
'Desafío Playablanca': An Innovative Educational Experience In The Training Of Secondary Education Teachers

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Abstract

This study, part of the 'Desafío Playablanca' initiative, explores methodological innovation in secondary education teacher training, focusing on gamification and active learning strategies. It addresses the impact of these methodologies on student motivation and academic performance in e-learning environments, a relatively underexplored area. Using a quantitative research design, participants were divided into four groups based on motivation levels—two control and two experimental—to assess the innovative strategies' effects. The study analysed academic performance in oral expression, written expression, visual-spatial, and logical-mathematical skills, using grades collected at the beginning and end of the study and statistical tools such as the Shapiro-Wilk test, Student's T-test, and Wilcoxon test. Findings revealed that the motivated experimental group (Group B) showed significant improvements in all skills, validating the effectiveness of gamified learning. The unmotivated experimental group (Group D) also improved, indicating benefits irrespective of initial motivation levels. Control groups showed no significant changes, underscoring the intervention's positive impact. The 'Desafío Playablanca' project enhances e-learning knowledge by demonstrating that active learning methodologies, like gamification and flipped classrooms, significantly enrich educational experiences, increase engagement and motivation, and improve knowledge assimilation and

application. This research offers a scalable, replicable model adaptable across disciplines, promoting dynamic, interactive, and student-centred learning environments, and supports a shift towards more engaging, participatory, and technologically integrated educational practices.

Keywords: Gamification; Active learning; E-learning; Motivation and Educational Innovations

Introduction

Methodological innovation within higher education institutions has become indispensable for adapting to the multifaceted challenges and transformations characteristic of the 21st century (Mesa, Campos and Vázquez, 2019). In a world increasingly shaped by globalisation and technological advancements, it is imperative for universities to remain abreast of developments, ensuring they equip students with the requisite tools and competencies to navigate the complexities of the contemporary labour market effectively. Predominantly, methodological innovation entails the adoption of novel teaching and learning strategies that enhance active participation among students, thereby nurturing their critical thinking (Krawczyk and Padilla, 2015) and capacity to address intricate problems (Reyes et al., 2017). Furthermore, it involves the integration of Information and Communication Technologies (ICT) to augment the educational process, facilitating a more interactive and personalised learning experience (Han and Ellis, 2020). Consequently, New Information and Communication Technologies have emerged as pivotal instruments in fostering innovation and creativity, engendering profound modifications across teaching, research, outreach, and institutional governance (Capanegra et al., 2016). Accordingly, these technologies are integral to this proposal, serving as fundamental components of its framework.

Moreover, the motivation of university students is identified as a crucial determinant in fostering such active and meaningful learning (Rodríguez, 2023). A motivated learner demonstrates heightened levels of commitment, interest, and engagement in academic pursuits, which concurrently benefits their individual learning trajectory (Soto Varela et al., 2023). Several factors can influence student motivation, notably including the pursuit of personal and professional aspirations (Gómez-Calderón, García-Borrego and Fernández-Sande, 2019), the perceived relevance of content and associated activities (Aguilar, 2020), and the supportive atmosphere and acknowledgment provided by educators and the educational establishment (Benites, 2020).

In this context, educators assume a pivotal role in stimulating student motivation, tasked with crafting learning strategies that inspire students. This encompasses, inter alia, the presentation of content in a manner that captivates and resonates (Vargas et al., 2019), the setting of clear and achievable objectives (Martín-García, Sánchez-Gómez and Pérez, 2019), the employment of diverse pedagogical methods tailored to the varied learning styles of students (Alvarado, 2019), and the provision of consistent and constructive feedback (Azpilicueta Amorín, 2020).

Additionally, educators are charged with cultivating a learning milieu wherein students feel esteemed. This can be achieved through the creation of participatory and collaborative spaces that encourage the expression of creative ideas and viewpoints (Onofre, 2020), thereby fostering intrinsic motivation (Mesa, Campos and Vázquez, 2019) —a self-derived form of motivation imperative for sustained learning. Consequently, students must also harbour an intrinsic interest in their educational endeavours and commit to their learning journey. The role of educators in motivating students is therefore integral, as they are positioned to offer incentives and rewards that bolster students' own motivational drives (Castro et al., 2020).

