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SUMARIO • SUMMARY • RESUMO

Editorial

We are pleased to present this new issue of the journal, which brings together research from various contexts in Spain and Latin America, focusing on some of the most significant challenges in education, vocational training, social inclusion, human development, and health. These publications demonstrate the scientific community's commitment to generating rigorous and contextualized knowledge, aimed at understanding complex issues and proposing alternatives that contribute to the improvement of educational, social, and professional practices. The thematic and methodological diversity of the included studies also reflects the wealth of perspectives that address contemporary challenges through comprehensive and interdisciplinary approaches.

The issue opens with a study on family socialization styles and self-concept among pregnant adolescents treated at the Tomasina Valdez Hospital in the Dominican Republic. The research explores the influence of family dynamics on the personal development of vulnerable adolescents, providing evidence of the importance of family environments characterized by affection, supervision, and the setting of boundaries in promoting emotional well-being and holistic development.

The following study focuses on the psychometric properties of an instrument designed to measure algebra proficiency among student teachers. This study makes a valuable contribution to educational assessment by validating a reliable and robust instrument capable of generating relevant information for decision-making in initial teacher education and in strengthening mathematical competencies.

Teacher professionalization is a central focus of the following article, which analyzes the training and competency-based performance of elementary and secondary school teachers in the Dominican Republic. The results prompt reflection on the need to strengthen ongoing professional development processes and to consolidate policies that promote the continuous professional development of teachers as an essential condition for ensuring a quality education.

Another study conducted in Ecuador addresses the issue of the digital divide in education through a methodological approach implemented at an educational institution in the province of Orellana. Experience shows that the combination of technological infrastructure, connectivity, equipment, and teacher training can bring about significant changes in teaching and learning processes, promoting a more equitable and inclusive education.

Digital literacy is the central focus of the research conducted at the Saint Paul School in Carice, Haiti. The findings reveal significant limitations in the technological skills of elementary school students and highlight the urgent need to promote educational

strategies that strengthen digital literacy from the earliest stages of education—a prerequisite for effective participation in the knowledge society.

The following article explores the potential of gamification for developing emotional intelligence in children ages five to six. Through an innovative pedagogical approach that combines analog and digital resources, the study demonstrates how play-based learning can foster self-awareness, emotional self-regulation, empathy, and social skills—all essential aspects of a well-rounded education from early childhood onward.

Academic performance among computer engineering students is the focus of analysis in another of the included studies. The study identifies socioeconomic, family, motivational, and health-related factors that significantly influence student performance, providing evidence that can guide institutional efforts aimed at improving retention, academic success, and the well-being of future professionals.

Another study examines the internationalization of basic education in Brazil from an innovative perspective. The author highlights the need to expand opportunities for internationalization beyond higher education, proposing strategies focused on equity, inclusion, and the development of global competencies that will prepare children and young people to thrive in an increasingly interconnected world.

A study conducted in Honduras analyzes the teaching vocation and its relationship to professional performance. Based on the perspectives of teachers and student teachers, the study reaffirms the value of motivation, ethics, a passion for teaching, and self-actualization as fundamental pillars of educational practice, contributing to the debate on the human factors that underpin the quality of teaching.

Social and labor inclusion plays a significant role in the article dedicated to the Impulsa workshop program, which is aimed at people at risk of exclusion. The results show how strategies involving career guidance, support, and collaborative work can strengthen self-efficacy, professional identity, and the development of more resilient life trajectories, highlighting the transformative role of socio-educational interventions.

For its part, research on student-centered communicative activities for the development of language skills offers valuable insights into language teaching in contexts following the shift to virtual education. The study highlights the effectiveness of participatory methodologies that place the student at the center of the learning process and promote the balanced development of various communication skills.

The articles section concludes with a study on holistic education based on a transdisciplinary approach to promote humanized health care in the Colombian context. The findings demonstrate how the integration of knowledge, collaborative work, and continuing education help strengthen a comprehensive approach to health care, in which health care professionals also take on an educational and social role committed to meeting the needs of the community.

Finally, it is worth noting that the articles in this issue highlight the importance of scientific research as a tool for understanding reality and promoting processes of

transformation in various areas of society. We would like to thank the authors for sharing their findings, the reviewers for their rigorous academic work, and our readers for their continued trust. We hope that the contributions included in this issue of MLSER will inspire new research, foster interdisciplinary dialogue, and help strengthen educational, social, and professional practices that are more inclusive, innovative, and committed to human development.

Antonio Pantoja Vallejo
Editor Jefe / Editor in chief / Editor Chefe

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FAMILY SOCIALIZATION STYLES AND SELF-CONCEPT IN PREGNANT ADOLESCENTS, TOMASINA VALDEZ HOSPITAL, DOMINICAN REPUBLIC, 2021-2022

Estilos DE SOCIALIZACIÓN familiar y autoconcepto en adolescentes embarazadas, Hospital Tomasina Valdez, REPÚBLICA DOMINICANA, 2021-2022

Altagracia Romero-Ramírez
Universidad Internacional Iberoamericana, Mexico
[Romero.altagracia@gmail.com] [https://orcid.org/0009-0005-4902-2862]
Javier Diz Casal
Universidad de Vigo, Spain
[javierdizcasal@gmail.com] [https://orcid.org/0000-0003-1332-8905]

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ABSTRACT

This article presents a study focused on family relationships and self-concept. Its objective was to analyze family socialization styles and self-concept in pregnant adolescents attending outpatient clinics at the Tomasina Valdez Hospital in the Dominican Republic during the period 2021-2022. A mixed-methods, observational, descriptive, correlational, and cross-sectional approach was implemented. The sample consisted of 30 adolescents aged 12 to 19 years. This sample size was calculated using non-probability convenience sampling. The instruments used were an interview protocol, the Rosenberg Self-Esteem Scale, and the Parental Socialization Scale in Adolescence (ESPA 29). Spearman's rank correlation coefficient and the chi-square test were used to analyze the relationship between the variables. The results indicate that there is no relationship between family socialization styles and self-concept in pregnant adolescents attending outpatient clinics at the Tomasina Valdez Hospital. Most of the participants were in late adolescence with an incomplete secondary education and had entered into early unions. The mothers' parenting style was indulgent, while the fathers' was neglectful. The participants came from single-parent families and had a low level of self-concept. It is concluded that a family parenting style characterized by high levels of affection, supervision, and clearly established rules and boundaries from both parents promotes the emotional well-being of adolescents and, while not determining their level of self-concept, can help them perceive themselves more positively.

Palabras clave:

RESUMEN

El presente artículo es una investigación centrada en las relaciones familiares y el autoconcepto. Su objetivo fue analizar los estilos de socialización familiar y el autoconcepto en adolescentes embarazadas atendidas en consultas en el Hospital Tomasina

Socialización familiar, autoconcepto, socialización parental.	Valdez, República Dominicana en el período 2021-2022. Se implementó un enfoque mixto, observacional, descriptivo, correlacional y trasversal. La muestra estuvo compuesta por 30 adolescentes de entre 12 a 19 años. Dicha muestra se calculó mediante un muestreo no probabilístico por conveniencia. Los instrumentos utilizados fueron un protocolo de entrevista, la Escala de Autoestima de Rossemberg y la Escala de Socialización Parental en la Adolescencia (ESPA 29). Para analizar la relación entre las variables se usó el Coeficiente de Correlación de Spearman y el Chi cuadrado. Los resultados indican que no existe relación entre los estilos de socialización familiar y autoconcepto en adolescentes embarazadas atendidas en consultas en el Hospital Tomasina Valdez. La mayoría de las participantes se encuentran en la adolescencia tardía con un nivel educativo de educación secundaria incompleta, con uniones tempranas. El estilo de socialización en las madres fue el indulgente y en el padre fue el negligente. Las participantes pertenecen a familia monoparental y con un nivel de autoconcepto bajo. Se concluye que un estilo de socialización familiar caracterizado por altos niveles de afecto, supervisión, normas y límites, claramente establecidos en ambos progenitores, favorece el bienestar emocional de las adolescentes y, aunque no determina el nivel de autoconcepto, puede ayudar a que las adolescentes se autoperciban de una manera más positiva.

Introduction

Adolescence is an important period in human development. It begins at the end of childhood and continues into the second decade of life (Oron, 2019). According to the United Nations Children's Fund (UNICEF, 2021), it is divided into three periods: Early adolescence (ages 10 to 13), middle adolescence (ages 14 to 16), and late adolescence (starting at age 17 and extending up to age 21). During this stage, physical, psychological, and social changes take place. On a psychological level, personality develops over time. Physically, changes in height and physical transformations of the body can be observed. On a social level, young people interact less with their families and form stronger bonds with their peers (Papalia and Martorell, 2021).

Although young people tend to spend more time with friends, the family system does not lose its influence on the lives of adolescents, as it is the most important environment for their development. Through the social interactions that take place at home, human beings learn how to relate to others. These interactions serve as the foundation for forming bonds, adapting to other contexts, and developing self-concept. Through their daily interactions, parents convey values, express affection, and provide positive or negative feedback on their children's qualities (Papalia and Martorell, 2021).

According to Palacios-Garay and Coveñas-Lalupú (2019), self-concept is the mental image that people form of themselves. In this regard, Papalia and Martorell (2021) explain that, in forming their own views, individuals use the opinions of others as a reference point and, based on that, develop their own personal assessments. On the other hand, Ingles et al. (2019) add that the concept of self is shaped through young people's socialization with significant others. Based on the authors' argument, it can be understood that self-perception is multifactorial, since family and social processes play a role in how adolescents construct a mental representation of their own worth, taking into account the views of significant others.

Papalia and Martorell (2021) explain that the family plays a fundamental role in self-concept, since adolescents who have positive relationships with their parents develop higher levels of self-esteem. According to the authors, it is through self-esteem that young people can recognize the value of their own qualities. Along these lines, Espinosa-García and Cuesta Izquierdo (2023), in a study on self-concept and parental socialization styles among adolescents aged 11 to 18, found that there is a significant relationship between socialization styles and levels of self-concept.

Musitu and García (2015) define parental socialization as an educational process through which parents pass on cultural knowledge and establish the boundaries and norms that guide individuals' behavior. According to the authors, there are four styles: the authoritative style, characterized by high levels of acceptance and involvement. Parents who follow this model strike a balance between love and control when raising their children. High expectations for children are managed through open communication, in which parents convey what they expect from them. That style of socialization allows people to better internalize the rules. On the other hand, the lenient style, characterized by high levels of acceptance and involvement and low levels of coercion and imposition. In this approach, communication is frequent; however, when rules are broken, no punishments are imposed—instead, they talk with their children as if they were mature enough to correct their own behavior. In contrast to this approach to parenting is the authoritarian style, which is characterized by low levels of acceptance and involvement and high levels of coercion and imposition—that is, low levels of affection and high

expectations. They are very demanding parents and pay little attention to their children's needs. The way to educate is through orders that must be obeyed. When behaviors conform to the rules, positive reinforcement is not used. Finally, there is the neglectful style, characterized by low levels of acceptance and involvement and low levels of coercion and imposition. Affection and boundaries are scarce. When we talk about a lack of boundaries, it means that there is no supervision or care; therefore, the children themselves are responsible for their own protection (Musitu and García, 2015).

In studies on socialization styles, Jiménez et al. (2020) found a permissive parenting style, as well as an extended family structure. Llantop (2020) found a higher percentage of participants from single-parent families and a neglectful parenting style. On the other hand, Malca-Romero and Rivera (2019) conclude that the family social climate and self-concept are significantly related; they explain that if young people perceive a positive structure in their home, their level of self-concept improves. Similarly, Espinosa-García and Cuesta Izquierdo (2023) found a relationship between parental socialization styles and self-concept. While Gómez (2022) and Cortés et al. (2020) found different results. These authors found that a common characteristic of the sample was a lack of parental involvement and supervision, a factor that could contribute to teenage pregnancy. Parents with these qualities have a lenient parenting style.

Otivo (2020) found that the largest percentage of the sample consisted of adolescents in middle and late adolescence who had not completed high school, were unmarried, and had low self-esteem; similarly, Gómez (2022) found low and moderate levels of self-concept. On the other hand, Rivera (2022) concludes that communicative socialization styles are associated with high levels of self-esteem, while neglectful and hostile styles are associated with low levels of self-esteem. The home environment influences not only self-concept but also risky behaviors, including teenage pregnancies. In this regard, Camarena (2023), based on a sample of adolescents aged 15 to 19, concludes that families experiencing difficulties in their functioning significantly increase the likelihood of teen pregnancies, since many of the young women interviewed explained that they did not receive support from their parents and faced financial difficulties, and for that reason, becoming sexually active at an early age and becoming a mother were seen as a way to leave home and improve their living conditions.

Teenage pregnancy is a social problem found in various countries around the world. They affect public health because they jeopardize the physical, psychological, and sexual and reproductive well-being of young women aged 10 to 19 (Ministry of Public Health, 2019), and they have consequences for pregnant women and their children, who are at risk of death (Góngora-Ávila and Mejía Arencibia, 2021). According to the National Bureau of Statistics (ONE, 2022a). Teenage mothers also face mental health risks. Bravo et al. (2020), in a sample of 60 pregnant adolescents aged 14 to 16, found, among other results, low levels of self-esteem, forced relationships that did not last, and physical violence.

Global rates of teen pregnancy are high. According to the World Health Organization (WHO, 2024), 21 million cases were reported in various parts of the world in 2019. The Dominican Republic stands out among the countries of Latin America and the Caribbean for its high rates of teenage pregnancy. According to the World Bank (2021), the country's statistics are 50% higher than the regional averages. In this regard, Caireta Serra (2024) explains that 19.03% of all births in the country occur among adolescents. UNICEF (2024) presents an even more alarming statistic, stating that 77 out of every 1,000 children born are to mothers between the ages of 15 and 19. To put it more clearly, it states that 1 in 5 young people in the country is pregnant or has had a child.

These percentages place the country in first place among Latin American and Caribbean nations with high rates of teenage pregnancy. National Statistics Office (ONE, 2020; World Bank, 2023). The provinces in the country with the highest rates of teenage pregnancies are Elías Piña, María Trinidad Sánchez, Dajabón, Montecristi, Pedernales, San Pedro de Macorís, Peravia, and San Cristóbal. In 2023, the latter reported a total of 1,507 cases of teenage pregnancy, representing 22.05% (Caireta Serra, 2024).

At the Tomasina Valdez Hospital, located in the Valdesia Region—specifically in the municipality of Sabana Grande de Palenque, which comprises both rural and coastal areas—a high percentage of pregnant adolescents has been observed, and these patients are referred to the psychology department. Upon evaluation, they have sparked interest in analyzing socialization styles within families and self-concept, since a better understanding of this issue requires exploring various factors.

This research is timely and important, first and foremost, because it is the first study of its kind to be conducted in this context and among this population. The data collected made it possible to identify the young women's perceptions of their parents' parenting styles and, at the same time, to analyze how these perceptions relate to their self-concept. Second, because teenage pregnancy is a social problem that affects the lives of hundreds of Dominican teenage girls. By researching this topic in the selected sample, the Tomasina Valdez Hospital can strengthen its comprehensive adolescent care program by incorporating guidance for families to foster positive relationships, and the Department of Psychology can carry out psychological interventions to strengthen self-concept and the family system and reduce the risk of future teenage pregnancies among the young women receiving care.

In this regard, the purpose of the study was to analyze family socialization styles and self-concept among pregnant adolescents receiving care at outpatient clinics at Tomasina Valdez Hospital in the Dominican Republic during the 2021–2022 period. In accordance with the stated objective, the general hypothesis was to identify the relationship between the two variables: family socialization styles and self-concept.

Method

A sequential mixed-methods approach was used. Arispe et al. (2020) explains that, by integrating qualitative and quantitative models, the study is mixed-methods. An observational study design was implemented; based on the number of measurements, it was a cross-sectional study, as the data were collected during a single period spanning 2021–2022. The chosen research design was descriptive, and ultimately, the study analyzed the correlation between the variables of family socialization styles and self-concept; in that sense, the study was correlational.

Population and Sample

The study population consisted of 30 pregnant adolescents aged 12 to 19. The entire group was used as the sample. Selected using non-probability convenience sampling. The selection criteria included being pregnant, being in good physical, emotional, and cognitive health, being between 12 and 19 years of age, being Dominican or a foreign national with oral or written proficiency in Spanish, residing in the Sabana Grande de Palenque municipality, being referred to and attending psychological counseling sessions at the Tomasina Valdez Hospital, and having obtained informed

consent from the parents, legal guardian, or romantic partner if the participant was in an early romantic relationship. Young women who did not meet all the criteria were excluded from the study.

Instruments

Instruments were selected to collect both qualitative and quantitative data. For the qualitative data, an in-depth interview was conducted using a 14-question protocol and the Rossemberg Self-Esteem Scale, through which the participants' characteristics were collected. To collect quantitative data, the Parental Socialization Styles Scale (ESPA 29) was selected to identify socialization styles within the family, and the Rossenberg Self-Esteem Scale was used to assess levels of self-esteem—high, medium, and low—and to organize the participants into each group.

The Self-Esteem Scale was developed by Rossemberg. It consists of 10 Likert-scale items that measure an individual's acceptance of and respect for themselves. It was validated by Martínez and Alfaro (2019). The findings indicate that it is useful in the adolescent population, given its validity and reliability in assessing self-esteem.

The Parental Socialization Styles Scale (ESPA 29) was developed by Musitu and García to assess parents' socialization styles. It consists of 29 items (Musito and García, 2015). The psychometric properties were confirmed by Celi (2015), as cited in Romero (2021). The author concludes that it is a valid and reliable tool for assessing parenting styles in the 11- to 18-year-old population.

The Rossenberg Self-Esteem Scale and the Adolescent Parental Socialization Scale (ESPA 29) have been used in various studies in the Dominican Republic, including Lara-Caba (2019)'s study on self-esteem among women who are victims of intimate partner violence, in which the Rossenberg Self-Esteem Scale was used, while the Parental Socialization Scale for Adolescents (ESPA 29) is notably featured in Romero (2021), in a study on the family social climate among sixth-grade students with low performance in Spanish.

A six-phase process was designed to collect the data. In the first phase, the researcher visited the hospital to request permission, where she met with the director and other staff members who coordinate care for pregnant adolescents. In the second study, the sample—consisting of the entire population—was selected. In the third phase, the selection process, instrument review, and ethical principles were carried out. Once the instruments were selected, the ethical principles were evaluated; these included, among other things, the confidentiality of the data provided by each participant and the protection of their identity. Subsequently, both the instruments and the ethical considerations were submitted to and reviewed by the ethics committee of the Universidad Iberoamericana Internacional (UNINI). Subsequently, the committee issued a favorable report. During the fourth session, the informed consent form was signed. The researcher met with the selected participants, their parents, legal guardians, or romantic partners if the participants had entered into a relationship at an early age. At the meeting, they were asked to collaborate on the study. The participant was given an explanation of what the research entailed, its general and specific objectives, the benefits of participating, and the ethical principles involved. Once that process was completed, two informed consent forms were signed. In the fifth phase, the instruments were administered to the selected sample in the privacy of a private consultation room. In the sixth and final phase, the information that had been collected was analyzed. They were coded and classified according to the corresponding data type.

Atlas Ti Software was used to analyze the qualitative data, and the information was organized into categories and codes. Content analysis, co-occurrence analysis, and sentiment analysis were conducted. Networks, co-occurrence tables, and word clouds were then created to represent the findings. The quantitative data were organized using Excel and the trial version of IBM SPSS Statistics 28, which was downloaded in 2024. A normality test was performed using the Shapiro-Wilk test. Subsequently, a descriptive and inferential analysis of the data was conducted; the latter was performed using Spearman's correlation coefficient and the chi-square test to determine the relationship between the variables. Finally, frequency tables and bar charts were created in accordance with the study's objectives.

Results

The overall objective of the study was to analyze family socialization styles and self-concept among pregnant adolescents receiving outpatient care at Tomasina Valdez Hospital in the Dominican Republic during the 2021–2022 period. To achieve this, the following specific objectives were established: to identify family socialization styles and determine the predominant style; to examine levels of self-concept; to classify family types; to detail the sociodemographic characteristics of the participants; and to determine the relationship between the variables of family socialization styles and self-concept.

When analyzing the qualitative and quantitative results. With regard to family socialization styles among mothers, the study found that 7% of the participants perceived an authoritative socialization style, 30% a neglectful style, and 63% a permissive style. Among parents, 3% exhibited an authoritative parenting style, 70% a neglectful style, and 27% a permissive style. Among the characteristics observed in family relationships, it was found that mothers are primarily the ones who provide guidance, support, and affection. Among siblings, there is support, guidance, and kindness. Table 1 below shows the frequencies and percentages of the socialization styles of both parents.

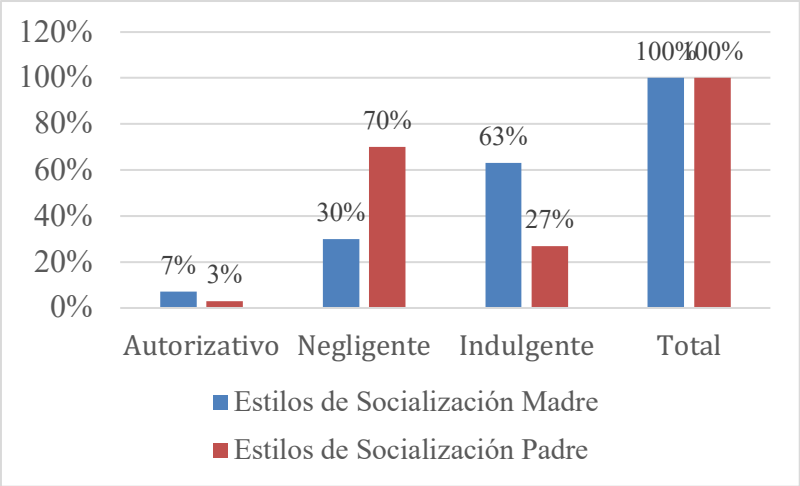
Table 1
Styles of Family Socialization

Styles Socialization	Mothers		Parents	
	Frequency	Percentage	Frequency	Percentage
Authorizing	2	7%	1	3%
Careless	9	30%	21	70%
Forgiving	19	63%	8	27%
Total	30	100%	30	30

The following graph shows the percentages of the parents' family socialization styles. It can be seen that, among midwives, the largest proportion is in the permissive parenting style, at 63%, while among parents, the highest percentage is in the neglectful style, at 70%; this latter style shows a steeper slope on the graph. With lower percentages—and therefore lower rankings—are the authoritative and neglectful parenting styles, at 7% and 30%, respectively. Among fathers, the authoritative and permissive styles accounted for 3% and 27%, respectively (see Figure 1).

Figure 1

Family socialization styles in both parents



With regard to self-concept level, a low level was identified most frequently (43%), while a high level was found in a smaller proportion of participants (27%). It can be seen that the majority scored low. Characterized by feelings of inferiority and low self-esteem.

The following table breaks down the levels of self-concept by frequency and percentage. The data shows that 8 of the participants were classified at the high level, representing 27%. In the middle group, 9 adolescents were identified, representing 30%. Finally, in the low category, 13 of the young women interviewed were identified, representing 43% of the sample. (See Table 2).

Table 2

Level of Self-Concept

Level of Self-Concept	Frequency	Percentage
High	8	27%
Medium	9	30%
Bass	13	43%
Total	30	100%

Correlation Analysis Between Variables Using Spearman's Rho

The variables were analyzed using Spearman's correlation coefficient and the chi-square test, performed using IBM SPSS Statistics 28, which was downloaded as a trial version in 2024.

HI: There is a correlation between family socialization styles and self-concept among pregnant adolescents receiving outpatient care at Tomasina Valdez Hospital in the Dominican Republic during the 2021–2022 period.

H0: There is no correlation between family socialization styles and self-concept among pregnant adolescents treated at outpatient clinics at Tomasina Valdez Hospital in the Dominican Republic during the 2021–2022 period.

Significance Level

Mr. < 0.05 indicates a relationship between the variables.

Mr. > 0.05: There is no relationship between the variables.

