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Estrategias didácticas basadas en la gamificación para mejorar el rendimiento académico en los estudiantes de segundo de bachillerato FIP Contabilidad.

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RESUMEN

El estudio analiza la incorporación de estrategias pedagógicas basadas en técnicas de gamificación para abordar el bajo rendimiento y la reducida motivación en estudiantes de segundo de bachillerato técnico de FIP Contabilidad. El objetivo planteado fue evaluar el impacto de estas metodologías en la motivación, la participación y el desarrollo de habilidades cognitivas y socioemocionales. La metodología incluyó un enfoque mixto, transversal, con una muestra no probabilística de 23 estudiantes matriculados en la Unidad Educativa Fiscal "Capitán Giovanni Calles" (2024-2025), mediante la recolección de datos obtenidos de cuestionarios digitales y entrevistas a tres docentes. Los resultados mostraron que más del 90% de los estudiantes encuestados valoraron positivamente la gamificación, evidenciando mejoras en participación, motivación y desempeño académico. Por otra parte, las entrevistas docentes confirmaron la percepción positiva, aunque señalaron resistencias iniciales por limitaciones tecnológicas y falta de capacitación. La propuesta presentada consistió en implementar estrategias gamificadas en el aula durante el horario de clases (sesiones de 40 minutos), especialmente en asignaturas percibidas como complejas, para dinamizar el aprendizaje. En conclusión, la gamificación demostró eficacia para fortalecer el rendimiento académico y socioemocional, fomentar la autonomía y generar un ambiente participativo, configurándose como una metodología replicable en otros contextos educativos.

Palabras clave: Gamificación, estrategias didácticas, rendimiento académico, motivación estudiantil, bachillerato técnico.

Teaching strategies based on gamification to improve academic performance in second-year high school students in the FIP Accounting program

ABSTRACT

The study examines the incorporation of gamification-based teaching strategies to address low academic performance and lack of motivation among second-year technical accounting students at FIP. The objective was to evaluate the impact of these active methodologies on students' motivation, participation, and the development of cognitive and socio-emotional skills. The methodology employed a mixed, cross-sectional approach with a non-probabilistic sample of 23 students from the Unidad Educativa Fiscal "Capitán Giovanni Calles" (2024–2025), collecting data through digital questionnaires and interviews with three teachers. Results showed that over 90% of the students rated gamification positively, with noticeable improvements in participation, motivation, and academic performance. Teacher interviews confirmed this positive perception, although initial resistance was noted due to technological limitations and lack of training. The proposed intervention consisted of implementing gamified strategies in 40-minute class sessions, particularly in subjects perceived as difficult, to make learning more dynamic. In conclusion, gamification proved effective in enhancing academic and socio-emotional performance, fostering autonomy, and creating a participatory learning environment, positioning it as a methodology that can be replicated in other educational contexts.

Keywords: Gamification, teaching strategies, academic performance, student motivation, technical high school.

INTRODUCTION

Currently, Information and Communication Technologies (ICTs) are considered indispensable tools for facilitating access to, interpretation of, and transmission of information. In the field of pedagogy, ICTs enable the development of new teaching and learning methodologies, promoting more dynamic, accessible, and interactive processes within the classroom and fostering meaningful learning. These tools encompass a wide variety of technological resources, including computers, smartphones, and storage devices, as well as software and digital applications, educational platforms, mobile applications, simulators, web browsers, search engines, augmented reality, and artificial intelligence; likewise, digital communication tools such as videoconferencing, instant messaging chats, podcasts, multimedia platforms, forums, and social networks, among others (Luzuriaga, 2024).

Several studies confirm that the appropriate use of ICT in the classroom can improve cognitive and metacognitive skills such as information comprehension and retention, as well as enhance academic performance and, consequently, influence grades (Abdulrahman, Alshehri, Alkhalifah, Alasiri, Aldayel, Alhmari, Alothman, & Alfadhel, 2023). Furthermore, ICT also benefits teachers in various ways, since tools such as Google Forms and platforms like Kahoot, Quizizz, and Moodle allow for interactive and engaging assessments that provide immediate feedback and facilitate monitoring student progress (Anzoátegui & Ponce, 2023; Ponce & Guevara, 2025; Guevara, Cordero, & Erazo, 2022).

The current educational model faces a significant challenge: adapting to a generation of students who require more interactive, technologically advanced, and participatory learning environments that foster the development of academic skills and educational competencies. Particularly in the FIP Accounting technical high school program, low levels of motivation, limited interest in theoretical and practical content, and, in general, a disconnect between the instruction provided and students' professional aspirations are evident. It is in this context that the need arises to implement methodologies that encourage interest, participation, and the pursuit of more meaningful learning.

