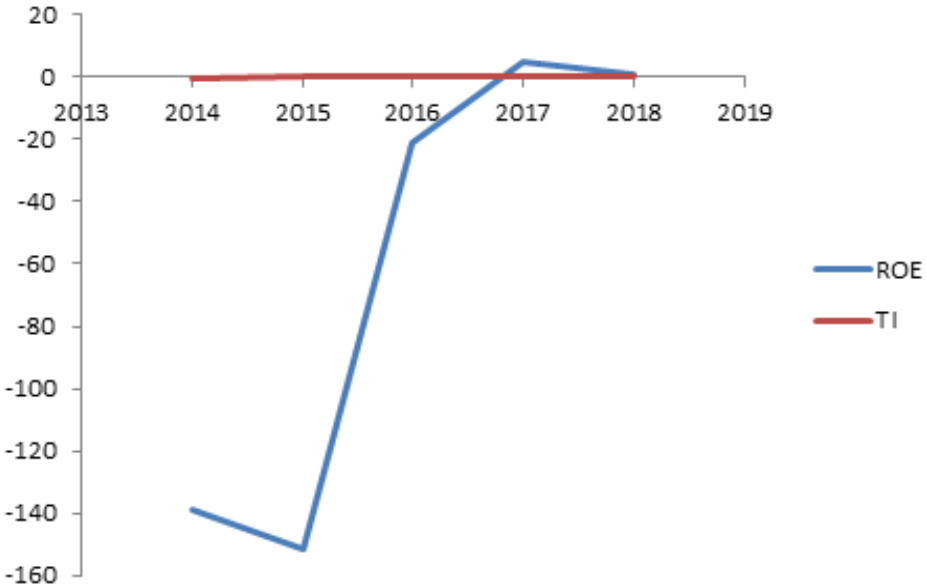


Note: Mora's (2014-2018).

Graph 7 details the difference between ROE and MRRR. It is worth noting that MRRR, the minimum expected return for interviewed shareholders, exceeds inflation levels, thus estimation yields the following results.

Considering that the organization maintained external financing in the years 2014 and 2015, it is necessary to compare ROE with the interest rate generated by the debt, as shown in Graph 8.

Graph 8
ROE and Interest Rate for the period 2014-2018



Biology Teacher.

Discussion

In Venezuela, inflation statistics are managed by the Central Bank of Venezuela (BCV) and the National Institute of Statistics (INE), available on their respective websites. Various inflation indices are applied in Venezuela to calculate the monthly price variation in basic goods and services, referred to as inflationary indices within the national context. These indices include the Consumer Price Index (CPI), the National Consumer Price Index (INPC), and the Core Inflation Index.

The high inflation rates observed in Venezuela compared to Latin America for the period 2014-2018 indicate an increase in prices of goods and services, resulting in a decrease in purchasing power and a loss of currency value. To conduct a more detailed analysis of inflation in Venezuela, it is advisable to establish its values during the study period. Thus, the information for the years 2014 to 2018 is presented.

As depicted in Graph 3, the variations in the inflation index in Venezuela have been characterized by significant increases, with a percentage variation between 2018 and 2014 of 189,768.90%, and an increase of 14,977.70% between the last years of the study. However, this implies that the series of economic measures implemented have only led to hyperinflation.

To better visualize the trend of inflation in Venezuela, Table 3 shows the data for the study period 2014-2018. Inflation is an economic process characterized by widespread and sustained increases in prices over time. This includes prices of goods and services as well as wages and salaries. Additionally, the price of foreign currencies also rises, meaning that in Venezuela, the bolívar depreciates against the dollar, the German mark, and the Japanese yen, requiring more bolivars to purchase foreign currencies. In Venezuela, during the last governments, irresponsible monetary policies have led us into a long period of inflation, with extremely serious social and political consequences (López, 2017).

The upward trajectory is unequivocally apparent, with all 5 data points in the study demonstrating this tendency. Between 2014 and 2015, the upward percentage variation stands at 221.96%; from 2015 to 2016, a notable ascent is observed with a percentage variation of 362.88%; further, between 2016 and 2017, a consistent upward trend persists, marking a variation of 234.12%; likewise, from 2017 to 2018, an upward trajectory is sustained, exhibiting a percentage variation of 455.59%. These escalating trends precipitated a decline in units sold and a surge in prices of goods and services, encompassing the food and beverage sector.

Inflation denotes the overarching escalation in the prices of goods and services over time within a nation. As inflation escalates, consumers find their purchasing power diminished, leading to decreased standards of living. Hyperinflation, an aberrant form of inflation, entails an extreme surge in prices, rendering the currency incapable of fulfilling its roles as a unit of account, medium of exchange, and store of value. Functional currency is defined by its ability to serve all three functions, whereas dysfunctional currency fails to meet any.

Inflation originates when a nation's Central Bank outpaces the production of goods and services with the creation of money. Fiscal deficits compel governments to mandate Central Banks to issue money to cover expenses surpassing revenues or debt issuance. This fiscal deficit monetization emerges as a primary catalyst for inflationary phenomena. The imbalance between production levels and monetary volume can escalate to such extremes as to catalyze hyperinflationary processes.

In response to escalating prices, individuals recalibrate their expectations and behaviors, expending funds swiftly to preempt price hikes. This widespread behavior accelerates currency circulation, exacerbating the inflationary spiral. A pernicious cycle ensues: elevated prices fuel anticipations of further escalation, prompting additional price hikes. This self-perpetuating cycle erodes the currency's value, resulting in economic instability and societal upheaval.

To address the impact of inflation on tax revenue in Venezuela, authorities resorted to funds generated by the Central Bank of Venezuela. This injection of bolivars spurred price increases. According to Ecoanalítica, total revenue plummeted by 47% in real terms by october 2017. Value Added Tax dropped by 52%. Fiscal conditions worsened due to the decline in oil prices since their peak in 2013 and the decrease in oil production, which fell to 600,000 barrels per day since 2015, as per the Organization of the Petroleum Exporting Countries. This was compounded by restricted access to international credit markets due to risk perception and sanctions imposed by the United States in 2017.

Regarding free cash flow, it is observed in Graphs 5 and 6 that in both operating and net operating working capital, the results of this study enable discernment of the possibility of measuring the integration of free cash flow behavior criteria in companies, considering the guidelines of the SUNDDE guide that encompass the principles, practices, and fundamental matters of consumer prices and guidance on integration throughout the organization.

The indicator fluctuated from 2014 to 2018. For the first 3 years, it was negative, indicating the company's lack of immediate cash availability to meet its needs. In the last two years, FCL shows an increase, being positive. However, this is not in proportion to significantly benefit the future and continuity of the business.

Regarding profitability, companies in the food and beverage sector of San Cristóbal municipality have progressed in all fundamental areas, with greater integration evident in those with mandatory profitability behavior, labor practices, fair operating practices, asset profitability, and equity profitability. Identified improvement opportunities address the need to strengthen business capacities in various management aspects such as production, quality and safety, technology and innovation, and occupational health and safety.

To achieve the objective, comparisons were made and a thorough analysis of operational value drivers was conducted to determine how the destruction or creation of business profitability has evolved. Initially, a negative trend of reduction is observed in both asset profitability and

equity profitability. However, the graph suggests that there is not a very direct cause-and-effect relationship between the two variables. From this, it can be concluded that the profitability behavior in the food and beverage sector is not directly or indirectly related.

Conclusions

Regarding inflation in Venezuela compared to Latin America for the years 2014-2018, it can be inferred that it had an impact on the management of companies in the food and beverage sector located in the municipality of San Cristóbal, Táchira state, especially in the activities of buying and selling food, due to the substantial increase in prices, as well as the increase in taxes during the study period.

During the study period, Venezuela was immersed in a type of inflation called hyperinflation, which only showed an upward trend reaching a peak in 2017, leading to a substantial decline in Venezuelan productive growth. Furthermore, this variable falls within the monetarist theory of inflation as it is driven by the increased amount of circulating money.

As a result of this situation, the economic measures implemented by the national government have been aimed at imposing controls, such as profit margins and sales prices. According to the results obtained, it can be inferred that these controls are not a solution to the macroeconomic problems facing the country; on the contrary, they erode consumer purchasing power, free cash flow, and business profitability, promoting economic uncertainty due to shortages caused by lack of inputs, exacerbating the inflationary spiral through hoarding and speculation.

Regarding free cash flow (FCL), an increase was observed for the first two years of the study period (2014-2015). Subsequently, a downward trend became prominent for the years 2016 and 2017; however, for the last year of the study, an increase compared to 2017 began to be evident. The variations shown can be inferred in relation to the inflation variable, showing an increase in revenue that is not representative with respect to the FCL obtained. Inflation increases sales; however, it diminishes short-term availability to meet obligations.

Regarding profitability for the period 2014-2018, from its two indicators Return on Assets (ROA) and Return on Equity (ROE), a moderate increase in profitability was evidenced, allowing it to meet the planned objectives for each period despite the country's situation and the level of inflation.

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Technological competencies and the academic performance of university students

Competencias tecnológicas y el desempeño académico de los estudiantes universitarios

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Abstract

The objective of the study was to establish the relationship between digital competencies and university teacher performance. The methodology was based on the positivist paradigm with a quantitative approach. The research was basic, descriptive and correlational. The non-experimental and cross-sectional design included a sample of 87 students from a public university in Maracaibo, Venezuela selected by convenience. The survey was used as the data collection technique, applying a questionnaire whose reliability was high (Cronbach's alpha = 0.975). The data were processed using SPSS software. The results indicated a moderate positive correlation (Spearman = 0.356) between the variables, suggesting that, as teachers' digital skills increase, their performance improves. In conclusion, the development of teachers' digital skills contributes to improving educational quality in the university context.

Keywords: Competencies, digital competencies, teaching performance, university professor.

Resumen

El estudio tuvo como objetivo establecer la relación entre las competencias digitales y el desempeño del docente universitario. La metodología se fundamentó en el paradigma positivista con un enfoque cuantitativo. La investigación fue de tipo básica, descriptiva y correlacional. El diseño no experimental y transversal incluyó una muestra de 87 estudiantes de una universidad pública en Maracaibo, Venezuela seleccionados por conveniencia. Se utilizó la encuesta como técnica de recolección de datos, aplicándose un cuestionario cuya confiabilidad fue alta (Alfa de Cronbach = 0,975). Los datos se procesaron mediante el software SPSS. Los resultados indicaron una correlación positiva moderada (Spearman = 0,356) entre las variables, sugiriendo que, a medida que aumentan las competencias digitales de los docentes, su desempeño mejora. En conclusión, el desarrollo de las habilidades digitales de los profesores contribuye a mejorar la calidad educativa en el contexto universitario.

Palabras clave: competencias, competencias digitales, desempeño docente, docente universitario.

Introduction

In the current context of the educational process, the use of technology has become essential, as it facilitates students' acquisition of knowledge. Acosta & Fuenmayor (2022) highlight that Information and Communication Technologies (ICTs) have profoundly revolutionized how university educators seek and manage the content needed for their teaching. These technological advancements not only improve access to information but also foster greater interactivity and collaboration in the educational realm, thereby enhancing the quality of both learning and teaching.

Therefore, higher education teachers must possess digital competencies. According to Centeno (2021), these competencies are defined as a set of knowledge, skills, and abilities associated with the use of technologies in educational environments, facilitating the achievement of curri-

cular goals and competencies. In this regard, Sánchez *et al.* (2022) emphasize that digital competencies include aspects related to hardware, software, school organization and management, the use of ICTs, and the social, ethical, and legal elements associated with their use.

Meanwhile, Cateriano *et al.* (2021) point out that, globally, many teachers face difficulties in searching for relevant data and information. As a result, many educators rely solely on Google as their main search tool and are unfamiliar with the use of databases, institutional repositories, and advanced searches with Boolean operators to access quality information. This lack of skills limits their ability to access appropriate academic resources and reduces the quality of information used in their teaching practice.

In this context, Cobos *et al.* (2020) indicate that there are global gaps in the use of technology for academic purposes and the dissemination of information. This is because many educators lack knowledge on how to select appropriate resources and effectively use search engines to choose topics aligned with students' research needs and academic levels.

Similarly, Díaz & Serra (2020) suggest that it is difficult to determine to what extent teachers misuse the Internet when searching for information. This may be due to a lack of necessary skills to fully utilize technologies in teaching or awareness of the variety of search engines available for consulting scientific information. Consequently, many teachers resort exclusively to traditional methods for finding quality scientific information, which impacts their classes and may negatively affect students' educational progress.