The following table presents an analysis of the variables "family socialization styles" and "self-concept." It can be seen that there is no significant correlation between family socialization styles and the participants' self-concept. For the mother, r = 0.046, p = 0.811. For parents, r = -0.057; p = 0.763. The results indicate that p > 0.05; therefore, the alternative hypothesis is rejected and the null hypothesis is accepted. However, a weak positive correlation can be observed between the mother's socialization styles and the father's socialization style, r = 0.387*; p = 0.035. The results indicate that p < 0.05. (See Table 3).

Table 3

Inferential Analysis of the Variables "Family Socialization Styles" and "Self-Concept"

		Self-Concept	Mother's Socialization Style	Father's Socialization Style
Spearman's Rho	Correlation coefficient	1,000	0.046	-0.057
	Two-tailed significance	0	0.811	0.763
Mother's Socialization Style	Correlation coefficient	0.046	1,000	0.387 *
	Two-tailed significance	0.811	0	0.035
	N	30	30	30

Analysis of Variables Using the Chi-Square Test

The table below shows the results of the chi-square analysis conducted to examine the relationship between the variables "family socialization styles of both parents" and "self-concept." It can be seen that the significance level for the mother is 0.443, and for the father it is 0.270. The results indicate that p > 0.05. Therefore, there is sufficient scientific evidence to reject the alternative hypothesis and accept the null hypothesis. There is no significant association between family socialization styles and self-concept among pregnant adolescents seen in outpatient clinics at Tomasina Valdez Hospital in the Dominican Republic during the 2021–2022 period (see Table 4).

Table 4
Chi-Square Test

	Mother			Father		
	Value	df	Asymptotic Significance Bilateral	Value	df	Asymptotic Significance Bilateral
Pearson's Chi-Square	3.337 a	4	0.443	5.175 a	4	0.270
Probability Ratio	4,673	4	0.323	4,999	4	0.287
Linear association	0.172	1	0678	0.005	1	0.941
Valid Cases	30					

On the other hand, regarding family types, it was found that the largest percentage of participants—67%—grew up in single-parent households. In those systems, , one of the parents was responsible for the care, protection, and upbringing of the children. A smaller proportion consisted of reconstituted households, comprising the mother, a stepfather, and children from a previous relationship, accounting for 3%.

Among the sociodemographic characteristics, it was found that the participants' ages ranged from 14 to 19 years, but the majority of the sample fell within the 17- to 19-year-old age range, corresponding to late adolescence. The results show that 80% of the adolescent girls interviewed were Dominican nationals, and only 20% were Haitian. About 60% were in early-stage relationships. Of that group, 33% got married because they became pregnant, and 27% had already entered into early relationships by the time they became pregnant. Finally, 90% of the participants were first-time mothers, and only 10% had had previous pregnancies.

Discussion and Conclusions

Discussion

In this study, the overall objective was to analyze family socialization styles and self-concept among pregnant adolescents receiving care at Tomasina Valdez Hospital in the Dominican Republic during the 2021–2022 period. Upon examining the results, it was found that the predominant socialization style among the participants' mothers was the indulgent style. The results of this study are consistent with those reported by Jiménez et al. (2020), Cortés et al. (2020), Romero (2021), and Zorrilla et al. (2021), as those authors found that mothers tended to be lenient.

Among parents, the largest percentage of the sample perceived a neglectful parenting style. A comparison of the results of this study shows that they are consistent with those found by Olivera and Arccosupa (2024). Among other findings, these authors identified that participants who did not live with their parents perceived a neglectful parenting style. Similarly, Llantop (2020) and Quispe Lazaro and Quispe Palomino (2022) partly agree, as they conclude that the predominant parenting style in the family was neglectful, whereas in this study, that style was found only among the parents. With

regard to neglectful parenting styles, Rivera (2023) found that they are associated with low levels of self-esteem.

On the other hand, the findings are fully consistent with those of Ríos (2024), who found that mothers were perceived as having an indulgent socialization style and fathers as having a neglectful style, but they are only partially consistent with those of Rudas (2023), who identified the indulgent and authoritarian styles as the predominant socialization styles. There are clear differences from the authoritarian style, as none of the participants perceived that style in their parents. Similarly, these findings contrast with those of Rodríguez (2024), who found that the most common parenting style among mothers was authoritarian, while among fathers it was indulgent.

Regarding the data on self-concept, it was found that 27% of the sample had a high level, 30% had a medium level, and the low level was the most common, present in 43% of the interviewees. Most pregnant teenage girls reported feelings of inferiority and low self-esteem. The findings of this study are consistent with those of Otivo (2020) and Bravo (2020), but contradict those of Salinas (2023), who found that most participants scored at a moderate level on self-concept. When analyzing self-concept by age, the author found that adolescents aged 13 to 15 had a low level of self-concept. The findings of this study also contrast with those reported by Guimaray (2020), who found a high level of self-concept among the participants.

With regard to family types, it was found that the largest percentage of the participants grew up in single-parent households. These results are consistent with those of La Rosa (2022), but when compared with those of Barzallo and Pauta (2022), differences were found, as those authors identified nuclear families as the predominant family type, whereas Peñaloza (2023) identified extended families as the predominant family type, as did Primo and Ramírez (2022).

Among the sociodemographic characteristics of pregnant adolescents, it was found that the participants' ages ranged from 14 to 19 years, but the majority of the sample was between 17 and 19 years old—corresponding to late adolescence—and had not completed secondary school. These results are consistent with those found by Otivo (2020); Acosta and Madera (2022), meanwhile, found that their participants were in the same age group.

The results show that 80% of the adolescent girls interviewed were Dominican nationals and only 20% were Haitian. These figures are consistent with statistics from the United Nations Children's Fund (UNICEF, 2024), which show that the Dominican Republic has the highest rate of teenage pregnancies in the Latin American and Caribbean region. In this country, 1 in 5 adolescents is either pregnant or has had a child.

Another important finding in the sample was that 60% were in early-stage relationships. Of that group, 33% got married because they became pregnant, and 27% had already entered into early unions by the time they became pregnant. The results of this study corroborate the findings reported in ONE (2022b). The results showed that, in 2019, 11.3% of the participants had entered into a union or married before the age of 15, and 35% before the age of 18. The statistics mentioned above indicate high rates of early marriage in the country. When comparing the results found in this study, they are consistent with those of Morán (2021) and Acosta and Madera (2022). The authors conclude that most of the participants were in early-stage relationships. Finally, 90% of the participants were first-time mothers. In agreement with Lozano (2024) and Caminos (2022).

Upon analyzing the relationship between the variables using Spearman's correlation coefficient and the chi-square test, no associations were observed; therefore,

the alternative hypothesis is rejected and the null hypothesis is accepted: There is no relationship between family socialization styles and the participants' self-concept. This suggests that pregnant adolescents may have high or low self-concept, regardless of their parents' parenting style.

A comparison of the results of this study shows that they are fully consistent with the findings of Llanca-Sánchez and Armas-Zambrano (2020), although those authors also emphasize that when parents fulfill their responsibilities, they promote adolescent girls' self-concept. Similarly, they are similar to Cortés et al. (2020), who found no relationship between the socialization styles of both parents; however, conflicting findings are highlighted in the conclusions of Malca-Romero and Rivera Jiménez (2019), Espinosa-García and Cuesta Izquierdo (2023), as these authors identified sufficient scientific evidence to confirm the relationship between self-concept and parental socialization styles.

Conclusion

Taking into account everything discussed in the previous sections, the results of this study indicate that there is sufficient statistical evidence to confirm that there is no relationship between family socialization styles and self-concept among pregnant adolescents treated at outpatient clinics at Tomasina Valdez Hospital in the Dominican Republic during the 2021–2022 period, suggesting that a particular parental socialization style does not influence high or low self-concept. On the other hand, most parents do not get involved in the participants' lives to raise them, set limits, teach rules, talk with them, and show them affection; only mothers do that. It is clear that an appropriate parenting style on the part of both parents—one that involves assertive communication, positive discipline, emotional support, and a balance between expressions of affection and behavioral supervision—can promote the emotional well-being of adolescent girls, although it does not determine their level of self-concept.

Limitations

Among the main limitations of the study, it was found that, because the population was small, it was necessary to include the entire group in the sample, since the participants selected were pregnant young women referred to a psychologist who attended appointments; however, not all of them went to see the psychologist, so the group that did not attend was not included. Because the results were obtained from such a small group, the findings were not generalized to the national population.

On the other hand, only pregnant adolescents participated; parents were not included in order to gather information on family socialization styles and obtain more specific information about socialization at home.

In future research, it would be important not only to include parents but also to conduct a comparative study that includes adolescents who are not pregnant, in order to examine socialization styles and self-concept in both groups and identify any differences. Finally, include other provinces and a larger population.

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PSYCHOMETRIC PROPERTIES OF AN INSTRUMENT TO MEASURE THE ALGEBRA PROFICIENCY OF STUDENT TEACHERS

PROPIEDADES PSICOMÉTRICAS DE UN INSTRUMENTO PARA MEDIR EL DOMINIO DEL ÁLGEBRA DE ESTUDIANTES EN FORMACIÓN DOCENTE

Oscar Ochoa Martínez
Universidad Pedagógica de Durango, Mexico
[chokar128@hotmail.com] [https://orcid.org/0000-0003-3330-9138]
Manuel Ortega Muñoz
Universidad Pedagógica de Durango, Mexico
[drmanuelortega@hotmail.com] [https://orcid.org/0000-0003-2087-5501]
Zaret Jazmín Hernández Soto
Universidad Pedagógica de Durango, Mexico
[hernandezsotozaret@gmail.com] [https://orcid.org/0000-0002-5369-9228]

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ABSTRACT

This research is a continuation of the instrumental study that consisted of designing an instrument to measure the algebra proficiency (IMDA) of Mexican students in teacher training. The first stage included application of the Delphi method, expert judgment, content validity test using the Hernandez-Nieto coefficient and piloting with 79 undergraduate students in pedagogy, which resulted in a KR-20 alpha reliability coefficient of 0.89 and excellent content validity. The present study was carried out with the objective of finding out if the IMDA is prepared for a larger scale project and was verified through two ways: a) Determination of the psychometric properties of reliability and content validity; the first through the KR-20 alpha coefficient and the second through item quality; b) Measurement of variability through the regression model. The sample consisted of 333 undergraduate students in public institutions of higher education in the state of Durango, Mexico. The results indicated the following: a) Reliability of the KR-20 alpha with a value of 0.84 and acceptable values in the statistical mean of the difficulty index (MIdif=0.59) and discrimination index (MIdisc=0.31); b) The R-squared coefficient of determination indicated that the proportion of variability of the dependent variable is significantly explained by all the independent variables in the regression model. It is concluded that the IMDA is reliable and has validity to generalize results in measuring the algebra proficiency of students in teacher training.

RESUMEN

Palabras clave:
formación docente, instrumentos de evaluación, psicometría.

Esta investigación es continuidad al estudio de carácter instrumental que consistió en diseñar un instrumento para medir el dominio del álgebra (IMDA) de estudiantes mexicanos en formación docente. La primera etapa incluyó aplicación del método Delphi, jueceo de expertos, prueba de validez de contenido mediante el coeficiente de Hernández-Nieto y piloteo con 79 estudiantes de licenciatura en pedagogía, el resultado arrojó un coeficiente de fiabilidad del alfa KR-20 de 0.89 y excelente validez de contenido. El presente estudio se realizó con el objetivo de conocer si el IMDA está preparado para un proyecto de mayor escala y se verificó mediante dos vías: a) Determinación de las propiedades psicométricas de fiabilidad y validez de contenido; la primera mediante el coeficiente alfa KR-20 y la segunda a través de la calidad del ítem; b) Medida de variabilidad a través del modelo de regresión. La muestra estuvo constituida por 333 estudiantes de licenciatura de instituciones públicas de educación superior del estado de Durango, México. Los resultados indicaron lo siguiente: a) Fiabilidad del alfa KR-20 con un valor de 0.84 y valores aceptables en la media estadística del índice de dificultad *(MIdif=0.59)* e índice de discriminación *(MIdisc=0.31);* b) El coeficiente de determinación R-cuadrado indicó que la proporción de variabilidad de la variable dependiente es explicada de manera significativa por todas las variables independientes del modelo de regresión. Se concluye que el IMDA es fiable y tiene validez para generalizar sus resultados.

Introduction

Mathematical thinking involves engaging in mathematical activities related to counting, measuring, representing, inferring, and modeling (Rodríguez-Álvarez and Duran-Llaro, 2023), and the results of these activities have an impact on an individual's development. Therefore, it is important for future teachers to develop the knowledge and skills to analyze and propose practices that promote students' learning of mathematics and the development of mathematical thinking—areas in which the use of algebra is fundamental.

In general, mathematical practice refers to mathematical creation and/or production and consists of promoting knowledge of formal mathematical language and its application; as Bueno and Vivanco (2023) note, formal languages are important tools for inference and discovery—fundamental aspects that can enable teachers to conduct mathematical proofs at any educational level.

The process of developing mathematical thinking and applying mathematics begins in preschool, where the use of mathematical language is important, even if it is not developed in a formal way; however, the learning achieved there will be essential for primary school students to correctly address the use and understanding of mathematical symbols. This idea is shared by Alsina (2015), who argues that at this educational level, mathematical proofs cannot be carried out, but emphasizes the importance of performing simple verifications

Students in teacher-training programs must have a solid grasp of early algebra as a means of fostering algebraic thinking in the early grades of elementary school (Pinto et al., 2023); recognizing this type of thinking as a way of thinking about and working with mathematical objects, relationships, and structures helps students understand and find meaning in mathematics. The practice of early algebra is facilitated when it is promoted through real-life situations that allow for reasoning and argumentation, leading children to understand mathematical properties, identify patterns, and represent relationships—aspects that enable them to make generalizations (Pincheira and Alsina, 2021).

The algebra content in the secondary school mathematics curriculum falls under the thematic area of "numbers, algebra, and variation," specifically the academic content on adding and subtracting algebraic expressions; this academic content is introduced in the first year of secondary school and is significant in subsequent school years.

Teaching algebra in secondary education is essential for students' academic and personal development; this subject provides essential tools for solving mathematical problems and fosters critical thinking and logic—skills that are necessary in everyday life and throughout their educational journey (Aguirre and Cerati, 2020). A solid grasp of algebra is a tool that helps students improve their academic performance and serves as a foundation for more advanced studies in science, technology, engineering, and mathematics; therefore, understanding the importance of teaching algebra at this stage is crucial for developing competent and analytical citizens.

In secondary education, it is common to conduct both formal and informal mathematical demonstrations, which include processes for identifying and analyzing errors in the use of algebra, particularly those related to the acquisition of algebraic language and the transition from arithmetic to algebra (Avila, 2016).

At the upper secondary education level, formal proofs become widespread, and this educational setting is a crucial stage for the development of algebra because, to a greater or lesser extent, this branch of the exact sciences is relevant and plays a significant role in the professional world (Márquez, 2019); indeed, it is undeniable that there is a

close correlation between technological development in a society and the role of mathematics.

It is at this educational level that mathematics takes on greater importance (European University, 2023), because this is where the processes for high school admission and for admission to higher education become more formalized, given that this subject is part of the curriculum in a wide variety of undergraduate degree programs.

The study of mathematics in teacher-training institutions of higher education is important because students must acquire tools to promote the development of their mathematical skills and facilitate problem-solving. In this regard, Aké (2019) argues that teacher training should incorporate the study of situations that allow students to rethink notations and arithmetic operations in ways that differ from the typical approach; that is, to cultivate a new mode of arithmetic thinking in which the basic notions of algebra can be constructed.

The student body at teacher-training institutions consists of students who completed their high school studies at technical or humanities-focused schools, regardless of the type or format of their secondary education; these are students who should have a solid grasp of algebra, however, in practice it has been shown that a considerable number of these students have difficulties with both understanding and applying concepts in this area of mathematics (Craveri, 2009).

To address this problem, it is advisable to administer a diagnostic assessment to students in order to determine their level of proficiency in algebra. This involves carrying out systematic and reflective processes to gather quantitative and qualitative information about student learning, which can be achieved through the use of various assessment tools, including exams of different types and formats.

Regardless of educational level, learning algebra is important for students' personal development, because acquiring the necessary knowledge in the field of mathematics is essential for students to achieve intellectual and holistic development that is reflected in their academic life and daily routines.

In this regard, it is worth noting that elementary school teachers are the primary promoters of the learning and application of mathematical concepts; therefore, it is important that their training include professional development in this area of knowledge, as teacher-training institutions recognize the need and importance of strengthening mathematics education to help future teachers acquire the skills that will enable them to guide their students in learning this discipline (Pérez, 2022).

The importance and necessity of strengthening knowledge and practice in algebra instruction among pre-service teachers in a global context were highlighted in a study conducted in Ecuador by Curichumbi and Navarro (2025), who refer to the European University's role in its geographic region and in Latin America.

In the teaching-learning process across various disciplines or fields of study, teachers conduct assessment activities, whether to promote learning improvement or for accreditation purposes. In this regard, it is recognized that students exhibit deficiencies stemming from their teacher training; for this reason, it is advisable to heed the suggestion of Pires (2024), who emphasizes the need for educational institutions and policymakers to prioritize offering specific courses and workshops to improve teachers' assessment skills.

Generally, teachers emphasize an assessment process aimed at evaluating learning outcomes. This involves carrying out systematic and reflective processes to gather quantitative and qualitative information about student learning (Hamodi et al., 2015), an

educational practice that can be achieved through the use of various assessment tools, including exams of different types and formats.

The information gathered through the aforementioned assessment tools must be analyzed with methodological rigor that allows for the identification of strengths and barriers faced by students at the beginning, during, and at the end of an educational process, with the aim of guiding efforts toward its improvement. In this regard, the authors Sepúlveda-Obreque et al. (2017) highlight the need to promote professional development and training for teachers on topics related to the assessment of learning and performance, as well as the use of assessment tools and their subsequent analysis to evaluate proficiency in mathematics and the development of mathematical thinking among students and teachers.

Based on the above observations, this research project is a continuation of a study whose first part involved designing an Instrument for Measuring Algebra Proficiency [IMDA] (Ochoa and Rivera, 2024) and was aimed at Mexican students in teacher training programs. The process of developing the IMDA followed the stages of the Delphi method and expert judgment, content validity testing using the Hernández-Nieto coefficient (Hernández-Nieto, 2002), and a pilot study involving 79 undergraduate education majors, during which it achieved a Kuder-Richardson alpha-20 reliability coefficient of 0.89.

The second part of the study, which is the focus of this research, was conducted with the overall objective of determining whether the IMDA is ready for a larger-scale project. This was assessed in two ways: a) Determination of the psychometric properties of reliability and content validity—the former using the Kuder-Richardson alpha-20 coefficient and the latter through item quality; and b) Measuring variability using the multiple linear regression method.

Method

This research was conducted using a quantitative methodological approach with an instrumental design, in accordance with Matos et al. (2025), the study is considered instrumental in nature, since it aimed to determine the psychometric properties of the IMDA.

Exhibition and Participants

The total sample consisted of 333 student teachers who were currently pursuing their bachelor's degrees at various public institutions of higher education in the state of Durango, Mexico. The main inclusion criterion for selecting the students who would complete the survey was to consider those who had recently completed a course in mathematics education or a related subject as part of their academic program.

Participants were selected using a non-probabilistic sampling method (Otzen and Manterola, 2017). The sample size was determined based on the criteria outlined by Roco et al. (2021), which involves having a minimum of five and a maximum of 10 subjects per item—the ideal number for administering an improved instrument.

Validation Tool and Process

In the first part of the study, the IMDA scale consisted of 30 items distributed across five dimensions (García et al. (2019), with the following structure: a) Dimension 1: Transition from Arithmetic to Algebra (PAA), with six items; b) Dimension 2: Reversibility of Thought (RP), with six items; c) Dimension 3: Pattern Identification (IP), with six items; d) Dimension 4: Generalization of Knowledge (GC), with six items; and e) Dimension 5:

Abstraction and Reflection in Mathematical Processes (ARPM), with six items. The IMDA can be found in the Appendices section (see Appendix 1).

The instrument was administered via the Google Forms platform, which allowed for standardized and accessible administration. Participants completed the survey individually, at a single time, and under controlled conditions to ensure that they responded independently and without external assistance. Prior to administering the questionnaire, clear instructions were provided regarding the purpose of the instrument and how to complete it, emphasizing the importance of answering honestly.

In addition, the confidentiality and anonymity of the responses were ensured, which fostered an atmosphere of trust and reduced potential biases in the information collected. This data collection technique is endorsed by the authors Núñez et al. (2024), which state the following: "The future prospects suggested by teachers point to the need to continue innovating in the design and implementation of online assessment tools, as well as to address inequities in access to educational technology" (p. 2715).

Data Analysis

The data processed during the research were organized and classified using an Excel spreadsheet and analyzed using the SPSS statistical software. The following tests were performed on the results obtained from the IMDA application: measures of central tendency, reliability testing, item quality testing, and variability testing using the multiple linear regression model.

Measures of Central Tendency

The measures of central tendency used in the analysis were the scores obtained on each dimension of the IMDA and the total score.

Reliability Test

The instrument's reliability was calculated using the Kuder-Richardson coefficient, specifically the KR20 formula, since this method is used to assess the internal consistency of a measure based on dichotomous data. The calculation used to determine this psychometric property is a formula that takes into account the variance of the item scores and is the dichotomous equivalent of the alpha coefficient (López et al., 2019).

Item Quality Testing

The quality of an item was measured based on the values of its difficulty index and discrimination index. These statistics are closely related; however, it is important to note the specific role of the discrimination index, since, according to Hurtado (2018), the determination of the standard discrimination value influences the interpretation of the quality of the performance test. To determine the difficulty and discrimination indices for the item, we used the method described by Backhoff and Rosas (2000); Table 1 shows the range of values for the difficulty and discrimination indices, which are used to assess the quality of the item.

Table 1
Classification and Interpretation of Difficulty and Discrimination Indices

Difficulty Index	Interpretation	discrimination index	Interpretation
Less than 0.24	Extremely difficult	Less than 0.00	Terrible
Between 0.25 and 0.44	Difficult	Less than 0.20	Inadequate
Between 0.45 and 0.75	Ideal	Between 0.21 and 0.24	Acceptable
Between 0.76 and 0.91	Easy	Between 0.24 and 0.34	Well
Greater than 0.91	Too easy	Greater than 0.35	Excellent

Note. Adapted from Muñoz et al. (2024)

IMDA Variability Measure

The regression model was used to determine the variability of the dependent variable's score relative to its statistical mean, while also assessing whether this variability is significantly explained by the independent variables included in the model.

This test is valid for the purposes of the study because the analysis is performed using composite variables derived from dichotomous items. The rationale for conducting this statistical test is that the IMDA is unidimensional, since its items are associated with a single latent construct—specifically, the domain of algebra—which allows the total score to be interpreted as a valid measure of that variable, thereby justifying the use of parametric regression analysis. "It is very important to have a unidimensional instrument, since for many people this will be an essential requirement for generating valid measures (Wright and Masters, 1982; Wright and Stone, 1998; as cited in Burga, 2006, p. 55)."

The regression model uses the coefficient of determination, R^2 , as the primary measure of variability (Rodríguez and Salmerón, 2018). The variables involved in the process were the total and dimension-specific scores obtained by the participants on the IMDA. For the purposes of data analysis using the SPSS statistical software, these were coded as follows:

1) Scores obtained by participants on the IMDA (P_{IMDA}). According to the regression model, this variable corresponds to the dependent variable or response variable.
2) Scores obtained by participants in each of the IMDA dimensions, which were: a) Score on *Transition from Arithmetic to Algebra* (P_{PAA}); b) Score on *Reversibility of Thought* (P_{RP}); c) Score on *Pattern Recognition* (P_{IP}); d) Score on *Generalization of Knowledge* (P_{GC}) and; e) Score on *Abstraction and Reflection in Mathematical Processes* (P_{ARPM}). According to the regression model, these variables correspond to the independent variables or predictor variables.