Implementing game mechanics (e.g., points, levels, rewards, and challenges) in academic activities offers an effective way to transform the educational model into a flexible and engaging experience focused on increasing student interest in what they are learning. Within this framework of pedagogical transformation, the use of game elements in non-game contexts is called gamification, and its objective is to improve learning behavior in order to create stimulating experiences that foster interest, motivation, and commitment to learning (Moreira & García, 2024; Cavus, Ibrahim, Ogbonna, Bode, & Modupeola, 2023). Thanks to the support of digital platforms and technological tools, the application of gamification techniques in educational settings is facilitated, promoting active participation, continuous practice, and immediate feedback.

Cáceres and Freire (2023) agree that the macro approach to education and gamification are linked to the legal framework and the legal, political, and theoretical regulations that condition and drive the implementation of gamified strategies in the educational model and the framework of professional competencies. Internationally, education shows a trend toward transformation and progressive changes that are increasingly leading it toward more dynamic and effective pedagogical models. Thus, countries like Finland and the United States are currently promoting the application of gamification strategies in educational settings, reporting positive results in students' academic performance at all levels (Ebrahimi, Alhumairi, and El Asri, 2023).

The meso level focuses on the applicability of gamification strategies within educational programs. In the Ecuadorian context, education has undergone continuous reforms aimed at strengthening

pedagogical practices and improving the quality of the education system through the incorporation of innovative methodologies in the classroom.

The micro level corresponds to the analysis of the impact and influence of gamification strategies in the classroom on the perception of learning and its academic outcomes. In the studied population, there are subjects whose content is perceived as complex or repetitive, representing an obstacle to meaningful learning. It is at this critical juncture that the effectiveness of gamification techniques in promoting learning, motivation, participation, immediate feedback, and recognition of achievements becomes evident. This study seeks to justify the incorporation of these active methodologies as a response to the cognitive and emotional needs of students.

The overall objective is to implement gamification-based teaching strategies to improve the academic performance of second-year students in the FIP Accounting technical baccalaureate program. The specific objectives are as follows: a) to diagnose the students' academic performance level before and after the implementation of gamification strategies in the classroom; b) to develop a gamification model adapted to the educational context that integrates gamification-based teaching strategies to enhance learning; and c) to validate the feasibility criteria for applying gamification-based teaching strategies in classroom processes.

Finally, the research questions are posed as follows: What indicators are associated with an improvement in the academic performance of second-year FIP Accounting high school students? What aspects of gamification are effective in improving student performance in the short and long term? How can gamification models be used and adapted to different educational contexts? And what are the immediate changes in the way students approach learning after the implementation of gamification?

Information and Communication Technologies (ICTs)

ICTs have established themselves as an innovative and efficient resource in various fields of knowledge, especially in education, as they facilitate access, processing, and transmission of information. The integration of these technologies transforms the traditional teaching and learning format, allowing students personalized access to educational content and materials tailored to their individual circumstances, thus fostering autonomy and flexibility in learning.

Zambrano, Lucas, Luque, and Lucas (2020) agree that the use of virtual platforms in education fosters autonomous learning and improves fundamental skills and abilities that motivate students in the subjects taught. Likewise, the use of educational videos, virtual reality, and simulations enriches the student experience, making it more engaging and memorable, thus promoting the development of key digital skills for the workplace (Sánchez, 2020). However, negative aspects such as lack of access to technological devices, poor connectivity in some geographic areas, and limited teacher training in the

pedagogical use of ICT are significant challenges these technologies face (Hinostroza, 2018). Therefore, the approach to integrating these tools must be planned, taking into account aspects of disparity, equity, competition, and pedagogical applicability.

From a theoretical standpoint, the use of ICT in education is grounded in theories such as cognitivism, which implies that learning requires internal mental processes. It also expands this view by considering mechanisms such as attention, perception, memory, and problem-solving (Saarinen, Lipsanen, Hintsanen, Houtilainen, & Keltikangas-Järvinen, 2021). This perspective allows for the design of teaching strategies that promote deep understanding, knowledge organization, and meaningful learning—key elements for effectively integrating digital technologies in the classroom (Aldama, 2020).