Within this framework, the educational innovation proposal herein is formulated, characterised by active teaching and learning strategies that necessitate the direct and proactive involvement of university students in the learning process, as opposed to passive reception of information (López-Gil and Sevillano García, 2020). This project introduces innovative methodologies such as gamification (Cabrera and Pech, 2020), designed to render the learning experience more enjoyable and motivating through the employment of game elements like scores or awards for solving enigmas (Irwanto et al., 2023), or through challenge-based learning (Godínes, 2020), which presents students with real-world problems or challenges requiring research, analysis, and resolution. These methodologies advocate for the application of theoretical knowledge to practical scenarios, and promote teamwork, collaboration, and communication—skills indispensable for the professional development of future educators (Araneda et al., 2023). Furthermore, the flipped classroom methodology (Diningrant et al., 2023) is incorporated, inverting the traditional educational model by pre-assigning digital materials for study, thus allocating class time to discussion, problem-solving, and topic exploration. Storytelling (Moore, 2023) is also integrated as a central theme, enveloping these methodologies in a narrative technique designed to effectively transmit information, impart knowledge, and connect with student motivation.

This paper proposes an innovative framework characterised by teaching and learning strategies within the university context that promote the active engagement of students, aiming to foster active learning through the cultivation of critical thinking and problem-solving abilities —crucial for the personal and professional advancement of university students.

Based on the aforementioned, this proposal aims mainly to show the conceptualization of an educational initiative and the results derived from its implementation. It aims to demonstrate that its application precipitates an enhanced motivation for learning amongst students enrolled in the master's degree in Teacher Training for Secondary Education, delivered online, particularly within the subject of Educational Innovation.

In Spain, the master's degree in Teacher Training for Secondary Education is the compulsory training that must be completed in order to become a secondary education teacher, according to Organic Law 2/2006, of May 3rd, on Education (LOE), later amended by Organic Law 8/2013, of December 9th, for the improvement of educational quality (LOMCE). Specifically, Article 100.2 of the LOE states that in order to access the teaching profession at secondary education, high school, and vocational training levels, it is necessary to have adequate pedagogical and didactic training. This

master's degree qualifies graduates to work as teachers in these educational stages in Spain.

The objectives outlined are as follows:

1. To devise a methodological innovation proposal necessitating the application of theoretical knowledge acquired by students.
2. To enable learners to engage with active teaching-learning methodologies and strategies.
3. To facilitate the practice of novel methodologies such as gamification, challenge-based learning, flipped classroom, and storytelling.
4. To execute a quantitative and comparative analysis of outcomes following the application of the proposed framework to an experimental cohort.

Methodology

Description of the Educational Proposition

At the heart of the pioneering pedagogical proposition 'Desafío Playablanca' lies a targeted initiative for participants of the master's degree in Secondary Education Teaching, with a particular emphasis on the Vocational Training and Career Guidance specialisation. This scheme emerges as a visionary endeavour aspiring to transform the educational process through the adoption of gamified strategies, thereby leveraging the motivation and commitment of students within a virtual learning setting. The methodological and didactic blueprint of 'Desafío Playablanca' signifies a departure from conventional teacher training modalities, incorporating active learning methodologies and gamification elements into the curriculum. Such a fundamental overhaul is predicated on the belief that a course centred on Teaching Innovation should epitomise innovation itself.

In the era of digitalization, the task of capturing and retaining student engagement has become increasingly formidable. In response, 'Desafío Playablanca' proposes a gamified educational experience that amalgamates diverse methodologies and pedagogical resources, thereby infusing the instructional environment with a refreshing and compelling perspective for prospective secondary education teachers.