For this reason, Espinoza (2020) highlights the importance of educators knowing and using academic search engines such as Google Scholar and Microsoft Academic, which provide access to peer-reviewed articles and books. Scientific journals on platforms like PubMed, IEEE Xplore, and JSTOR, as well as databases like Scopus, SciELO, Dialnet, and Redalyc, offer specialized and high-quality research. In addition, academic networks such as ResearchGate and Academia.edu facilitate collaboration and access to publications and scientific websites offering high-quality reports and studies.

In this context, Baldomero (2022) emphasizes that the digital competencies of higher education teachers include information literacy, essential for navigating, filtering, and managing digital information. He also highlights the importance of online communication and collaboration, involving interaction and proper use of netiquette. Another key competency is digital content creation, which requires integrating platforms and respecting copyright. Additionally, Díaz & Loyola (2021) note that these digital competencies include data search and management, person-to-person interaction, and data protection. They also highlight the importance of technological skills that enable teachers to search for and filter relevant information while applying effective strategies for virtual teaching.

On the other hand, Flores & Garrido (2019) underline that in Latin America, teachers must develop digital, communicative, intellectual, and ethical skills to ensure student learning. Likewise,

Mancha *et al.* (2022) argue that the new educational environment presents the challenge of acquiring knowledge about the use of technologies, which are fundamental tools for consulting, producing, and distributing educational content.

In this regard, Pérez (2017) asserts that to use ICTs correctly and effectively, it is necessary to improve teachers' digital skills. Therefore, in the educational environment, it is crucial to create an appropriate connection between the use of ICTs, pedagogy, and strategies that integrate education and technology.

Zabalza & Zabalza (2020) describe that education based on the digital competence approach is a recent concept that significantly differs from traditional teaching in terms of concepts, methods, and practices. Its purpose is to promote the acquisition of skills that enable individuals to succeed in various contexts, including economic, labor, social, and academic.

In this respect, Acosta & Barreto (2023) note that education aims to respond to the new knowledge and information society; therefore, teachers need to acquire digital skills that allow them to learn how to use technological tools properly. In this sense, Sánchez & Carrasco (2021) argue that additional training on using technology in the classroom is necessary to foster a critical attitude toward creating, using, and legally managing content. Hence, teachers should learn to use these resources to be more creative and apply them in various areas of learning.

Moreover, Puche & Acosta (2024) state that in Venezuela, mechanisms must be implemented to transform and develop education, technology, and science, promoting the development of life skills. They also emphasize that schools must respond to societal needs, meaning the educational process should be approached from a holistic perspective. This involves managing each academic process to facilitate students' effective learning.

In this context, Díaz & Castillo (2017) highlight that excellent and effective teaching management will develop students' cognitive, affective, and psychomotor skills, rather than merely imparting information. Similarly, Acosta & Barrios (2023) indicate that teachers should stimulate learning, contextualize content, and integrate students into instructional design.

Furthermore, Rojas & Arévalo (2022) note that teacher performance is closely linked to the quality of education. Therefore, teachers must plan and formulate a professional activity plan that aligns with the context, educational process, and evaluation indicators. It is also crucial to consider both external and internal educational factors and integrate technological practices to improve teaching quality.

Additionally, Oviedo & Páez (2020) emphasize that teacher performance is linked to digital, cognitive, and affective competencies, directly impacting educational quality. Soria *et al.* (2020) affirm that optimal teacher performance is evident when educators have a strong command of content, employ effective pedagogical mediation, and use instructional and evaluative resources tailored to students' needs.

In this context, Arenas *et al.* (2021) argue that for effective teaching performance, educators must possess digital competencies, which enable them to stimulate learning, contextualize content, and integrate students into the educational process. Cabero & Martínez (2019) highlight that the Internet provides informational resources and a fast communication platform between teachers and students. Furthermore, Acosta (2022) emphasizes that integrating the Internet, multimedia technologies, and gamification is key in virtual teaching, noting the growing support among teachers for online collaboration, multimedia use, and diversified assessment methods.

On the other hand, Carretero (2021) argues that there is a gap between knowing and doing. However, various studies and scientific literature have demonstrated that an appropriate instructional design incorporating technologies offers several pedagogical benefits for more effective teaching. In this regard, García *et al.* (2021) emphasize that the use of technologies such as Virtual Learning Environments (VLE) in higher education presents multiple advantages. Among these are the ability to reach a larger number of users, as well as providing flexibility in scheduling, monitoring, and tracking students' learning progress.

Given the above, it can be stated that digital competencies are closely related to teacher performance. Educators must plan and organize their strategies according to educational objectives, manage available resources, adjust time and school environments, and enhance learning with the support of technology. This contributes to the development of competencies established in the curriculum design, optimizing the educational process, and promoting more effective learning tailored to current needs.

In this sense, it has been observed that some university professors in Maracaibo, Zulia, Venezuela, exhibit weaknesses in using technological tools, predominantly opting for traditional teaching methods. Despite technological advancements and current market demands, these teachers tend to repeat familiar methods and focus on student memorization. This situation may be attributed to a lack of digital competencies, as well as limited access to the internet, digital platforms, and technological equipment—tools essential for significantly improving teaching and learning.

Another relevant aspect is age, as many of these educators are over 50 years old and have not been technologically literate. Most possess only basic digital skills and need improvement in searching for information on specialized platforms, using virtual libraries, and managing quality academic information. This lack of digital skills negatively impacts teachers' performance, affecting their ability to plan and assess their practices, which could, in turn, influence students' academic performance. Based on the issues described above, the objective of the study was to establish the relationship between digital competencies and university teacher performance.

Methodology

The study was based on the positivist paradigm and employed a quantitative approach, as the primary goal was to measure and analyze the relationship between digital competencies and

teaching performance in a university context. According to Hernández & Mendoza (2018), this approach allows for the collection and analysis of numerical data, providing a solid foundation for the objective interpretation of results.

This was a basic research study, aimed at generating theoretical knowledge and a deeper understanding of the phenomenon under investigation, without the immediate intention of applying this knowledge in a practical context. The descriptive level, as Arias (2016) explains, offers a clear and comprehensible view of the variables involved. The study focused on a detailed characterization of university teachers' digital competencies and their performance, allowing for a deeper understanding of professors' digital skills and how these influence their academic performance.

The scope of the study was correlational, enabling an examination of the relationship and degree of association between teachers' digital competencies and their performance. As noted by Hernández & Mendoza (2018), this type of study is essential for identifying patterns and connections between variables without necessarily establishing direct causality.

The study design was field-based, as it was conducted in the location where the problem occurred. Additionally, it was classified as non-experimental because independent variables were not manipulated but observed as they naturally occurred in their environment. The cross-sectional nature of the design meant that data was collected at a single point in time, offering a snapshot of the state of digital competencies and teaching performance at a specific moment.

The sample consisted of 87 university students from a public university in Maracaibo, Zulia, Venezuela. These students were selected through non-probabilistic convenience sampling. This sampling method was chosen for its ease of access to participants and the feasibility of the study given the time and resource constraints. Although non-probabilistic, this approach provided relevant and valuable information about the topic under investigation.

It is important to note that no specific university was mentioned in the study to ensure the generalization and validity of the results. By not specifying the institution, biases related to specific university characteristics were avoided, allowing the findings to be applicable to other similar institutions. This approach minimized confidentiality risks and focused the study on the main subject rather than institutional details, facilitating comparison with other studies and contributing to a broader, more generalizable knowledge base.

Inclusion criteria required that participants be university students currently enrolled in higher education programs at the selected institution, with at least a basic level of digital competencies. Informed consent was provided to students, detailing the purpose of the study and their rights, including confidentiality and the option to withdraw if they did not wish to complete the survey.

First-year students were excluded due to their lack of relevant experience with teaching performance and digital competencies. Additionally, those unable to provide full informed consent

or with limited exposure to digital competencies were excluded to maintain the validity of the study's results.

For data collection, the survey technique was used, and the instrument was a structured digital questionnaire containing specific information on the relevant variables, dimensions, and indicators for the study. This enabled a systematic and organized collection of data. The reliability of the questionnaire was confirmed through Cronbach's Alpha coefficient, which yielded a value of 0.975, indicating high reliability and internal consistency of the instrument used.

The collected data were processed using SPSS version 27, a robust statistical tool that facilitated a detailed analysis of the relationships between digital competencies and teaching performance. This software allowed for both descriptive and inferential analyses, providing a solid foundation for the study's conclusions.

Results

After processing the data, descriptive analyses were conducted to provide an overview of the variables. Subsequently, inferential analysis methods were applied to evaluate the correlation between digital competencies and university teaching performance. This approach allowed for a detailed examination of the relationship between the two variables and how they interrelate. Below are the tables with the results, which clearly illustrate the connection between teachers' digital competencies and their performance in the university context, offering a comprehensive view of the findings.

Table 1
Digital Competencies

Levels	Search and management		Information literacy		Communication and development		Digital content creation	
	F	%	F	%	F	%	F	%
Deficient	13	14,9	15	17,2	30	34,5	16	18,4
Moderate	74	85,1	72	82,8	53	60,9	61	70,1
Efficient	0	0	0	0	4	4,6	10	11,5
Total	87	100	87	100	87	100	87	100

Note: Own elaboration (2024).

Table 1 presents the results for the variable "digital competencies" along with each of its dimensions. It is observed that 85.1% of the respondents consider that professors' "search and management" of information is at a moderate level, while 14.9% express that it is deficient. Regarding the "information literacy" dimension, 82.8% of the participants believe that teachers have a moderate level, while 17.2% indicate it is deficient.

For the "communication and development" dimension, 60.9% of respondents think that professors are at a moderate level, while 34.5% believe it is deficient. Finally, in the "digital content creation" dimension, 70.1% of respondents state that professors are at a moderate level, with 18.4% considering them deficient.

Table 2
University Professors' Performance

Niveles	Content mastery		Pedagogical mediation		Use of instructional resources		Contextualized evaluation	
	F	%	F	%	F	%	F	%
Deficient	17	19,3	11	12,5	12	14,8	17	19,3
Moderate	44	50	45	52,3	41	46,6	51	58
Efficient	26	30,7	31	35,2	34	38,6	19	22,7
Total	87	100	87	100	87	100	87	100

Note: Own elaboration (2024).

Table 2 displays the results for the variable "teaching performance" with its dimensions. It is observed that 50% of the respondents consider that teachers' "content mastery" is at a moderate level, 30.7% deem it efficient, and 19.3% rate it as deficient. Regarding the "pedagogical mediation" dimension, 52.3% view it as moderate, 35.2% consider it efficient, and 12.5% rate it as deficient.

For the "use of instructional resources" dimension, 46.6% of respondents place it at a moderate level, and 38.6% find it efficient; however, 14.8% categorize it as deficient. Finally, in the "contextualized evaluation" dimension, 58% of respondents indicate that professors are at a moderate level, 22.7% consider it efficient, and 19.3% rate it as deficient.

Table 3
Correlation between digital competencies and university professors' performance.

			Digital competency	Teaching performance
Spearman's Rho	Digital competency	Correlation coefficient	1	0,356**
		Significance (Two-tailed)	-	0,001
		N	87	87
	Teaching performance	Correlation coefficient	0,356**	1
		Significance (Two-tailed)	0,001	-
		N	87	87

Note: Own elaboration (2024).

Table 3 reflects the results analyzing the relationship between the variables "digital competencies" and "teaching performance" using Spearman's correlation coefficient, a suitable method for evaluating relationships between ordinal variables or when a normal distribution of data cannot be assumed. This statistical technique allowed for the measurement of the strength and direction of the association between the study's variables of interest.

The results show that the Spearman correlation coefficient between digital competencies and teaching performance is 0.356. This value indicates a moderate positive correlation, suggesting that as digital competencies of teachers increase, their performance tends to improve as well. The two-tailed significance associated with this coefficient is 0.001, indicating that this correlation is statistically significant, meaning that the likelihood of this result being obtained by chance is very low.

The Spearman correlation analysis reveals a positive and significant correlation between digital competencies and teaching performance. This provides empirical evidence of how the development of digital competencies positively impacts the quality of teaching performance. It highlights the importance of fostering these skills in the current educational context to improve teaching effectiveness. The high reliability of the questionnaire used and the detailed data analysis through SPSS software enhance the validity of these findings and provide valuable recommendations for educational practice and institutional policy formulation..

Discussion

The results obtained in this study support the assertions of Callejas *et al.* (2016), who emphasize that digital competencies for educators include a crucial set of knowledge and skills necessary to effectively integrate technology into the educational environment. These competencies are fundamental for achieving teaching objectives, enhancing teachers' ability to facilitate learning and adapt to the demands of the modern educational context.

