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RESEARCH ARTICLE

Playful Strategies for Entrepreneurial Minds: An Analysis of Gamification in Education

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ABSTRACT

The study aimed primarily to analyze the connection between gamification and the promotion of entrepreneurship among students in a university. To address this issue, a non-experimental, cross-sectional, correlational, and causal methodology was employed, with a predominantly quantitative approach. The study population comprised 120 third-grade students from a specific school, from which a sample of 43 students from the "A" class of the third grade was selected. The data collection technique used was a survey, facilitated through a questionnaire designed for this purpose. The attained results unveiled that the variable "Gamification" indicated a "Moderate" level, while the variable "Entrepreneurship" demonstrated a "Moderate" level as well, with a total of 5 participants falling into this particular category. Totals for each level of "Entrepreneurship" and "Gamification" were synthesized, along with the overall total of partici-pants in the study, amounting to a total of 43 participants. In terms of educational implications, the study concluded that gamification correlates with entrepreneurship, fostering the develop-ment of skills for the youth's future endeavors.

INTRODUCTION

Gamification and entrepreneurship play essential roles in the educational realm and the effective functioning of society. Understanding this environment hinges on communication, learning, and knowledge acquisition through various strategies. These strategies enable children and young people to remain engaged with playful, motivating, and stimulating elements that can be effectively integrated into formal education.

Considering this perspective, a significant challenge arises in motivating students and overcoming obstacles that hinder their learning process. This task has become a noteworthy endeavor for educators who must implement adaptive strategies using games, known in academic circles as gamification. This approach fosters an environment that promotes student effort and commitment, enhancing their level of participation and autonomy.

Gamification involves harnessing the exciting and inspiring moments that are characteristic of games and combining them with activities that often require an extra dose of motivation. This tool, along with its positive outcomes, has become an essential component of educational strategies; several teachers have skillfully and consistently employed this approach in their teaching (Bravo Paniagua & Valenzuela González, 2019).

Gamification, although it may appear as a novel topic, is an educational method or plan that has been utilized for a long time in the teaching and learning process. The mechanics of games are incorporated into the pedagogical field with the aim of achieving meaningful teachings (López Apaza et al., 2020).

Furthermore, gamification is a methodology that seeks to enhance participants' motivation and apply it in non-entertaining environments, with the purpose of motivating students, promoting learning, improving specific skills, or rewarding specific actions, among other objectives. It has a definition rooted in the term "GAME," which prompts students to enhance their game-based skills, with the intention of motivating and expanding their learning (Lozada Ávila et al., 2017).

On another note, when addressing the topic of entrepreneurship, it is essential to start by referring to the Hispanic literature. In comparison to the term "entrepreneur," it becomes evident that a precise encompassing definition cannot be found, nor is there singularity in its interpretation. This is due to the various interpretations that have arisen over time, originating from different fields. The concept of an entrepreneurial individual is characterized by certain qualities, which can be acquired through experience or education. It is not necessary for the individual to possess innate or stable cognitive traits (Melani Rossi, 2022).

Regarding entrepreneurial skills, they constitute a distinct set of abilities possessed by individuals, with their primary function being to foster idea generation and the initiation of endeavors to create products that address diverse needs. Being an entrepreneur involves the ability to translate theories into practice and ideas into actions with flexibility, persistence, and creativity. Moreover, it entails the capacity to recognize the strengths of all collaborators (Suni Surco et al., 2018).

In relation to the topic of entrepreneurship in local schools, a specific objective supported by parents is observed, aiming to provide students with an adequate opportunity to acquire knowledge about technology, as it stands as a fundamental pillar in the realm of entrepreneurship. Azqueta and Naval (2019), define it as an educational approach that enables the development of students' entrepreneurial potential and contributes to comprehensive growth, particularly in intellectual, social, and moral dimensions of the individual. This approach is not confined solely to socioeconomic and occupational progress.

The theoretical justification of the research was upheld, as it encompassed the significance of gamification and entrepreneurship as means in the learning and teaching process. This led to the generation of new research lines in the pedagogical and didactic domain.