The structure of 'Desafío Playablanca' is delineated through a sequential learning journey spanning the duration of the course, wherein each session introduces a novel challenge predicated on active engagement. Herein, students take centre stage in their educational journey, engaging either individually or collaboratively to surmount challenges that necessitate a holistic application of knowledge.

The project narrative is centred around the fictive reconstruction of Playablanca, a quaint coastal township devastated by a natural calamity. Occupying the roles of educators in training, students are tasked with navigating a series of pedagogical and societal quandaries to aid in the community's resurgence. This storyline provides a

profound and motivating backdrop, facilitating the seamless assimilation of the curriculum's content.



Figure 1: Screenshot from the site containing the experience.

The instructional model deployed endorses the flipped classroom approach, enabling students to undertake preparatory work in advance and allocating classroom time for dynamic engagement and problem resolution. Gamification stands as a cornerstone of this initiative, with a structured system of points and rankings designed to foster participation and sustained effort.

Procedure

The cohort involved in this experimental study comprised university students. Presented in Table 1 are the demographics for the four scrutinised groups, inclusive of two control groups and two experimental groups, each distinguished by their motivational predisposition. The composition of students in each group is comparable, as is the presence of repeating students across both the motivated and unmotivated groups.

Table 1: Groups Definition

Group	Type	Characteristics	N	Repeaters
A	Control	Motivated	53	0
B	Experimental	Motivated	51	0
C	Control	Unmotivated	56	17
D	Experimental	Unmotivated	48	13

Four groups were established, each containing a roughly equivalent number of participants. To monitor the pre-existing levels of motivation, the study delineated two control groups and two experimental groups. Additionally, to minimise potential bias resulting from the status of the students, the proportion of repeating students across both motivated and unmotivated groups was equilibrated.

The control groups, labelled Control 1 and Control 2, functioned as the comparative baseline against the experimental groups. These participants did not undergo any specific intervention aimed at influencing their motivational states.

Conversely, the experimental groups, named Experimental 1 and Experimental 2, constituted the focus of the motivational intervention under scrutiny. Each of these groups partook in the identical intervention, thereby facilitating the evaluation of the intervention's efficacy. To further investigate the potential interplay between the level of motivation and the efficacy of the intervention, participants were stratified according to their self-reported motivational levels before being assigned to groups. This stratification process resulted in the formation of an Experimental 1 group, composed of students with naturally higher levels of motivation, and an Experimental 2 group, consisting of students with naturally lower levels of motivation. Equalising the number of repeating students across these motivational categories was instrumental in ensuring that any effects observed could not be attributed solely to previous student experiences.

Employing a balanced, multi-group design encompassing both control and experimental conditions enabled the study to isolate the effects of the motivational intervention, controlling for inherent motivational disparities and the status of the students.

Regarding data collection, this investigation assessed academic performance by evaluating four key skills: oral expression, written expression, visual-spatial, and logical-mathematical abilities. Owing to the structured nature of the course, discrete

grade values were recorded at two pivotal junctures: at the commencement of the course (initial measurement) and upon the term's conclusion (final measurement).

The statistical analysis was executed as follows: initially, a fundamental examination of means and standard deviations for each skill at both evaluation intervals and across all groups was conducted using the Microsoft Excel software. Subsequently, the open-access software JASP, version 0.17.2.0, was utilised to perform an inferential statistical analysis. Within this analysis, the initial assessment was treated as the pretest, with the concluding evaluation acting as the post-test. The aim of this analytical phase was to determine the presence of statistically significant differences between the initial and final evaluations, thereby appraising the pedagogical experience. To this end, the Shapiro-Wilk normality test was employed to assess the hypothesis of normality between evaluations for each skill. In instances where the p-value was found to be less than 0.05, the Wilcoxon test was applied to confirm significance, reaffirming the threshold of $p = 0.05$ as the conventional criterion for establishing statistically significant differences, whilst also observing the corresponding correlation coefficients. Should the p-values exceed 0.05 in the normality test, indicating an absence of significant differences, the analysis proceeded with the student's t-test, employing a threshold whereby differences were deemed non-significant if p exceeded 0.05. Furthermore, the study was enhanced with the computation of Cohen's d to determine the effect size.