To determine the relationship between these variables, a regression analysis was performed using the following regression model.

$$y = \beta_o + \beta_1 x_1 + \beta_2 x_2 + \cdots + \beta_i x_i$$

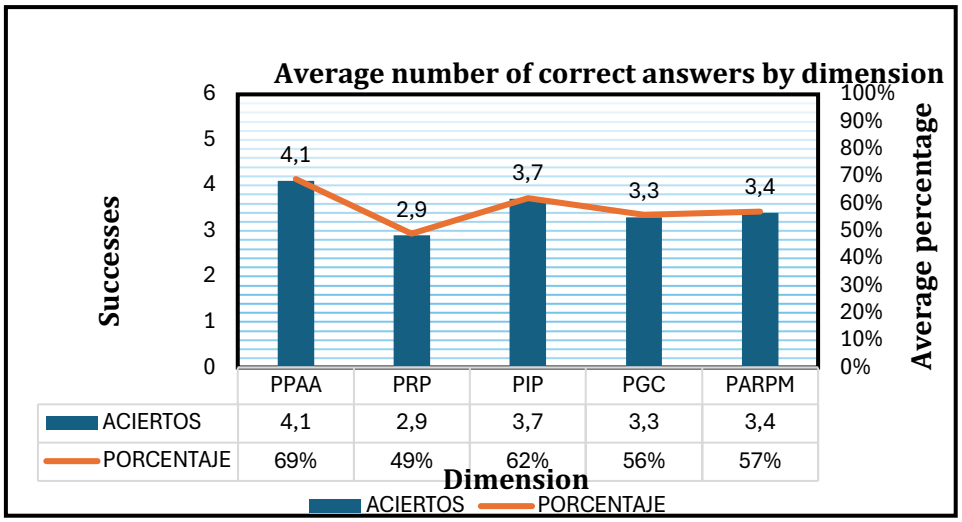
Results

Measures of Central Tendency

The graph in Figure 1 shows the statistical mean of correct answers recorded for each dimension of the IMDA; Here, it can be seen that there is a balanced score across dimensions, which is confirmed by the mean of the statistical means of correct answers *($M_{DIMENSIONS}$=3.5)*

Figure 1

Average number of correct answers by IMDA dimension



The score obtained by participants on the IMDA *(P_{IMDA})* can be found in the appendix section (see Appendix 1). This data includes the mean score statistic P_{IMDA} (M_{IMDA}=17 correct answers). This value indicates that, on average, the 333 students answered 17 of the 30 IMDA items correctly.

Measure of Reliability

The reliability measure is shown in Table 2; the calculation was performed using the Kuder-Richardson alpha 20 formula, in accordance with Duran and Abad (2021). The coefficient value *(KR-20 = .846)* is good, since the authors consider it acceptable when it falls between .75 and .90.

Table 2

Reliability Test Results

Reliability Statistics	
Alfa 20 of Kuder-Richardson	Number of elements
.846	30

Validity of IMDA Content

Item Quality

Table 3 shows the difficulty index and discrimination index values for each item. It can be seen that all 30 items are considered to be of acceptable quality, since they fell within the preestablished quality range, Similarly, it can be seen that the statistical mean of the difficulty index (M_{Idif} = .59) is classified as having *adequate difficulty*, and the statistical mean of the discrimination index (M_{Idisc} = .31) is considered *good*, although both could be improved.

Table 3
Difficulty and Discrimination Indices

item	Idif	Idisc	item	Idif	Idisc	item	Idif	Idisc
1	0.49	0.31	11	0.48	0.33	21	0.52	0.35
2	0.68	0.38	12	0.52	0.38	22	0.61	0.36
3	0.77	0.26	13	0.59	0.38	23	0.50	0.24
4	0.70	0.27	14	0.43	0.40	24	0.59	0.30
5	0.77	0.27	15	0.63	0.34	25	0.64	0.33
6	0.72	0.34	16	0.70	0.26	26	0.61	0.31
7	0.44	0.37	17	0.60	0.22	27	0.47	0.43
8	0.63	0.34	18	0.78	0.29	28	0.41	0.21
9	0.49	0.36	19	0.66	0.20	29	0.59	0.21
10	0.38	0.35	20	0.47	0.22	30	0.69	0.31
							M_{Idif}=.59	M_{Idisc}=.31

Variability Test

Table 4 provides a summary of the regression model; the R-squared value for Model 1 indicates that the variability in the independent variable P_{IP}explains 64.2% of the variability in the dependent variable P_{IMDA}. In the subsequent models, it can be observed that the value of the coefficient of determination (R-squared) increases with the gradual inclusion of the independent variables P_{PAA}, P_{ARPM}, P_{GC}, and P_{RP}, to the point where the explained variability contributed by these scores accounts for nearly 100% of the variability in the P_{IMDA} score. The degree of variability explained by all the variables is significant, as evidenced by the value of the Fisher-Snedecor (F) test statistic, which is acceptable in each model and has a significant p-value.

Table 4
Model Summary

Model Summary

Model	R	R squared	Adjusted R-squared	Standard error of the estimate	gl	F	Mr.
1	,801[a]	,642	,641	3,695	331	593,499	,000
2	,908[b]	,824	,823	2,594	330	773,031	,000
3	,951[c]	,905	,904	1,914	329	1,038,982	,000
4	,977[d]	,955	,955	1,315	328	1,742.881	,000
5	1,000[e]	1,000	1,000	,000		.	.

a. Predictors: (Constant), P_{IP}
b. Predictors: (Constant), P_{IP}, P_{PAA}
c. Predictors: (Constant), P_{IP}, P_{PAA}, P_{ARPM}
d. Predictors: (Constant), P_{IP}, P_{PAA}, P_{ARPM}, P_{GC}
e. Predictors: (Constant), P_{IP}, P_{PAA}, P_{ARPM}, P_{GC}, P_{RP}

A complementary result to the R-squared coefficient test is the collinearity diagnosis proposed by Salmerón and Rodríguez (2017). Table 5 shows that, in each regression model, the multicollinearity statistic *Tolerance* yielded values close to "1"; these values indicate low multicollinearity among the independent variables, a result that reaffirms their effect in the regression model.

Table 5
Colinearity Statistics

Excluded variables[a]						
Model		In beta	t	Mr.	Partial correlation	Colinearity Statistics Tolerance
1	P_{PAA}	,483[b]	18,485	,000	,713	,781
	P_{RP}	,502[b]	17,176	,000	,687	,671
	P_{GC}	,400[b]	12,750	,000	,574	,738
	P_{ARPM}	,466[b]	16,501	,000	,672	,747
2	P_{RP}	,350[c]	14,631	,000	,628	,565
	P_{GC}	,316[c]	14,918	,000	,635	,710
	P_{ARPM}	,345[c]	16,648	,000	,676	,674
3	P_{RP}	,299[d]	18,787	,000	,720	,552
	P_{GC}	,270[d]	19,207	,000	,728	,693
4	P_{RP}	,286[e]	.	.	1,000	,551

Another indicator of the absence of multicollinearity among the scores of the independent variables is the presence of moderate correlation and the absence of high correlation between pairs. Table 8 shows that the correlation values between pairs range from .386 to .574, that is, the condition established by Goode-Romero (2019) to demonstrate the absence of multicollinearity is met, which consists of excluding pairs of variables that indicate a correlation coefficient (r > 0.6).

Table 6
Correlation Between Pairs of Variables

Correlations						
		P_{PAA}	P_{RP}	P_{IP}	P_{GC}	P_{ARPM}
P_{PAA}	Pearson's correlation coefficient	1	,556**	,468**	,386**	,473**
	Mr. (bilateral)		,000	,000	,000	,000
	N	333	333	333	333	333
P_{RP}	Pearson's correlation coefficient	,556**	1	,574**	,392**	,471**
	Mr. (bilateral)	,000		,000	,000	,000
	N	333	333	333	333	333
P_{IP}	Pearson's correlation coefficient	,468**	,574**	1	,512**	,503**
	Mr. (bilateral)	,000	,000		,000	,000
	N	333	333	333	333	333
P_{GC}	Pearson's correlation coefficient	,386**	,392**	,512**	1	,411**
	Mr. (bilateral)	,000	,000	,000		,000
	N	333	333	333	333	333
P_{ARPM}	Pearson's correlation coefficient	,473**	,471**	,503**	,411**	1
	Mr. (bilateral)	,000	,000	,000	,000	
	N	333	333	333	333	333

Discussion and Conclusions

Regarding the results of the IMDA application, the measures of central tendency indicated that there is a balance among the statistical mean values for correct answers across the five dimensions—a situation that, at first glance, reflects homogeneity in the responses to the IMDA and is indicative of an adequate measure of the construct *algebra proficiency*.

In light of the objective set forth in this study, the IMDA was administered to 333 student teachers, and it was found that the reliability statistic continues to indicate a fairly acceptable value *(KR-20 = .84)*, just five hundredths below the value obtained in the pilot test *(KR-20 = .89)*; this result confirms that the IMDA exhibits good internal consistency among items and stability over time.

With regard to the quality of the items, it was found that each of the 30 items had acceptable values for their difficulty and discrimination indices, as they fell within the range established for items to be considered of good quality; the same was true for the set of items that had acceptable values for the statistical mean of their difficulty index (M_{diff} *= .59)* and in the statistical mean of their discrimination index (M_{diff} *= .31*); these results indicate that, in general, the IMDA items are moderately easy and distinguish between those who have mastered algebra and those who have not.

The test of variability conducted using the regression model indicated that the variability of the dependent variable was significantly explained by each of the independent variables, accounting for 100% of the variability. This result was supported by the R-squared value recorded for each model, as shown in the summary of the regression model. These results indicate whether the observed variability in the IMDA is systematic or random, a characteristic that contributes to obtaining reliable and consistent information—in this particular case, regarding the level of algebra proficiency among student teachers.

A result that complements the IMDA's measure of variability is the *Tolerance* collinearity diagnosis, which yielded values close to "1." The value of this statistic indicates low collinearity among the independent variables in the regression model, which means that the variables are not strongly correlated with one another and that each independent variable provides unique information about the dependent variable. Consequently, the regression model is more stable and the coefficients are more reliable—characteristics that improve the accuracy of the IMDA estimates. Based on the results of the colinearity test, a correlation test was conducted between pairs of independent variables, and a moderate positive correlation was found for each pair.

Once the IMDA was subjected to rigorous studies involving a larger number of participants, it was confirmed that it possesses psychometric properties of reliability and content validity; furthermore, the results of the variability test indicated that the IMDA is also capable of detecting significant differences between individuals or groups.

These properties and psychometric characteristics exhibited by the IMDA enhance the robustness and generalizability of the results, ensuring that the instrument is accurate and useful for application in teacher-training populations where students with a wide range of proficiency in algebra come together, given that, at the bachelor's degree level, there are students who completed their high school education at technical and humanities-focused schools.

Through the implementation of the IMDA, the goal is to obtain a diagnostic assessment that will enable the implementation of targeted actions aimed at strengthening the development of mathematical thinking among student teachers, so that when they begin their teaching careers, they will have more and better tools to facilitate their students' learning and educational practice in this area of knowledge.

In order to expand the IMDA's utility, it still needs to be tested on populations with different educational levels, since care was taken in the formulation of its items to ensure their structure and level of complexity. Furthermore, there is also a need to conduct the test to determine whether it has predictive validity—a psychometric property through which students' success can be predicted.

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Appendices

Appendix 1

IMDA Score (P_{IMDA})

P	A	P	A	P	A	P	A	P	A	P	A	P	A	P	A	P	A	P	A
1	30	**37**	26	**73**	23	**109**	21	**145**	18	**181**	16	**217**	14	**253**	12	**289**	11	**325**	9
2	30	**38**	26	**74**	23	**110**	21	**146**	18	**182**	16	**218**	14	**254**	12	**290**	11	**326**	8
3	30	**39**	26	**75**	23	**111**	21	**147**	18	**183**	16	**219**	14	**255**	12	**291**	11	**327**	8
4	30	**40**	26	**76**	23	**112**	20	**148**	17	**184**	16	**220**	14	**256**	12	**292**	11	**328**	8
5	30	**41**	26	**77**	23	**113**	20	**149**	17	**185**	16	**221**	14	**257**	12	**293**	10	**329**	8
6	30	**42**	26	**78**	23	**114**	20	**150**	17	**186**	16	**222**	14	**258**	12	**294**	10	**330**	8
7	30	**43**	26	**79**	23	**115**	20	**151**	17	**187**	15	**223**	14	**259**	12	**295**	10	**331**	8
8	29	**44**	26	**80**	23	**116**	20	**152**	17	**188**	15	**224**	14	**260**	12	**296**	10	**332**	8
9	29	**45**	26	**81**	23	**117**	20	**153**	17	**189**	15	**225**	14	**261**	12	**297**	10	**333**	7
10	29	**46**	26	**82**	23	**118**	20	**154**	17	**190**	15	**226**	14	**262**	12	**298**	10		
11	29	**47**	26	**83**	23	**119**	20	**155**	17	**191**	15	**227**	13	**263**	12	**299**	10	***M_{IMDA}=17***	
12	29	**48**	26	**84**	23	**120**	20	**156**	17	**192**	15	**228**	13	**264**	12	**300**	10		
13	29	**49**	25	**85**	22	**121**	20	**157**	17	**193**	15	**229**	13	**265**	11	**301**	10		
14	29	**50**	25	**86**	22	**122**	20	**158**	17	**194**	15	**230**	13	**266**	11	**302**	10		
15	29	**51**	25	**87**	22	**123**	19	**159**	17	**195**	15	**231**	13	**267**	11	**303**	10		
16	29	**52**	25	**88**	22	**124**	19	**160**	17	**196**	15	**232**	13	**268**	11	**304**	10		
17	29	**53**	25	**89**	22	**125**	19	**161**	17	**197**	15	**233**	13	**269**	11	**305**	10		
18	29	**54**	25	**90**	22	**126**	19	**162**	17	**198**	15	**234**	13	**270**	11	**306**	10		
19	28	**55**	25	**91**	22	**127**	19	**163**	17	**199**	15	**235**	13	**271**	11	**307**	10		
20	28	**56**	25	**92**	22	**128**	19	**164**	17	**200**	15	**236**	13	**272**	11	**308**	10		
21	28	**57**	25	**93**	22	**129**	19	**165**	17	**201**	15	**237**	13	**273**	11	**309**	10		
22	28	**58**	25	**94**	22	**130**	19	**166**	16	**202**	15	**238**	13	**274**	11	**310**	10		
23	28	**59**	25	**95**	22	**131**	19	**167**	16	**203**	15	**239**	13	**275**	11	**311**	10		
24	28	**60**	25	**96**	22	**132**	19	**168**	16	**204**	15	**240**	13	**276**	11	**312**	10		
25	28	**61**	24	**97**	22	**133**	19	**169**	16	**205**	15	**241**	13	**277**	11	**313**	10		
26	28	**62**	24	**98**	22	**134**	19	**170**	16	**206**	15	**242**	13	**278**	11	**314**	10		
27	27	**63**	24	**99**	21	**135**	19	**171**	16	**207**	14	**243**	12	**279**	11	**315**	10		
28	27	**64**	24	**100**	21	**136**	19	**172**	16	**208**	14	**244**	12	**280**	11	**316**	10		
29	27	**65**	24	**101**	21	**137**	18	**173**	16	**209**	14	**245**	12	**281**	11	**317**	10		
30	27	**66**	24	**102**	21	**138**	18	**174**	16	**210**	14	**246**	12	**282**	11	**318**	9		
31	27	**67**	24	**103**	21	**139**	18	**175**	16	**211**	14	**247**	12	**283**	11	**319**	9		
32	27	**68**	24	**104**	21	**140**	18	**176**	16	**212**	14	**248**	12	**284**	11	**320**	9		
33	27	**69**	24	**105**	21	**141**	18	**177**	16	**213**	14	**249**	12	**285**	11	**321**	9		
34	27	**70**	24	**106**	21	**142**	18	**178**	16	**214**	14	**250**	12	**286**	11	**322**	9		
35	27	**71**	23	**107**	21	**143**	18	**179**	16	**215**	14	**251**	12	**287**	11	**323**	9		
36	27	**72**	23	**108**	21	144	18	**180**	16	**216**	14	**252**	12	**288**	11	**324**	9		

Appendix 2

IMDA Tool

Items No	Item
1–6 (PAA)	Find the value of the algebraic expression: $2x + 3y =$ (for $x = 1;\ y = -2$)
	Find the value of the algebraic expression: $3a - 2b =$ (for $a = \frac{3}{5};\ b = \frac{1}{10}$)
	Find the value of "x" in the algebraic expression: $x = 8 + y;$ Consider that: $y = 4$
	Find the value of "x" in the algebraic expression: $8x - 8 = 6$.
	Enter the value of "x" to make the following algebraic expression equal: $-11 + 7 = x - 6$
	Find the equivalent of the following algebraic expression: $4(x - 2) + 6 =$
7–12 (RP)	Select the number that satisfies the equation: $(a)(b + c) = (ab + ac)$
	Find the value of "x" in the following algebraic expression: $\frac{3x}{4} - 12 = 0$
	On Equality: $r^4 = 256$ Which expression determines the value of "r"?
	Enter the result of the algebraic sum: $4x(y - 4xy) + 12x^2y =$
	Identify the factors of the quadratic trinomial: $x^2 - 3x - 18$
	Find the solutions to the system of simultaneous equations: $(2x + 4y = 28)$; $(-4x + 2y = -6)$
13–18 (IP)	Identify the term in the fifth position of the following geometric sequence: 3, 9, 27,…, (…),
	Identify the pattern in the following geometric sequence: 7, 11, 15, 19, ...
	The sum of 6 consecutive numbers is 45. What should the range of these numbers be?
	What is the sum of the first 5 terms of the arithmetic progression: 15, 13, 11, …, …?
	Which geometric progression does the following pattern correspond to: $3n^2 - 2$
	Which monomial fits in the fifth position of the geometric sequence: 2xy, $4xy^2$, $8xy^3$, … , (…)?
19–24 (GC)	State the equation that provides the solution to a direct proportion problem.
	State the equality that the solution to the inverse proportion problem yields.
	From the formula $R = \frac{V}{I}$, state the appropriate equation for calculating the value of (I).
	Derived from the formula: $x = \frac{4}{(y+z)}$, Provide the appropriate equation to calculate the value of "y".
	From the formula $^{\circ}C = \frac{^{\circ}F-32}{1.8}$; write the equation to find the temperature at $^{\circ}F$
	Write the formula for finding the height (h) of a trapezoid: $A = \frac{(B+b)h}{2}$
25–30 (ARPM)	Write the mathematical model to represent: María's (M) money plus a quarter of Lupe's (L)
	Write the mathematical model to represent: Luis (L) has 8 fewer coins than Paco (P)
	Write the mathematical model to represent: Juan has 15 more coins than Pedro
	Write the mathematical model to represent the following: Writer "B" wrote 2.5 times as many pages as "A."
	Write the mathematical model to represent: There are 27 students in a group, and the number of women (W) is twice the number of men (M).
	Write the mathematical model to obtain an odd number.

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ANALYSIS OF THE PROFESSIONALIZATION OF PRIMARY AND SECONDARY SCHOOL TEACHERS IN THE DOMINICAN REPUBLIC THROUGH THEIR TRAINING AND COMPETENCY PERFORMANCE.

ANÁLISIS DE LA PROFESIONALIZACIÓN DE LOS DOCENTES DEL NIVEL PRIMARIO Y SECUNDARIO EN REPÚBLICA DOMINICANA A TRAVÉS DE SU FORMACIÓN Y EL DESEMPEÑO COMPETENCIAL.

Yudelquis Hernández Mejia
Universidad Internacional Iberoamericana, Dominican Republic
[yudelquis0309@gmail.com] [https://orcid.org/0009-0008-5489-6056]

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ABSTRACT

The teaching profession is essential to student learning. Studying the characteristics of a competent teacher is very important to promote effective educational processes. The general objective of this research is to analyze teacher professionalization through their training and competency performance. This is a correlational and cross-sectional study, with a non-experimental design, quantitative approach, carried out with a significant sample of 369 Primary Level teachers and 309 Secondary Level teachers of the Dominican educational system. The instrument used in data collection was the questionnaire designed to evaluate teachers' academic profiles, engagement in professional development, and competency levels. The findings reveal that the academic profile of the teachers falls below the standards established by the Dominican educational curriculum. Teachers claim to have the professional skills demanded by today's society, but only a minimal percentage of those consulted are actively involved in professionalization and professional development programs. Some teachers express satisfaction with their current skills, believing they are sufficient to address system challenges. In the same way, teachers claim to have no need for continuous training because they understand that they have sufficient preparation and skills to face the challenges of the current educational system. However, they confirm the value of teacher professionalization as an essential pillar to enhance the quality of their work, their skills and abilities for excellent competency performance.

Palabras clave:
profesionalización docente, capacitación, competencias,

RESUMEN

El trabajo docente es esencial en el aprendizaje del alumnado. Estudiar las características del profesor competente, es muy importante para propiciar procesos educativos eficaces. El objetivo general de esta investigación es analizar la profesionalización docente a través de su formación y desempeño competencial. Se

desempeño profesional, mejora escolar.	trata de un estudio de tipo correlacional y transversal, con diseño no experimental, enfoque cuantitativo, realizada con una muestra significativa de 369 docentes pertenecientes al Nivel Primario y 309 docentes del Nivel Secundario del sistema educativo dominicano. El instrumento utilizado en la recolección de datos fue el cuestionario. De manera general, se concluye que el perfil académico de los docentes está por debajo de los estándares establecidos por el currículo educativo dominicano; Los docentes manifiestan tener las competencias profesionales que demanda la sociedad actual, pero solo un porcentaje mínimo de los consultados se involucra de manera activa en programas de profesionalización y desarrollo profesional. Del mismo modo, los docentes entienden que cuentan con la preparación y las competencias suficientes para hacer frente a los desafíos del sistema educativo actual, reconocen el valor de la profesionalización docente como un pilar esencial para potenciar la calidad de su trabajo, de sus habilidades, conocimientos y destrezas para un excelente desempeño competencial.

Introduction

It is possible for students to develop the expected competencies and achieve effective educational outcomes if educators have an adequate level of professional development.

According to Ramírez (2020), the educational curriculum should ensure that teachers are trained and specialized in the organization and implementation of authentic learning situations, effective pedagogical management, the advancement of learning, and the strengthening of collaborative work, which must be grounded in openness, ethics, tolerance, and respect for the integrity of their peers.

Teacher professional development is a key component that fosters dynamism, innovation, and the design of appropriate classroom activities. In turn, it allows students to learn and develop a variety of skills.

When it comes to teaching skills, teachers draw on their knowledge and experience, as well as the strategies they use to ensure that students remain diligent, engaged, and motivated to continue achieving significant learning outcomes. Possessing these skills makes it easier for them to design effective teaching processes, analyze content, and provide meaningful information so that students can continue the learning process (García et al., 2021).

In the Dominican Republic, the findings derived from analyses of student performance on the tests they take indicate that an in-depth analysis of programs aimed at the ongoing education and training of teaching staff is necessary.

Accordingly, this study aims to analyze the professional development of elementary and secondary school teachers in the Dominican Republic through their training and competency-based performance, as well as their influence on improving the educational process.

Teacher Training

Teacher training is conceived as a process designed to develop teachers' ability to address the challenges that arise as a result of the changes and transformations taking place in society, science, and cultures.

Teacher training is also an essential component that contributes to the process of developing a teacher's professional profile, as well as their identity as an educator. This process unfolds continuously, consistently, systematically, in a planned manner, and either collectively or individually. Furthermore, it is defined as the first stage established to socially shape one's career (Cervantes and Vargas, 2019).

In accordance with the findings of Anijovich et al. (2021), topics related to the theoretical and practical components and the path followed in the training activities of education professionals have been the focus of particular interest in the field of pedagogy due to their importance, since the effectiveness of teacher training has a significant impact on the knowledge students acquire.

As defined by the European University (2023), teacher education encompasses the policies and practices aimed at preparing teachers so that they acquire the necessary skills and develop the essential qualities to perform effectively in their teaching practices both in the classroom and beyond the school setting.

Competency-Based Teacher Training

Competency-based training is defined as "a people-centered teaching and learning process aimed at helping individuals acquire the skills, knowledge, and attitudes necessary for optimal performance" (Cayo et al. 2018, p. 1).

Training teachers using a competency-based approach means enabling them to develop holistically, demonstrating educational excellence, and linking what they have learned and the competencies they have acquired to their level of performance in their respective roles.

Competencies include knowledge, skills, and abilities, as well as behaviors associated with practical application. These three essential aspects are key to addressing the challenges teachers face and resolving complex and inconsistent situations (Fondo, 2019).