Strategies in gamification and their relationship with digital natives

Gamification, generally understood as the application of game elements in non-game contexts, according to Anuradhanil, Yatigammana, and Wijayarathna (2024), refers to the deliberate incorporation of game mechanics into learning to develop engaging educational materials that help students achieve their learning objectives efficiently. In Ecuador, several educational innovation programs have incorporated the use of digital tools such as Kahoot!, Classcraft, and Geneally, which have proven effective in boosting motivation, active participation, and knowledge retention among students (Anzoátegui & Ponce, 2023; Ponce & Guevara, 2025; Guevara, Cordero, & Erazo, 2022).

METHODOLOGY

This study was conducted using a mixed-methods, cross-sectional approach. The design was selected based on the objective of analyzing the impact of gamification strategies on the academic performance of a representative sample of second-year high school students in the Accounting program.

The study population consisted of second-year high school students in the Accounting program at the school during the 2024-2025 academic year. This study employed non-probability sampling. The sample comprised 23 students, each selected according to established inclusion and exclusion criteria to ensure the relevance and feasibility of the pedagogical intervention.

Those subjects included were those who met the following inclusion criteria: Students enrolled in the second year of the FIP Accounting program at the “Capitán Giovanni Calles” Public School during the 2024-2025 academic year; students with regular class attendance and active participation in classroom activities; participants with access to basic technological resources, at least one functional mobile device. The following were excluded: students who were not enrolled in the second year of the FIP Accounting program or who were studying another specialization or educational level; students with prolonged absences or low participation that would prevent a valid comparative evaluation before and after the intervention.

For data collection, a digital questionnaire designed using Google Forms was employed. This allowed for efficient, accessible, and secure data collection, facilitating student participation and subsequent analysis of the results. The questionnaire consisted of multiple-choice questions, organized into sections that addressed variables related to academic performance, the level of integration of games and playful activities into the teaching-learning process, and the development of cognitive and socio-emotional skills.

The data obtained were organized and analyzed qualitatively using descriptive statistical tools to measure the perception of academic performance in second-year high school students of FIP Accounting. Cronbach's validity was applied with 0.87 as very good reliability.

RESULTS AND DISCUSSION

The results obtained demonstrate the positive impact of implementing gamification-based teaching strategies on the academic performance of students in the Accounting Vocational Training program at the technical high school level. This result is supported by the analysis of the surveys administered, which show a predominance of "good" and "very good" ratings in the evaluated indicators.

In determining the level of academic performance, a significant shift is evident between student perception and participation. Overall results indicate that 57% of students hold a "good" opinion regarding the impact of games on learning. This finding aligns with the findings of authors such as Abdulrahman et al. (2023), who argue that the use of interactive, engaging, and dynamic technologies enhances meaningful learning.

In the integration of games into the classroom, 52% of participants rated the implementation of game activities as "very good," thus validating both the relevance and effectiveness of this proposed model within the context of the studied population. According to Moreira and García (2024), this approach transforms education from a traditional and outdated system to a more contemporary one, where classes become engaging and memorable experiences.

Regarding the teaching-learning process, 70% of students rated the reinforcement of the idea that gamified strategies energize teaching and improve its quality as "very good," while also boosting interest, participation, autonomy, and commitment—essential characteristics for the field of technical education, where theory and practice are effectively combined. This is particularly true in subjects like accounting, traditionally considered abstract or repetitive (Parrales et al., 2023).

On the other hand, the process of validating the feasibility of the implemented strategies proved favorable, given that the institution's teachers showed openness and willingness to integrate the proposal into their curriculum planning. This aligns with the provisions of the LOEI (Organic Law of Intercultural Education) and the Ecuadorian pedagogical framework, which promote educational innovation and the

appropriate use of ICT in the classroom (Martínez, 2024), defining that its implementation not only responds to the identified cognitive needs but also has a positive impact on classroom dynamics, fostering an active and committed attitude toward learning.

ILLUSTRATIONS, TABLES, FIGURES.

Table 1:

The level of integration of recreational games

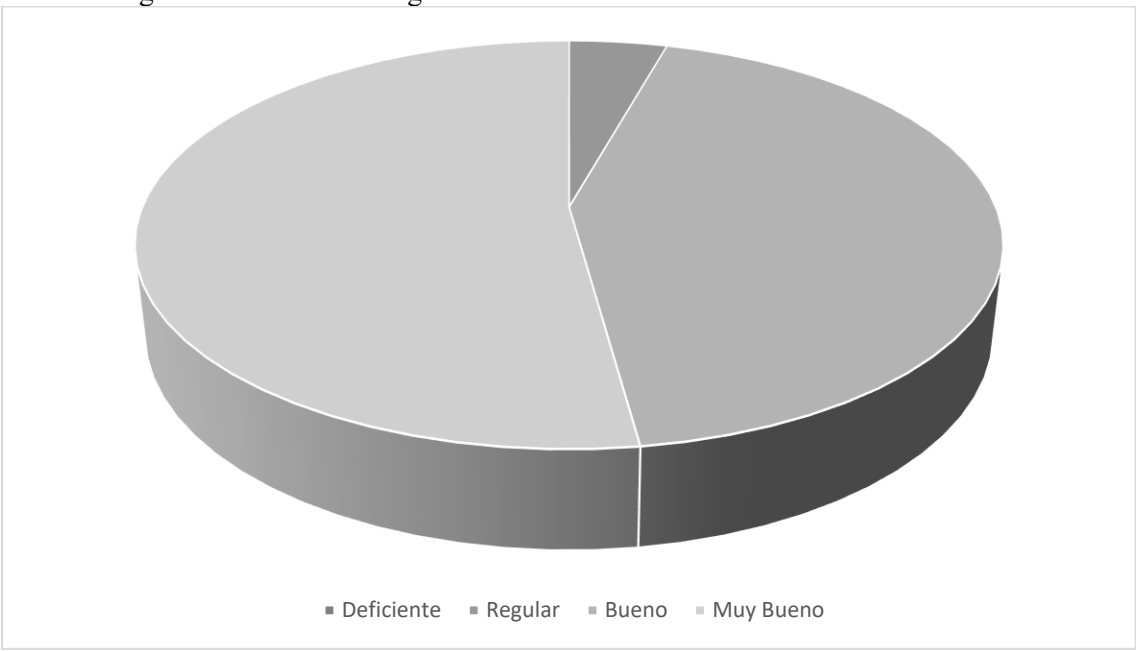
Levels	Frequency	Percentage (%)
Deffiecient	0	0%
Regular	1	4%
Good	10	43%
Very good	12	52%
Total	23	100%

Table Note: The respondents' perceptions regarding the level of integration of recreational games (gamification strategies) are detailed.

Analysis: It is evident that 52% respond to the very good level in terms of the integration of recreational games, as well as 43% with the good level, and only 4% as regular.

Figure 1:

The level of integration of recreational games



Authors: Sánchez, K. & Betancourt, J.

Table 2:

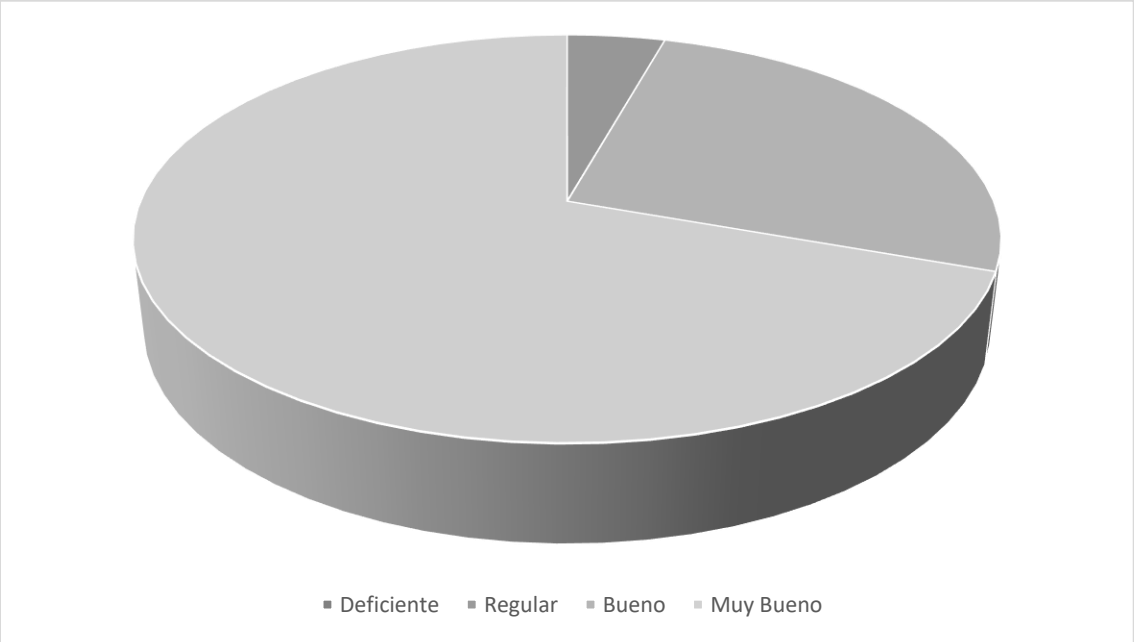
The Learning – Teaching process

Levels	Frequency	Percentage (%)
Defficient	0	0%
Regular	1	4%
Good	6	26%
Very good	16	70%
Total	23	100%

Table Note: The perception of the respondents regarding the teaching-learning process in relation to the use of gamification strategies is evident.