This aligns with the view of Flores & Garrido (2019), who describe digital competencies as an organized and creative set of technologies that facilitate student learning. Additionally, Callejas (2016) argues that digital literacy involves not only the development of skills but also the acquisition of knowledge, attitudes, values, and ethics in the use of ICT, with the aim of maximizing the use of resources available on the Internet.

Baldomero (2022) highlights that digital competencies for higher education instructors include information literacy, which encompasses the ability to navigate, filter, evaluate, and manage digital information. The importance of digital communication and collaboration is also emphasized, involving online interaction, participation, and collaboration, as well as the use of netiquette and digital identity management. Digital content creation is another key competency, involving the integration and refinement of platforms, content development, and adherence to copyright and licensing regulations.

Acevedo *et al.* (2020) add that acquiring these digital competencies is crucial in the 21st century, as it facilitates information searching, collaboration, content creation, and the design of met-

hodological strategies to optimize learning. Castro & Artavia (2020) also highlight how these skills enhance administrative tasks and teaching organization, promoting the comprehensive development of students.

Díaz & Loyola (2021) complement this view by noting that digital competencies include internet searching, data management and evaluation, interpersonal interaction, content creation, and data protection. Together, these findings underscore the importance of digital competencies, which extend beyond mere technological tool usage to encompass fundamental aspects necessary for effective and secure performance in the modern educational environment.

On the other hand, the results obtained regarding teaching performance align with observations from Acevedo *et al.* (2020), who highlight that teaching performance manifests in the act of teaching, considering both the characteristics of students and the efforts required for the teacher's professional growth. This directly impacts student learning.

García & Acosta (2012) argue that the goal of teaching performance is to develop students' cognitive skills and achieve high educational quality standards through practices adapted to social realities and student needs, promoting comprehensive development.

Soria *et al.* (2020) add that teaching performance involves the ability to handle complex classroom situations, which depends on students' psychosocial resources and the teacher's skills and attitudes in specific contexts. Optimal performance is demonstrated when the teacher masters the content, applies effective pedagogical mediation, and utilizes instructional and evaluative resources tailored to student needs.

Acosta & Barrios (2023) complement this view by noting that a good teacher must master the subjects, prepare lessons adequately, have experience with learning resources, and show respect for others. Soria *et al. (2020)* also emphasize the importance of pedagogical mediation in creating a conducive learning environment, managing content, motivating students, and appropriately using educational and technological resources.

Lastly, Cuentas *et al.* (2021) highlights that other factors positively influencing teaching performance include job satisfaction, relationships with students, parents, and administrators, and willingness to collaborate. In summary, teachers are responsible for seeking, finding, and utilizing a variety of resources to enrich the learning environment. They must adapt their technological strategies to motivate students and consider individual learning needs to improve their classroom performance.

Conclusions

The results show that the Spearman correlation coefficient between digital competencies and teaching performance is 0.356, indicating a moderate positive correlation. This correlation suggests that as teachers' digital competencies increase, their performance also improves. However,

not all teachers fully leverage the advantages and opportunities offered by digital tools, highlighting the need to elevate digital competencies to ensure better teaching outcomes. The bilateral significance associated with this coefficient is 0.001, indicating that this correlation is statistically significant, meaning the probability that this result occurred by chance is very low.

The positive and significant correlation between digital competencies and teaching performance underscores the importance of enhancing these skills to boost educational quality and professional performance in the university context. This finding emphasizes that teachers with higher digital competencies are not only more efficient in integrating technologies into their teaching methods but also more effective in facilitating learning and adapting to technological and social changes. Therefore, fostering these competencies is essential for achieving more effective and enriching education.

To achieve this goal, it is recommended to implement continuous training programs in digital competencies for university teachers. Educational institutions should invest in technological infrastructure and provide adequate resources and technical support to enable teachers to develop and update their digital skills. Additionally, promoting a culture of innovation and continuous learning, where educators feel motivated and supported to explore new digital tools and methodologies, is crucial. Regular evaluation and feedback on the use of ICT in the classroom can also help identify areas for improvement and ensure that digital competencies are used effectively to enhance teaching performance and, ultimately, educational quality.

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Integration of the use of information and communication technologies in the tracking process

Integración del uso de las tecnologías de información y comunicación en el proceso de enseñanza

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Abstract

The learning process in educational institutions is the result of the development and society changes in benefic of the state. For this reason, the education system require changes to adapt to the needs of the education environment. With the digital age, the technologies are been used in all spaces of the daily life, including education, they are more frecuent, because it can be used it inside or ourside the classroom. In that sense, the porpouse of this investigation is manager to analize the technological tools used for the integration of ICT in the teaching process. The theoretical context that underpins the research contributed to the description of theories and concepts based on the technological tools implemented by teachers for pedagogical development. The research was developed with a qualitative methodology, with an interpretive approach, under the hermeneutic method in order to collect information from bibliographic reviews. It is concluded that there are various technological tools known to students, but they are not addressed in a timely manner by teachers. They help in collective work, self-training, research, critical and reflective thinking, developing creative skills and actively participate in the development of the class.

Keywords: Integration of ICT in education, technological tools in pedagogy, pedagogical development of ICT, Educational innovation with ICT.

Resumen

El proceso de formación de las instituciones educativas es el reflejo del desarrollo de la sociedad y de los cambios sociales en beneficio del Estado. Para ello, se requiere del sistema educativo que se adapte a las necesidades del entorno educativo. Con la era digital, el uso de las tecnologías en todos los espacios de la vida cotidiana incluyendo el educativo se hace más frecuente, ya que, son muchas las herramientas tecnológicas que se pueden usar dentro y fuera del aula de clase. En este sentido, el propósito de esta investigación está dirigido a analizar las herramientas tecnológicas usadas para la integración de las TIC en el proceso de enseñanza. El contexto teórico que fundamenta la investigación contribuyó a la descripción de teorías y conceptos basados en las herramientas tecnológicas implementadas por los docentes para el desarrollo pedagógico. La investigación se desarrolló con una metodología cualitativa, de enfoque interpretativo, bajo el método hermenéutico a los fines de recabar la información desde las revisiones bibliográficas. Se concluye que existen diversas herramientas tecnológicas conocidas por los estudiantes, pero no se abordan de manera oportuna por los docentes. Ayudan en el trabajo colectivo, la autoformación, la investigación, el pensamiento crítico y reflexivo, a desarrollar habilidades creativas y participar activamente en el desarrollo de la clase.

Palabras clave: Integración de TIC en la educación, herramientas tecnológicas en la pedagogía, desarrollo pedagógico de las TIC, Innovación educativa con TIC

Introduction

ICTs are developing in all areas of society, where new methods and technological forms are being incorporated to help individuals in their daily lives, fostering dependence on technologies in scientific, work, social, and educational activities. In this way, the integration of ICTs in the pedagogical process is continuously growing, creating innovative resources for actors to use in the school environment, as stated by Araya & Majano (2022), "The use of technological tools and the application of the virtual classroom in the didactic process are means that facilitate learning" (p.5).

Thus, the integration of ICTs in education promotes personalized learning, based on the fact that each student has different realities and learns in different ways, encouraging the development of creative skills, autonomy, and responsibility for developing knowledge, critical and reflective thinking, problem-solving, through the teaching strategies of educators in learning spaces, with educational technological tools that are available and easily accessible to the actors involved in the pedagogical act.

In this sense, digital resources in the educational field for the integration of ICTs are feasible for both teachers and students, facilitating communication among the actors in the process. These include various technological tools with or without web connection, with diverse applications in the educational field. These range from virtual environments, software, and educational games, to information search and sharing, apps, multimedia content, and online communication.

Furthermore, these technological tools are used for solving academic activities through the consensus of ideas, in interactive forms, in real-time, and remotely. Hence, the need arises to identify the technological resources to be applied by teachers that adapt to the content in order to address individual weaknesses presented during the class.

It is important for teachers to update themselves in this digital area to reduce the gap caused by technological illiteracy among educators. Since innovations in didactic resources are not aligned with teacher training, while young people, as digital natives, handle technologies naturally from home. They use mobile devices, computers, and tablets with multiple applications for the development of their daily and academic activities.

In this context, the current teaching process is traditional, oriented toward fulfilling objectives, as classical exams and mechanistic learning prevail to achieve subject approval. This limits the effective incorporation of ICTs in classrooms due to teachers' resistance to educational innovations. This contributes to the practice of banking education and students' reluctance to use ICTs as a medium for sharing knowledge inside and outside the classroom.

Therefore, the researcher decides to intervene in the issue that daily arises in classrooms, motivated by the lack of technological strategies in the educational process. Hence, the following question arises: What technological tools are used for the integration of ICTs in the teaching

process? These tools should be directed by teachers in a didactic way to improve students' academic performance, enhance sociability, and promote comprehensive education to keep up with the digital age.

Methodology

The methodology applied is framed within the qualitative paradigm using an interpretative approach, with the aim of analyzing the technological tools used for the integration of ICTs in the teaching process. The design employed is documental, through consultations of authors in peer-reviewed journals available on the web over the last 9 years, which provide an updated view of technological innovations in the educational field.

In this regard, keywords were used, including: integration of ICTs in education, technological tools used in pedagogy, pedagogical development in ICTs, and educational innovations with ICTs. Likewise, an inductive-deductive analysis was conducted for data treatment.

Results

The integration of ICT has fostered human dependence in all daily activities of society, according to Montoya *et al.* (2019). Therefore, education and the teaching process must stay at the forefront of the digital age, as mentioned by Flores (2020), "The information and knowledge society has driven the use of information technologies in our work, personal, and academic activities" (p. 45). In this way, in the academic field, ICTs are the means through which the teacher uses any technological resource so that the actors socialize knowledge before, during, and after the pedagogical act, through didactic strategies that enhance the teaching process.

In the field of education, the application of ICT by teachers and students presents a wide variety of resources for educational spaces, according to Toro (2017). First, without web connectivity, mobile devices, computers, and tablets can be used as technological tools to watch videos, use software and educational games, slideshows, infographics, and multimedia content. Terms such as gamification emerge: it involves teaching and solving problems through educational games that motivate students to learn in a creative way, according to Espinoza *et al.* (2023).

At the same time, technological resources with internet use offer a range of technological tools, such as virtual environments like Moodle, Canvas, and Classroom: these allow teaching classes and workshops remotely, sending multimedia content, assigning activities, tracking tasks, and evaluations. They also allow forums and personalized tutoring. During activities, students can interact with the teacher in real-time and also with each other to create any content.

Similarly, with internet use, interactive courses, multimedia content, virtual libraries, educational software, online training, and personalized tutoring are available, allowing for the assignment and evaluation of academic activities, improving collaborative work, and individual learning, as stated by Pandolfi (2024). Additionally, AI-powered chatbots create systemic learning processes

to reinforce the unique aspects of each student, according to Caballero & Brítez (2024).

Similarly, Mejias & Gómez (2017) point out that internet use in the daily activities of society is very frequent, and in the educational field, it is used by both students and teachers as a means to transmit or search for information to develop a topic, learn new content, or reinforce what was learned in class, as highlighted by Gómez *et al.* (2021) and Céspedes *et al.* (2020). Furthermore, there are many pedagogical activities (educational games, forums, chats, videos, among others) for online study and continuous learning, providing teachers with the ability to constantly update their academic training, as stated by Caballero & Brítez (2024) and Kerr & Mckensy (2022).

On the other hand, in this digital era, the educational realities of students shape the teaching and learning process, the level of comprehension, and decision-making, improving individual activities effectively, as noted by Céspedes *et al.* (2020). In the technological field, with a variety of innovative resources, the teacher must train and educate students in the use of ICT tools, as mentioned by Tapia *et al.* (2023). Moreover, they bring significant advantages such as personalized training using social networks, reinforcing content through multimedia forms available on the web, simulation of practices, and collaborative work, as noted by Montoya *et al.* (2019).

In the same way, the correct use of social networks in the educational field brings benefits as it makes the teaching process more flexible, according to Chávez & Barahona (2024). The student takes ownership of the learning process based on their learning level and becomes involved in study communities through video and interactive chat, allowing them to attend conferences, workshops, and personalized tutoring, which increases class participation and dialogue for educational purposes among peers, as noted by Gil & Calderón (2021) and De La Hoz et al. (2015).

Moreover, social networks create paradigms for teaching methods, with WhatsApp, YouTube, or Facebook being the most used networks for entertainment or personal interests, as noted by Céspedes *et al.* (2020). They are also used as study groups for common activities, sharing content (chat, audio, video, and text), and conducting academic practices or training workshops in real-time from different locations, as noted by Gil & Calderón (2021).

Flores (2020) emphasizes that through ICT tools, the contents of one or more curricular units can be made known, offering students multimedia activities and participatory classes that capture their interest in learning, according to their learning channels and styles. Reinforcing content at home can be improved through didactic strategies recommended by teachers using ICT tools for the topics assigned in class, creating study autonomy in the learning process, as noted by Montoya *et al.* (2019).