According to Balbo (2019), competency-based teacher training emphasizes that teaching is progressive, systematic, and grounded in reflection; it is a lifelong process that fosters the integration of knowledge, with the aim of enabling teachers to acquire the skills needed to successfully address the challenges inherent in the educational process.

Continuing Education for Teachers. Importance

Continuing education can be viewed as an ordered sequence of actions that involve systemic reflection and the renewal of knowledge—including both concepts and the strategies and methods that enable teachers to grow personally and professionally. It is, at the same time, an extremely useful tool for addressing the need for professional development and for countering outdated academic practices in an interconnected world where science and technology are evolving at a rapid pace (Flores, 2023).

Continuing education is education that takes place after college. As Riesco (2018) points out, continuing education for teachers provides them with new experiences that help revitalize instructional intervention processes.

According to Escribano (2018), the procedures used to carry out ongoing teacher training will be determined by the educational philosophy on which they are socially grounded, which requires a clear vision of the model of citizenship and the kind of country we aim to have in the coming decades.

It is essential to recognize the teaching profession and the work of teachers as one of a country's most significant commitments; therefore, the education system must be managed by well-trained staff who are highly motivated and fully aware of the scope and importance of their work.

Teacher Professional Development. Concept and Importance

There are various approaches to the concept of teacher professionalization. Regarding this, Betancourt et al. (2020) argue that professionalization has become a fundamental principle for teachers' acquisition of teaching competencies.

As González (2019) points out, the professionalization of teaching is related to a set of factors that can be addressed in three dimensions: a) basic or undergraduate academic education, continuing education, and graduate-level training; b) the teaching profession, including its regulations, statutes, and performance evaluations; c) teachers' working conditions.

Meanwhile, García et al. (2021) argue that the professionalization of teaching entails educators taking responsibility for improving instruction through reflection, analysis, and the integration of pedagogical and academic aspects, in accordance with the guidelines and regulations of the education system and, more specifically, of the school.

Method

To conduct this research, a quantitative approach and a non-experimental design were chosen. Similarly, this study employs a descriptive methodology, as it analyzes and examines the causes of the selected social phenomenon.

Some of the questions guiding this research include:

1- What is the academic profile of elementary and secondary school teachers as described in the Dominican educational curriculum?

2- How does teacher training contribute to improving the educational process?

Researching this topic is interesting because of the importance of encouraging analysis and reflection on the educational practices of teaching staff, as well as the importance of providing them with ongoing training in programs that support their professional development in various areas of their work and help them refine their teaching methods, with the goal of bringing about significant improvements in students' academic success.

Population and Sample

The study population consists of 831 participants: 460 elementary school teachers and 371 secondary school teachers in the Dominican education system. The sample consisted of 368 elementary school teachers and 309 secondary school teachers.

The tool used to collect data and information in this study is a questionnaire, which was systematically designed based on the objectives and variables outlined in this research. The instrument was developed using a Likert scale consisting of five possible responses ranging from the lowest to the highest level: 1) Strongly agree, 2) Agree, 3) Neutral, 4) Disagree, and 5) Strongly disagree.

Reliability was established by processing and analyzing the data using Cronbach's alpha coefficient with SPSS version 25 software. The analysis process was carried out in a series of steps: identification of variables, systematization of information, statistical processing, and tabulation.

In light of the foregoing, the overall objective of this study is to analyze the professionalization of elementary and secondary school teachers in the Dominican Republic through their training and competency-based performance.

The following specific objectives stem from the general objective:

1- Analyze the academic profile of elementary and secondary school teachers as described in the Dominican educational curriculum.

2- Analyze the impact of teacher training on improving the educational process.

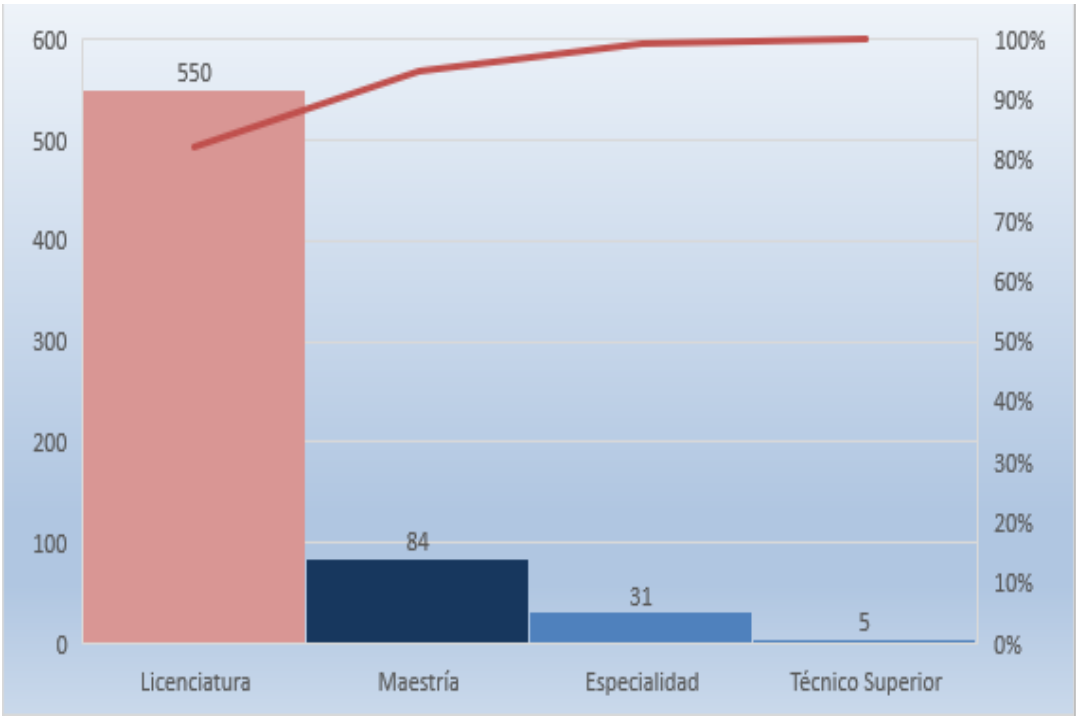
In accordance with the proposed objectives, the study aims to analyze whether there is a correlation between educators' characteristics, their professional performance, the learning effectiveness index, and teaching productivity, as well as to determine the impact of teachers' competencies and training on student learning, among other objectives.

Similarly, this study employs a descriptive methodology, as it analyzes and examines the causes of the selected social phenomenon. This design is based on the theory derived from the compilation, analysis, and presentation of the data obtained.

Results

Under the first specific objective, data were collected on the academic profile of primary and secondary school teachers as described in the Dominican educational curriculum.

Figure 1
Teachers' Academic Level



According to the results, 81% of teachers hold a bachelor's degree, 12.4% hold a master's degree, and 4.6% hold a specialized degree. None of the teachers have earned a doctorate.

These percentages show that the majority of teachers have earned a college degree, which is a basic requirement for working as a teacher.

The second specific objective refers to the impact of teacher training on the optimization of the pedagogical process.

Table 1

The Contribution of Continuing Education Programs Offered by the Ministry of Education of the Dominican Republic (MINERD) to Improving the Quality of Teacher Performance

		Frequency	Percentage	Valid percentage	Cumulative Percentage
Valid	He didn't answer	1	0.1	0.1	0.1
	I completely agree	335	49.3	49.3	49.5
	Okay	294	43.3	43.3	92.8
	Neutral	23	3.4	3.4	96.2
	Disagree	17	2.5	2.5	98.7
	Strongly disagree	9	1.3	1.3	100.0
	Total	679	100.0	100.0	

.

According to the data presented in Table 1, 49.3% of the teachers surveyed indicated that they strongly agree that the continuing education programs offered by MINERD support the optimization of educators' performance; 43.3% stated that they agree, 3.4% were neutral, 2.5% disagreed, 1.3% strongly disagreed, and 1% did not respond.

The results presented show that the majority of teachers view the effectiveness of the training programs offered by MINERD—which are designed to strengthen their teaching practices—in a positive light, although there are some unfavorable opinions regarding the quality of these programs and their impact on improving teacher performance.

Table 2

The Relationship Between Teacher Training and Student Learning

		Frequency	Percentage	Valid percentage	Cumulative Percentage
Valid	He didn't answer	3	0.4	0.4	0.4
	I completely agree	260	38.3	38.3	38.7
	Okay	323	47.6	47.6	86.3
	Neutral	47	6.9	6.9	93.2
	Disagree	35	5.2	5.2	98.4
	Strongly disagree	11	1.6	1.6	100.0
	Total	679	100.0	100.0	

As shown in Table 2, 47.6% of the teachers surveyed indicated that they agree that their students' learning reflects what they learn in the training courses they attend, while 38.3% said they strongly agree with this statement.

Based on these data, it is evident that the majority of teachers believe that continuing education has a positive impact on student learning. In this regard, different viewpoints were also expressed regarding the correlation between the two elements, as 6.9% of teachers remained neutral on this issue, 5.2% indicated they disagreed, 1.6% strongly disagreed, and 0.4% did not respond to this question.

These findings reveal that a smaller percentage of teachers believe that the training they receive does not impact students' learning; these factors can lead to discouragement among teachers, reducing the percentage of participants in training programs and negatively affecting teachers' perception of the value of ongoing professional development, thereby minimizing the chances of improving the quality of the national education system.

Table 3

The Contribution of Teacher Training Programs to Improving Teachers' Skills

		Frequency	Percentage	Valid percentage	Cumulative Percentage
Valid	He didn't answer	2	0.3	0.3	0.3
	I completely agree	400	58.9	58.9	59.2
	Okay	258	38.0	38.0	97.2
	Neutral	16	2.4	2.4	99.6
	Disagree	2	0.3	0.3	99.9
	Strongly disagree	1	0.1	0.1	100.0
	Total	679	100.0	100.0	

According to the data presented in Table 3, 58.9% of the teachers surveyed indicated that they strongly agree that what they learned in the training courses helps improve their skills and abilities for their professional performance, 38% said they agree, 2.4% were neutral, 0.3% disagreed, and 0.1% strongly disagreed. Finally, 0.3% did not respond.

As evidenced by the data presented, a majority of teachers view the positive impact of professional development courses as a key factor in developing the competencies and skills needed to perform better in the classroom.

Discussion of the Results

With regard to the academic profile of teachers, the Dominican Curriculum Framework for Primary and Secondary Education (2016) states that the teacher's profile is classified into components that encompass various perspectives on their role as educators. These components focus on the student and their learning, on the curriculum, and on their commitment as a person and as a professional.

From that same perspective, the Dominican Republic's curriculum guidelines specify that among the qualities a competent educator with a solid academic background must possess are a willingness to collaborate, knowledge of and proficiency in the curriculum and inquiry-based techniques, along with ethical principles in the disciplines they are assigned to teach, and the ability to create contexts that foster the construction of meaningful knowledge, and the acquisition of skills and abilities by students. At the same time, they must be skilled at coordinating across curricular areas and have the ability to plan instruction using a variety of methodologies, materials, and techniques to measure, evaluate, monitor, and provide feedback on students' educational progress, as well as to make decisions regarding their interventions and students' levels of progress.

In this regard, the findings of this study reveal that the highest percentage of the teachers surveyed hold a bachelor's degree, followed by those with a specialization and a master's degree. None of the teachers surveyed have earned a doctorate, and only a small percentage are fluent in a language other than Spanish.

According to these results, the academic profile of these teachers falls short of the requirements of the Dominican educational curriculum, which demands that teachers

demonstrate a high level of commitment to continuously participating in learning experiences and training programs that contribute to enhancing their professional development in order to meet the needs of each student. The majority of teachers complete their bachelor's degree and do not continue their professional development by pursuing master's degrees, doctorates, or other studies related to the subject they teach, which is detrimental to their professional development and their ability to meet the professional standards required by the education system.

When considering the profile and academic competencies that educators must possess in the current context, Salazar and Tobón (2018) argue that educators must demonstrate a wide range of competencies, talents, abilities, and skills that enable them to support their students' holistic development.

The qualities that teachers need to possess—and that should define their professional profile—can only be developed through a process of professional development; initial training alone is not enough. It is necessary to continue participating in training courses and graduate-level studies. Although the majority of the teachers surveyed say they are willing and open to continuous and ongoing professional development, their statements contrast with their academic profiles.

In this regard, Aguerrondo (2022) argues that defining a new teaching profile requires the integration of pillars that serve as a foundation for a new personal experience for teachers. These pillars are related to the teacher's experiences in laying the groundwork for building knowledge; the teacher is an expert in learning, not in teaching; they reflect on their practice and on the professional competencies they possess; and they are educators with a high level of professionalism who embrace a different philosophy of knowledge and learning—one that is holistic—seeking to overcome the historical limitations of teaching, which was originally viewed as a form of knowledge not based on evidence or science.

If a teacher has a weak academic background, it is possible that their knowledge is not sufficiently solid, that it is not up to date, and that their teaching methods are not very motivating or innovative, making their lessons uninteresting to students. Similarly, a poor academic profile can affect the quality of teaching, thereby negatively impacting educational outcomes.

Finally, when analyzing how teacher training impacts the improvement of the educational process, teachers' opinions center on their recognition that the continuing professional development initiatives offered by MINERD help enrich their work, skills, and abilities; contribute to strengthening their strategic understanding of teaching approaches for curriculum implementation; improve classroom discipline and behavior; and also promote better implementation of lesson planning and development techniques.

These observations by the teachers consulted are consistent with the views of García and Tocora (2018), who argue that the professionalization of teachers is the most decisive factor in students' progress and cognitive performance.

Similarly, teachers believe that continuing education programs take into account diversity, context, and their professional development needs; furthermore, these programs allow them to make better use of their teaching time so that students can develop the necessary competencies and achieve educational goals, and to implement new strategies for assessing student learning.

These results are consistent with the conclusions of the study conducted by De León et al. (2021). The study cited above found that, in order to achieve effectiveness and quality in education, as well as to create opportunities for students to build knowledge and develop skills throughout their lives, it is necessary to transform the training and professional development of teaching staff.

Alvarado (2022) believes that current teacher training requirements include: training in effective and respectful communication, competent classroom management, in-depth knowledge of the subjects they teach, the development of creative skills, and an emotional connection with students.

From this perspective, Nova and Palacios (2023) state that today's educators need to be trained to acquire pedagogical competencies, understand curriculum guidelines, develop an excellent attitude toward teaching, and acquire the basic skills to organize appropriate and effective learning environments that keep students motivated and enable them to achieve their full potential.

Along the same lines, López (2023) outlines a set of areas on which the professional development of teachers should focus today. These aspects are:

-Building the capacity to recognize the diversity of their students, their unique characteristics, the ways in which these characteristics can affect learning, and how to incorporate them into classroom activities.

-Skills for making adaptations or adjustments to the curriculum, teaching strategies, assessment methods, and educational resources in order to effectively address the specific needs of students.

-Developing skills so that educators can incorporate technological tools into their teaching practices, thereby improving instruction and increasing the inclusion and participation of all students in the learning process.

-Skills that enable teachers to effectively manage a classroom where inclusion, integration, collaboration, and mutual respect are practiced, as well as to foster a student culture with clear rules and positive conflict resolution.

-Developing skills for implementing collaborative work in the classroom. Educators must possess the necessary competencies to encourage their students to engage in collaborative activities with peers or colleagues. In this way, a bond of camaraderie is forged, creating a learning community committed to the academic success of all students.

Every educational system must ensure that its citizens graduate from educational institutions with optimal levels of education and that educators, through their participation in and involvement with ongoing training programs, strengthen their teaching effectiveness; based on their experiences, make valuable contributions to education; are competent in the art of teaching; and possess a high level of qualification.

Conclusions

The objective of this study was to analyze the professional development of elementary and secondary school teachers in the Dominican Republic through their training and competency-based performance. Based on the data collected, it has been found that the highest percentage of teachers hold a bachelor's degree, followed by a specialized degree or a master's degree, and none of the teachers surveyed have earned a doctoral degree. The majority of teachers complete their bachelor's degree but do not continue their professional development by pursuing a specialization, master's degree, doctorate, or other studies related to the subject area they teach, which is detrimental to their professional development and their ability to meet the characteristics of an education professional as stipulated in the country's educational model.

Although a bachelor's degree is considered an essential requirement for teaching, and a high percentage of teachers hold this academic degree, the findings according to the

findings, that in the Dominican Republic, it is necessary to encourage teachers working at the primary and secondary levels to pursue postgraduate studies that will help them continue acquiring the competencies, skills, and up-to-date knowledge needed to meet the demands related to their professional profile and job performance.

As for the key qualities that teachers reported possessing to develop a competency-based teaching process, these include: a willingness to stay current and pursue professional development—an attitude that is very important in a dynamic, evolving educational context where it is essential to continually adjust teaching techniques and approaches—as it demonstrates a high degree of commitment to their professional growth, as well as to the constant improvement of their teaching practice.

At the same time, the teachers stated that they are willing to incorporate innovative elements into their teaching practices, to be empathetic and collaborative, and to promote values—especially respect and honesty. They also stated that they see themselves as guides and facilitators for their students in the process of learning. These characteristics equip them with the ability to embrace current educational innovations and demands. To a lesser extent, teachers are seen as role models for their students and as creative educators.

It is concluded, however, that although the teachers surveyed state that they possess the aforementioned characteristics, their academic profile falls short of the requirements of the Dominican educational curriculum, which demands that teachers have a strong sense of responsibility to continuously participate in learning experiences and training programs that contribute to enhancing their growth as educators and supporting the individual progress of each student. This conclusion is based on the contrast between the teachers' statements and the actual situation. Only a small percentage of teachers commit to continuing their professional development by enrolling in certificate programs, master's programs, or doctoral programs that enable them to advance their professional development, become familiar with emerging educational strategies, and improve their skills as educators.

It is not enough to simply be willing to innovate and pursue professional development; this willingness must be linked to a genuine commitment to the process of professional development. It is certainly necessary to develop initiatives that help bridge the existing gap between expressing a willingness to pursue teacher professionalization and actually putting it into practice.

With regard to the objective of analyzing the impact of teacher training on improving the educational process, it is concluded—in line with the study's findings—that teachers rate the ongoing training provided by MINERD as having a high impact on strengthening the effectiveness of their work and their professional skills and competencies. In addition, they help strengthen strategic understanding of teaching methodologies to ensure proper implementation of the curriculum and adherence to classroom rules, fostering a harmonious school environment that is ideal for building knowledge. At the same time, they support lesson planning and development, as well as the successful educational management of school spaces.

It is reasonable to conclude that teachers' participation in professional development activities helps them enhance their interpretive skills, foster independent thinking, develop critical thinking skills regarding various topics and content, value collaboration with peers to share enriching experiences, and acquire new knowledge.

It is concluded that there is a close link between professionalization, improved teaching performance, and professional development. A school that provides a high-quality education is one that has a faculty with strong academic backgrounds—teachers

who are well-trained, qualified, committed to their professional growth, and willing to become agents of change.

A student with a solid academic education, in line with the demands of his or her environment, is the result of an educational process led by an educator who not only possesses a solid academic background but also consistently participates in continuing education programs that strengthen his or her professional development.

Based on the above, it can be concluded that the Dominican educational system must continue to encourage teachers' participation in programs and projects that promote their professional development and enhance their professional competencies, with the aim of shaping their professional profile in accordance with current circumstances and realities—in which educators need to develop critical thinking skills and reflect on their everyday practices.

Teaching is a profession that requires teachers to learn continuously, because every day brings new challenges and skills to master. As a new school year begins, new students join the class, each with specific educational needs that teachers must address by designing creative and meaningful activities for them. Professional development is the tool that equips them with the skills they need to bring about the changes in the classroom necessary to make education a dynamic and high-quality process.

Overall, it is concluded that teachers' academic profiles fall short of the requirements of the Dominican educational curriculum. Teachers report having the professional competencies required by today's society; however, only a small percentage of those surveyed actively participate in professional development and training programs. Similarly, most of them feel prepared to effectively manage their classroom environments and resolve the problems and challenges that education brings. In conclusion, it was determined that teachers emphasize the importance of their professional development for the adoption of promising practices that will lead to their students' academic success.

Limitations of the Study

This study analyzed the professional development of elementary and secondary school teachers in the Dominican Republic, focusing on their training and competency-based performance.

This study has provided highly relevant information. However, several limitations arose during the course of the study, including the following:

1- Some teachers were reluctant or unwilling to complete the questionnaire used to collect information, which affected the time allotted for its administration.

2- There has been little previous research on the subject. This made it difficult to develop the background information, the theoretical framework, and the comparative analysis of the results.

3- The subjective nature of certain components of the study, the results of which depend on the participants' personal judgment and interpretation, which could affect the accuracy and precision of some data.

Identifying these limitations allows the research to be conducted with a high degree of transparency and helps identify opportunities for improvement in future studies.

Future Courses of Action

Based on the conclusions and final implications, it can be argued that teachers' academic profiles play a decisive role in the effective implementation of the curriculum.

The academic profile encompasses teachers' abilities to address the competencies outlined in the curriculum and ensure that their students develop them.

An academic profile aligned with the curriculum's requirements provides teachers with the foundation to adjust their teaching methods so that they are geared toward meeting their students' learning expectations.

It is clear that there is an urgent need for the officials in charge of the MINERD to define and implement crucial initiatives focused on promoting educators' participation in specialization programs, master's and doctoral degrees, and advanced courses in their fields of academic training, which will contribute to the enrichment of their academic résumés.

The professional development of teachers is key to advancing toward excellence in teaching; consequently, its implications for the establishment of high-quality education systems and for academic success are crucial. In this regard, it is essential that the MINERD, through INAFOCAM, evaluate and implement the necessary reforms to the established policies for the training and ongoing professional development of educators, so that they can carry out their core mission, which is to provide support to teachers so they can grow in terms of their competencies, thereby leading to improved student academic performance.

Similarly, it is necessary to develop action plans to encourage the implementation of professional development strategies within schools, so that school leaders play an active role in training the teachers under their supervision, thereby fostering institutional practices of excellence. Likewise, it is essential that teacher training programs be accessible and tailored to the areas where teachers need improvement and to their specific circumstances.

Training programs must take into account the scheduled times for their implementation in order to ensure the participation of all teachers who request them, thereby overcoming the barrier of lack of time, since these teachers are generally very busy. By designing and offering online training programs and self-paced learning guides, we achieve a higher level of faculty engagement and, consequently, a higher academic standing.

Incorporate and schedule time in the school calendar for teachers to reflect on their practices and performance as guides and facilitators of learning, as this will enable them to identify areas where changes are needed and design improvement strategies to make their work more efficient.

The MINERD and INAFOCAM should encourage educators to participate in research projects in the field of education, given that such participation contributes to the achievement of educational quality. A research teacher has the opportunity to analyze, discover modern teaching techniques, continually update their knowledge, and contribute to the country's educational development.

Establishing a culture of collaborative learning in pairs is an effective strategy for sharing best practices and providing mutual support, which enables teachers to grow and develop professionally. This strategy can be implemented by creating learning networks in which teachers participate by level, subject area, and grade level. They can be conducted in person or online, under the supervision of an education specialist, who may be a district technician.

Training programs must be supervised and monitored by educational authorities, while also being evaluated to determine their level of effectiveness and the results achieved, and to implement any necessary improvements to optimize their quality.

In addition to monitoring and evaluating teacher training projects and initiatives, it is of great importance to to evaluate the effectiveness of the work carried out by the

institutions of higher education responsible for training educators—including their coordinators and instructors—as well as the methods, modalities, and resources used in each phase of training. This is because the quality of the practical experiences in which participants will be immersed and the learning outcomes they achieve depend primarily on these aspects.

Achieving a high level of professionalism among teaching staff is a challenging process that requires intensive work on designing and offering enriching, up-to-date training opportunities, as well as constant support from educational authorities and a systematic process of monitoring, evaluation, and feedback. This will lay the groundwork not only for the genuine professionalization of teachers, but also for improving the quality of the education system and developing students' curricular competencies.