As for the practical rationale, the motivation behind this research in this topic stemmed from the anticipation that in future education, it will evolve into a guide and source of motivation for educators to enhance their traditional teaching and learning methods. This involved harnessing the advantages provided by games as educational tools.

The methodological justification was grounded in the adaptation of gamification and entrepreneurship techniques in schools and society at large, aimed at enhancing the educational environment and its impact on learning.

The research question was: How does gamification relate to fostering entrepreneurship among students in a school in Chiclayo, Peru? To address this, the overarching research objective was defined as analyzing the connection between gamification and the promotion of entrepreneurship

among students in a school in Chiclayo, Peru. The central hypothesis guiding this analysis posited that gamification is positively related to the promotion of entrepreneurship among students in a Chiclayo school.

LITERATURE REVIEW

Relevant international studies were conducted in the field of gamification, highlighting the research by Ortiz-Colón et al. (2018) at the University of Jaén, Spain. The purpose of this study was to explore the theoretical benefits of gamification and its application in education. They analyzed 330 documents between 2011 and 2016, selecting 37 relevant gamification experiences. Using a qualitative approach based on content analysis, they identified the most significant findings. Results indicated that gamification in education provided multiple benefits to students, including intrinsic motivation, situational planning, engagement with content, and social interaction. The incorporation of diverse elements in the gamification process enriched educational activities, making them more engaging and stimulating for students.

In their research at the Universidad Americana, Ecuador, Briceño Núñez (2022) focused on the affective aspects of educational gamification to teach foreign languages in the socio-pedagogical context. Data were collected from 100 foreign language teachers during the 2020-2021 period using a version of the Al-Isa test, composed of 17 items on a Likert scale. The results demonstrate that gamification has a positive impact on foreign language learning, increasing student involvement in formative and evaluative activities. In summary, the evidence supported the teachers' perception that gamification is an effective pedagogical tool for teaching foreign languages in virtual environments.

Likewise, in a study at the Universidad de Las Américas, Chile, Valenzuela (2021) focused on the importance of the human factor in the learning process, highlighting that the tools and resources used in learning are only one part of this complex process. The study employed a bibliographic review of twenty specialized texts and nine articles that center on gamification, particularly in its educational application to strengthen learning and increase student motivation. The results confirm the social importance of play as a formative phenomenon and the value of gamification as a pedagogical resource in the educational environment. In summary, Valenzuela (2021) emphasizes the relevance of the human component in education and highlights how gamification can enhance student motivation and learning.

In the national context, there were investigations like the one presented by Calderón Arévalo et al. (2022), which was conducted in a district of Lima city to analyze the impact of gamification on elementary school students' reading comprehension during the pandemic. The study sample consisted of 90 students who were administered two questionnaires. The results indicated that gamification contributes from analytical and technical aspects to mechanical and dynamic activities. To conclude their research, it was mentioned that gamification has an impact on reading comprehension since the beginning of the pandemic and its digitalization usage, further supporting teaching-learning processes.

On the other hand, in a non-experimental and correlational quantitative research conducted in Lima, Villarroel et al. (2021) sought to determine the relationship between gamification and motivation. The study population consisted of 253 regular basic education students. To collect data, the gamification observation guide and the MSLQ motivation questionnaire were employed. The results revealed a significant but very low relationship, with a value of 0.025, between gamification and motivation. It was concluded that gamification is not directly related to student motivation. It's noteworthy that most teachers do not use digital tools in their classes, which is essential in distance and virtual learning, particularly in light of the situation caused by the COVID-19 pandemic.

Additionally, it was demonstrated that teachers face difficulties in using social media, video conferencing, and online platforms.

Lastly, Solís Castillo and Marquina Luján (2022) conducted a study in Lima that analyzed how gamification contributes as a methodological approach in private university education. The sample included 22 business administration students. They used unstructured online interviews, both individual and in focus groups, through the Zoom platform. The results indicated that gamification motivates students in their interaction with content and peers, increasing their engagement and promoting teamwork, which in turn reduces absenteeism in classes.