In this regard, the constant use of the virtual world requires an innovative and technologically updated teacher. The educational field presents a challenge due to the existing digital divide between teachers and students, as noted by Pandolfi (2024) and Kerr & Mckensy (2022). Hence, there is a need for teachers to constantly train through various virtual platforms available on

the internet, which provide information on various topics to develop pedagogical skills in the area of ICT, as stated by Caballero & Brítez (2024).

Finally, the integration of ICT tools during class development should establish clear planning regarding what is intended to be achieved by using the technological resource. Additionally, time management should be organized before, during, and as a reinforcement after the pedagogical act. Furthermore, processes should be incorporated to provide technical support to students during the use of technological tools, as noted by Cerna & Maguiña (2022). Likewise, the relevant resource should be selected based on the content that is functional for the class and well-known by the students. All of this requires constant updating of teaching staff for the effective use of ICT during the teaching process.

Discusion

In the new technological landscape, teachers are immersed in a pedagogical paradigm where the teaching process faces challenges with the incorporation of ICT as a means to present content. This article addresses alternatives proposed by various authors that provide answers to which technological tools are used to integrate ICT into the teaching process, utilizing technological resources with or without internet connection for the development of teaching work. Educational institutions must innovate to become attractive to students, streamline educational processes, and make them more effective and efficient.

To begin, regarding digital resources, Araya & Majano (2022) mention that there are many technological tools that allow teachers to innovate in content development. At the same time, Izquierdo (2021) points out that resources implemented as didactic strategies that allow the transmission of knowledge in an enjoyable and engaging way for students can be considered a technological innovation in class development.

In fact, Montoya *et al.* (2019) state that all these devices, such as phones, tablets, and computers, are used by individuals in their daily lives. However, the use of these resources in the pedagogical field enables meaningful learning, as related to Flores *et al.* (2024) and Gómez *et al.* (2021). Additionally, the use of educational software on these technological devices in specific curricular units provides great relevance in achieving objectives for class development, as noted by Flores (2020).

Thus, it is affirmed that within ICT tools, there are resources, software, and games used in the pedagogical act without an internet connection to solve various academic activities. In this context, teachers incorporate videos and slides through video beams to display content. They use educational games for different tasks such as recognizing letters, teaching addition, learning languages, and more. They also download books and virtual libraries for reading and research offline, both in and out of class, aiming to create innovative pedagogical processes that engage students' interest in the class and improve academic performance, in line with Paredes *et al.* (2024).

On the other hand, with the incorporation of the internet as an ICT tool, there is greater capacity for using technological resources, software, information search, and online learning. Thus, the internet has enabled technological advancement, leading to the emergence of the digital age. Izquierdo (2021) portrays the internet as a new vision of teaching due to its ability to interconnect borders through the virtual world and the vast amount of available content: chat, audio, video, text, and images, which can be used remotely, in any space, and in real time, as emphasized by Kerr & McKensy (2022); Mejias & Gómez (2017); Céspedes *et al.* (2020).

Furthermore, given the potential of the internet in the academic field, teachers, using different virtual platforms, can generate didactic strategies for the teaching process that strengthen critical thinking, self-education, continuous research, and the proper use of technological resources at home, as discussed by Mesa *et al.* (2019) and Cerna & Maguiña (2022). Therefore, it is argued that the internet breaks the barriers of the traditional classroom, creating new learning environments without existing borders, with multidisciplinary content in multimedia forms for different students, each with their own limitations, in real time.At the same time, with the use of the internet, social networks emerged as the most widely used communication technological tool in all areas of society and as a teaching process for students and teachers. Authors Gil &Calderón (2021); Chávez & Barahona (2024); Flores *et al. (2024)* reflect on how these new study environments allow participants to create autonomy based on their learning pace, enabling knowledge sharing through collaborative workspaces where everyone contributes to solve academic activities assigned by the teacher.

Also, De La Hoz *et al.* (2015) emphasize the importance of collaborative work manifested in social networks, where through virtual groups, students self-learn, learn from their peers, and contribute knowledge of the content studied in real-time (Céspedes *et al.*, 2020). Based on the above, the researcher affirms that social networks, when properly used in the teaching process, influence the creation of students with independent learning processes and stimulate teamwork by providing real-time content to build consensus in the development of academic activities.

Regarding the teacher's role, Flores *et al.* (2024) and Montes (2023) highlight that teachers must be researchers, guides, and mediators who help students understand their realities, reinforce what they've learned, and contextualize it with the environment around them to obtain useful learning in the pedagogical field and in their professional, social, and cultural lives (Cerna & Maguiña, 2022). Similarly, a creative teacher produces positive results by seeking different ways to plan, including ICT in the pedagogical work through clear objectives, a methodological and technical process of what, how, and when ICT tools will be used to develop the class, as pointed out by Gómez *et al.* (2021) and Acuña *et al.* (2024).

Rosendo *et al.* (2023) argue that educational institutions, according to their technological capabilities and existing realities, are experiencing changes by incorporating innovative resources into the training process. At the same time, Paredes et al. (2024) state that teachers must break the paradigm of traditional teaching methods because, in some cases, the technological illiteracy of teachers reduces the use of didactic resources in the teaching process. However, with the

use of a systematic process through virtual environments where they are trained in technological skills, it may help reduce the existing gap, according to Rosendo et al. (2023).

Therefore, the analyzed articles reveal that there are different tools for integrating ICT into the teaching process during the student's training period. They also demonstrate that technologies are widely known and used by students to assist in the development of various academic activities. In fact, it is affirmed that technology helps foster independent learning for students and creates new learning environments.

Nevertheless, there are currently limitations when incorporating ICT into the teaching process due to the lack of teacher training in managing technological resources. Teachers are not prepared to use technology in their daily activities, as they do not have technical support on how and when to apply technological resources in the classroom. To address this, teachers must be encouraged to engage in continuous research and use of ICT tools in the teaching process.

Finally, the benefits of correctly applying ICT tools in learning spaces result in participative, research-driven students with the capacity to innovate in the academic process, allowing them to take research beyond the knowledge provided by the teacher, with multiple applications and virtual environments for students' self-education in any area of knowledge, and applying it in daily contexts.

Conclusions

The ICT tools are the means by which teachers socialize content in a creative, multimedia, real-time, and remote manner. Therefore, these technological resources, such as mobile phones, computers, and tablets, can be used without internet connection in the development of the lesson, projecting educational videos, scientific content, and various information, in addition to slides, infographics, games, and educational programs that simulate interactive exercises and activities.

On the other hand, technological devices with internet connection offer scientific information in multimedia form or in updated and interactive digital databases, distance learning, educational games and software, emails, chat, blogs, virtual environments, and social networks. All of this helps reinforce students' weaknesses and needs, motivate interest in individual learning, and promote idea exchange between peers and teachers.

Furthermore, virtual environments such as Moodle and Classroom provide distance learning processes with interactive and personalized classes, allowing for activity scheduling and evaluation recording. Similarly, social networks create study communities or groups for collaborative work, consensus-building of ideas, and information exchange between students and teachers via WhatsApp, Facebook, or various applications found on the web.

Additionally, there are educational games and software that simulate real-life content, such as

Duolingo (an app for learning languages), along with programs for coloring, vowels, puzzles, math, and physics simulators, among others. These devices allow access to various applications like slides, infographics, educational videos, forums, and conferences, which can be incorporated as didactic strategies in the pedagogical act through tutoring between teachers and students inside and outside the classroom.

Finally, the integration of ICT tools into the teaching and learning process will directly depend on the teacher's training and preparation in this area. Therefore, it is recommended that educators continually update and research the use of ICT tools in teaching, enabling the inclusion of innovations during the pedagogical act to create competitive educational programs in the digital age, helping students build autonomous learning processes and develop both collaborative and individual work.

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Reading for understanding: The impact of narrative texts in primary education

Leer para comprender: el impacto de los textos narrativos en la educación primaria

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Abstract

The objective of the study was to analyze the impact of narrative texts on reading comprehension in primary school students. The methodology adopted was documentary in nature, where 30 documents related to reading were analyzed. The study explored the connections between pleasurable reading and comprehension, identified both internal and external difficulties affecting reading, and evaluated the benefits of narrative texts.The results highlight the importance of narrative texts in the development of reading comprehension and suggest effective strategies for its improvement. It was concluded that reading comprehension in students is positively influenced by exposure to narrative texts, which foster imagination, enrich vocabulary, promote empathy, and stimulate critical thinking. Additionally, various internal and external difficulties that affect reading comprehension were identified, such as lack of motivation, cognitive difficulties, and a low vocabulary level.

Keywords: Reading comprehension, reading difficulties, primary education, narrative texts.

Resumen

El objetivo del estudio fue analizar el impacto de los textos narrativos en la comprensión lectora en estudiantes de educación primaria. La metodología adoptada fue documental, en la que se analizaron 30 documentos sobre la lectura, se exploraron las conexiones entre la lectura placentera y la comprensión lectora, se identificaron las dificultades internas y externas que afectan la lectura, y se evaluaron los beneficios de los textos narrativos. Los resultados subrayan la importancia de los textos narrativos en el desarrollo de la comprensión lectora y sugieren estrategias efectivas para su mejora. Concluyendo que la comprensión lectora en estudiantes se ve positivamente influenciada por la exposición a textos narrativos, los cuales fomentan la imaginación, enriquecen el vocabulario, promueven la empatía y estimulan el pensamiento crítico. Además, se identificaron diversas dificultades internas y externas que afectan la comprensión lectora, como la falta de motivación, dificultades cognitivas y un bajo nivel de vocabulario.

Palabras clave: comprensión lectora, dificultades lectoras, educación primaria, textos narrativos.

Introduction

In 21st-century educational management, teachers must promote comprehensive reading in primary education through innovative strategies and digital tools, creating a dynamic environment. Comprehensive reading facilitates intellectual and personal development by providing access to information and fostering critical thinking. According to Acosta & Barreto (2023), modern educational management should focus on applying strategies to cultivate a love for reading, leveraging digital technologies that enhance comprehension through interactive and multimedia texts. Additionally, it is necessary to provide teacher training in educational technology. Collaborating with teachers, families, and the community is key to creating an educational environment that promotes comprehensive reading and develops competent and passionate

readers in primary education.

Reading is fundamental for the holistic development of children, providing them with access to knowledge, expanding their vocabulary, fostering their imagination and critical thinking, and promoting their participation in society. In this regard, Rivera *et al.* (2023) state that, in primary education, reading comprehension becomes essential, as children must acquire the ability to read fluently and comprehensively to handle the variety of texts in their academic and personal lives.

According to Palma (2023), narrative texts, such as stories, fables, legends, myths, and novels, play a fundamental role in this process. These texts allow children to develop their imagination by transporting them to fantastical worlds, foster empathy by understanding the emotions and motivations of characters, learn about different cultures and values, enrich their vocabulary, and enhance their critical thinking by reflecting on the actions and values conveyed in the stories.

According to Paredes & Paredes (2023), to promote reading comprehension through narrative texts, various strategies can be employed, such as reading aloud, formulating questions and answers, conducting reading comprehension activities, and encouraging primary students to create their own narrative texts.

These approaches suggest that narrative texts are a powerful tool for developing reading comprehension in primary education. According to Puche & Acosta (2024), it is essential for educators to implement varied strategies to maximize the benefits these texts offer, providing children with the opportunity to enjoy a wide range of stories that enrich their reading experience.

Furthermore, the researchers' experience indicates that among the difficulties observed in primary students with poor reading comprehension are manifested in various ways and can be evidenced through different indicators, one of the most apparent being difficulty understanding the meaning of words and phrases they read, which is reflected in slow and choppy reading. Additionally, these children often struggle to make connections between ideas presented in the text, which prevents them from understanding the plot or the overall message of the story.

In this sense, Leal (2023) states that among the difficulties caused by poor reading comprehension is the inability to extract relevant information from texts. Students may have problems identifying main ideas, important details, or cause-and-effect relationships within the narrative. According to Blanco & Acosta (2023), this translates into a lack of deep understanding of what they are reading and an inability to apply the acquired knowledge to other situations.

Additionally, Maina & Papalini (2023) argue that the lack of reading comprehension in primary school children may be related to difficulties in language development, deficits in cognitive skills such as memory or attention, or even environmental factors like the lack of support at home or in school. It is important to address these difficulties comprehensively by providing persona-

lized interventions that help children develop the necessary skills to understand and enjoy reading.Finally, the study focused on analyzing the classical theories proposed about reading, establishing the connections between pleasurable reading (narratives) and reading comprehension in primary students, uncovering the difficulties that students face while reading, categorized as internal and external, and determining the benefits of narrative texts for improving reading skills.