Results

The orchestration of the teaching practice for groups A, B, C, and D was conducted in accordance with the procedures outlined in the methodology section. This involved the acquisition of students' grades at two distinct junctures—the commencement and the conclusion of the period, denoted as the initial (i) and final (f) evaluations, respectively. These assessments spanned four key competencies: oral expression, written expression, visual-spatial (V-S), and logical-mathematical (L-M) abilities. Table 2 provides an initial statistical analysis, incorporating both the mean scores and standard deviations, succeeded by the descriptive statistics pertinent to the four groups under scrutiny.

Table 2: Mean Scores and Standard Deviations by Group and Time of Evaluation

Group	Parameter	Evaluation	Oral expression	Written expression	V-S	L-M
A	Mean	i	5.4	6.7	6.7	6.1
		f	5.3	6.3	6.5	6.3
	Standard deviation	i	1.8	1.6	1.7	1.8
		f	2.8	2.3	1.7	2.0
B	Mean	i	5.1	6.3	6.4	5.3
		f	5.7	7.0	6.9	5.9

	Standard deviation	i	1.7	1.5	1.7	1.7
		f	2.0	1.4	1.7	1.5
C	Mean	i	3.1	4.2	4.2	4.0
		f	3.7	3.6	4.9	4.4
	Standard deviation	i	1.8	2.1	2.2	1.8
		f	3.1	2.3	3.0	2.0
D	Mean	i	2.8	4.1	4.6	4.5
		f	3.9	4.8	5.3	5.2
	Standard deviation	i	1.7	1.5	1.7	1.4
		f	2.4	1.9	2.3	2.1

Primarily, regarding Group A, which serves as the motivated control group, it is pertinent to note that the mean grades exhibit minimal variance, with the spread of scores ranging from 1.7 to 2.8 points across both evaluation instances and irrespective of the skill assessed.

Additionally, for this group, the Shapiro-Wilk normality test results, delineated in table 3, reveal that all p-values exceed 0.05. This suggests that the observed differences lack statistical significance.

Table 3: Shapiro-Wilk Normality Test for Group A

Pretest	Test	W	p
Oral expression i	Oral expression f	0.961	0.081
Written expression i	Written expression f	0.963	0.098
V-S i	V-S f	0.975	0.317
L-M i	L-M f	0.967	0.148

Table 4 illustrates the outcomes of the Student's T-test conducted for this group, with all p-values surpassing 0.05, thereby substantiating the assumption of distribution normality. Furthermore, the application of an effect size correction, as indicated by the low Cohen's d values, reinforces the findings.

Table 4: Student's T-Test and Results of Effect Correction for Group A

Pretest	Test	t	df	p	Cohen's d
Oral expression i	Oral expression f	0.467	52	0.642	0.064
Written expression i	Written expression f	1.416	52	0.163	0.194
V-S i	V-S f	0.753	52	0.455	0.103
L-M i	L-M f	-1.127	52	0.265	-0.155

For group B, identified as the motivated experimental group, table 2 demonstrates an incremental improvement in the average grades towards the semester's end, with increases ranging from 0.5 to 0.7 points, while the variability of scores spans from 1.4 to 2.0 points across both evaluations and all assessed skills.

Additionally, table 5 displays the results of the normality test for this group, showcasing a notable deviation from the control group. The observed distributions deviate from normality, as evidenced by p-values not surpassing the 0.05 threshold.

Consequently, the Wilcoxon test, detailed in table 6, affirms the significance of these outcomes ($p < 0.05$), accompanied by robust correlation coefficients, as indicated by R^2 values ranging between 0.715 and 0.969.