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METHODOLOGY TO REDUCE THE DIGITAL DIVIDE IN EDUCATION: A CASE STUDY OF ECUADOR

METODOLOGÍA PARA REDUCIR LA BRECHA DIGITAL EN EDUCACIÓN: CASO DE ESTUDIO ECUADOR

Fabián Noriega
Instituto Superior Tecnológico Loja, Ecuador
[fabianoriega@gmail.com] [https://orcid.org/0009-0007-7238-1841]
Jon Arambarri
Universidad internacional Iberoamericana, Spain
[jon.arambarri@uneatlantico.es] [https://orcid.org/0000-0002-6450-8562]

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ABSTRACT

Ecuador faces a significant digital divide that affects students and teachers, limiting their access to educational and technological resources, especially in geographically dispersed areas with socioeconomic inequalities. This study focuses on implementing sustainable strategies at the Dayuma Kento Educational Unit, located in the La Joya de los Sachas canton, Orellana province. The main objective is to improve equitable access to technology and strengthen the quality of education. Through surveys, key challenges were identified, leading to the development of four intervention areas. The first, Equipment, consisted of providing the institution with essential technological infrastructure, including network devices and video surveillance systems, ensuring efficient internet access. The second, Connectivity, improved internet access and coverage through secure wired and wireless networks, facilitating user access to online resources. The third area, Infrastructure, involved adapting school spaces with computers and connectivity to optimize the use of technology in educational environments. Finally, the Pedagogy component focused on training students and teachers in the effective use of ICT, integrating it into teaching and learning processes. Subsequent surveys revealed positive results, highlighting a 65% increase in teachers' interest in technology training and a significant improvement in the educational experience and student engagement thanks to the effective incorporation of technological tools in the classroom.

Palabras clave:
Metodología, brecha digital, conectividad, pedagogía, TIC.

RESUMEN

Ecuador enfrenta una notable brecha digital que afecta a estudiantes y docentes, limitando su acceso a recursos educativos y tecnológicos, especialmente en áreas con dispersión geográfica y desigualdades socioeconómicas. El presente estudio se centra en implementar estrategias sostenibles en la Unidad Educativa Dayuma Kento, ubicada en el cantón La Joya de los Sachas, provincia

	de Orellana. El objetivo principal es mejorar el acceso equitativo a la tecnología y fortalecer la calidad educativa. A través de encuestas se identificaron desafíos clave que condujeron al desarrollo de cuatro ejes de intervención. El primero, Equipamiento, consistió en dotar a la institución de infraestructura tecnológica esencial, incluyendo dispositivos de red y sistemas de video vigilancia, asegurando una distribución eficiente de internet. El segundo, Conectividad, mejoró el acceso y la cobertura de internet mediante redes seguras tanto cableadas como inalámbricas, facilitando a los usuarios el acceso a recursos en línea. El tercer eje, Infraestructura, implicó la adecuación de espacios escolares con dotación de computadoras y conectividad para optimizar el uso de la tecnología en entornos educativos. Finalmente, el eje de Pedagogía se centró en capacitar a estudiantes y docentes en el uso efectivo de las TIC, integrándolas en los procesos de enseñanza y aprendizaje. Posteriormente, encuestas evidenciaron resultados positivos destacando un incremento del 65% en el interés de los docentes por formarse en tecnología y una mejora significativa en la experiencia educativa, interés de los estudiantes gracias a la incorporación efectiva de herramientas tecnológicas en el aula.

Introduction

Access to technology and connectivity have become essential elements of the education system, a reality that was further highlighted by the pandemic, which exacerbated preexisting shortcomings, such as inadequate educational infrastructure, a shortage of teachers, and low academic performance (De Jesús & Ayala Ramírez, 2021). According to data from Ecuador's Ministry of Education (MINEDUC), of the 16,096 educational institutions in the country, 7,759 lack internet connectivity, which is equivalent to 28.41% of the total. Of these, 4,618 are in urban areas and 3,141 in rural areas (Pérez O, González M, Otero I, 2005). The digital divide affects both urban and rural areas. In the same classroom, there are students who are proficient in using digital devices alongside others who are not, and in some cases, classrooms equipped with technology but staffed by teachers who lack digital skills. This digital divide has a negative impact on learning, leading to a decline in educational standards. During the pandemic, although the government increased the supply of digital devices, teaching and learning dynamics broke down, which paradoxically led to a decline in educational quality (Andocilla et al., 2023).

Experiments in Norway and Sweden have shown that banning the use of electronic devices in classrooms can improve reading skills and critical thinking, suggesting that these devices may act as distractions (Villalta Jadan et al., 2023). In light of this situation, this case study at the Dayuma Kento Educational Unit in the La Joya de los Sachas canton, Orellana province, seeks to identify the digital divide affecting the student population through a survey. Based on the results, a plan will be proposed for the provision of electronic devices and Internet access in accordance with the number of students, infrastructure, and the socioeconomic conditions of the families (UNESCO, 2024).

The pandemic has highlighted the extent of the digital divide in education, significantly affecting students and teachers, especially in areas with limited internet access, as observed in the province of Guayas (Tutivén, F., & Muñoz, 2021). Studies show that a lack of internet access and adequate devices has hindered online learning and increased student dropout rates, with the greatest impact on public and rural institutions. Despite government efforts to bridge this gap, inequalities persisted and became more visible during the health crisis (Prince Torres, 2021).

On the other hand, research on connectivity and equipment in Ecuador's public schools shows that fluctuations in government investment have affected the availability of technological resources, limiting the effective use of ICT in education (Pita Salazar et al., 2021). These limitations have been particularly evident in the university setting, where a direct impact on the teaching-and-learning process has been observed. Furthermore, the digital divide has been identified as an obstacle to the universal right to education, exacerbating social inequalities and limiting equitable access to education, especially during the pandemic (Moreira et al., 2017).

Taken together, these studies show that the digital divide is a complex phenomenon that affects all levels of Ecuador's education system, from elementary and secondary school through college. While some studies highlight the lack of infrastructure and connectivity as the main obstacles, others focus on social inequalities and their impact on access to education (Baca-Pumarejo et al., 2018). The pandemic has served as a catalyst that has amplified these inequalities, underscoring the urgent need for more effective and sustainable policies to bridge the digital divide and ensure quality education for all (Moreira et al., 2017).

In this context, this project focuses on implementing key strategies to bridge the digital divide, including an appropriate pedagogical approach that provides for the urgent training of teachers and students, infrastructure equipped with wireless technology,

augmented reality, and virtual reality, computer labs with internet access, and lesson plans designed to develop skills, competencies, and methodological strategies in a digital environment. This enabled students to compare, identify, critique, and search for information on their own. This article is divided into 4 sections. A review of related topics and the focus on the digital divide presented in the Introduction. Section 2 explains the methodology to be used to bridge the digital divide. The results are presented in Section 3, and the discussion and conclusions are highlighted in Section 4.

Methodology

This section describes the methodology to be used in the article, which consists of assessing the digital divide by identifying and quantifying its underlying causes using indicators that facilitate the analysis and formulation of strategies to reduce it (Díaz Lazo et al., 2005). This methodology is applied in an educational institution, where the evaluation criteria take into account the resources the institution must provide to students so that they can incorporate new technologies into their personal and educational development. The analysis focuses on the relationship between schools and students, highlighting the importance of ICTs in this relationship and considering three key aspects for reducing the digital divide: economic, social, and educational (Valenzuela Urra et al., 2022).

Infrastructure must keep pace with technological advances; there is no point in equipping a classroom with an interactive whiteboard if it does not have Internet access. Content and applications must be tailored to the educational level and the skills to be acquired, while teachers must be trained in the use of ICT (Anaya Figueroa et al., 2021). All of this requires appropriate conditions for carrying out curricular activities. At the Dayuma Kento Educational Unit, the Ishikawa method was used to identify the causes that have widened the digital divide by analyzing the factors that affect the technology available to students.

To assess the digital divide at the Dayuma Kento Educational Unit, key variables related to Internet access infrastructure, the quality of educational content and applications, and teachers' skills—as identified using the Ishikawa method—were considered (Gómez et al., 2008). The research focused on quantifying these variables and analyzing their impact on the digital divide. The study population included 187 students at various grade levels and 43 teachers. Surveys were conducted before and after the training sessions to gather data on access to technology, digital skills, and the use of ICT in the classroom, in both the morning and afternoon sessions. The information was anonymized to protect the participants' identities using the Office 365 Forms platform, as shown in Figure 1; this platform was provided by the Ministry of Education. This approach made it possible to identify the causes, characteristics, and possible actions to reduce the digital divide within the institution.

Figure 1
Survey of Faculty and Students at UEDK

Note. Figure 1 shows the surveys used to measure the digital divide, which are administered to teachers and students.

Internet access infrastructure and the digital divide are intrinsically linked. However, the digital divide also has deeper causes, such as the lack of educational programs that adequately integrate ICT into the educational process (Sánchez et al., 2018). In this regard, the variables to be analyzed for this study are those that directly influence the existence of the digital divide, whether due to a lack of or deficiencies in Internet access infrastructure, as revealed by Ishikawa's analysis. Therefore, to assess the digital divide at the Dayuma Kento School from the perspective of what the school offers its students, the following variables were considered:

- ICT-supported access infrastructure.
- Educational content and applications.
- Teachers' skills and competencies.

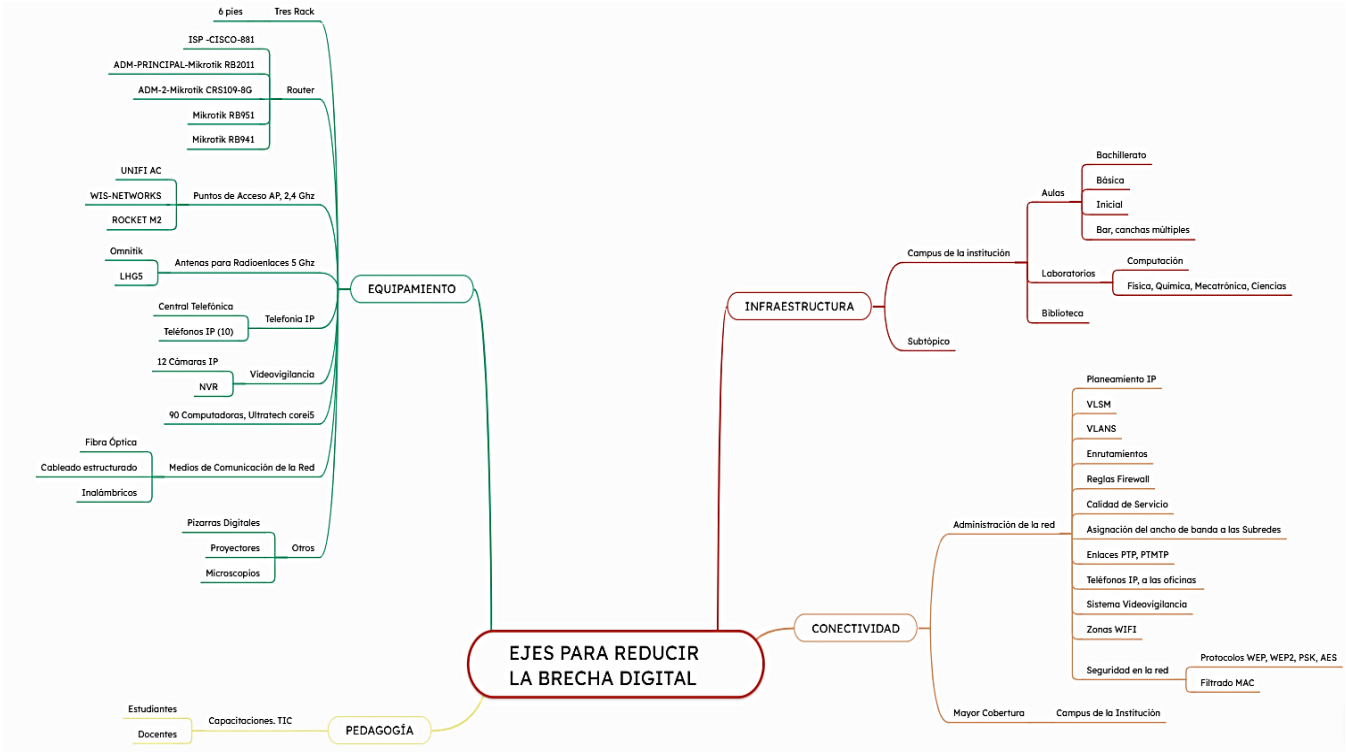
Answering the central question of this study ("What is the extent of the digital divide at the Dayuma Kento Educational Unit in the city of Joya de los Sachas? What are its causes and characteristics, and what actions should be implemented to reduce it?") requires quantifying the variables mentioned and analyzing how each of them contributes to the existence of the digital divide.

The digital divide and ICT use are inversely related: a wider digital divide implies lower ICT use, and vice versa. This requires integrating ICT into traditional teaching methods (Gómez-Prada et al., 2019). The integration of these technologies—especially the Internet—into education is transforming school practices in a way similar to the computerization of the past. Nowadays, it is inconceivable to manage information in a school without digital technology. The implementation of ICT requires organizational and educational process adjustments to ensure its planned integration, optimal use, and quality, in accordance with the guidelines of the Ministry of Education.

The methodology and implementation processes for reducing the digital divide—the result of this research—consist of four main parts or pillars, as shown in Figure 2:

- Equipment
- Infrastructure
- Connectivity
- Pedagogy

Figure 2
Mind Map: Strategies for Bridging the Digital Divide



Note. Mind map of the key areas and all their components for bridging the digital divide.

Equipment

To ensure that both students and teachers have the devices they need for digital learning, it is essential to start by taking inventory of the current devices and assessing their condition and functionality. Next, we need to purchase new devices, such as laptops and tablets, for those who do not have them. This is essential, as a survey showed that the number of teachers without training in digital skills decreased by 45% after they received new equipment. In addition, implementing a schedule for regular maintenance and device updates will ensure their continuous operation. Offering workshops and courses on the use of these devices will allow students and teachers to become familiar with and make the most of the available tools, which has resulted in an 82% increase in teachers' digital competence, according to the survey results.

Infrastructure

It is crucial to create a physical environment that facilitates the effective use of digital technologies in teaching and learning. For this reason, classrooms must be adapted and equipped with modern technologies, such as projectors, interactive whiteboards, and charging stations for devices. The importance of these improvements was evident in the survey, in which teachers reported significant improvements in their students' learning experience as a result of having adequate infrastructure. It is also essential to create spaces within the school dedicated to collaborative work and the use of technology, such as computer labs and multimedia rooms. An ongoing maintenance plan will ensure that all equipment and spaces are in optimal condition, while also ensuring that they are safe and accessible to all members of the educational community. The quality and functionality of these spaces and facilities, along with their use by students and faculty, will be the main

indicators of success, based on the positive results observed in surveys conducted after these improvements were implemented.

Connectivity

It is essential to ensure that all members of the educational community have a stable, high-quality internet connection. This begins with an assessment of the existing network infrastructure and its coverage, followed by the implementation of the necessary improvements to ensure a fast and stable connection. The importance of these actions was reflected in a descriptive statistical analysis, in which the most significant variable was the implementation of technology in the classroom. This demonstrated a significant improvement in the effective use of technology in teaching once connectivity was improved. In addition, it is crucial to establish agreements with internet service providers to offer subsidies or discounted rates to students and teachers. It is also necessary to set up free internet hotspots in strategic locations throughout the school and the community to make access easier for those who need it. Indicators of success will include the speed and stability of the internet connection, as well as the percentage of students and teachers with regular access, which, according to surveys, has been key to improving the quality of learning.

Pedagogy

It is vital to effectively integrate digital technologies into teaching and learning methods. Offering continuing education programs for teachers on the pedagogical use of digital technologies has proven to be highly effective, as reflected in the survey results, in which a growing number of teachers expressed a desire to receive more technology training after participating in the initial programs. This was the profile of the teachers surveyed, who, as can be seen in Table 1, are mostly experienced educators who have witnessed firsthand the transition from traditional to digital pedagogy.

Table 1
Population / Sample of Teachers

Number of respondents	Faculty Profile	Antiquity	Academic Year
25	Teacher of elementary and high school education	old	2023–2024
2	Upper Secondary General Education Teacher	new	2023–2024
7	Math Teacher	old	2023–2024
4	Language Teacher	old	2023–2024
5	Technical Instructor	old	2023–2024

It is essential to create and adapt digital educational materials that are relevant and accessible. Implementing teaching methodologies that encourage the active use of technology—such as project-based learning and the *flipped classroom*, among others—can have a significant impact. According to the analysis of the survey data, the application of these methodologies resulted in an increase in the perception of technology's positive impact on learning. Using digital tools for ongoing assessment and personalized feedback for students is essential to maintaining and improving these results.

Results

This section analyzes the experimental results and provides a detailed examination of the strategies used to bridge the digital divide. It also presents the findings of surveys conducted among teachers and students before and after the implementation of this project. The analysis of the results includes the variables used to assess the digital divide.

Working on infrastructure helps meet the needs of the educational community; thus, the main technological systems that were implemented are as follows: Main rack, Cisco 881 router from the Internet service provider, patch panel for structured data and voice cabling, IP PBX, secondary rack, omnidirectional antenna, 5 GHz, point-to-multipoint links, CPE antennas. (Customer Premises Equipment), 5 GHz, point-to-multipoint links, 2.4 GHz access points (AP 1, 2), 2.4 GHz access point (AP 3), three 2.4 GHz access points (AP 4, 5, 6) in classrooms and computer labs, 2.4 GHz AP 7, 2.4 GHz AP 8, monitoring center with 9 IP cameras and 6 IP phones.

Figure 3
Telecommunications Technology Equipment

Note. Figure 3 shows the various pieces of equipment needed for internet connectivity, communication, and image display at the UEDK.

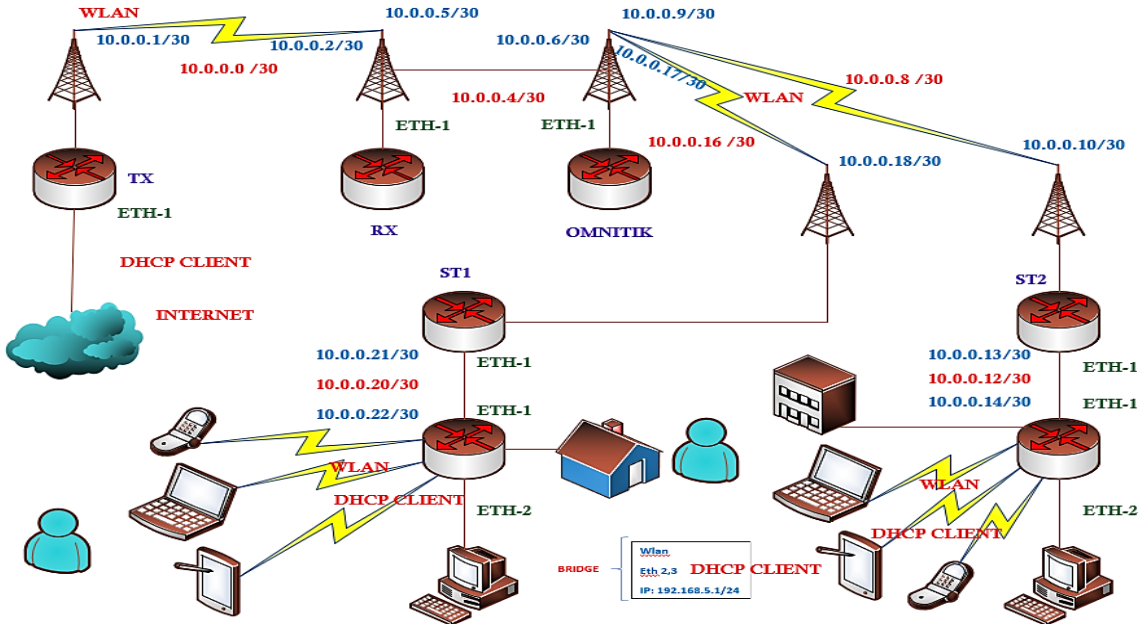
The subscribed-to Internet service offers a bandwidth of 20 Mbps for uploads and 10 Mbps for downloads, and its topology is shown in Figure 4. The service provider uses fiber-optic technology with a 1:2 sharing ratio. For this corporate contract, a Cisco 881 edge router was assigned.

The intranet on the educational campus is managed through four routers and eight access points, providing wireless coverage to 90% of the institution's campus area. The configurations applied to these devices include: IP address planning using the IPv4 protocol with private IP addresses; variable-length subnet masks (VLSM), which optimize

the use of IPv4 addresses and device resources; static routes to allow access to network resources from any subnet; and Quality of Service (QoS), which enforces restrictions on internet access through the main device's firewall, in accordance with internal policies. In addition, bandwidth is allocated among networks and subnets using simple queues, and point-to-multipoint links are established at the 5 GHz frequency to extend the wireless signal to areas without Ethernet network access points. The security of the 2.4 GHz Wi-Fi network is ensured through the WPA and WPA2 protocols and MAC filtering.

Figure 4

The institution's network topology.



Note. Figure 4 shows the network topology used throughout the institution.

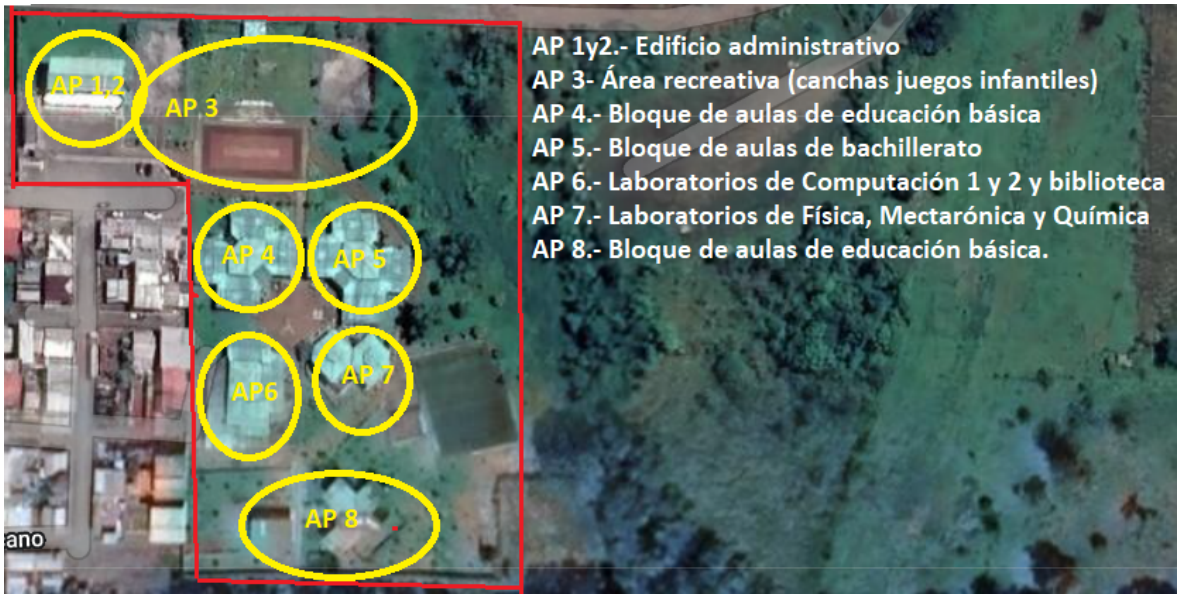
The intranet infrastructure includes three *racks* interconnected via fiber optics, from which structured cabling is distributed to the network points in the educational facility's buildings. The intranet is managed using Mikrotik routers, with the Winbox program used to manage the "Administrator," "Admin-dos," "Chemistry Lab Router," and "Mechatronics Router" devices deployed on the network. The settings configured on the main router, called "Administrator," include assigning IP addresses to all subnets, configuring the DNS (Domain Name System) protocol, implementing NAT (Network Address Translation), and managing routing. On the "Admin-Dos" router, IP addresses are configured using VLSM (variable-length subnet mask), and an omnidirectional antenna is connected, which allows for point-to-multipoint connections. In addition, rules are created in the device's firewall to block certain websites, static routing is implemented, and bandwidth is allocated to subnets using the simple queues option.

The routers in the Mechatronics and Chemistry Lab areas are configured with specific IP addresses and Wi-Fi networks for each location, using MAC filtering to ensure that only authorized users can access the wireless network, thereby enhancing security. Access points (APs) 3, 4, 5, 7, and 8 operate at a frequency of 2.4 GHz and are strategically located to provide Wi-Fi coverage across 90% of the campus, as shown in Figure 5. Once inside the APs' operating system, you can view details such as the frequency channel, channel width, region code, and the throughput of the wireless signals. The Wi-Fi network is configured in the "Wireless" settings with key parameters such as the SSID "RED-DOCENTES," and in addition to passwords, MAC filtering with whitelists is applied for

teachers' devices, ensuring greater security and coverage across almost the entire campus.