Methodology

The study was of a documentary type, which, according to Díaz (2011), is defined as a process of collecting, analyzing, and synthesizing information from written and audiovisual sources. A total of 30 documents were reviewed, including scientific articles, books, and postgraduate and doctoral theses. The currency of the documents was not considered, as the scope of the review extended from classical theoretical propositions to the most recent research.

Techniques such as bibliographic review and content analysis were used to investigate how narrative texts improve reading comprehension in primary students. These techniques allowed for the identification of key patterns in the literature, revealing that narrative texts enrich vocabulary, stimulate critical thinking, and foster empathy.

Instruments such as bibliographic cards and summary cards facilitated the organization and synthesis of information, ensuring a solid foundation for analysis and conclusions. The study concluded that exposure to narrative texts is essential for improving reading comprehension in students, providing an effective framework for developing cognitive and emotional skills in primary education.

Results

The findings from the documentary review provide a detailed and structured view of the different dimensions and relevant aspects of the study topic. These categories are the result of a thorough analysis of existing literature, allowing for the identification and classification of the main elements influencing the studied phenomenon. Through this process, a deeper and more comprehensive understanding of the factors, concepts, and relationships involved in reading comprehension and the use of narrative texts in primary education is achievedle.

Table 1
Classics of theoretical propositions on reading

Author	Year	Postulates	Analysis
Emilia Ferreiro	2016	Reading and writing are constructive processes that children engage in based on their prior knowledge and interaction with their environment.	Ferreiro highlights the role of constructivist principles in literacy development, stressing how prior knowledge and social experiences shape children's reading and writing skills. His approach has significantly influenced literacy teaching practices in primary education.

Frank Smith	1990	Reading is a process of prediction and verification. Readers use their prior knowledge to predict what they are going to read and then check their predictions as they progress through the text.	Smith emphasizes the active role of the reader in the reading process. His theory has contributed to the understanding of how readers construct the meaning of the text.
Isabel Solé	1992	Reading comprehension is a complex process that involves the interaction of three levels: the text, the reader, and the context.	Solé proposes a model of reading comprehension that takes into account the characteristics of the text, the reader's skills, and the context in which reading occurs. His model has been useful for understanding the factors that influence reading comprehension..
Michel Certeaul	2008	Reading is a creative activity in which the reader constructs their own meaning from the text.	De Certeau conceives of reading as a process of meaning-making. His approach has contributed to the understanding of reading as a critical and creative activity.
Jerome Bruner	2003	Reading is a form of discovery-based learning. Readers learn by interacting with the text and constructing their own understanding of it.	Bruner emphasizes the importance of the reader's participation in the learning process. His theory has contributed to the development of teaching strategies that promote reading comprehension.

Note: Own elaboration (2024).

The consulted authors agree that reading is a complex process involving the interaction of various factors. However, each author offers a different perspective on the reading process. Ferreiro and Smith focus on the role of the reader in constructing the meaning of the text. Solé proposes a model that considers the characteristics of the text, the reader's skills, and the context.

De Certeau views reading as a creative activity. Meanwhile, Bruner emphasizes the importance of the reader's engagement in the learning process. In summary, the ideas of these authors provide a comprehensive view of the reading process and offer a solid foundation for teaching reading in primary education.

Table 2

Links between pleasurable reading (narratives) and reading comprehension in primary school students.

Author	Year	Postulates	Analysis
Jeanne Chall	1983	Pleasurable reading is an important factor in the development of reading proficiency. Children who read for pleasure are more likely to develop stronger reading comprehension skills.	Chall was one of the first researchers to highlight the importance of pleasurable reading for reading comprehension. Her research has demonstrated that children who read for pleasure have larger vocabularies, better decoding skills, and a deeper understanding of the text.

Stephen Krashen	2013	Free reading is essential for language acquisition and the development of reading proficiency. Children who read for pleasure are more likely to develop greater fluency and deeper reading comprehension.	Krashen is a proponent of free reading and argues that children learn to read better when they engage with material that interests and motivates them. His theory has contributed to the development of reading programs that promote pleasure reading in schools.
Isabel Solé	1992	Pleasure reading is a powerful tool for promoting reading and improving reading comprehension. Children who read for pleasure are more likely to develop a positive attitude towards reading and become independent readers.	Solé has developed a reading comprehension model that includes motivation as an important factor. His model has contributed to understanding how pleasure reading can enhance reading comprehension.
Richard Allington	2006	Pleasure reading is a key factor for academic success. Children who read for enjoyment are more likely to achieve better results on academic performance tests.	Allington has conducted research demonstrating that pleasure reading is linked to better academic performance across various subjects. His research has contributed to the promotion of pleasure reading as a tool for enhancing learning in schools.

Note: Own elaboration (2024).

The consulted authors converge on the idea that pleasurable reading has a significant influence on the development of reading proficiency in primary education students. This practice not only involves an act of enjoyment but also carries a range of tangible benefits for the holistic development of the individual in the reading domain. As children immerse themselves in pleasure reading, they have the opportunity to naturally expand their vocabulary by encountering new words in meaningful and engaging contexts.

Additionally, this experience helps improve their decoding skills by exposing them to a variety of texts and literary styles, which strengthens their overall comprehension of the text and their ability to extract meaning from what they read. This approach also promotes smoother reading fluency and a more agile reading pace, as children are more engaged and motivated when they enjoy what they are reading.

Furthermore, fostering a positive attitude towards reading from an early age can have a significant impact on long-term academic performance. Students who enjoy reading tend to dedicate more time and effort to this activity, which, in turn, reinforces and consolidates their reading skills. In short, pleasurable reading is not only a recreational activity but also a powerful tool for the growth and holistic development of students in the realm of reading proficiency.

Table 3
Benefits of narrative texts

Benefits	Relevant theory	Analysis
Development of story comprehension	According to information processing theory, narrative texts provide a clear structure that helps students organize and retain information, facilitating their understanding of the story.	Narrative texts allow students to practice identifying narrative structure, predicting events, and understanding cause-and-effect relationships, which enhances their ability to comprehend and retain information.
Empathy and understanding of characters	From a socio-emotional development perspective, exposure to complex characters in narrative texts allows students to practice empathy and understand the emotions and motivations of others.	By understanding the experiences and perspectives of characters in narrative texts, students develop skills to infer mental states and better comprehend the complexities of human relationships, which fosters empathy and emotional awareness.
Vocabulary enrichment	Language processing theory suggests that exposure to a wide variety of words in meaningful contexts facilitates the learning and retention of new words, which enriches students' vocabulary.	Narrative texts provide a wealth of vocabulary that challenges students to infer the meaning of unfamiliar words from context, thereby expanding their lexical repertoire and improving their overall comprehension of the texts.
Promotion of critical thinking	According to cognitive development theory, narrative texts stimulate critical thinking by encouraging students to reflect on the characters' decisions, moral dilemmas, and the underlying themes of the story.	By analyzing key elements of narrative texts, such as conflicts, characters, and themes, students develop skills to evaluate information, make connections between ideas, and form their own opinions, which strengthens their critical thinking and analytical abilities.
Stimulation of imagination	From the perspective of cognitive development theory, narrative texts foster imagination and creativity by offering fictional worlds and vivid characters that spark students' curiosity and interest.	As they immerse themselves in the stories and characters of narrative texts, students develop skills to visualize scenarios, anticipate events, and create connections between fiction and their own experiences, which stimulates their imagination and creativity.

Note: Own elaboration (2024).

Table 3 presented offers a holistic and detailed understanding of how narrative texts positively impact reading comprehension in primary school students. By supporting each benefit with relevant theories from the educational and psychological fields, it provides a solid foundation for understanding the underlying mechanisms behind these advantages.

From information processing theory to a focus on socio-emotional and cognitive development, it explores how exposure to narrative texts facilitates the mental organization of information, promotes empathy, enriches vocabulary, stimulates critical thinking, and fosters creativity. Moreover, the detailed analysis highlights how these benefits translate into educational practice,

showing how students develop reading comprehension skills as they engage with narrative texts in the classroom, which in turn influences their academic performance and appreciation for reading.

Table 4
Difficulties in schoolchildren's reading, classified as internal and external

Type of difficulty	Description
Internal	
Lack of motivation	Lack of interest in reading, lack of emotional connection with the content, perception of reading as a boring or irrelevant task.
Cognitive difficulties	Attention, memory, linguistic processing, or decoding skill problems that hinder text comprehension.
Low vocabulary level	Limitations in knowledge and understanding of words, which hinder overall comprehension of the text and the inference of meanings.
Emotional difficulties	Stress, anxiety, or insecurity that can affect concentration and comprehension during reading.
External	
School environment	Lack of access to appropriate reading materials, an unstimulating learning environment, or lack of support and motivation from teachers.
Pedagogical strategies	Inadequate teaching approaches, lack of diversification in teaching methods, absence of activities that promote reading comprehension.
Type of reading	Inappropriate texts for students' reading competence level, lack of variety in genres and topics, excessive reading material.

Note: Own elaboration (2024).

Table 4 provides an overview of the possible difficulties that students may face in their reading process, addressing both internal challenges and those arising from the school environment and pedagogical strategies used. When considering internal difficulties, obstacles that students themselves may experience are examined, such as difficulties in word decoding, lack of reading fluency, comprehension problems, as well as limitations in vocabulary and prior knowledge. These internal difficulties can be influenced by individual factors, such as cognitive ability, prior learning experiences, and the emotional development of students.

On the other hand, when exploring external difficulties, challenges arising from the school environment and pedagogical strategies employed are analyzed, such as the lack of adequate educational resources, the quality of the curriculum and instruction, as well as the lack of support and motivation from educators. These external difficulties can have a significant impact on the reading learning process, influencing students' motivation, engagement, and academic performance. Together, this comprehensive analysis provides a deep understanding of the various factors that can affect students' reading abilities and highlights the importance of addressing both internal and external aspects to promote effective reading development.

Discussion

When reviewing the theories that frame the object of study and the elements connected to it, an initial explanation is provided on how the classical theories on reading contribute to establishing appropriate strategies using narrative texts to improve reading comprehension. In this regard, Ferreiro (2016), known for her research on literacy processes and the acquisition of written language in children, presents her ideas on the construction of knowledge and reading comprehension as an active and constructive process. These ideas inform strategies that encourage student participation in meaning-making from narrative texts.

Meanwhile, Smith (1990), recognized for his theory on the natural learning process of reading, highlights the importance of immersion in meaningful texts and learning through understanding, rather than memorization or decoding. He proposes strategies focused on exposing students to a wide variety of significant narrative texts and developing deep comprehension skills.

Similarly, Solé (1992), who has extensively researched teaching reading comprehension and constructing meaning from texts, suggests that her ideas on teaching through metacognitive strategies, such as self-regulation and monitoring, can be useful in designing activities that help students reflect on their comprehension and employ effective strategies while reading narrative texts.

For his part, de Certeau (2008), focusing on cultural theory and everyday practice, offers ideas on interpretation and appropriation of texts, which can be relevant to reading comprehension. His concepts of reading as a creative activity and the reader's reinterpretation of texts can inspire teaching approaches that promote active interpretation and personal connection with narrative texts.

Bruner's (2003) analysis has significantly contributed to the field of cognitive psychology and education, emphasizing the importance of narrative in learning and understanding. His theories on narrative structure and the role of narrative in meaning-making can inform strategies that utilize narrative texts to facilitate comprehension, such as modeling narrative structure and analyzing key elements of a story.

When addressing the links between pleasurable reading (narratives) and reading comprehension in primary school students, Chall (1983) emphasized the importance of intrinsic motivation in reading and how the enjoyment of reading can drive readers' engagement and interest. Thus, pleasurable reading fosters a conducive environment for practice and exposure to a variety of texts, which contributes to improved reading comprehension through increased fluency and familiarity with different writing styles and genres.

Likewise, Krashen (2013) proposed his theory of comprehensible input, which holds that readers improve their comprehension and acquisition of language skills when they engage with texts that are both interesting and understandable to them. In this way, pleasurable reading provides

a meaningful and relevant reading experience for readers, enhancing their motivation and facilitating comprehension while expanding their vocabulary and language knowledge.

For Solé (1992), it is important to create a pleasant and motivating reading environment in the classroom to promote reading comprehension. Pleasurable reading is based on personal choice of texts and the freedom to explore different topics and genres, which can boost readers' self-esteem and willingness to engage with reading, ultimately improving their comprehension.

Allington (2006), on the other hand, highlighted the relationship between the amount of reading and reading comprehension, arguing that students who read more tend to better understand what they read. Therefore, pleasurable reading promotes a positive attitude toward reading and the willingness to read regularly outside school hours, increasing exposure to different types of texts and strengthening comprehension skills over time.