Figure 2:

The Learning – Teaching proces



Authors: Sánchez, K. y Betancourt, J.

Table 3:

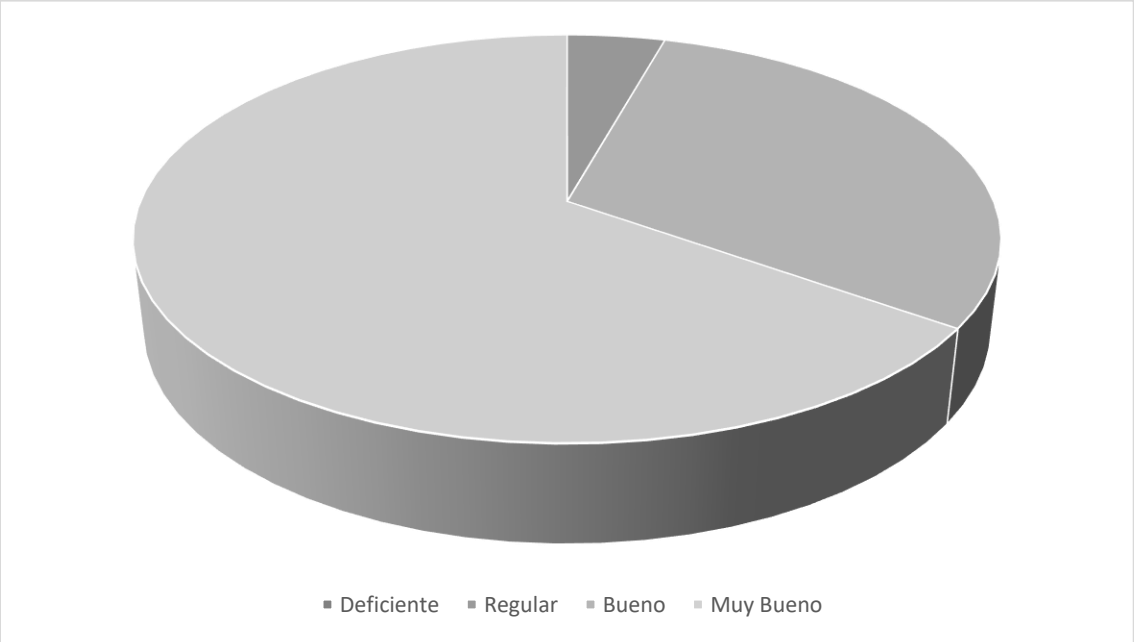
The development of cognitive and socio-emotional skills.

Levels	Frequency	Percentage (%)
Defficient	0	0%
Regular	1	4%
Good	7	30%
Very good	15	65%
Total	23	100%

Table Note: The perception of the respondents regarding the teaching-learning process in relation to the use of gamification strategies is evident.

Figure 3:

The development of cognitive and socio-emotional skills.



Authors: Sánchez, K. & Betancourt, J.

CONCLUSIONS

It was determined that the implementation and integration of gamification-based teaching strategies significantly optimizes the performance of second-year technical high school students in the Accounting Vocational Training program. The evidence consists of increased scores in the "good" and "very good" levels of the surveys, demonstrating the high effectiveness of this methodology in energizing the teaching-learning process.

The initial and subsequent assessment of academic performance levels revealed improvements in student engagement, participation, and motivation. Gamification, by incorporating game mechanics, facilitated an emotional connection with the content and increased interest in subjects traditionally considered abstract, such as accounting.

The gamification model designed and implemented in the study proved suitable for the analyzed educational context, adapting to the technological, pedagogical, and curricular conditions of the "Capitán Giovanni Calles" Public School. Student and teacher reception was highly positive, confirming the viability of the proposed approach.

Gamified strategies demonstrated an ability to enhance students' cognitive and socio-emotional skills, strengthening not only disciplinary learning but also key competencies such as autonomy, self-regulation, teamwork, and resilience in the face of academic challenges. The implementation of this approach contributed to improving the classroom climate and fostering a more participatory and student-centered learning culture, in accordance with the guidelines established in national educational frameworks such as the LOEI (Organic Law of Intercultural Education).

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