Figure 5

Level of Wi-Fi signal coverage on the institution's campus



Note. The figure shows the educational institution's campus and the Wi-Fi coverage in the various areas.

APs 3, 4, 5, 7, and 8 are access points that operate at a frequency of 2.4 GHz and are located at strategic points throughout the institution to provide Wi-Fi coverage to 90% of the campus. Once you have logged into the access points' operating system, you can view the network status, including the frequency channel, channel width, region code, and maximum speed; you can also view the throughput of the wireless signals.

Figure 6

Main menu for APs 3, 4, 5, 6, and 8.

Note. WisNetworks Operating System Home Screen

In the "Wireless" option, you can configure the Wi-Fi network and its main settings, such as the SSID: RED-DOCENTES, the channel, channel bandwidth: To enhance network security in addition to passwords, MAC filtering with whitelists is implemented, which includes the MAC addresses of teachers' laptops and cell phones. It is worth noting that this network signal covers almost the entire campus.

Using the same equipment, virtual APs are configured to broadcast a new wireless signal with a different password. This creates a Wi-Fi signal named "RED ESTUDIANTES," with a different password and whitelist. The whitelist consists of the MAC addresses of students' devices (laptops and cell phones). When a student requests network access for their device, the device's MAC address is added to the whitelist for a limited time, since the bandwidth is not sufficient for all users.

The fourth proposed strategy for reducing the digital divide in education is pedagogy; for which a sample was drawn from sixth-year students in lower secondary school, ninth-year students in upper secondary school, and first-year high school students in both the morning and afternoon sessions, totaling 187 respondents and 43 teachers. They were administered a test assessing their knowledge of demographic information, access to technology, digital skills, and the use of technology in the classroom. After the test, training sessions were held according to a set schedule that lasted two weeks, with one hour per day for each grade level in elementary and high school. The topics covered in the training were as follows:

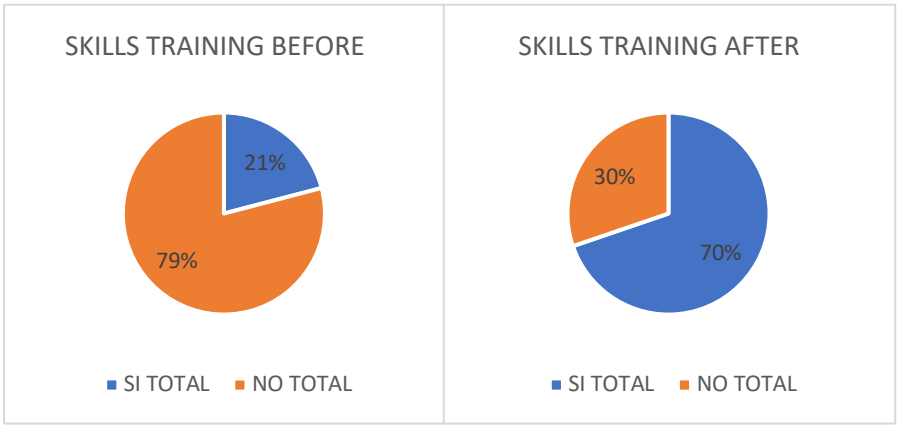
- The Evolution of Technology
- Proficiency in Microsoft Office (Word, Excel, PowerPoint)
- Proper Use of the Internet
- Study of digital platforms (Office 365, Google)
- Email, OneDrive, Google Drive.
- Office tools used in education (Canva, Genially, Mindomo, Classroom, Kahoot, Mentimeter).
- Introduction to Artificial Intelligence (AI)
- Augmented Reality, Virtual Reality
- The Metaverse.
- Introduction to Educational Robotics (programs: (Tinkercad, mBlock, Ottoblocky, Proteus, Fritzing, Arduino).

Analysis of Teacher Surveys

A total of 43 teachers were surveyed. The sampling method used was simple random sampling.

Before the training, only 9 teachers had received formal training in digital skills or in integrating them into their teaching. However, following the training, the number of trained teachers rose to 30, representing a significant increase from 21% to 70%—that is, a 49% increase. Similarly, the percentage of teachers who had not received training in digital skills decreased from 34 to 13, a 49% reduction, reflecting a drop from 79% to 30%, as shown in Figure 7.

Figure 7
Technology Skills Training



Note. Results of the technology training sessions before and after the training.

The Student's t-test, developed and promoted by William Sealy Gosset and commonly known as the "t-test," is a statistical tool used to determine whether there is a significant difference between the means of two groups. This test is particularly useful when working with small samples and the population standard deviation is unknown. When applying Student's t-test to paired samples, we observe that the p-value is less than 0.05; that is, the null hypothesis is rejected, meaning the two groups are not equal and, therefore, there are differences between receiving more technology training before and after. However, since this is a dichotomous qualitative variable, it is not normally distributed; therefore, the nonparametric Wilcoxon test is performed.

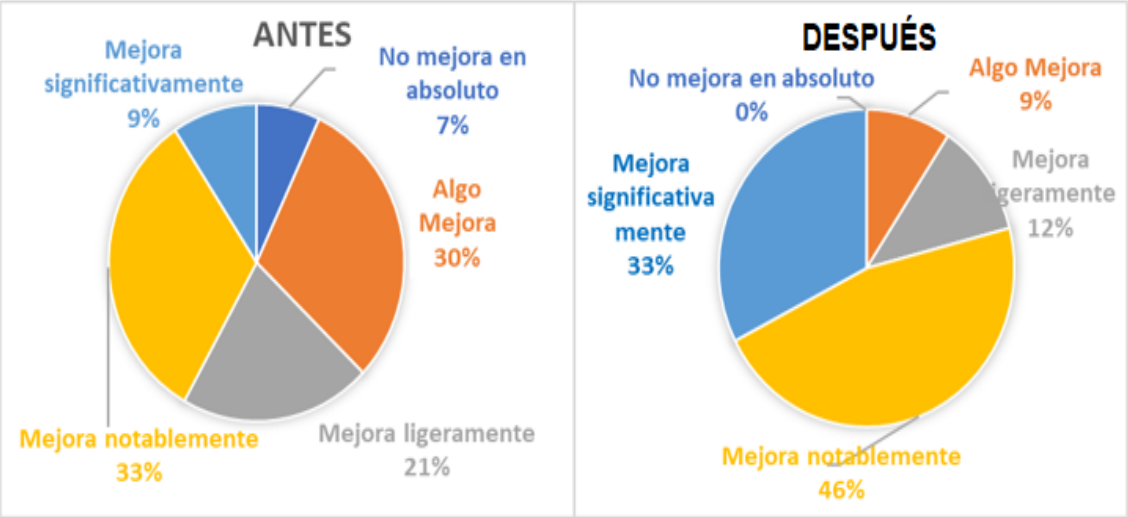
When analyzing the impact of educational content and applications, the “no improvement” option decreased from 3 teachers who did not believe in the impact of technology on learning to 0 teachers; all 43 teachers believe that the use of technology in the classroom has an impact on improving students’ learning experience, representing a 7% improvement.

For this option, the impact of the improvement is very insignificant; the number also drops from 13 to 4 teachers—that is, from 30% to 9%, a decrease of 21%. Similarly, for the “slight improvement” option, the percentage drops slightly from just under 9 teachers to 5, or 12%. In total these three options together result in a 39% improvement. On the other hand, the options “noticeably improved” and “significantly improved” increased from 14 to 20 for the former (13%). And the second, the most significant, was from 4 to 14 (24%). In other words, between them, they increased their rating of the impact of using technology in their classrooms to improve their students’ learning experience by 37% (16 teachers).

What can we conclude in light of these results? Well, the application of statistical tests, such as Student's t-test and the nonparametric Wilcoxon test, shows that technology training has a significant impact on teachers' perceptions of the use of technology in learning. The results show a notable shift in teachers' opinions: those who initially did not believe in the positive impact of technology (3 teachers) are no longer present, while the proportion of teachers who considered the improvement to be "very insignificant" and "slightly significant" has decreased considerably, with declines of 21% and 12%, respectively. In contrast, the categories with the greatest impact—“noticeable improvement” and “significant improvement”—saw increases of 13% and 24%, respectively, representing a total increase of 37% in positive assessments of technology

use. This reflects a profound shift in teachers' perceptions of technology integration as a key tool for improving students' learning experience, highlighting the effectiveness of training programs.

Figure 8
The Impact of Technology on Classrooms: Then and Now



Note. Figure 8 illustrates the significant impact that the use of technology has on the institution.

Analysis of the Student Survey

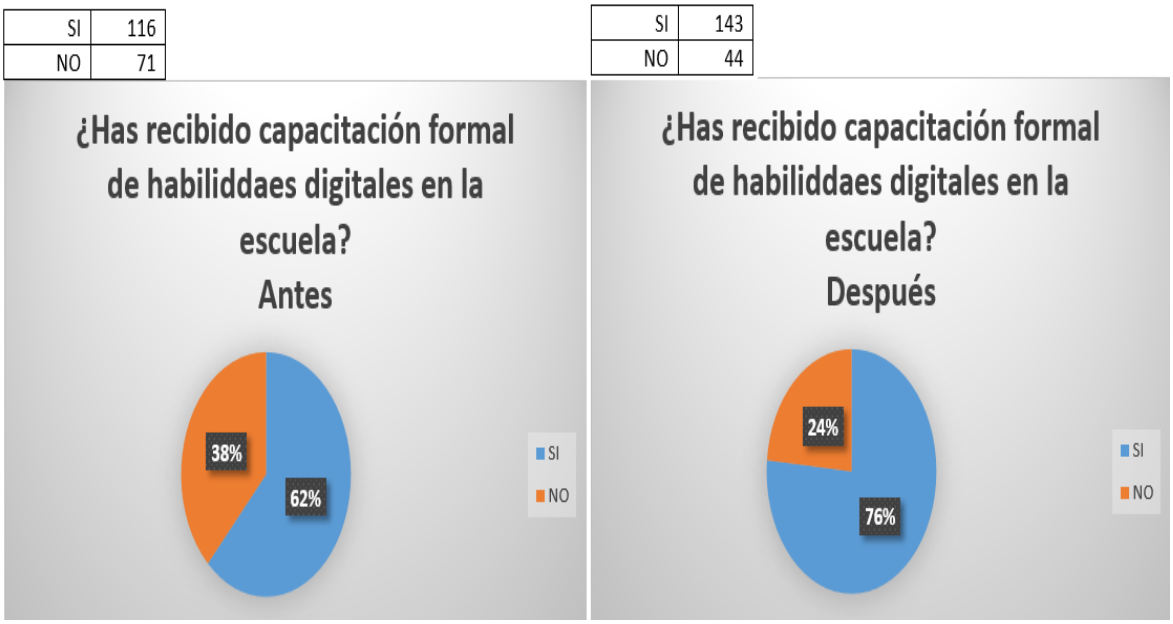
Table 2
Student population / sample

Number of respondents	***Genre***	***Age***	***Course/Level***
187	Men's (109)	Under 12 years old (28)	Sixth Grade (Middle School)
	Women (78)	Ages 12–14 (62)	9th grade (upper elementary)
		Ages 15–17 (97)	First Year of High School (Science, Mechatronics, Electromechanics)

Note. Number of students surveyed.

When applying the nonparametric Wilcoxon test, a p-value less than 0.05 is obtained, leading to the rejection of the null hypothesis and indicating that there are significant differences between the two samples—that is, they are not equal. This leads to the conclusion that formal training in digital skills at school has had a significant impact. As shown in Figure 8, before the training, 62% of respondents answered "YES," while after the training, that percentage rose to 76%. This 14% increase reflects a rise of 27 cases and a corresponding decrease in the lack of training.

Figure 8
Survey administered to students before and after.



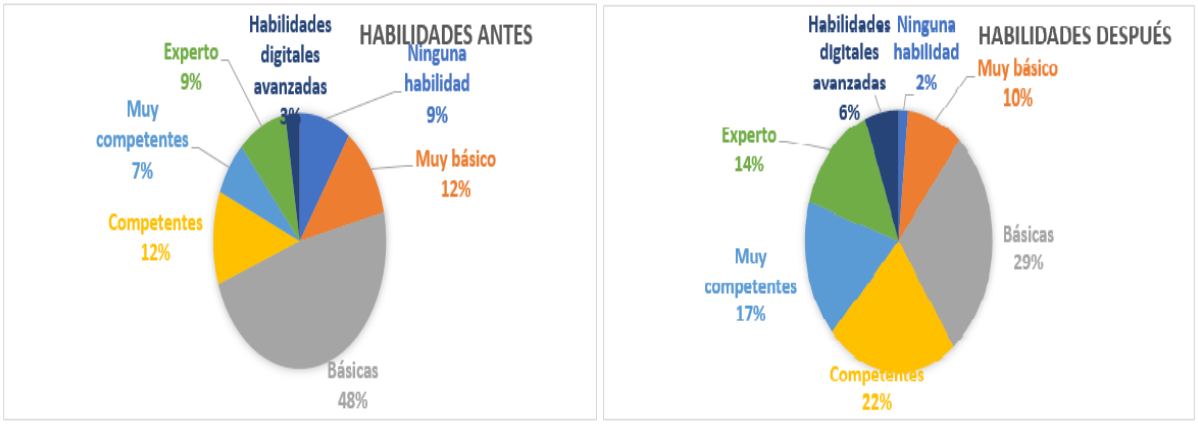
Note. Survey results from before and after the student training.

When applying Student's t-test to paired samples, we observe that the p-value is less than 0.05; therefore, the null hypothesis is rejected. They are not the same, and therefore there are differences between the pre- and post-training measures; however, since these are dichotomous qualitative variables, they are not normally distributed, so the Wilcoxon test is used. The number of respondents with no digital skills decreased from 9% to 2%, meaning it dropped from 18 to 3 people, with 15 respondents showing an improvement in their skills. With regard to skills rated on the Likert scale (competent, very competent, expert, and advanced), a 30% increase was observed among all respondents, bringing the total number of people in these categories to 56. The "highly competent" and "expert" options each increased by 10%. In addition, the skills gap was reduced by 28%, with a 19% decrease in basic skills—from 90 to 54 respondents—meaning that 46 students progressed beyond basic skills.

What do these variations mean? And what are the tasks that the Dayuma Kento Educational Unit should focus on? The results obtained using the nonparametric Wilcoxon test and Student's t-test confirm significant differences in the respondents' digital skills before and after formal training, reflecting a positive and measurable impact. The 14% increase in the number of people with digital skills (from 62% to 76%) highlights the program's success, resulting in 27 additional cases of individuals with basic skills. In addition, the percentage of respondents without digital skills dropped sharply from 9% to 2%, representing an improvement for fifteen people. This progress is complemented by a notable 30% increase in the higher skill levels (competent, very competent, expert, and advanced), with the "very competent" and "expert" levels each rising by 10%. The 19% decline in basic skills (46 students advanced) indicates progress toward more advanced competencies, confirming the effectiveness of training as a transformative tool in the development of digital skills.

Figure 9

Survey administered to students before and after

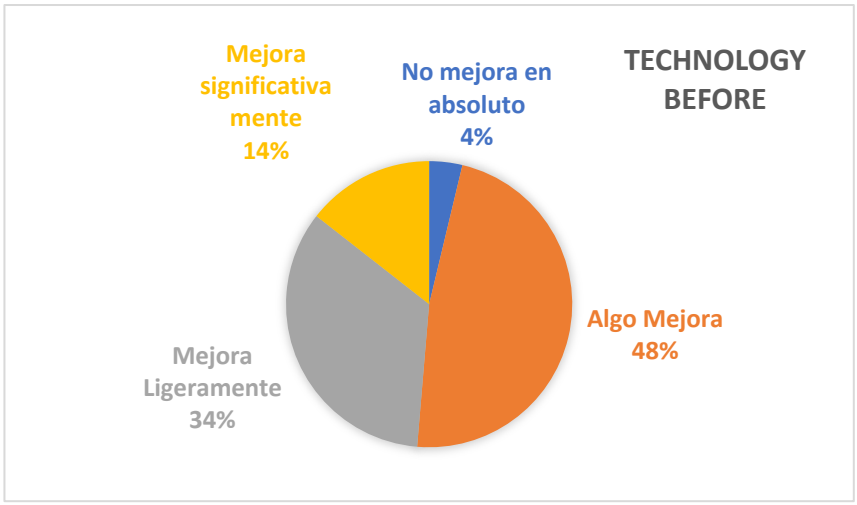


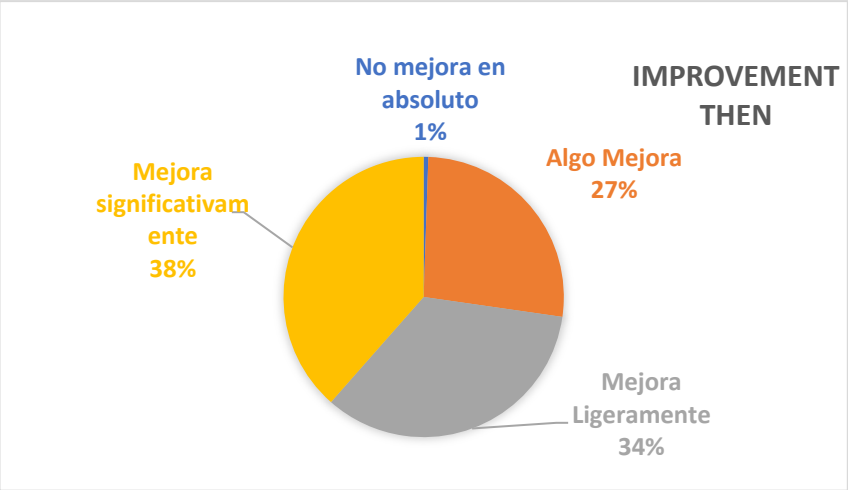
Note. Figure 9 shows how students' skills improve during the learning process following the training.

In terms of technology use, the "no improvement at all" option decreased from 7 to 1 respondent, representing a 3% decline. Although the percentage of respondents who chose the "some improvement" option remains high, it fell from 48% to 27%. There were no significant changes in the "slightly improved" option, but the most significant option, "significantly improved," saw a notable increase, rising from 27 to 72 respondents, representing a 24% improvement in classroom learning, up from 14% to 38%.

Figure 10

Technology enhances the learning experience both before and after training





Note. Figure 10 shows how technology enhances the learning experience after training.

Finally, a summary of the variables analyzed for both the teacher and student surveys is presented, as shown in Table 1. The results of the surveys conducted among teachers. The results show that, following the survey, teachers' perceptions and attitudes toward the importance of technology in the classroom have changed for the better.

A summary of the results from the student surveys is also presented, showing a notable improvement in perceptions after the survey. However, there remains some doubt or mistrust among students regarding technology, as they often associate it with greater control and an increased academic workload, among other factors.

Table 3

Summary of Descriptive Statistics from the Faculty and Student Surveys

	Teachers		Students	
Variables Analyzed	**Before**	**Afterward**	**Before**	**Afterward**
Percentage of teachers who have received training in the effective use of technology.	21%	70%	62%	76%
Percentage of teachers who believe that technology significantly improves learning	30%	95%	48%	27%
Percentage of teachers who have received formal training in digital skills	30%	67%		

Note. Table 3 presents a summary of the descriptive statistics from the faculty and student surveys.

With regard to digital skills training, the percentage of teachers who received formal training rose from 30% to 67%, reflecting an improvement in teachers' technological proficiency. These results highlight the positive impact of training on both skill development and changing attitudes toward the use of technology in education, establishing it as a key tool for improving the learning experience.

Finally, all the technology and equipment installed and used at the Dayuma Kento Educational Unit led to the school's participation in the 18th Binational Science and

Technology Fair held in Peru, where it delivered a brilliant presentation with a project titled: Augmented reality robotic arm, which won second place, as shown in the following link:
https://educacion.gob.ec/estudiantes-de-orellana-triunfan-en-concurso-estudiantil-de-indole-internacional/.

Discussions and Conclusions

The integration of digital technologies into education is a crucial issue in today's world, where the digital transformation is redefining teaching and learning methods. In this discussion, four key aspects were analyzed: equipment, infrastructure, connectivity, and pedagogy, all of which are essential to ensuring an educational environment that maximizes the use of ICT and minimizes the digital divide.

Formal training in digital skills has been highly effective, as evidenced by a 49% increase in the number of teachers trained and a significant improvement in their skills. In addition, continuing education has sparked growing interest, with 65% more teachers interested in receiving additional training. In addition, the modernization of the technological infrastructure—including improved connectivity and the retrofitting of classrooms with advanced technologies—has significantly enhanced the educational experience. This is reflected in teachers' positive perception of the impact of technology on student learning.

The implementation of the methodology to bridge the digital divide at the Dayuma Kento Educational Unit has shown that adequate provision of technological equipment, improved connectivity, and training for both students and teachers are essential to promoting more equitable access to educational resources. This has not only made technology more accessible, but has also significantly improved the quality of the teaching and learning process, as evidenced by the increased participation and interest of the educational community in continuing to strengthen its technological skills.

The results underscore the importance of a comprehensive approach that addresses both technical and pedagogical aspects in order to bridge the digital divide. The combination of adequate infrastructure, improved connectivity, and teaching strategies focused on the integration of ICT has enabled technology to become an effective tool for learning, thereby reducing educational inequalities and opening up new opportunities for academic development in communities with limited access to technology.

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DIGITAL COMPETENCE IN THE USE OF ICT IN PRIMARY SCHOOL STUDENTS: A CASE STUDY AT SAINT PAUL EDUCATIONAL INSTITUTION, CARICE, HAITI

COMPETENCIA DIGITAL EN EL USO DE LAS TIC EN ALUMNOS DE EDUCACIÓN PRIMARIA: UN ESTUDIO DE CASO EN LA INSTITUCIÓN EDUCATIVA SAINT PAUL, CARICE, HAITÍ

Jean Rolex
Universidad Internacional Iberoamericana, Puerto Rico
[jean.rolex@doctorado.unini.edu.mx] [https://orcid.org/0000-0003-0167-2581]
Antonio Gavira Narváez
Universidad de Córdoba, Spain
[antonio.gavira@uco.es] [https://orcid.org/0000-0002-5389-8315]

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Digital Competence, Information and Communication Technology, Information Society.

ABSTRACT

This study investigated the digital competence of primary school students at the "Saint Paul" Educational Institution in Carice, Haiti, acknowledging the crucial need to address challenges posed by the information society. Employing a quantitative approach, the research involved 233 participants, aged 6 to 14, with an average age of 10. Data was gathered through surveys utilizing a Likert scale-based questionnaire, adapted from Tourón et al.'s (2018) Digital Competence Questionnaire for Teachers, alongside competence assessments. The findings revealed that a significant 85% of students possessed poor ICT skills, indicating inadequate digital competence within the institution. Consequently, the study highlights the urgent need to enhance digital skills and promote effective ICT utilization to better navigate the demands of the information society.

Palabras clave:
competencia digital, tecnología de la información y la comunicación, sociedad de la información.

RESUMEN

Este trabajo presenta los resultados de una investigación sobre la competencia digital en el uso de las Tecnologías de la Información y la Comunicación (TIC) por un grupo de estudiantes de Educación Primaria de la Institución Educativa "Saint Paul" de Carice, Haití, ante la premura de enfrentar adecuadamente los desafíos de la sociedad de la información. El estudio aplica un enfoque cuantitativo considerado como el más apropiado dada la naturaleza y las circunstancias de la investigación. La muestra utilizada incluyó a 233 participantes, con una edad promedio de 10 años (rango de 6 a 14 años). Las herramientas empleadas para recopilar los datos incluyeron una encuesta, cuyo cuestionario está basado en la escala Likert y las evaluaciones de competencias. El cuestionario fue adaptado del Cuestionario de Competencia Digital Docente (CDD) creado por Tourón et al. (2018), con el objetivo de describir una visión general de la competencia digital mediante el uso de las TIC.

	Los resultados mostraron que el 85% de los estudiantes tiene pocas habilidades para usar las TIC. Estos hallazgos indican que la competencia digital de los estudiantes de esta institución es inadecuada, siendo necesario promover en esta institución y en todas las instituciones de educación primaria una mejora de las habilidades digitales y del uso de las TIC para abordar con mayor efectividad los desafíos existentes en la sociedad de la información.