Referring to the benefits of narrative texts in fostering reading comprehension, Ccoa (2023) states that the development of story comprehension is fundamental for reading comprehension, as it involves the ability to understand the sequence of events, identify characters, understand their motivations, and anticipate outcomes. Ascencio, Gonzales, Ibañez & Ascencio (2023) argue that by being exposed to narrative texts, students practice identifying narrative structure, improving their ability to organize and retain information. Furthermore, familiarity with different types of plots and narrative structures helps them anticipate events and understand cause-effect relationships, contributing to a deeper understanding of the story as a whole.

Regarding empathy and understanding of characters, Acosta (2024) points out that it is important for teachers to foster empathy in students, as these are fundamental aspects of reading comprehension, allowing students to emotionally connect with the story and understand the motivations and emotions of the characters. In this regard, Bort & Gil (2023) suggest that when exposed to complex characters in narrative texts, students practice empathy by putting themselves in the characters' shoes and understanding their experiences and viewpoints. This skill not only improves comprehension of the story but also fosters emotional awareness and strengthens social and relational skills.

Additionally, when analyzing vocabulary enrichment, Rivera *et al.* (2023) consider this element decisive for reading comprehension, as a wide range of words facilitates understanding of complex texts and recognition of implicit meanings. Therefore, Ccoyo & Turpo (2023) emphasize that by exposing students to a variety of words in meaningful contexts through narrative texts, they improve their vocabulary by deducing the meaning of unknown words from the context. This, according to Cieza (2023), strengthens their ability to understand and retain information, as well as express themselves more precisely and effectively, both orally and in writing.

Regarding the promotion of critical thinking, Leal (2023) states that it is important for reading comprehension as it involves the ability to analyze, evaluate, and question the information presented in the text. Hence, according to Chacaguasa & Larreal (2023), by interacting with the

fundamental elements of narrative texts, such as conflicts, characters, and themes, students develop skills to evaluate information, make connections between ideas, and form their own opinions. This strengthens their ability to think critically and analytically, which improves their understanding of complex texts and their capacity to apply critical thinking in other areas of life.

As for the benefits of narrative texts for improving students' reading comprehension, Quezada, Aravena, Maldonado & Coloma (2023) consider that stimulating the imagination is fundamental for reading comprehension, as it involves the ability to visualize scenarios, anticipate events, and create connections between fiction and reality. In this regard, Ccoyo & Turpo (2023) explain that by immersing themselves in the stories and characters of narrative texts, students develop the ability to imagine situations and events, which helps them comprehend and remember the information presented in the text. This not only enhances reading comprehension but also stimulates creativity and abstract thinking.

Similarly, when addressing the reading difficulties faced by students, classified as internal and external, starting with those related to students (internal), Herrera & Villafuerte (2023) point out that these are connected to a lack of motivation, which can inhibit the student's interest and engagement with reading, hindering the development of comprehension skills. Therefore, recognizing this difficulty allows for the implementation of strategies using interesting and relevant narrative texts to increase the student's intrinsic motivation and foster a pleasant learning environment.

According to Acosta (2023), cognitive difficulties, such as problems with attention or memory, can affect a student's ability to process and comprehend the information they read. In this regard, Juana & Mateo (2023) argue that by acknowledging these difficulties, narrative texts with clear and coherent structures can be employed to facilitate comprehension and reduce the cognitive load on the student.

For Chacaguasa & Larreal (2023), a low level of vocabulary can limit the understanding of complex texts. Therefore, using narrative texts rich in vocabulary and providing activities that foster the expansion of the student's lexicon help overcome this difficulty while also strengthening reading comprehension.

Additionally, according to Acosta & Blanco (2022), emotional difficulties, such as stress or anxiety, can interfere with a student's ability to concentrate and understand what they read. Incorporating narrative texts that address relevant emotional topics and providing a supportive emotional environment can help students feel more comfortable and engaged with reading.

Regarding external difficulties, Juana & Mateo (2023) indicate that the school environment can influence reading comprehension through factors such as the availability of resources, the support from teaching staff, and the reading culture in the classroom. This suggests that recognizing the importance of the school environment allows for measures to be implemented that create

a conducive atmosphere for reading comprehension, including the use of narrative texts that reflect the diversity and interests of students.

Additionally, pedagogical strategies used by teachers present challenges, as they can significantly affect students' reading comprehension. Incorporating narrative texts into the curriculum and using pedagogical approaches that encourage participation, reflection, and discussion about the texts can improve both comprehension and enjoyment of reading. Ascencio *et al.* (2023) argue that the type of reading selected can influence students' comprehension and interest. Meanwhile, Paredes & Paredes (2023) suggest that by choosing narrative texts appropriate for the student's skill level and interests, comprehension difficulties can be overcome, promoting a rich and meaningful reading experience.

In this regard, Bruner (2018) asserts that narrative texts play a fundamental role in enhancing reading comprehension in primary school students by offering a rich and immersive reading experience. These texts present stories that capture readers' imaginations, transporting them to fictional worlds where they can explore diverse situations, characters, and settings.

Moreover, Bruner (2015) believes that by immersing themselves in these narratives, students not only improve their ability to comprehend the literal meaning of what they read, but also develop more advanced comprehension skills, such as inference, prediction, and interpretation. The structure of narrative texts, which often includes an introduction, a development, and a conclusion, provides students with a clear framework for following the sequence of events and understanding their relationships.

Finally, narrative texts provide primary school students with an effective platform to enhance their reading comprehension by offering an engaging and meaningful reading experience that fosters the development of key cognitive and emotional skills.

Conclusions

Analyzing the classic theories proposed on reading reveals that the classic theories suggested by prominent researchers such as Emilia Ferreiro, Frank Smith, Isabel Solé, Michel de Certeau, and Jerome Bruner provide a deep understanding of the theoretical foundations underpinning the reading process. These authors offer a variety of perspectives addressing important aspects of reading development, such as language acquisition, text comprehension, and meaning formation. Their theoretical contributions are fundamental to understanding how students construct meaning from the texts they read and how educators can design effective strategies to promote reading comprehension in the classroom.

Regarding the links between pleasurable reading and reading comprehension in primary students, the results show a direct connection between pleasurable reading, especially through narrative texts, and the improvement of reading comprehension in primary students. In this sense, authors such as Jeanne Chall, Stephen Krashen, Isabel Solé, and Richard Allington have

highlighted how reading for pleasure not only increases motivation and interest in reading but also strengthens comprehension skills, vocabulary, and reading fluency. These findings underscore the importance of promoting positive and engaging reading experiences in the school environment to cultivate competent and passionate readers.

Regarding the identification and understanding of students' reading difficulties, both internal and external, the results indicate that they are significant for designing effective interventions to address these barriers. Factors such as lack of motivation, cognitive difficulties, low vocabulary levels, emotional challenges, the school environment, and inadequate pedagogical strategies can negatively affect reading comprehension. By recognizing these difficulties and their underlying causes, educators can implement differentiated and personalized approaches to help students overcome these obstacles and improve their reading competence.

Finally, the research highlights a wide range of benefits associated with the use of narrative texts in primary education. These benefits include the development of story comprehension, empathy and understanding of characters, vocabulary enrichment, the promotion of critical thinking, and the stimulation of imagination. By exposing students to a variety of narrative texts, educators can provide meaningful learning experiences that not only enhance reading comprehension but also promote students' overall development in multiple cognitive, emotional, and social dimensions.

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Review article
Artículos de revisión

The UNA: Challenges and trends guiding our future

La UNA: Desafíos y tendencias que orientan nuestro futuro

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Abstract

"The UNA: Challenges and trends shaping our future" is a reflective analysis on the present and future of higher education, with a specific focus on the National Open University (UNA). It examines the adoption of hybrid pedagogies, which play a substantial role in the educational debate. The essay discusses the role of universities in being a key player in society and advocates for a strong commitment to creativity and improvement. The future of the UNA is promising; it can be achieved through careful planning and visionary leadership, in order to overcome challenges and establish itself as a leading institution in the training of professionals committed to the future. Overall, this study provides a comprehensive and structured overview of university challenges and trends, emphasizing the need for adaptation and continuous improvement in the field of education.

Keywords: Higher Education, National Open University (UNA), hybrid pedagogies, educational challenges.

Resumen

"La UNA: Desafíos y tendencias que orientan nuestro futuro" es un análisis reflexivo sobre el presente y futuro de la educación superior, con enfoque específico en la Universidad Nacional Abierta (UNA). Se examina la adopción de pedagogías híbridas, las cuales ocupan una parte sustantiva del debate educativo. En el artículo se razona sobre el papel de las universidades a la hora de ser el todo en la sociedad y a la defensa vehemente por una dedicación persistente a la creatividad y la mejora. El mañana de la UNA es promisorio; se puede llevar a cabo con una planificación cuidadosa y un liderazgo visionario, para superar los desafíos y afirmarse como una institución líder en la formación de profesionales comprometidos con el porvenir. En conjunto, este estudio proporciona una visión integral y estructurada de los desafíos y tendencias universitarias, subrayando la necesidad de adaptación y mejora continua en el ámbito educativo.

Palabras clave: Educación superior, Universidad Nacional Abierta (UNA), pedagogías híbridas, desafíos educativos.

Introduction

Organizations in the 21st century have been in constant flux, aiming to adapt to the country's realities and the new paradigms on which society has been centered. Political and economic pressures have driven social and cultural changes that characterize Venezuelan society and, consequently, impact both the internal and external contexts of organizations.

In this continuous state of institutional change, such transformations appear to be fixed and not accidental; they are evident across various social domains, including the nature of social relations, work, and particularly the development and rise of new information and communi-

cation technologies. Additionally, the demands of economic globalization, such as quality, timeliness, competitiveness, and increased access, along with the intensification of educational globalization, call for internationalization as an active response to the globalization of knowledge.

In light of this reality, especially within the university context, a new vision is required. Venezuelan universities, therefore, represent an expression of social democratization and have become a project of interest for the Venezuelan State, especially today when society is experiencing a period of uncertainties and ambiguities. These institutions are called upon to provide social leadership and address the demands of the nation's integral development, taking on the responsibility of participating in the construction of a new country.

Regarding these issues, dilemmas and discussions about the university's role in acting within a society aspiring to be participatory and self-managed are prevalent within these institutions. Thus, public and private universities are in debate, facing ruptures, challenges, readjustments, and emerging proposals aimed at addressing the crisis, the transition, and the conceptions of authority, knowledge, and especially the social function of these institutions. This essay analyzes these trends and how institutions can adjust and thrive in an ever-evolving environment, requiring well-planned strategies of coordination, partnerships, and proposals.

Traits and trends in the current context

The topic of globalization is widely discussed today. It is recognized as a modern social phenomenon, driven primarily by scientific and technological advances, especially in communication and electronics, along with the aspirations of multinational corporations. Globalization is defined and explained in various ways; Reyes (2008) provides some ideas that, in a way, constitute a simplified synthesis of the meaning and scope of globalization: Globalization is a set of theoretical proposals that highlight two major trends: (a) global communication systems, and (b) economic conditions, particularly those related to the mobility of financial and commercial resources.

However, Brünner offers an interpretation of globalization as the manifestation of four phenomena closely linked to one another: (a) the universalization of markets and the advancement of post-industrial capitalism, (b) the diffusion of the democratic model as the ideal form of political organization for States, (c) the telecommunications revolution, leading to the so-called "information society," and (d) the generalization of a cultural "climate" of the era, known as postmodernity.

Moreover, the so-called knowledge, information, and learning society in the digital age, as a paradigm for reorganizing the forms of production, organization, management, and communication in all areas of human activity, is inaugurating new fields that have fostered the development of a new civilization (cultural revolution), which has been accelerated by the emergence of the COVID-19 pandemic.

In addition to the economic, productive, organizational, digital, informational, and commercial spectrum, this phenomenon presents significant challenges in the realm of state responsibilities in countries like Venezuela. The country has entered a new stage, and therefore, all its systems and subsystems have as well. In recent years, Venezuela did not align its expectations with the growing process of globalization, nor did it attempt to align national development with it.

This phenomenon, which had been taking shape for several years, produced structural effects on the economy, society, and politics, exacerbating changes in the economic model. This scenario brought severe consequences for the structure of the State, with deregulating reforms and intervention in social policy, generating sharp increases in poverty, informality, migration, job insecurity, exclusion, and the deterioration of living conditions for the population.

Thus, one of the fundamental challenges facing higher education is to overcome these obstacles in order to help build structural changes in the country while addressing social and environmental needs. This requires appropriate curricula, content, and educational models, as well as the adaptation of teaching qualifications to stay at the forefront of these transformations in a dynamic way.