Table 5: Shapiro-Wilk Normality Test for Group B

Pretest	Test	W	p
Oral expression i	Oral expression f	0.943	0.017
Written expression i	Written expression f	0.912	0.001
V-S i	V-S f	0.928	0.004
L-M i	L-M f	0.928	0.004

Table 6: Wilcoxon test for group B

Pretest	Test	W	z	p	R^2
Oral expression i	Oral expression f	373.500	-2.377	0.017	-0.390
Written expression i	Written expression f	270.500	-3.402	< 0.001	-0.558
V-S i	V-S f	301.500	-3.094	0.002	-0.508
L-M i	L-M f	344.500	-2.497	0.013	-0.414

Upon examination of the outcomes, it has been statistically validated that significant modifications occur within the four competencies related to the pedagogical methodology examined in this investigation, particularly among the groups characterised by high motivation.

When delving into the data for the two groups with elevated levels of motivation, attention turns to group C, designated as the unmotivated control group. According to table 2, there appears to be a marginal improvement (approximately 0.5 points) in three of the four competencies assessed, with written expression being the notable outlier. The range of dispersion for this group is identified to be between 2.0 and 3.1.

Conversely, the analysis delineated in table 7 reveals the absence of statistically significant differences between the initial and final evaluations across all skills and assessment intervals.

Table 7: Shapiro-Wilk Normality Test for Group C

Pretest	Test	W	p
Oral expression i	Oral expression f	0.968	0.146
Written expression i	Written expression f	0.976	0.339
V-S i	V-S f	0.979	0.443
L-M i	L-M f	0.961	0.070

Utilising the student's t-test reveals that the p-values exceed 0.05 in every instance, thereby confirming the normality of grade distributions across all evaluated scenarios.

Table 8: Student's T-Test and Results of Effect Correction for Group C

Pretest	Test	t	df	p	Cohen's d
Oral expression i	Oral expression f	-1.673	55	0.100	-0.224
Written expression i	Written expression f	1.629	55	0.109	0.218
V-S i	V-S f	-1.682	55	0.098	-0.225
L-M i	L-M f	-1.340	55	0.186	-0.179

In the case of group D, identified as the unmotivated experimental group, table 2 shows a significant enhancement in the mean scores across all four skills, with oral expression experiencing the most substantial increase (up to 1.1 points). The spread of scores is consistent with the other groups, ranging from 1.4 to 2.4.

Furthermore, Table 9 presents the Shapiro-Wilk normality test results, which, like Group B, reveal that the p-values fall below the 0.05 threshold. Consequently, the Wilcoxon test, detailed in Table 10, confirms the significance of these findings ($p < 0.05$), accompanied by robust correlation coefficients.

Table 9: Shapiro-Wilk Normality Test for Group D

Pretest	Test	W	p
Oral expression i	Oral expression f	0.939	0.015
Written expression i	Written expression f	0.923	0.004
V-S i	V-S f	0.949	0.035
L-M i	L-M f	0.924	0.004

Table 10: Wilcoxon test for group D

Pretest	Test	W	z	p	R ²
Oral expression i	Oral expression f	187.000	-4.113	< 0.001	-0.682
Written expression i	Written expression f	221.500	-3.341	< 0.001	-0.572
V-S i	V-S f	292.000	-2.715	0.007	-0.460
L-M i	L-M f	301.000	-2.617	0.009	-0.443

These findings underscore the considerable influence that effective teaching methodologies can exert on student outcomes within the context of higher education, even amongst cohorts characterised by lower levels of motivation. The results are subsequently examined in a disaggregated manner to elucidate this impact further.

In the case of group A, the motivated control group, the data reveal an absence of statistically significant variations in academic performance skills between the initial and final assessments. The Shapiro-Wilk normality test corroborated that the score distributions did not significantly diverge, implying that the pedagogical approach adopted for this cohort did not result in marked enhancements in academic performance competencies.

In contrast, group B, the motivated experimental group, displayed modest increments in the average scores across the assessed competencies. The Shapiro-Wilk test outcomes suggested that the score distributions deviated from normality, and subsequent analysis via the Wilcoxon test validated the presence of significant improvements in academic performance following the intervention. This indicates that the pedagogical strategy implemented for group B positively influenced academic outcomes.