Regarding theories, there is the one developed by Sánchez Pacheco et al. (2020), which analyzes gamification as an emerging educational alternative. Although in its early stages with limited research and debate, this perspective is intriguing due to its innovative focus on education and other contemporary contours. Gamification shares affinities with behaviorist learning theory but is not merely an update of the Skinnerian system. Instead, it employs a community-based evaluation and reinforcement approach that distinguishes it from previous theories, except for the concept of connectivity. This definition positions gamification as the fourth learning theory, addressing it in parallel with behaviorist, cognitivist, and constructivist currents, thus enriching the educational landscape and its interaction with various disciplines.

Gamification is an approach that uses game elements and mechanics in non-playful contexts to foster participation, engagement, and motivation of individuals. According to Borrás Gené (2015), gamification involves integrating game elements into real-world situations to enhance user experience and engagement. This entails creating clear goals, structured challenges, meaningful rewards, and feedback mechanisms that activate intrinsic motivation in individuals.

Entrepreneurship encompasses the identification of opportunities, the creation and development of initiatives aimed at generating economic, social, or cultural value. Terán-Yepez and Guerrero-Mora (2020), emphasized that entrepreneurship is grounded in the ability to recognize opportunities unseen by others and the willingness to seize them. It involves proactive attitudes, a willingness to take risks, and a constant pursuit of opportunities in changing environments.

The intersection between gamification and entrepreneurship lies in gamification's potential to foster entrepreneurial attitudes and skills. Gamification provides a learning environment where participants experience the decision-making process and face challenges akin to real entrepreneurial situations. Gamification can stimulate creativity, problem-solving, and a disposition to take risks—essential skills in the entrepreneurial realm.

The effective implementation of gamification in education and work can influence individuals' mindset and competencies, preparing them to tackle entrepreneurial challenges with confidence and motivation. It can serve as a tool to nurture entrepreneurial skills from an early stage and promote a culture of innovation and creativity.

2. MATERIALS AND METHODS

Within the methodological framework of this study, an applied approach was adopted, aiming for the acquisition of new knowledge and problem-solving, in line with the ideas presented by Velázquez and García (2013). For the statistical analysis of the data, a quantitative methodology was chosen, following the perspective proposed by Huamani Mantari (2019), which focuses on measurement and the use of statistics. The selected design was non-experimental, allowing for the observation and measurement of phenomena in their natural environment, in accordance with the orientation proposed by Hernández Sampieri et al. (2014). Additionally, a cross-sectional approach was employed for data analysis from a specific sample at a particular moment. This facilitated capturing a representative snapshot of the relationship between the variables in the studied context, providing

a deeper understanding of the interactions between gamification and the promotion of entrepreneurship in students.

Focused on improvement and seeking a deeper understanding, the research's primary objective was to explore the relationship between gamification and the promotion of entrepreneurship in students of a school in Chiclayo. The population in question consisted of all third-grade students in the school, and a representative sample of 45 students from a specific section was selected to participate in the study. The choice of this sample was based on a non-probabilistic convenience sampling approach, as the students from this particular section proved to be accessible and suitable for the research objectives Cvetkovic Vega, et al (2021). This sampling approach allowed for maximizing data collection efficiency by leveraging the availability of certain participants, thus ensuring the feasibility of the study and obtaining valuable results for the investigation into the relationship between gamification and the stimulation of entrepreneurial spirit in the educational context.

To carry out this research rigorously, a methodology based on a survey was chosen, materialized through a questionnaire designed using the Likert scale. This questionnaire became the primary tool for collecting accurate and meaningful data about students' perception of gamification and entrepreneurship. The validity of these instruments was rigorously confirmed by experts in the field, who evaluated and validated the content and appropriateness of the questions, thus ensuring the robustness of the collected data and confidence in interpreting the results. This methodological approach ensured that participants' responses were consistent and reliable, allowing for a precise analysis of the relationship between gamification and the promotion of entrepreneurship in the educational context.