Liquid society, technology, and digitalization

This new 21st-century society is rapidly being built with information and communication technologies. Its foundations support daily activities across the spheres of the economy, health, housing, food, transportation, and, of course, education. Institutions dedicated to the transmission of knowledge are compelled to incorporate these tools for both general and specialized education; however, their integration into the educational process also presents challenges.

We are witnessing the dissolution of the human sense of social belonging, giving way to a more defined individuality. The human being experiences independence, and society is no longer a mere sum of individualities but the collective of those individualities. According to Bauman (2003), we are in the context of liquid modernity, where the challenge lies in building a future and finding solutions to contemporary difficulties, as well as understanding the new ways of relating to knowledge that emerge in today's dynamics.

Bauman (2003) explores the attributes of capitalist society that have endured over time and argues that everything changes from one moment to the next; we are consistent with these changes and think that nothing is permanent. We live in a present where everything is consumable and elastic, including human beings. The values and dogmas of previous generations were solid (as Berman noted), but today, nothing is unbreakable or fixed. This leads to significant variations across all social, economic, political, cultural, and educational spaces.

It is therefore necessary to establish new methods and adopt tools and concepts that allow us to engage with the emerging scenarios for knowledge and interaction between individuals. Li-

quid learning (Bauman, 2008) is "a type of education that adapts to change," offering a wealth of possibilities in a globalized world. It is a form of education that breaks with established solidity and prepares individuals to live in a changing world filled with information, networked behavior, connectivity, and engagement in communities of practice.

The adaptation of the UNA to these changes is framed within the context of the digital, knowledge, and information society, or learning society, embodying the voice of this liquid volatility. This adaptation involves not only convergent and divergent dynamics but also the inclusion of technology in academic spaces, resulting in changes in the management and production of knowledge.

Hybrid pedagogies

In the academic realm, the experiences and lessons imposed by the COVID-19 pandemic have led to the projection of a hybrid model in the teaching-learning process, adapted to new technologies. The teaching model at the UNA must adapt to this technology, as it allows for synchronous and asynchronous communication across distant locations.

Thus, the hybrid concept offers an opportunity for coherence in teaching and learning, as it implies growth and spatial-temporal stability (synchronous and asynchronous) within the educational environment. According to Duart *et al.* (2008, p. 76), "this training modality is defined by the intertwined use of presence and non-presence in the classroom. This can only be achieved by modifying the design and teaching planning of courses and subjects."

In this context, face-to-face interactions are integrated with the opportunities offered by digital technology. This communicative association opens up a new didactic space, where both teachers and students use physical and intangible tools to model meaningful learning. Hybrid pedagogy requires a flexible curriculum that integrates in-person and virtual activities in a coherent manner.

On the other hand, Graham (2006) emphasizes that hybrid learning is the fusion of two archetypal learning environments, where traditional face-to-face learning has existed for centuries. However, the exponential growth and expansion of distributed learning environments align with the increasing technological possibilities for distributed communication and interaction. Graham argues that, in the past, there has been a significant contrast between these two learning environments, using different combinations of media and methods, and targeting different audiences.

The main challenge in designing and developing hybrid environments lies in understanding that this is a new educational modality with particular characteristics. When well understood, it can lead to the best use of both in-person and virtual possibilities. Viewing hybrid environments as either in-person environments with virtual support elements or virtual environments with some in-person encounters reduces the full potential of this modality.

National university scenario

In the Venezuelan case, universities today find themselves in an increasingly complex and dynamic environment, facing the challenge of changing and innovating an educational method that presents conservationist and traditionalist characteristics at all levels and modalities of education. In this scenario, the university organization is presented with numerous challenges, to which it must respond both within the system itself and from the institutional position of each university. A process of university transformation is necessary, with policies, programs, and management styles that allow for revitalization.

Today, the higher education system has led to universities that, with few exceptions, do not meet minimum quality standards in university functions such as undergraduate and postgraduate teaching, research and innovation, humanities development, artistic creation and production, extension, and communication. This has caused distortions in the functioning of universities, low student enrollment, insufficient funding, and a considerable loss of academic human capital.

Venezuelan universities resist; their staff suffers from deep demotivation, induced by an administration that imposes its manifest incapacity. Institutions lack the authority to respond to their staff, who endure low wages that restrict their ability to face the harsh economic and social realities. Students, maintaining low enrollment, struggle to participate in virtual spaces applied in this new reality, many of them without the resources or basic services (computers, smartphones, and connectivity) necessary for online learning. At the same time, university authorities bear the weight of managing institutions with insufficient financial resources to maintain large infrastructures and obsolete technological resources.

Education from home is promoted, assuming that everyone has computers, smartphones, and internet access, along with electricity. However, the virtualization of education faces significant challenges, given the lack of equipment, connectivity, and economic resources, as well as limited opportunities for technological updates. In this context, universities suffer from neglect, relying on the goodwill of their staff to continue functioning, having been left to their fate in terms of funding and without a national development strategy, which should be the foundation of the role of state universities worldwide.

In this context of demands, the Venezuelan university system is called to reimagine itself with new formats that keep it current, fulfilling its social and scientific relevance and transcending existing boundaries. The trend is to project higher education into a "new stage, not from the limits of existing transformation, but from the rupture brought by a new paradigm of lifelong learning and knowledge management, with social responsibility" (Aponte, 2008, p. 147).

Beyond some advances and the current uncertainties, state funding for universities continues to maintain an extremely complex environment for institutional management, forcing them to adapt to the logic of the market and business, which undermines their educational and public

mission. Despite this adverse framework, UNA has managed to maintain its standing, as evidenced by the preference of students to pursue undergraduate and postgraduate degrees.

The National Open University

The creation and launch of the UNA on September 27, 1977, did not simply represent adding another university to the existing ones at the time. The formation of UNA embodied a bold effort at innovation, moving from the design phase to full and regular operation through a large-scale model that had no prior opportunity to be tested.

The proposal to establish a large distance-learning university—UNA—was initially well-received politically. UNA emerged as an alternative for training qualified and entrepreneurial professionals in areas crucial to social development, ensuring their integration into both national and international labor markets.

Additionally, the University has gone through various stages in its academic history. Gradually, it has evolved, responding to the changes that have taken place in the social, political, and economic contexts, even as it has consistently upheld the fundamental principles that form its core pillars, allowing it to endure over time.

University innovation is therefore a necessity in today's world. Given the new realities of globalization, the creation of larger economic zones, the acceleration of communications, competitiveness, and the emergence of new knowledge, higher education faces significant challenges. These can only be addressed through profound and systematic processes of change.

UNA context

Universities have been assigned various functions that, while historically they have taken on different forms, have nonetheless maintained a certain continuity. In recent years, the role of promoting the social, cultural, and economic development of the surrounding society has been increasingly emphasized. The current outlook forces us to view higher education through a variety of contexts influenced by political variables. One such scenario includes ongoing economic decline, reduced private-sector employment, public-sector job restrictions, and insecurity. All these factors point to the continuation and worsening of the university crisis, compounded by ongoing migration.

The economic crisis and its mismanagement have undoubtedly affected budgetary resources and led to a decline in both faculty and student numbers. Additionally, it has impacted the security of university buildings, which have become targets for theft and vandalism, resulting in the loss of technical equipment and much of the electrical, sanitary, and management infrastructure.

The University must develop strategies based on its distinctive capabilities, while also considering

the social, economic, and regulatory contexts. In the proposal process, several problems affecting the university were identified and grouped according to their process and substantive function. Below, the problems are outlined, followed by proposals on how these challenges can be viewed as opportunities for UNA.

Current situation of campuses, staff, technology, and advisors/counselors

- Local Centers and Support Units with damaged infrastructure and no students.
- Facilities in use and disuse.
- Need for teaching, administrative, and labor staff.
- Current need for technological infrastructure at UNA.
- Lack of connectivity.
- Obsolescence and deterioration of equipment.

The Local Centers, which serve as the university's representation points in various states, face similar problems across the country. These include the deterioration of physical infrastructure, the lack of basic services like potable water and electricity, the absence of air conditioning, and the lack of internet connectivity. Furthermore, the institution has been the victim of theft and vandalism, with most incidents remaining unresolved. These criminal acts have led to the loss of essential equipment and materials for university teaching, which cannot be replaced due to budget constraints.

To describe the current conditions at UNA, one could visit any of its campuses, observe what is seen, and fill in the name of any city. UNA shares a mirrored reality with its sister institutions. This refers to its universe: infrastructure, teaching, labor, and administrative staff, and students.

Although some of its buildings have been empty or nearly empty in recent years, it is the human capital that has kept the university alive. UNA should be capable of managing not only a vast infrastructure but everything that comes with it, as it once did. However, the university has failed to meet its obligations to provide the necessary resources, leading to the abandonment of its facilities.

Another issue is the academic offerings, which are weak, along with the absence of students and the lack of academic staff in several areas. This creates disorganization between administrative and academic processes and resources, leading to problems in coordinating methods and a lack of investment in physical, technological, and human resources.

Administrative processes, such as purchasing materials, are slow, delaying the execution of tasks and ignoring established schedules. Delays in the approval of human resource contracts and financial allocations reduce the visibility and competitiveness of the university. Administrative processes support core functions, but the management of these processes faces common problems, affecting multiple actors. These issues are mainly evident in the lack of administrative staff and financial resources.

Another key challenge is the obsolescence of technological infrastructure and the lack of connectivity, which does not adequately support academic processes, leading to delays. There is a lack of development guidelines for a virtual wellness program that would impact administrative processes. The infrastructure is not suitable for such processes, resulting in low participation and integration due to the absence of appropriate, well-equipped spaces where users can access information.

Overall, there is a deficiency and insufficiency in the physical infrastructure, equipment, and connectivity, which prevent UNA from maintaining the level of visibility and image positioning necessary to ensure the successful execution of its core functions. This deficiency also limits the ability to carry out various university activities freely.

Enrollment, advising/counseling, instructional material development, and evaluation

- Low undergraduate enrollment.
- Degree programs with few students.
- Failures in processes.
- Development of teaching resources.
- Evaluation strategies.

The main issues affecting student enrollment at UNA are largely a result of the economic crisis and emigration, leading to a decrease in the number of new students. Another factor impacting students is the lack of effective communication channels with advisors, either due to a shortage of advisors or the lack of connectivity and equipment. In addition, the absence of adequate follow-up and evaluation strategies often renders them ineffective. Students also miss opportunities to participate in wellness programs, sometimes due to a lack of awareness, as they often do not receive timely information, which leads to dissatisfaction.

UNA is current Integrated Information System has notable weaknesses. Although the system met user demands in the recent past, the technology it relies on has become obsolete. A comprehensive diagnosis is needed to identify areas for improvement, which would allow for more efficient management. Moreover, new teaching and learning guidelines must be established to help students acquire knowledge, skills, and competencies. It is essential to move beyond the mechanical repetition of information, which is now easily and quickly accessible.

In this context, university performance evaluations are often seen as a way to assess the knowledge, skills, and competencies required in future professional life, which are reflected in grades. Currently, there is no commonly accepted model that serves as a reference for how to optimally assess learning that takes place remotely.

Furthermore, the availability of written and digital bibliographic resources is limited. Unlike printed books, which involve significant costs for paper, ink, and printing, digital files can be copied

thousands of times without additional expenses. However, creating, distributing, and updating digital materials is not necessarily cheaper. The ongoing crisis has slowly integrated e-books into university libraries, aligning with the current learning contexts where online resources are becoming increasingly vital.

Digital technologies offer immense opportunities in terms of access, storage, and information transmission. Digital reading environments also offer ways of presenting information that are difficult or impossible to replicate in print, significantly altering how we read. Digital materials can be adapted to the competency levels of individual readers, facilitating flexible learning processes tailored to each learner's needs and development. However, empirical research indicates that the characteristics of digital screens may also encourage less favorable reading habits and thinking patterns.

UNA could capitalize on the benefits of modern educational technology by enhancing the development of digital audiovisual content and adapting evaluation strategies to the nature and characteristics of technology-mediated education.

According to an analysis of the most relevant problems in the institution's core and supporting functions, the most recurring issues include the lack of coordination in core teaching functions, the absence of strategies and policies in various processes, communication and information failures, poor management, little to no allocation of resources for Local Centers, insufficient technological resources and tools, and delays in processes that integrate academics and administration, which result in fundamental issues.

Challenges, trends, and opportunities shaping our future

The university must develop its strategies based on its distinctive strengths while also considering the social, economic, and regulatory context. Incorporating a culture of continuous information gathering—both internal and contextual—is essential. This information, when viewed holistically and from a competitive perspective, allows for a strategic analysis that helps define where we want to be in the coming years. Below, we outline the challenges and trends, and how they present opportunities for UNA.