Introduction

Today, digital literacy is a fundamental skill necessary for individuals to effectively navigate both their broader social lives and their work (INTEF, 2024). Therefore, this competency must be developed as part of the educational phase known as lifelong learning, since digital literacy is addressed through comprehensive strategies and is an essential factor in an increasingly technological and digitally active society (UNESCO, 2021). Having digital literacy means being able to make optimal use of the technological tools necessary to participate effectively in the knowledge economy and 21st-century society (Rodríguez-García, Martínez Heredia, and Raso Sánchez, 2017). For this reason, digital literacy—defined as a set of skills, knowledge, and attitudes needed to use ICT effectively—has become a cross-cutting component of students' comprehensive education (UNESCO, 2021). Therefore, it is essential that young people learn this skill from an early age (Cabero, Vázquez, López, and Jaén, 2020).

Several recent studies show that children have only a very basic level of digital competence in ICT, even when engaging in activities that would classify them as "digital natives" (Pech, González, and Herrera, 2020). Haiti is no exception in this regard, as digital literacy in primary education in that country is at a very early stage of development (ITU, 2020).

A recent assessment of digital skills indicated that the level of digital proficiency in Haiti is low at all educational levels, both in content creation and problem-solving. According to Estrada (2020), this situation affects students' learning. This reality is evident among the students at the "Saint Paul" school in Carice, who, despite being familiar with technology, are not making the most of ICT in their educational process.

The main objective of this study is to quantitatively describe the level of digital competence in the use of ICT among students at "Saint Paul" Elementary School. To achieve this goal, the following specific objectives are established:

- To assess the digital literacy of students and teachers in the educational context and the implementation of local education policy related to the integration of ICTs in the institution.
- Identify the types of digital competencies students possess and link them to theoretical constructs such as DIGCOMP.
- Assess how often and in what ways students use ICT in their daily lives, both at school and outside of school.
- Assess students' views on the order in which they should develop their digital competence and the obstacles they face along the way.
- Analyze how the use of technological tools is intertwined with the level of proficiency in digital skills across different areas, such as information retrieval, content creation, and communication.

This study not only identifies the strengths and weaknesses in the digital competencies of students in Carice, Haiti, but also makes practical recommendations to enrich and improve the integration of ICT into the school curriculum (UNESCO, 2023). It also highlights the importance of an education system that effectively addresses the challenges and opportunities of the 21st century as we prepare our students for an increasingly digitized and globalized world. The "Saint Paul" Educational Institution serves as a prime example of how digital competence can be positively linked to the academic and personal performance of elementary school students.

Digital competence, one of the eight competencies identified in the 21st-century approach to holistic education, includes technical, computer, content creation, media, communication, problem-solving, strategic, and ethical decision-making skills and

attitudes (Díaz-Arce and Loyola-Illescas, 2021). This set of skills fosters a critical and confident attitude toward the use of ICT in everyday life (Cabero-Almenara and Palacios-Rodríguez, 2020).

Digital literacy is related to the use of ICT, as it encompasses the skills needed to use these technologies effectively and safely (Caccuri, 2018). In this way, it paves the way for the optimal use of ICT in all aspects of life and work, as well as in learning activities (Guitert and Romeu, 2022). In today's rapidly evolving technological landscape, this skill enhances the ability to adapt to emerging technologies and environments (García-Ruiz and Pérez-Escoda, 2020).

Adequate digital literacy is also necessary to protect oneself from online threats, such as identity theft and cyberattacks (Granda Asencio and Carbay Cajamarca, 2021). It also promotes the creative and productive use of technological tools, which is essential for the holistic development of the individual (Cabero; Vázquez; López and Jaén, 2020; García-Valcárcel, 2016).

Currently, ICT is beginning to be studied and applied in the field of early childhood education. However, although there is international research on this topic, studies on the use of ICT in early childhood education are lacking in Haiti. This is despite the fact that such educational innovations have been described as beneficial (Bullón-Solís, 2022; Quispe Atoccsa, 2020; Flores Coapaza, 2020), as they lead to improved academic performance, greater motivation, and the development of healthy habits.

Recent information from UNESCO on the potential of digital technologies to transform education—by improving the quality and relevance of learning, increasing inclusion, and facilitating efficient educational management—highlights this trend. Technology has the potential to transform education and make it better, but for its implementation to be successful, it must be equitable, sustainable, and student-centered (UNESCO, 2024).

Many studies support the inclusion of ICT in the elementary school curriculum (Sánchez-Vera, 2021). The National Institute of Educational Technologies and Teacher Training (INTEF, 2024) emphasizes that digital literacy should be introduced at an early age, with a focus on the careful use of new technologies and human development. Similarly, several studies have demonstrated the beneficial effects of using ICT in early childhood education, particularly with regard to children's cognitive and socio-emotional development (UNESCO, 2021).

But there are still questions about how to ensure its proper implementation. Some studies warn of the risks and adverse effects that the inappropriate use of ICT can have on children's cognitive, linguistic, and socio-emotional development (Cabrero Sancho, 2023). This suggests the need to avoid excessive use of these technologies among children, ensuring that, whenever possible, the benefits outweigh the risks and that digital literacy is established as early as possible (Brussa, 2024). These findings also indicate that more research is needed to understand the role of ICT in elementary education, as there is a clear lack of robust studies on the implementation of ICT at this educational level (Baeza-González, Lázaro-Cantabrana, and Sanromà-Giménez, 2022). These authors also note that most of these studies rely on self-assessment by students, which can lead to biased evaluations.

In addition, the quality of digital training for teachers also has a major impact on how effective ICT is for children. Although, according to UNICEF (2017), young people today are familiar with and have access to technology from an early age, they need the support of educators to develop essential digital skills, such as critically searching for information, thinking critically, and communicating effectively in digital contexts

(Martínez Piñeiro, Vila Couñago, and Gewerc Barujel, 2018). Therefore, national education systems must create fully digital learning environments at the school level to make the most of ICT (Fraga-Varela and Alonso-Ferreiro, 2019). For example, the phenomenon of play forms the basis of pedagogical methodologies for students, as it enables children to learn more effectively and focuses on their holistic development (Lamrani and Abdelwahed, 2020).

Most studies conclude that there is a need to integrate ICT into primary education. Several countries have already incorporated educational games and technology-based learning tools to strengthen and promote learning (Ojeda, Herrera, Mediavilla, and Álvarez, 2020). In light of these studies, it is essential that all schools promote digital literacy and the development of skills for the critical and creative use of ICTs, thereby innovating teaching and learning processes and fostering collaborative work (Anampa-Pillacca, 2021). At present, there are no national studies on digital literacy in elementary education in Haiti. The country's current sociopolitical situation appears to be hindering the implementation of such studies. At the same time, this presents an opportunity to experiment there with far-reaching innovations that will help contextualize projects aimed at improving the quality of education.

However, the introduction of Information and Communication Technologies (ICT) in the educational context is a complex process and is still the subject of extensive debate. In many schools around the world, this process has greatly transformed educational practices, but in places like Haiti, most children are not receiving an education in this area—not even enough to graduate. The goal of working to help schoolchildren in Haiti acquire these skills is to enable them to use ICT in a humane, ethical, socially responsible, and environmentally friendly manner—beyond simply mastering technical skills.

Carice, the city where this research is being conducted, has obvious problems with its education system. One of the main drawbacks stems from the extent of school privatization. Currently, approximately 90% of schools are privately owned and administered by religious organizations (World Bank, 2015). This situation has contributed to unequal access to education, which has been particularly detrimental to vulnerable communities (Bonhomme, 2015). Educational segregation and low-quality education have resulted from privatization.

Environmental factors, such as natural disasters, and social and political factors, such as corruption, violence, and instability, have also had a significant impact on school attendance and the safety of both students and educators in Carice. As recently as 2024, the persistent climate of violence plaguing Haiti has led to the closure of numerous schools, as well as a substantial decline in school enrollment in the region. In addition, the financial vulnerability of many parents prevents them from being able to afford their children's educational expenses. In Carice, then, education is a privilege that only the economically privileged can afford. Amid these challenges, the “Saint Paul” Educational Institution, run by the Oblate Missionaries, stands out for its continued efforts to help students and provide them with an education, even in the face of various difficulties.

Method

Design

The study design employed a quantitative research approach to describe digital competence in the use of information and communication technologies (ICT) among elementary school students at Saint Paul School. The objectives of this quantitative study are:

1. Assess students' level of digital literacy.

2. Analyze how often they use ICT in their daily activities.
3. Identify the factors that influence the use of technological devices and the Internet.
4. Conduct descriptive research and use various data collection tools.

Participants

The study population consisted of all elementary school students at the "Saint Paul" School located in Carice. To determine the sample size, we used a comprehensive list of students enrolled during the 2023–2024 school year, which yielded a total of 588 students, with a gender breakdown of 302 males and 286 females. The participants' ages ranged from 6 to 14 years old. This information was provided by the institution's director, Fr. Wilson Exantus, OMI. A simple random sample of 233 students was selected to ensure that the sample was representative of the population; the sample size was calculated based on a 95% confidence level and a 5% margin of error.

Variables and Instruments

The variables considered in this study are digital competence and the use of ICT. Given the quantitative nature of the methodological approach, established tools and techniques for data collection and organization were used in this study. Priority was given to a data collection method based on administering surveys to students, addressing the aspects relevant to the study. To this end, a questionnaire consisting of 26 items on a Likert scale was used, supplemented by competency tests as assessment tools. The questionnaire was chosen because of its ability to provide an overview of students' digital competence in the use of ICT, offering concrete and quantifiable data for analysis. The survey instrument used was an adaptation of the Teacher Digital Competence Questionnaire (CDD) developed by Tourón et al. (2018). The questionnaire included multiple-choice questions, which made it possible to:

1. To facilitate data entry and coding.
2. Reduce ambiguity in the responses provided by participants.
3. Improve the comparability of respondents' answers.

In addition, tests and assessments were used to measure the overall objective of the study. In this regard, the students' ability to use ICT in the educational process was assessed through a questionnaire, which made it possible to determine the level of digital competence among elementary school students at the "Saint Paul" School in Carice.

Procedure

An informed consent form was presented to the participants. Afterward, following a detailed explanation of the various aspects of consent, they were given the questionnaire. Participants were assured that their participation was entirely voluntary and that the confidentiality of the data collected would be maintained at all times, with the data being used exclusively for the purposes of the study in question. It was emphasized that participation was optional and that they were free to withdraw at any time without any consequences. The researcher, who is the author of this article, was solely responsible for receiving the data collection instruments. All questionnaires were coded prior to analysis, using the following nomenclature: RJ1, RJ2, RJ3, etc. Data collection took place between January and May 2024, with the assistance of Mr. Lauradin Casseus, a computer science professor at the institution. To collect the data, a questionnaire using a Likert scale was administered, consisting of 26 closed-ended questions, all of which were directly related to the students' digital competence in the use of ICT. Prior to its implementation, experts in the field were consulted to assess the clarity

and relevance of the questionnaire's questions. The content validity of the instrument was assessed based on the judgment of three experts.

Data Analysis

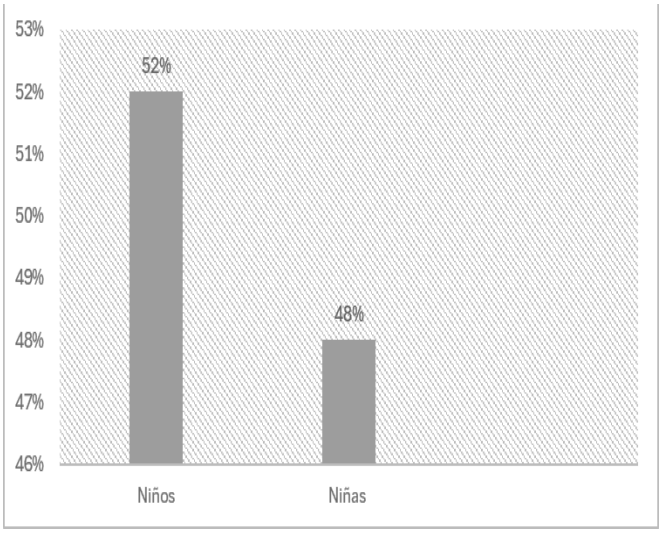
To analyze the study results, we used Excel version 21.0 for Windows (Statistics and Solution Service Product). The numerical data obtained were analyzed thoroughly, and their meanings and implications were discussed in the context of the research. This phase of the process was also devoted to data cleaning, ensuring that there were no errors that could compromise the validity of the findings. In addition, commonly used statistical packages for textual analysis were employed and integrated into the computational tools used in this research. Specifically, EXCEL 21 software was used to calculate descriptive statistics.

Results

Following a rigorous analysis of the collected data, which included critical validation and cleaning phases, the quantitative results obtained are presented below. These findings, derived from a comprehensive statistical analysis, provide essential numerical insights that not only reveal the key trends and patterns identified in the study but also establish a solid empirical foundation for drawing robust conclusions and making informed decisions. The presentation of this data aims to provide an accurate and objective understanding of the relationships and magnitudes observed, serving as a foundation for future interpretations and discussions.

Figure 1

Study participants

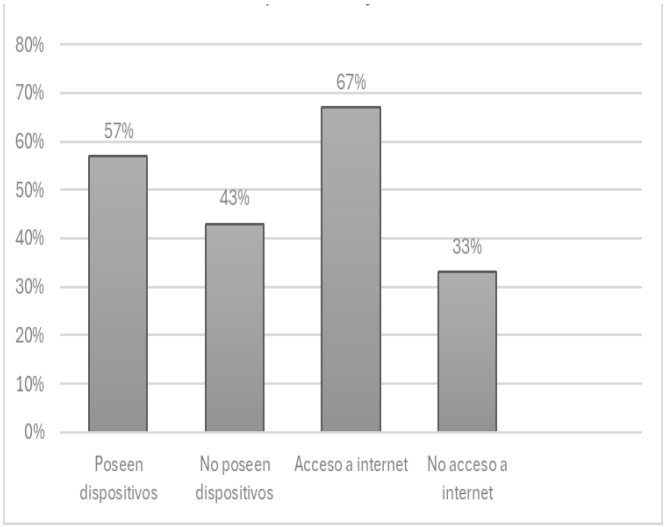


Note. Figure I shows the students who participated in the study.

Figure 1 shows the 233 participants in the study, all of whom are elementary school students (grades 1 through 5). Of this total, 121 (52%) were boys and 112 (48%) were girls. Their ages ranged from 6 to 14. All participants are students at the "Saint Paul" School in Carice.

Figure 2

Possession of Devices and Internet Access

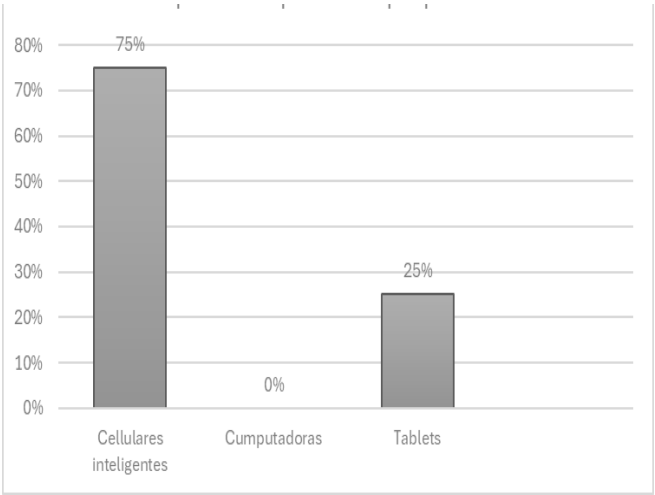


Note. Figure 2 shows students' device ownership and internet access.

According to Figure 2, 67% of the total population has Internet access, which indicates a very high penetration rate. However, 33% of people do not have access. This is how potential digital divides emerge and become apparent. In addition, 57% of those surveyed own technological devices. However, 43% do not have access to them. Therefore, this is also a potential barrier to using digital services or online products.

Figure 3

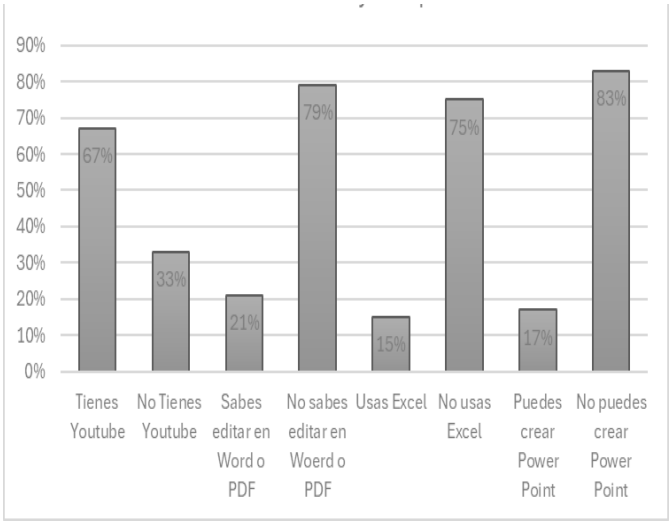
Types of devices they have



Note. Figure 3 shows what devices the students own.

According to Figure 3, 75% of students own a smartphone. No students have computers, while only 25% have tablets. When comparing this to global trends, it is clear that the smartphone penetration rate among young Haitians is similar to that in other places. However, there is a significant gap: Many students do not have access to all the technological tools they need for their education.

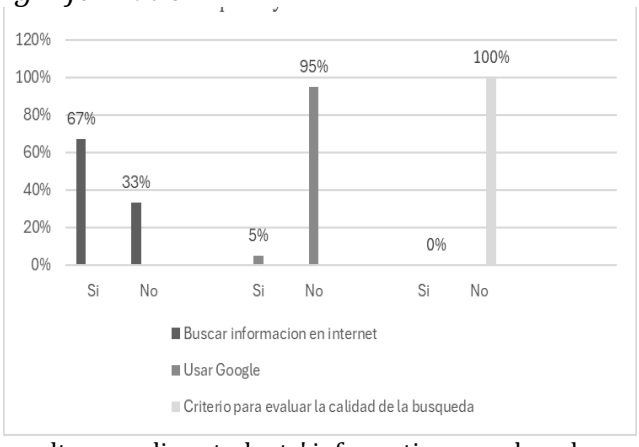
Figure 4
Using Apps and Tools



Note. Figure 4 details students' use of applications and tools.

Figure 4 clearly shows that students do not know how to use PowerPoint (83%), identify exactly what is wrong with Excel (75%), or edit documents in Word or PDF (79%). However, YouTube is widely used. 67% of students are already familiar with this website. This indicates that today's Haitian youth need to raise awareness about how to consume online content. The results show an urgent need to strengthen the digital skills of students at Saint Paul School in Carice.

Figure 5
Searching for and Using Information

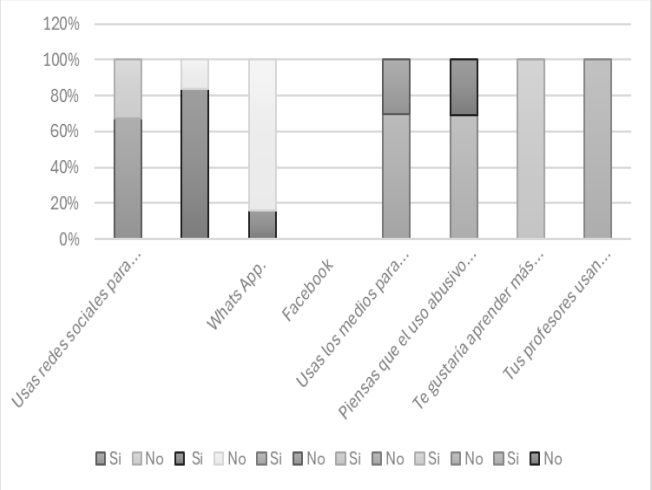


Note. Figure 5 shows the results regarding students' information search and use.

Figure 5 shows that 67% of students search for information online, while 33% do not use the Internet. Only 5% use Google, which indicates that it is not the primary search engine. None of the students use any criteria to evaluate the quality of the information. Although many people look for information online, it is necessary to teach them how to evaluate its quality and use other tools for finding information.

Figure 6

Social Media, Communication, and Digital Literacy



Note. Figure 6 details the social media platforms used by students and their teachers, and how they use them.

According to Figure 6, 67% of respondents use social media to communicate. There is also a great deal of interest in learning more about digital skills. This highlights the need for programs at various educational levels.

A significant number of respondents mentioned that their teacher does not use technology in class. A large proportion (84%) said they had used WhatsApp to send documents, and 16% said they had used Facebook. WhatsApp was their preferred means of communication, so communication strategies within the school could take advantage of this platform.

Perceptions of the risks associated with the misuse of technology vary among respondents. Sixty-nine percent of them believe that excessive use of technology poses a risk to their health, while the remaining 31% believe the opposite. It is particularly noteworthy that most of the children at the Educational Center are aware of the dangers inherent in the excessive use of technology. This finding suggests the importance of implementing awareness campaigns on the responsible use of technology at various levels.

Discussion and Conclusions

An analysis of the results revealed that 85% of the students have significant gaps in their foundational knowledge of ICT. This finding highlights a lack of digital literacy that needs to be addressed in order to optimize students' future performance. This finding is consistent with previous studies (Pech, González, and Herrera, 2020; Estrada, 2020).

Sixty-seven percent of students use ICT frequently, reflecting a common trend among today's youth. However, despite this widespread use, students do not demonstrate effective mastery of these technological tools. This observation also applies to the "Saint Paul" School in Carice, where 71% of students between the ages of 9 and 14 are regular Internet users.

90% of students own a cell phone, which indicates that technology is a constant presence in their daily lives. However, their use is not always the most appropriate, since 63% of them primarily use apps for recreational purposes. We need to encourage a

balanced use of technology, incorporating activities that promote physical and mental well-being.

The survey findings suggest that the excessive use of ICT devices and the Internet among students at Saint Paul School in Carice is primarily due to their need for social interaction. Instant communication and the ability to share multimedia content are two features that are particularly appealing to them. This trend is consistent with numerous studies showing excessive use of mobile devices by children in today's schools (Zuluaga, 2023; Müller et al., 2020; Álvarez Clemente and Mamani Ccarita, 2023).

However, despite the ubiquity of these digital technologies in their daily lives, both students and teachers at our institution have only a basic level of digital skills. This limitation is particularly evident in the use of a variety of technological tools, in understanding their pedagogical application, and in taking advantage of online training courses. This finding is corroborated by other studies (Verdú-Pina, Grimalt-Álvaro, Usart, and Gisbert-Cervera, 2024; Silva, Soto, and Trillo, 2023).

In addition, there is a lack of fundamental knowledge regarding cybersecurity and the effectiveness of digital communication. Consequently, the implementation of continuing education programs designed to maintain and strengthen digital skills throughout the educational community is an urgent necessity, as recently documented by UNESCO (2023). It is crucial to offer accessible training programs to improve digital skills. It is also recommended that ICT be integrated across the academic curriculum.

Most students at the "Saint Paul" School in Carice use technology primarily as a form of entertainment. This trend reflects a disparity between theoretical knowledge of the technology and its practical application in an educational context. In this situation, many students lack the opportunities or the necessary support from teachers to develop digital skills in an academic setting. If this trend continues, it could lead to concerning consequences, such as difficulties in achieving independent learning and a lack of critical digital skills (Chacón, 2022).

The results obtained from the school's students reveal a significant digital divide among their peers, showing a particular lag in the acquisition of proficiency in basic technological tools. It is imperative to organize practical training courses with clear objectives, such as teaching students to use not only PowerPoint but also Excel and Word effectively. This training should present real challenges and enable students to apply their knowledge in various fields of study (UNESCO, 2024).

Furthermore, it is considered absolutely necessary to incorporate these tools into all subjects and to gradually foster the development of students' digital skills. To achieve equity in education, it is essential to provide the technology and resources necessary for every student to acquire these skills, regardless of their background or socioeconomic status.

This study identifies two significant limitations that affect the interpretation of its findings:

1. Methodological limitations: The lack of previous research on the digital competence of Haitian elementary school students has significantly limited the scope of our observations. The lack of benchmarks for comparison makes it difficult to generalize the results and complicates the formulation of education policies that are specific and relevant to the Haitian context.
2. Contextual limitations: The political and social instability currently affecting Haiti poses a considerable challenge to our research. Security conditions have limited our access to various towns, which has been detrimental both in terms of quality control in data collection and in terms of the potential impact these conditions may have had on the results obtained.