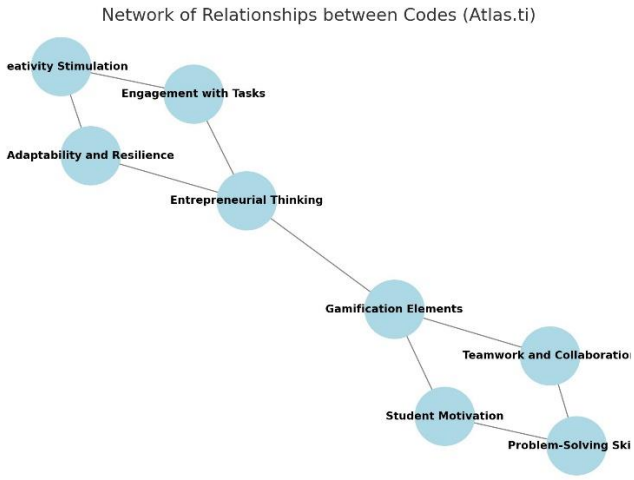

Figure 1. Semantic networks extracted from Atlas.ti.

This network graph illustrates the connections between various codes in the research. The strength of the relationships is indicated by the lines connecting the codes. For example, "Gamification Elements" has strong ties with both "Entrepreneurial Thinking" and "Student Motivation," suggesting that gamification is closely linked to fostering entrepreneurial thinking and enhancing student engagement. Other relationships, like between "Problem-Solving Skills" and "Teamwork and Collaboration," highlight the interplay between these skills in the context of gamified education.

Data collection was carried out using physical sheets that were subsequently entered into Microsoft Excel software for organization and preparation. For in-depth data analysis, SPSS version 26 was employed, enabling both descriptive and inferential tests. Since the data was observed not to follow a normal distribution, the non-parametric Spearman's Rho test was chosen, an appropriate tool for analyzing connections and relationships between variables in a context where normality is not

present. This approach ensured a robust and accurate assessment of the relationship between gamification and the stimulation of entrepreneurship, contributing to obtaining reliable conclusions supported by empirical evidence.

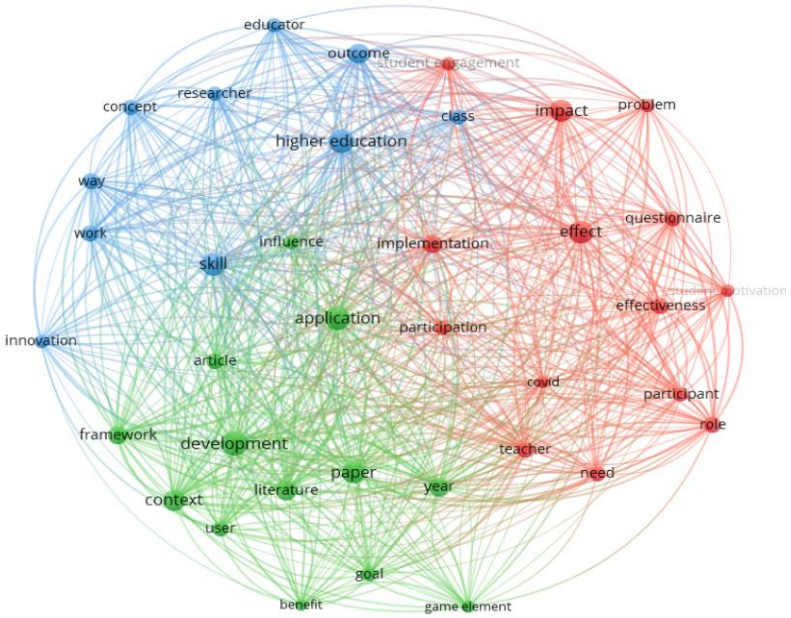

Figure 2. Bibliometric network extracted with VOS v

The topics of the VOS viewer are closely related to the empirical information, and in this sense, the following are directly coincident aspects: gamification, education, digitalization, soft skills, and innovation, and the following aspects are not directly revealed in the empirical information: university and knowledge; it would be important in future studies to deepen the implications of these aspects at the educational level in the framework of digital transformation and technological innovation. Based on the coinciding elements, the scientific discussion of this research unfolds