Current situation of facilities, personnel, technology, and advisors/counselors

- Facilities in use and disuse, with deteriorated equipment, furniture, and green spaces.
- Local Centers and Support Units without students.
- Shortage of administrative and labor staff.
- Urgent need for technological infrastructure at UNA.
- Lack of connectivity.
- Obsolescence and deterioration of equipment.
- Insufficient academic staff.
- Lack of motivation.

Enrollment, advising/counseling, instructional material development, and evaluation

- Low undergraduate enrollment.
- Programs with few students.
- Process failures.
- Increase in postgraduate enrollment.
- Mixed educational system.
- Development of teaching resources.
- Evaluation strategies.

UNA has an opportunity to align itself as an agile organization in a constant state of change to meet its objectives in a rapidly shifting environment. This requires a high capacity for anticipation and a decisive action-oriented mindset. The university must continuously adapt to new societal needs and requirements, redesigning strategies for advising, supporting, and tracking students' trajectories. Early interventions in cases of academic lag or potential dropout are essential, as is strengthening the teaching and learning processes through didactic-pedagogical strategies focused on meaningful learning, integrated into the curriculum.

UNA should become a university that fully leverages current educational technology, promotes the development of digital audiovisual content, and adapts its evaluation strategies to the nature and characteristics of technology-mediated education. Additionally, the institution must remain competitive in teaching, research, outreach, engagement, and services.

The most complex challenge to date is to conceive and promote a new way of approaching the university's system, with a central focus on developing human, technical, and institutional capacities. These are essential to fulfilling new missions in an uncertain and rapidly changing social context marked by increasing inequality. Neither an adjustment nor a reorganization of the existing system will suffice for the current situation; the necessary change demands potent strategies that reorganize and restructure the entire model. This change must also shift the prevailing perceptions and beliefs regarding how to manage processes and with whom.

It is important to remember that organizations are led by people, and their actions depend on their mindset. For a traditional university, it is often difficult to adapt to the accelerated changes required by current trends and mega-trends, as these often contain contradictory and even antagonistic elements. Reforms cannot simply be decreed; they must evolve through a process in which multi- and transdisciplinary teams, with boldness, creativity, and cutting-edge knowledge, chart a path toward a future of proactive action.

Today, UNA is tasked with breaking away from entrenched paradigms and rethinking itself as an institution essential to addressing the significant challenges of the contemporary world. NOU should focus on training citizens capable of building a more open, fair society based on solidarity and respect for human rights. Above all, it must become a university committed to improving

the quality of life for the population. UNA needs to transform itself into a new, renewed, and creative institution, willing to accept and embrace the challenge of self-transformation—a challenge that must be led both internally and externally, as the country demands it, and so does our era.

The university we want

It is possible that, without the pandemic, the changes in administrative and teaching methods would have been slower. It is also true that universities entered this new world without adequate preparation. However, it remains valid that institutions reinvented themselves to continue their teaching and learning processes to the best of their ability. Faculty members used every available tool to continue teaching their respective disciplines, demonstrating proactivity in overcoming the technological obstacles that arose.

This is a complex reality that the university, in the current context, must face. Addressing it will require well-coordinated and articulated strategies and plans. To move forward, a diagnosis of UNA is current state is necessary to project its functionality.

This diagnosis will allow UNA to improve while adapting to change. It is crucial to project the future by setting institutional, functional, and operational objectives and adjusting the organizational structure to meet the demands of the times. At the same time, it is vital to recover the functions that have been sidelined. All of this must align with current trends, challenges, and developments in education: globalization, international dimension and cooperation, problem-solving, capacity integration, technological change, ICT advancements, knowledge management, and studies.

Significant challenges loom on the horizon. However, the lessons learned offer a glimmer of hope amidst uncertainty. The path forward compels us to envision a renewed Open National University—an institution committed to 21st-century processes that demand the use of virtual mechanisms for the academic functions that define our university. UNA is adaptation will require the reassessment of new competencies in administrative processes, teaching, research, outreach, and service, many of which are already being updated.

UNA was born with a specific mission: to strengthen the higher education system by producing graduates with clear competencies and a strong connection to the social sector. These qualities have enabled graduates to successfully enter the labor market. UNA has fully met this mission and now finds itself at a new stage, one that requires the reorientation of the institution to implement changes and achieve consolidation.

Final reflections

This prolonged crisis presents an opportunity to collectively reflect on the University we want. Therefore, priorities must be defined, actions guided, and efforts coordinated toward a goal that must be both consensual and shared. It is essential, first and foremost, to work from public

policy, as education is a public good, and as such, the State must be the primary guarantor of the right to it. This means that the public administration must ensure the necessary conditions for the educational community to perform its functions under any circumstances and for everyone.

Secondly, collaboration as a strategy. The priority is to build solutions by recognizing the importance of dialogue and shared learning, as well as the joint responsibility among the various actors involved in the educational process. A third point refers to institutional strengthening and capacity development. This involves promoting all actions aimed at having a stronger institution, with greater capacity to respond to the demands of an ever-changing context.

Finally, thinking with a future-oriented mindset. We must be aware of the risks that come with failing to promote strategies that drive the transformation of the University. Viewing adversity as an opportunity for improvement is crucial. We are facing a pivotal moment, a unique opportunity to embark on meaningful change, fostering equity and quality that reaffirms education's ability not only to reform the individual but also as a tool for building a more just society.

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Interview
Entrevista

Interview with Dr. Daniel Goleman Author of the Book Óptimo*

Entrevista al Dr. Daniel Goleman autor del libro Óptimo

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* Imaginary interview with Dr. Daniel Goleman.

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Abstract

Emotional intelligence, encompassing emotions, their neurological basis, and management, has transformed fields such as education, psychology, sociology, and business leadership. Daniel Goleman's groundbreaking theory on emotional intelligence highlights it as crucial for personal and professional success, on par with cognitive intelligence. In his latest book, *Óptimo* (2024), Goleman presents purpose-centered strategies, offering techniques for self-awareness, conscious perception, burnout management, empathy, and building collaborative teams—all within a highly technological context to boost satisfaction and productivity. This summary introduces an imaginary interview with Goleman, aiming to explore the key elements of *Óptimo*. In conclusion, Goleman emphasizes that a fulfilling life is closely tied to developing emotional abilities.

Keywords: Óptimol, satisfaction, emotional intelligence, empathy, productivity.

Resumen

La inteligencia emocional, que abarca las emociones, su base neurológica y su gestión, ha transformado campos como la educación, la psicología, la sociología y el liderazgo empresarial. La teoría innovadora de Daniel Goleman sobre la inteligencia emocional la destaca como crucial para el éxito personal y profesional, al mismo nivel que la inteligencia cognitiva. En su último libro, Óptimo (2024), Goleman presenta estrategias centradas en el propósito, ofreciendo técnicas para el autoconocimiento, la percepción consciente, el manejo del burnout, la empatía y la construcción de equipos colaborativos, todo en un contexto altamente tecnológico para mejorar la satisfacción y productividad. Este resumen introduce una entrevista imaginaria con Goleman, con el objetivo de explorar los elementos clave de Óptimo. En conclusión, Goleman enfatiza que una vida plena está estrechamente ligada al desarrollo de las habilidades emocionales.

Palabras clave: óptimo, satisfacción, inteligencia emocional, empatía, productividad.

It is an honor to interview Dr. Daniel Goleman, psychologist, journalist, author, and speaker, who has left a significant legacy in the study of emotions. He earned his Ph.D. in clinical development psychology and personality and graduated with the distinction *Magna Cum Laude*, which earned him a scholarship to pursue his doctorate in psychology at Harvard University. He worked as a writer for *The New York Times* in the Behavioral and Brain Sciences section for many years. He is the author of numerous books, including the bestseller Emotional Intelligence, with over five million copies sold and translated into 40 languages. He is also co-director of the Consortium for Research on Emotional Intelligence in Organizations and has been nominated for the Pulitzer Prize several times.

Today, we will talk with this distinguished scientist about his latest work, *Óptimo: Empatía, rendimiento e inteligencia Emocional*, in collaboration with psychologist Cary Cherniss. This book outlines techniques to achieve greater productivity and satisfaction, tools to address workplace conflicts, and the alarming burnout syndrome that has brought about absenteeism, dismissals,

conflicts, somatization, and mental health problems. It also examines emotional management in various contexts, including technology.

The author explains that empathy, a core component of emotional intelligence, cannot be emulated by artificial intelligence due to the complexity of the neural connections activated during empathetic interactions—something devices and Artificial Intelligence cannot replicate.

Interviewer: *In your recent work, Óptimo, you emphasize the importance of self-awareness and emotional self-management, with realistic goals and self-motivation to achieve complete satisfaction. What are the tools to achieve this?*

Dr. Goleman: It is essential to understand emotions, to be aware of what we experience, and the true origin of our feelings. This helps us manage them optimally, avoiding reactions that lead to negative consequences and impulsive decisions. In *Óptimo*, I recommend techniques such as deep breathing and mindfulness practice, which involve awareness of the present moment. Additionally, cultivating positive habits and maintaining an open, growth-oriented mindset are necessary for consistency and perseverance to reach set goals.

Interviewer: *Dr. Goleman, which aspects of emotional intelligence should be emphasized in university education to optimize students' cognitive processes and improve teacher effectiveness?*

Dr. Goleman: For decades, I have researched the foundations for achieving academic success. Among them is emotional self-awareness, which involves understanding one's emotions, strengths, and weaknesses for better stress management. Emotional perception contributes to academic success. Neurologically, the amygdala, which stores emotional memory, activates under stress and interferes with the hippocampus, a brain structure related to learning and memory. Therefore, there is a dual relationship: better emotional management leads to better information encoding and retrieval.

The harmonious development of the cerebral cortex also supports the regulatory activity of the amygdala, reducing the impact of stress and anxiety on cognitive processes. It is essential to focus emotions on realistic, well-defined, and achievable goals, with sustained motivation and the resilience needed to overcome obstacles that often lead to poor performance, dropout, and frustration.

Moreover, social skills, such as effective communication and teamwork, are essential tools in knowledge production, conflict resolution through group thinking, and productive learning environments in digital communities and AI-disrupted spaces. Each member can shine for their unique skills in virtual learning and social media environments, where cooperative, empathetic, and synergistic presence is essential.

Interviewer: *According to what you explained in your recent work, emotional management contributes to a state of high performance and satisfaction. Which personality traits can facilitate or hinder this process?*

Dr. Goleman: Extroverted individuals are generally more sociable and inclined to engage in group settings, which provides an opportunity to develop social skills like communication, empathy, and the management of others' emotions. People prone to neuroticism often face difficulties managing their emotional world, as they tend to experience anxiety, sadness, anger, and irritability more intensely, are more sensitive to stressors, and are consequently prone to interpersonal conflicts and low frustration tolerance.

Likewise, people with flexible thinking can adapt to uncertain times and life transitions, such as the disruption brought by artificial intelligence. As I mention in this publication, AI is not static; it can develop independently of personality. Better emotional management leads to higher performance and personal satisfaction, defined as having a productive and meaningful day achieved through effective emotion management to balance performance and well-being.

Interviewer: I*n the organizational setting, how can emotions be managed in a hyper-technological world where empathetic communication is minimal?*

Dr. Goleman: Empathy is essential for a productive and harmonious work life. There are three types of emotional connection with others: cognitive empathy, which is understanding what the other person feels and thinks; emotional empathy, which involves feeling what the other person feels due to neural mirroring of the other's emotions; and compassionate empathy, which involves acting with compassion and support in conflict or emergency situations.

Empathy contributes to productivity by promoting a reason-emotion balance, preventing conflicts, and fostering open, effective communication. In a tech-mediated world, empathy management becomes a challenge, but it requires conscious device use and attention to nonverbal cues in video calls. Genuine interest in the emotions expressed in conversations is crucial. Organizations should offer seminars or workshops on leadership and emotional competencies, as employee satisfaction and, consequently, productivity depend on it.

We thank Dr. Goleman for the depth of his insights in this interview, where he offered us a glimpse of his latest work, *Óptimo: Cómo alcanzar la excelencia personal y laboral todos los días*, co-authored with Cary Cherniss. The book emphasizes tools like deep breathing, perceptive awareness, and empathy as essential life habits for satisfaction and performance. Addressing these themes has a profound impact on organizational productivity, especially for universities. They must embrace the challenge of fostering a culture of emotional awareness, innovation, and adaptability in a hyper-technological, ever-evolving context to prevent dehumanization in cyber society. Without emotions and motivation, humanity risks becoming a slave to its own creation.

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