Turning attention to group C, the demotivated control group, a marginal elevation in average scores was observed for three of the four competencies evaluated. The Shapiro-Wilk test confirmed that the distributions conformed to normality, and the student's t-test upheld the absence of significant differences in academic performance between the pre-test and post-test phases. This suggests that the instructional method

employed did not significantly affect academic performance within this demotivated cohort.

Lastly, group D, the demotivated experimental group, demonstrated pronounced improvements in mean scores across all evaluated competencies. The Shapiro-Wilk test identified non-normal distributions, prompting the application of the Wilcoxon test, which affirmed significant enhancements in academic performance following the intervention. This reveals that the instructional approach enacted for group D had a markedly positive impact on academic outcomes, notwithstanding the initial motivational deficit.

In summary, these outcomes accentuate the pivotal role of teaching methodologies in shaping academic performance, including among groups presenting lower motivation levels. The evidence highlights the necessity for bespoke educational strategies to optimise student achievements and points to the potential of instructional interventions to effect positive changes in student performance within university environments. Further investigative efforts in this domain hold promise for uncovering efficacious teaching practices suited to the diverse needs of student populations.

Analysis and Discussion

'Desafío Playablanca' articulates a pedagogical proposal rooted in the principle of experiential learning, advocating for an educational experience that immerses students in the direct application of knowledge. This method underscores the value of experimentation and learning from mistakes, enriching students' comprehension of theoretical principles and their relevance to practical scenarios. Such an approach empowers students to discern the inherent logic within educational processes, markedly improving their capacity to amalgamate theoretical insights with practical application.

Active learning methodologies in higher education, such as flipped learning and gamification, are key in improving educational outcomes by fostering motivation, autonomy, and student engagement (Parra-González et al., 2020).

The findings of this study confirm the effectiveness of the innovative methodologies applied in "Desafío Playablanca," particularly in the experimental groups. Data analysis through parametric and non-parametric tests showed significant improvements, especially in the experimental groups. Specifically, group B (motivated experimental group), showed substantial progress in all four assessed skills (oral expression, written expression, visual-spatial, and logical-mathematical). These results are consistent with previous studies on active methodologies in higher education, which argue that these approaches foster autonomy, motivation, and improved academic outcomes (Parra-

González et al., 2020; Manzano-León et al., 2022). Additionally, they facilitate active learning and the cultivation of key competencies, including digital literacy, which commands a premium in today's digital-centric society (Arruabarrena et al., 2019).

Gamification, as a core element of these strategies, creates an engaging and motivational environment by integrating game elements into educational contexts. This approach drives higher student participation and fosters critical thinking and creativity through real-world challenges, pushing students to apply theoretical knowledge in practical scenarios.

The flipped classroom model, which also constitutes a key component of this methodological framework, further enhances this dynamic by shifting traditional learning paradigms. In this setup, students prepare ahead of class, allowing for more interactive, problem-solving sessions during class time. This not only optimizes learning outcomes but also strengthens collaborative and practical skills (Moreno-Guerrero et al., 2021). While beneficial, this model occasionally faces challenges, such as a mismatch between institutional goals and family engagement (Bond, 2019).

Critical reflection on encountered obstacles is deemed essential within the learning trajectory. Utilising collaborative technologies like Jamboard enhances the collective sharing of experiences, methodologies, and resolutions identified by students. This collaborative exercise not only bolsters individual learning through idea exchange but also advances the social and cooperative skills indispensable for educators in modern educational contexts. Kim et al. (2011) argue that facilitating deep learning through collective reflection is vital in project-based learning environments, with effective instructor guidance being paramount to optimising group performance.

In Group D (unmotivated experimental group), the results were equally notable, with significant improvements in all assessed competencies. This suggests that active methodologies are effective even for students with initially low motivation. The improvement in this group confirms that gamification and active learning can also serve as a catalyst for engagement in students who otherwise may struggle to stay motivated.