3. **RESULTS**

Within the framework of a thorough analysis, comprehensive assessments were conducted covering fundamental dimensions of gamification and entrepreneurship. Regarding gamification, various aspects were explored, such as creativity, overall perception, skill benefits, and for entrepreneurship, social skills, leadership, and problem-solving abilities. The evaluation results indicated that the overall perception of gamification was mostly at an intermediate level, while benefits, skill improvements, leadership, and problem-solving were found to be at a high level of engagement. Concerning entrepreneurship, although there was an observed "low" participation overall, a clear interest was manifested at medium and high levels. These findings underscored the intermediate perception of gamification, highlighting its benefits and skill improvements, while simultaneously revealing genuine interest in entrepreneurship, particularly among medium and high strata participants. This detailed understanding enriched the analysis and provided a more comprehensive view of how gamification and entrepreneurship relate to students' perceptions and aspirations.

Table 1. Dimensions of Gamification and Entrepreneurship

	Gamification												**Entrepreneurship**											
	Creativity and innovation				**Perception of gamification**				**Perks and Skill Enhancement**				**Social skills and attitudes**				**Leadership skills**				**Problem resolution**			
	Low	Half	High	Total	Low	Half	High	Total	Low	Half	High	Total	Low	Half	High	Total	Low	Half	High	Total	Low	Half	High	Total
Count	1	14	28	43	2	8	33	43	2	12	29	43	1	14	28	43	2	9	32	43	2	10	31	43

This Table 2 presented the results of an evaluation of gamification in relation to the "creativity and innovation" dimension among students, categorized into three levels: low, medium, and high. It was observed that 2.3% of students rated at the "Low" level, 32.6% at the "Medium" level, and 65.1% at the "High" level. The cumulative percentage shows that 34.9% of students rated at the "Medium" or higher level. These results suggested a positive perception of the presence of creativity and innovation in gamification among students.Table 2. Gamification: dimension - creativity and innovation that students have

		Frequency	**Percentage**	**Valid percentage**	**Valid percentage**
Valid	Low	1	2,3	2,3	2,3
	Half	14	32,6	32,6	34,9
	High	28	65,1	65,1	100,0
	Total	43	100,0	100,0	

This Table 3 presented the results of an assessment of the "perception of gamification" dimension among students in relation to gamification. Similar to the previous table, students were categorized into three levels: low, medium, and high. It was observed that 4.7% of students rated at the "Low" level, 18.6% at the "Medium" level, and 76.7% at the "High" level. The cumulative percentage indicated that 23.3% of students rated at the "Medium" or higher level. These results suggest that at that time, there was a predominantly positive perception of gamification among students, with a high percentage viewing gamification in a favorable light.

Table 3. Gamification: dimension - perception of gamification

		Frequency	Percentage	Valid percentage	Valid percentage
Valid	Low	2	4,7	4,7	4,7
	Half	8	18,6	18,6	23,3
	High	33	76,7	76,7	100,0
	Total	43	100,0	100,0	

Subsequently, within the context of this article, Table 4 was presented, which evaluated the "benefits and improvement of skills" dimension in relation to gamification in the educational environment. The results indicated that 4.7% of students were situated at the "Low" level, while 27.9% were at the "Medium" level, and a substantial 67.4% at the "High" level. Considering the cumulative percentage, it follows that 32.6% of students achieved scores at the "Medium" or higher level. Such results suggested that the majority of students perceived substantial skill improvements and benefits stemming from gamification, pointing towards a positive perspective regarding the favorable effects of this strategy on their learning and development.

Table 4. Gamification: dimension – benefits and improvement of skills

		Frequency	Percentage	Valid percentage	Valid percentage
Valid	Low	2	4,7	4,7	4,7
	Half	12	27,9	27,9	32,6
	High	29	67,4	67,4	100,0
	Total	43	100,0	100,0	

Table 5 provided an in-depth analysis regarding the dimension of "attitudes and social skills" in the context of entrepreneurship. The results underscored that 2.3% of participants exhibited attitudes and social skills at the "Low" level, while 32.6% fell into the "Medium" level. On the other hand, a notable 65.1% of participants demonstrated attitudes and social skills at the "High" level. These percentages, taken together, reflected a 34.9% of participants with scores at the "Medium" or higher level. This analysis suggested that a significant majority of participants possess strong attitudes and social skills in the context of entrepreneurship, indicative of adequate preparation in terms of social interaction and human relationships, crucial factors for an entrepreneur's success.

Table 5. Entrepreneurship: dimension – attitudes and social skills

		Frequency	Percentage	Valid percentage	Valid percentage
Valid	Low	1	2,3	2,3	2,3
	Half	14	32,6	32,6	34,9
	High	28	65,1	65,1	100,0
	Total	43	100,0	100,0	

Table 6 presented a detailed analysis of the "leadership skills" dimension in the context of entrepreneurship. The results indicated that 4.7% of participants had leadership skills at the "Low" level, while 20.9% scored at the "Medium" level. In contrast, a significant 74.4% of participants demonstrated leadership skills at the "High" level. When summing up the valid percentages, it was observed that 25.6% of participants achieved scores at the "Medium" or higher level. This finding underscored that the vast majority of participants possess strong leadership skills in the realm of entrepreneurship, a crucial competence for successfully guiding teams and business projects.

Table 6. Entrepreneurship: dimension – leadership skills

		Frequency	Percentage	Valid percentage	Valid percentage
Valid	Low	2	4,7	4,7	4,7
	Half	9	20,9	20,9	25,6
	High	32	74,4	74,4	100,0
	Total	43	100,0	100,0	

Table 7 presented an analysis of the "problem-solving skills" dimension in the context of entrepreneurship. The results indicated that 4.7% of participants demonstrated problem-solving skills at the "Low" level, while 23.3% scored at the "Medium" level. In contrast, a significant 72.1% of participants exhibited problem-solving skills at the "High" level. These findings highlighted that the majority of participants possess strong problem-solving skills in the realm of entrepreneurship, a crucial ability for addressing the challenges and obstacles that may arise in their business journeys.

Table 7. Entrepreneurship: dimension – problem solving

		Frequency	Percentage	Valid percentage	Valid percentage
Valid	Low	2	4,7	4,7	4,7
	Half	10	23,3	23,3	27,9
	High	31	72,1	72,1	100,0
	Total	43	100,0	100,0	

Table 8 presented a detailed analysis that revealed a clear relationship between the variables "Gamification" and "Entrepreneurship". This approach allowed for a thorough exploration of how the connections between "Entrepreneurship" levels were established based on "Gamification" levels. The values recorded in the table cells reflected the number of participants situated in each specific combination of levels. When considering the cell where the "Gamification" variable indicated a "Medium" level and the "Entrepreneurship" variable showed a "Medium" level, a total of 5 participants were identified who fit within this particular category. Furthermore, in the right and bottom margins of the table, summations were performed that represented the totals corresponding to each level of "Entrepreneurship" and "Gamification", as well as the overall total of participants in the study, which amounted to a total of 43 participants overall. This resource provided a clear and detailed insight into how participants were distributed in relation to the different levels of "Gamification" and "Entrepreneurship", delivering valuable and enlightening information about the interactions and associations between these two fundamental variables.