In contrast, the control groups (A and C), which did not receive any active learning interventions, showed no significant changes in academic performance. This underscores the limited effectiveness of traditional, passive learning methods in improving student outcomes, even among those with initial motivation. These findings suggest that motivation alone is not enough to foster academic improvement without the support of dynamic and student-centered approaches like those developed in 'Desafío Playablanca'.

The improvements observed in both motivated and unmotivated experimental groups (B and D) highlight the capacity of active learning strategies to enhance intrinsic motivation and academic performance. The application of real-world challenges in

"Desafío Playablanca" allowed students to engage more deeply with the material, leading to better development of critical skills, such as oral and written expression.

In conclusion, the results of "Desafío Playablanca" demonstrate that integrating active learning methodologies, such as gamification, flipped classroom, and storytelling, can significantly enhance academic performance. The statistical validation of these results, particularly in the experimental groups, highlights the importance of adopting innovative, student-centered approaches to foster deeper learning, motivation, and skill development in higher education.

Conclusions and Recommendations

'Desafío Playablanca', as an innovative educational initiative, not only echoes the pressing need for methodological innovation in the pedagogical landscape but also underscores its tangible benefits on learning outcomes and student motivation. The initiative's core, built on gamification, challenge-based learning, flipped classrooms, and storytelling, serves to revitalise the educational experience, rendering it more engaging and pertinent to the demands of the contemporary educational milieu. The comparative analysis undertaken between control and experimental groups, stratified by their motivational levels, unveils significant insights into the efficacy of 'Desafío Playablanca'. The findings from this empirical investigation suggest a notable enhancement in the academic performance and motivation of students who engaged with the active learning strategies embedded within the initiative. Particularly striking are the improvements recorded among students initially categorised with low motivation levels, who, through their participation in 'Desafío Playablanca', exhibited significant strides in oral expression, written expression, visual-spatial, and logical-mathematical skills. This improvement not only attests to the potency of the employed methodologies in fostering academic excellence but also in catalyzing a motivational shift amongst learners.

'Desafío Playablanca' epitomises the transformative potential of active learning methodologies. By shifting the locus of learning from a passive reception of knowledge to an active engagement with content, these methodologies promote a deeper, more holistic understanding of subject matter. Furthermore, the integration of ICTs and gamification strategies enriches the learning environment, making it more interactive and immersive. This aligns with the pedagogical prerogative of fostering an educational setting that is not only intellectually stimulating but also emotionally engaging, thereby enhancing students' intrinsic motivation towards learning.

Moreover, the significant outcomes observed in the experimental groups underscore the efficacy of these methodologies in bridging the gap between theoretical knowledge and practical application. Through the practical challenges and collaborative tasks inherent in 'Desafío Playablanca', students were afforded the opportunity to apply theoretical concepts in solving real-world problems. This not only facilitated a deeper

engagement with the content but also honed critical thinking and problem-solving skills, competencies that are invaluable in the modern educational and professional landscape.

In synthesising these findings, 'Desafío Playablanca' tries to offer a blueprint for the future of teacher education. By embedding active learning methodologies at the heart of teacher training, the initiative not only enhances academic performance and motivation but also prepares future educators to navigate and thrive in the evolving educational landscape. The success of this initiative serves as a testament to the potential of innovative pedagogical approaches in transforming educational experiences and outcomes.

In conclusion, the 'Desafío Playablanca' experience underlines the critical role of active methodologies in contemporary teacher education. The initiative's positive impact on student motivation and academic performance illuminates the path forward for educational innovation. It calls for a paradigm shift in teacher training, urging the adoption of pedagogical strategies that are dynamic, participatory, and aligned with the needs of the 21st-century learner. As the educational landscape continues to evolve, initiatives like 'Desafío Playablanca' offer valuable insights and frameworks for enriching the educational journey of future teachers, thereby contributing to the cultivation of a more engaged, motivated, and competent generation of educators.

*This study does not require ethical approval as it does not process any personal data from any individual.

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