Table 8. Cross table Gamification*Entrepreneurship

		Entrepreneurship			Total
		Low	Half	High	
Gamification	Low	0	0	1	1
	Half	1	5	11	17
	High	0	7	18	25
Total		1	12	30	43

In the context of this research, Table 9 provided a detailed view of the results obtained through the analysis that explored the relationship between the core variables, namely "Gamification" and "Entrepreneurship". When examining these variables, a Spearman correlation coefficient of 0.503 was revealed, indicating a moderately positive connection between the two. This finding suggestively implied that there exists a consistent and significant relationship between the implementation of gamification strategies and the fostering of an entrepreneurial spirit in students. The statistical

robustness of this finding is reinforced by the fact that the obtained p-value was less than 0.001, supporting the notion that gamification exerts a positive influence on the development of entrepreneurial skills among students. These results suggest that gamification experiences can play an essential role in promoting entrepreneurial attitudes and aptitudes, which could be valuable for their personal growth and future career trajectories.

Table 9. Gamification*entrepreneurship correlation

			Gamification	Entrepreneurship
Spearman's Rho	**Gamification**	Correlation coefficient	,1000	,503**
		Next (bilateral)	.	,0000
		N	43	43
	Entrepreneurship	Correlation coefficient	,503**	,1000
		Next (bilateral)	,0000	.
		N	43	43

4. **DISCUSSION**

The results obtained in the study, which aimed to analyze the relationship between gamification and the promotion of entrepreneurship among students in a school in Chiclayo, were presented in Table 8, providing a visual representation of the connection between the "Gamification" and "Entrepreneurship" variables. In this table, specific combinations of levels for both variables were identified, along with the number of participants falling into each of these combinations. Upon examining the data, a distribution in the cells can be observed, reflecting the relationship between gamification and the promotion of entrepreneurship.

Comparing these results with the background, it can be highlighted that several previous studies have explored the impact of gamification in different educational and work contexts. Ortiz-Colón et al. (2018) found that gamification in education offers benefits such as intrinsic motivation and engagement with the content. Briceño Nuñez (2022) observed that gamification had a positive effect on foreign language learning, increasing student participation. Valenzuela (2021) highlighted the value of gamification as a pedagogical resource to enhance motivation and learning. In national contexts, Calderón Arévalo et al. (2022) identified that gamification had repercussions on reading comprehension among students, especially in distance education situations. However, Villarroel et al. (2021) found a significant but low relationship between gamification and motivation in regular basic education students.

In the context of the current results, Table 8 demonstrated how the "Gamification" and "Entrepreneurship" variables related to the group of students in Chiclayo. It is important to note that, when comparing the results with the background, the relationship found in this study might vary based on the specific characteristics of the students, the educational environment, and the dynamics of the school.

In summary, the findings of this study indicated a relationship between gamification and the promotion of entrepreneurship among students in the Chiclayo school. These findings align with previous research that highlights the benefits of gamification in terms of motivation and engagement. However, it is crucial to consider that each educational context is unique and can influence how this

relationship manifests. These results provide a foundation for future research and suggest that gamification could be a valuable tool to foster entrepreneurial attitudes in students, by providing an environment that simulates real decision-making situations and challenges.

5. **CONCLUSION**

In conclusion, this research focused on examining the relationship between gamification and the promotion of entrepreneurship among students in a school in Chiclayo, Peru. The findings revealed a Spearman correlation coefficient of 0.503, indicating a moderately positive relationship between gamification and entrepreneurship, supporting the initial hypothesis posed. These results suggest that the inclusion of playful elements in the educational environment can have a significant impact on the development of entrepreneurial skills. The statistical significance, with a p-value less than 0.001, supports the notion that gamification exerts a positive influence on the promotion of entrepreneurial attitudes among students. However, it is crucial to acknowledge the study's limitations, such as its specific focus on a single school and geographical location, which might limit the generalizability of the results. Additionally, the collection of self-reported data could introduce biases in the responses. In future research, it would be beneficial to consider larger and more diversified samples, as well as the incorporation of mixed methods to gain a more holistic understanding of the relationship between gamification and entrepreneurship promotion. Furthermore, exploring potential mediating or moderating factors could enhance the understanding of underlying mechanisms. Despite these limitations, the results, specific to the context of Chiclayo, underscore the relevance of approaching gamification as an effective pedagogical strategy to foster an entrepreneurial mindset among youth, thus laying a strong foundation for future research and educational practices.

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