To foster relevant digital competencies in the use of ICT at the "Saint Paul" Elementary School in Carice, the following actions are proposed:

1. Development of a detailed development plan: The school's administration should develop a plan that sets specific goals regarding the digital content and skills that both students and teachers must acquire. Appropriate technological resources must be selected, and the plan must provide for a gradual introduction of new strategies to ensure that the entire educational community adapts to them. It is essential to seek out resources for this project within the educational community and other relevant areas, and the collaboration of recognized specialists is crucial to ensuring the initiative's success.
2. Alumni Community Participation: Your involvement is crucial to the success of this project. Through an alumni committee, both individual and group donations can be coordinated from those living in the country and those living abroad. These financial contributions will enable the institution to secure the resources needed to integrate digital skills into the curriculum.

The alumni committee, in collaboration with the school administration, can organize various fundraising activities to promote the development and integration of technology in education. These approaches could include: These approaches could include:

1. In-person events: Charity dinners, art and antique auctions, concerts, and other cultural activities organized within the community to raise awareness of the project's goals through community cohesion, thereby ensuring that development is in line with the aspirations of its members.
2. Online campaigns: Establishment of online donation platforms, virtual auctions, and various social media activities to raise funds globally among alumni and supporters of the project.
3. Commemorative products: Sale of school-branded items, such as screen-printed T-shirts, mugs, and key chains, as promotional products.
4. Strategic partnerships: Establishing partnership agreements with local and multinational companies to secure in-kind donations (technology equipment, software) and/or sponsorship for events or other public relations activities. Leveraging alumni social and professional networks is a highly promising avenue for establishing personal contact. Their social media campaigns can generate donations and volunteer participation for the project. To strengthen the academic community's digital capabilities, we suggest exploring partnerships with local schools and edtech companies. This strategy would make it possible to optimize teaching and provide a higher-quality education. Alumni and friends of the school can use their national and international contacts to spread the word about this project. Through social media platforms, for example, various stakeholders could be encouraged to participate. The establishment of strategic partnerships with institutions of higher education and educational technology research centers is primarily aimed at improving the digital skills of the educational community by providing access to high-quality training programs, cutting-edge technological resources, and the expertise of professionals in the field.

These joint efforts aim to:

1. Strengthening teachers' digital skills: Offering continuing education programs to equip teachers with the skills needed to integrate information technology-based methodologies into their teaching practices.

2. Develop educational innovation initiatives: Implementing pilot projects to adopt new teaching tools and approaches.
3. Promote collaborative networks: In order to draw on the experiences, resources, and best practices of other institutions. This cooperation agreement will facilitate the school's transition to a hybrid educational model that combines elements of traditional and online education, thereby preparing students to face the challenges of an increasingly digital world.

Future lines of research to further explore digital competence in elementary schools are as follows:

1. Computational thinking: It is necessary to investigate how early exposure to programming fosters problem-solving and critical thinking skills in students at all educational levels.
2. Development of assessment tools: There is an urgent need to develop new tools and innovative methodologies to accurately and reliably assess children's digital skills.
3. Promoting Collaboration: Strategies should be explored to enable digital platforms to facilitate collaboration among groups of students in order to improve learning outcomes.
4. The Influence of ICT on Social Relationships: It is necessary to investigate how the use of ICTs affects children's interpersonal relationships, both on an individual level and in terms of group behavior.
5. Environmental Impacts and Sustainability: The relationship between the use of ICT and environmental sustainability should be investigated, promoting conscious and sustainable digital practices.

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GAMIFIED STRATEGY TO DEVELOP EMOTIONAL INTELLIGENCE IN FIVE- AND SIX-YEAR-OLD CHILDREN

ESTRATEGIA GAMIFICADA PARA DESARROLLAR LA INTELIGENCIA EMOCIONAL EN NIÑAS Y NIÑOS DE 5 Y 6 AÑOS

Tatiana Rodríguez Ávila
Universidad Internacional Iberoamericana, Colombia
[tatianarodriguezavila@gmail.com] [https://orcid.org/0009-0001-4265-4542]

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ABSTRACT

From an interpretive paradigm, this research aimed to design a gamified strategy to develop emotional intelligence in five- and six-year-old children at Colegio Tibabuyes Universal, a public institution in Bogotá. The strategy integrates an analog game and a digital game, both guided by an explicit pedagogical intention. The study follows an empirical approach and adopts a quasi-experimental design, with an experimental group that implemented the gamified strategy and a control group without intervention. Additionally, a mixed-methods approach was employed, combining quantitative and qualitative techniques. For data collection, the main instruments were a validated questionnaire and the structured observation of emotional behaviors. These tools allowed the identification and analysis of changes in emotional intelligence skills—self-awareness, emotional self-regulation, empathy, and social skills—before and after the implementation of the strategy, thus ensuring methodological triangulation that reinforces the validity and depth of the findings. The results showed statistically significant differences between the groups, suggesting improvements in emotional intelligence following the strategy's implementation. Complementary qualitative analyses revealed greater capacity to verbalize emotions, apply calming techniques, demonstrate empathy, and exhibit prosocial behaviors. It is concluded that a gamified strategy, designed according to the interests, motivations, and developmental needs of children in this age group, effectively fosters the development of emotional intelligence in a safe, playful, and intentional environment.

Palabras clave:
inteligencia emocional, estrategia gamificada, habilidades emocionales.

RESUMEN

Desde un paradigma interpretativo, esta investigación ha tenido como propósito diseñar una estrategia gamificada para desarrollar la inteligencia emocional en niñas y niños de 5 a 6 años, en el Colegio Tibabuyes Universal, institución pública de Bogotá. La estrategia integra un juego analógico y un juego digital, orientados con una intencionalidad pedagógica explícita. El estudio se inscribe dentro de un enfoque empírico y un diseño cuasiexperimental, con un grupo experimental, que implementa la estrategia gamificada y un

grupo control, sin intervención. Además, se opta por un enfoque mixto, combinando técnicas cuantitativas y cualitativas. Para la recolección de datos, el instrumento principal es un cuestionario validado y la observación estructurada de conductas emocionales. De esta forma, las herramientas han permitido identificar y analizar los cambios en las habilidades de la inteligencia emocional: autoconocimiento, autorregulación emocional, empatía y habilidades sociales, antes y después de la implementación de la estrategia, asegurando así una triangulación metodológica que refuerza la validez y profundidad de los hallazgos. Los resultados evidenciaron diferencias estadísticamente significativas entre los grupos, lo cual sugiere avances en la inteligencia emocional tras la implementación de la estrategia. De manera complementaria, los análisis cualitativos muestran una mayor capacidad para verbalizar emociones, aplicar técnicas de calma, manifestar empatía y actitudes prosociales. Se concluye que una estrategia gamificada, diseñada en función de los intereses, motivaciones y necesidades evolutivas propias de las niñas y los niños del rango etario del estudio, logra el desarrollo de la inteligencia emocional en un entorno seguro, lúdico e intencionado.

Introduction

Scientific advances have shown that the human brain integrates rational and emotional capacities in an interdependent manner. However, it is in times of global crisis—such as wars, natural disasters, and pandemics—that emotional intelligence has taken on an undeniable central role in education. This skill, which is essential for coping with uncertainty, enables people to make decisions that are meaningful for their lives. In Colombia, this need is exacerbated by conditions of vulnerability that particularly affect children and by an educational tradition focused on academic achievement. That is why it is urgent to refocus the pedagogical approach on emotional learning from an early age, in order to recognize and nurture their abilities.

Childhood is a critical stage of human development, during which the neurobiological, cognitive, social, and emotional foundations that shape future behavior are established. It is at this stage that primary emotional imprints are formed, which is why the development of emotional intelligence is essential for well-being and a sense of purpose.

In this vein, this study is based on the observation that, although there is growing recognition of the importance of emotional skills, the teaching strategies available in preschool education are either insufficient or disconnected from the genuine interests of the children. Accordingly, the main objective is to design a gamified strategy that promotes the development of emotional intelligence in 5- and 6-year-old girls and boys at Tibabuyes Universal School, a district school in Bogotá, while addressing their interests and developmental needs.

In response, the strategy proposed here is aimed at the transition grade and is based on play as a foundational activity in early childhood education (Colombian Ministry of National Education, 2010; District Education Secretariat, 2019). Play allows children to explore, express, and transform their emotions in safe and meaningful settings. Therefore, gamification—understood as the incorporation of game elements into educational contexts to harness intrinsic motivation (Tobares, 2023)—constitutes a relevant pedagogical approach for fostering emotional learning, stimulating reflection, and facilitating decision-making.

Emotional Intelligence in Childhood

Children's emotional development has been addressed across the board in education and psychology. Classic authors such as Freinet (1973), Montessori (1909), and Piaget (1980) emphasized the role of emotion in learning, recognizing that emotion and cognition are interrelated processes. According to Vygotsky (2004), emotions are social constructs linked to personality, context, and language.

The contemporary concept of emotional intelligence, as developed by Mayer and Salovey (2004), builds on this history; they proposed a four-branch model: perception, facilitation, understanding, and regulation of emotions. This approach was expanded upon by Goleman (2012), who incorporated neuroscientific evidence related to emotional processing, well-being, learning, and social relationships. Bar-On and Parker (2018) propose a model of assessable competencies, while Bisquerra (2009) outlines a pedagogical approach based on five dimensions: emotional awareness, regulation, autonomy, social competence, and life skills.

These findings have been put into practice by various authors through specific strategies for emotional intervention beginning in childhood. The current academic consensus recognizes that this stage is critical for laying a solid foundation for emotional, relational, and adaptive development (Díez, 2021).

In summary, emotional intelligence—the focus of this study—is defined as the set of abilities that enables individuals to recognize, understand, and regulate emotions; build positive relationships; and make conscious decisions. This study focuses on four skills: self-awareness, emotional self-regulation, empathy, and social skills.

Emotions

Based on the theories of Damasio (1994) and Barrett (2018), emotion is defined as an active construct that depends on cultural, contextual, and learning factors. These are not fixed biological responses, but rather experiences constructed in the brain through interpretive processes. An emotion arises when the brain interprets bodily sensations or emotional states and categorizes them based on past experiences and cultural concepts. In other words, an emotion arises when a specific meaning is assigned to general bodily sensations.

Neurobiological research has shown that emotion and cognition are processes that share neural networks. A child's brain, which is highly plastic, is extremely sensitive to emotional experiences. Immordino-Yang and Damasio (2007) introduce the concept of "emotional thinking" to describe the interaction between emotion, attention, memory, and judgment. Research by Siegel and Bryson (2021) confirms that the quality of the emotional environment directly influences the maturation of structures such as the amygdala and the prefrontal cortex, which are responsible for self-regulation and decision-making. Consequently, emotional education is both a pedagogical and neuroprotective strategy capable of strengthening brain circuits that are essential for social life and well-being.

In this context, calm takes on a profound significance as a physiological and emotional state that allows us to regain our balance after intense arousal. Although it is commonly used in everyday language, this concept often lacks a scientific understanding that would classify it as a fundamental system of the human body. It is appropriate to draw on scientific studies, since the gamified strategy that was designed includes techniques aimed at fostering emotional responses rooted in calmness, supported by Porges' Polyvagal Theory (2021), which explains how a safe environment and mindful breathing can activate neurophysiological circuits associated with self-regulation.

Emotional Development at Ages 5 and 6

Children between the ages of 5 and 6 are at a developmental stage in which biological, temperamental, experiential, and sociocultural factors converge.

Temperament plays a crucial role in understanding individual differences in emotional expression and regulation. Cloninger (2003) and Castro and Mustaca (2017) argue that, although temperament has a genetic basis, it can be shaped through interaction with the environment. Chess and Thomas (1996) describe three temperamental profiles—easy, difficult, and slow-to-respond—each with specific implications for emotional regulation.

With regard to emotional awareness, they begin to establish causal relationships between events and emotional states, although these associations may still be influenced by magical thinking, personal desires, or subjective beliefs (Harris & Cheng, 2022).

One of the most important emotional skills at this age is frustration tolerance, which is closely linked to self-regulation. This ability allows one to cope with adverse situations without giving in to emotional outbursts. Current research agrees that fostering these skills early on prevents disruptive behaviors and promotes resilience (Del Prette & Del Prette, 2022; Manciaux, 2023). Neuroscience has shown that frustration activates both reactive and control structures, and that emotional training in simulated

situations—such as those provided by games—helps strengthen the ability to delay gratification, cognitive flexibility, and impulse control (Immordino-Yang & Damasio, 2007; Monjas Casares, 2020; Zinsser et al., 2021).

Gamification

Gamification has established itself as an innovative teaching methodology that incorporates game elements into educational contexts, and it is widely supported for its motivational, self-regulatory, and collaborative potential (Torres and Romero, 2018). Tobares (2023) argues that an effective strategy must incorporate clear goals, feedback, gradual challenges, and metacognition.

This integration of play and learning makes sense when, as in this study, a gamified strategy is developed that combines an analog game and a digital game. The first promotes physical interaction and mutual regulation (Mardell et al., 2023); the second, through simulations and immediate feedback, stimulates reflection, decision-making, and emotional coping (Pozo-Sánchez et al., 2022).

Research on Emotional Intelligence and Gamification in Preschool

A review of recent studies in the field of emotional intelligence and gamification reveals a growing consensus on the need to design educational approaches that integrate both aspects starting in early childhood. One of the leading initiatives is CASEL (2020), which offers effective social-emotional learning programs starting in preschool and serves as the foundation for various projects around the world.

Studies, such as the one by Mata (2021), confirm that early emotional education has a positive impact on personality structure and neurological development. Meanwhile, Alcaide and Salas (2022) emphasize the need to design teaching and assessment tools appropriate for preschool-aged children when implementing the EMOTI program.

Regarding gamification, Dichev and Dicheva (2017) conducted a critical review that highlights a research gap in early childhood education, as most studies focus on other educational levels. However, there are notable examples such as the educational escape room developed by Sanz and Alonso (2020), which combines historical concepts to foster collaborative work in early childhood education, and the program by Gianella and Gutiérrez (2020), which uses structured games to develop emotional skills.

This overview highlights the potential for conducting more in-depth research using rigorous methodological designs that address contextual realities in accordance with local legislation.

Currently, Colombia's regulatory framework under Law 2383 of 2024 recognizes the promotion of emotional education starting in preschool. Although implementation is still underway, this serves as direct regulatory support for the implementation of educational strategies based on educational technology, such as the one presented here.

Method

This study adopts a mixed-methods approach with a quasi-experimental design, integrating quantitative and qualitative techniques to comprehensively analyze the impact of a gamified strategy on the development of emotional intelligence in 5- and 6-year-old girls and boys. It is based on the need to address complex educational

phenomena from a holistic perspective, recognizing the complementary nature of statistical data and interpretive narratives (Lugo and Ramírez, 2020).

From an interpretive perspective, this study seeks to understand the emotional transformations experienced in real educational contexts by interpreting the meanings that children attribute to their emotions, as well as the observable changes resulting from a structured pedagogical intervention. Within this framework, reality is conceived as a social construct mediated by individual and contextual experience (Ayala, 2021).

The sample is selected using non-probabilistic convenience sampling and consists of two groups from the educational institution: an experimental group, which participates in the gamified strategy, and a control group, which receives no intervention. This decision is based on institutional organizational considerations, ensuring the feasibility of the study without compromising methodological rigor.

The hypothesis formulated in this study includes elements of causality, in that it predicts that the gamified strategy designed will have a direct impact on the development of emotional intelligence among the children in the study population. Similarly, the hypothesis is directional because it predicts the direction of the effect by stating that this strategy promotes positive progress in emotional skills. This results in a noticeable improvement in the dependent variable—the development of emotional intelligence—as a result of the intervention involving the independent variable—the gamified strategy.

Specifically, the hypothesis posits that a gamified strategy, designed based on the interests, motivations, and developmental needs of 5- and 6-year-old preschoolers, fosters the development of emotional intelligence in line with the characteristics expected for this age group.

In line with the research objectives, the methodological design is structured into four sequential phases:

Diagnostic phase: This phase involves the design and administration of a questionnaire tailored to the age group, focusing on the emotional intelligence skills selected for the study and validated through expert judgment to ensure consistency with the study; its internal consistency is assessed through item-by-item statistical analysis and the calculation of Cronbach's alpha.

Design phase of the gamified strategy: Based on the diagnostic findings, a gamified strategy is designed that consists of an analog game and a digital game, incorporating narrative elements, challenges, rewards, and feedback, with the goal of enhancing emotional intelligence skills.

Implementation phase: During scheduled sessions, the experimental group participates in the gamified strategy, and behaviors are observed in real-world educational settings.

Validation phase: The questionnaire is administered again to both groups to compare pre- and post-implementation results using statistical tests; in addition, the responses are analyzed qualitatively.

Descriptive and inferential statistics were used to analyze quantitative data using SPSS 27 software, employing Student's t-test and the Mann-Whitney U test to identify significant differences between groups. Qualitative data are processed using thematic coding in NVivo software, with initial support from AI-assisted systematization (ChatGPT–GPT-4.5), ensuring that interpretation is carried out exclusively by the researcher. Thus, as Albert (2007) suggests, the purpose is to identify emerging patterns and emotional transformations expressed verbally and behaviorally. In addition, the mixed-methods approach allows for triangulation, which adds depth and validity to the findings.

Results

The results are presented for each phase of the research:

Diagnostic Phase

This phase addresses the study's specific objectives to assess emotional intelligence skills in 5- and 6-year-old girls and boys, with the aim of identifying strengths and needs that will guide the design of the gamified strategy and characterizing emotional intelligence skills. Thus, based on the findings of CASEL (2020) and Díez (2021), a questionnaire appropriate for this age group is developed. Validation of the questionnaire showed adequate internal consistency (Cronbach's $\alpha > 0.80$), and it was reviewed by experts to verify its relevance, with adjustments made based on their recommendations.

As shown in Table 1, the statistics prior to the gamified strategy indicate that the Mann-Whitney U and Wilcoxon W values are similar. The Z-value reflects the distance, in standard deviations, between the average range of the groups and the expected average range if there were no difference. The (two-tailed) asymptotic significance is not significant ($p > 0.05$) for any of the skills. These ranges do not suggest marked differences between the control and experimental groups in the measurements taken prior to the implementation of the gamified strategy.

Table 1

Statistics prior to the gamified strategy

	PRE SELF-AWARENESS	PRE SELF-REGULATION	PRE EMPATHY	PRE-SOCIAL SKILLS
Mann-Whitney U test	300,000	277,500	247,000	293,000
W for Wilcoxon	625,000	602,500	572,000	618,000
Z	-,288	-,798	-1,397	-,443
Asymptotic sign (bilateral)	,773	,425	,162	,658

Qualitative data analysis revealed that, in terms of self-awareness, although they recognize basic emotions, they have difficulty expressing them clearly and linking them to their causes; they know what emotion they are feeling, but they lack greater emotional expression.

In terms of emotional self-regulation, the child shows a marked dependence on an adult figure to manage emotions such as anger, sadness, or frustration. Impulsive reactions, such as inconsolable crying, tantrums, or withdrawal, are common in situations involving loss, conflict, or waiting. A lack of calming techniques and limited recognition of the need to use self-regulation strategies have been identified.

When it comes to empathy, they show two distinct tendencies: on the one hand, girls and boys express simple empathetic actions, such as helping or comforting, but they are unable to validate the emotion. Furthermore, their empathetic responses are more frequent when mediated by an adult, which suggests that their empathy is not very spontaneous.

In terms of social skills, there is little initiative to form new relationships or to cope with rejection without adult intervention. There is a significant difficulty in resolving conflicts and settling disagreements peacefully, which creates tensions in the school community.

The characterization, summarized here, serves as the central input for designing the gamified strategy, allowing it to be aligned with the identified emotional needs and strengths.

Phase 2. Design of a Gamified Strategy to Develop Emotional Intelligence in 5- and 6-Year-Old Girls and Boys

In line with the main objective, the purpose of this phase is to design a gamified strategy for developing emotional intelligence, based on the findings of the diagnostic phase.

The gamified strategy combines an analog game, Emotiburones, and a digital game, Atrapa Osos. Both were designed based on the qualitative results of the diagnostic phase, integrating four emotional intelligence skills: self-awareness, self-regulation, empathy, and social skills.

Emotiburones is a board game for five players, featuring a game board with a symbolic marine theme and a path leading to the treasure of the golden coin as a reward. Using a die and game pieces, players make their way through the course with the challenge of identifying the sharks' emotions, verbalizing the likely cause, and—with the help of calm cards—calming them down so they can move forward.

Sharks are central characters because they are captivating to children and allow them to project onto them emotions that are difficult to manage. In this sense, the shark serves as an emotional metaphor that externalizes intense emotional states, allowing students to talk about "what the shark feels" without feeling directly exposed; it enables a compelling narrative that sparks curiosity and sustained attention—essential elements in teaching. It presents a challenge by requiring calmness; players do not compete against each other to defeat the shark, but rather to help it calm down, which reinforces the prosocial aspect of the game.

Catch the Bears is an interactive PowerPoint game that simulates a claw machine catching bears. When the player succeeds, a text appears describing a situation involving an emotional response or how to deal with it; the player must choose a response or ask for help in doing so. When the bear isn't caught, a calming technique is used. The game allows players to experience frustrating situations in a safe environment, making it easier to identify and use emotional regulation strategies; it offers symbolic rewards for correct answers, represented by the chosen bear; and it encourages perseverance and thoughtful decision-making.

Teddy bears are symbols with emotional connotations, and the dynamics of the claw machine playfully and safely recreate a situation involving waiting, chance, and possible failure, thereby generating authentic experiences of controlled frustration.

Both games underwent pilot testing with age groups similar to those in the sample. One of the adjustments made to *Emotiburones* was to omit the reward of many coins, as they were distracting, leaving only the gold coin in the treasure chest; subsequently, expert judgment validation was conducted using an instrument based on Sevillano's (2002) media evaluation model.

The evaluation yielded a positive assessment, highlighting the clarity of the pedagogical purpose, the richness of the emotional scenarios, the alignment with children's interests, and the appropriate use of gamification elements. Improvements were proposed, such as including techniques for dealing with sadness—like drawing your sadness, talking to someone, or asking for a hug—in order to validate it. Adjustments made prior to implementation.

As Table 2 shows, each component of the game directly addresses the needs identified during the diagnostic phase. For example, difficulties in expressing negative

emotions led to the creation of “calm cards” in Emotiburones; impulsive reactions were addressed through controlled scenarios in Atrapa Osos that trigger self-control techniques.

Table 2

Elements of a Gamified Strategy for Developing Emotional Skills

Emotional Intelligence	Development indicator	Emotiburones Game	Catch the Bears Game
Self-Awareness	Recognition, validation, and expression of emotions such as anger, sadness, fear, and joy.	-Identify the different emotions that sharks experience and suggest the reason for each emotion. -Describe how they felt and what they learned at the end of the game.	Identify the emotions in the situations presented. Reflect on the emotions you experienced at the end of the game.
Self-Awareness	Understanding the causes of emotions such as anger, sadness, fear, and joy.	Explain why you think the shark is experiencing the emotion you’ve depicted, and in your final reflection, describe the reason behind your feelings.	Throughout the game, it explains what frustration is and how it manifests itself both conceptually and experientially.
Self-regulation	Controlling impulsive reactions to anger, fear, sadness, and frustration through relaxation techniques.	-Experiencing frustration when they don't get the color of token or the turn they want, when they have to go back a turn, or when they don't win the game. -Practice relaxation techniques for constructively managing anger, fear, sadness, and frustration	Experience frustration when the bear falls and practice calming techniques for constructively managing anger and frustration. To enable responses to situations involving anger, fear, sadness, and/or frustration
Self-regulation	Controlling impulsive reactions in the face of the joy of winning.	-Experience victory by controlling impulsive reactions of joy, without underestimating your peers.	Experience victory by controlling impulsive reactions of joy without underestimating your peers
Self-regulation	I respect the turn-taking process and practice active waiting.	-Take turns throwing; follow the rules of the game.	-Switch to the turn-based game.
Self-regulation	The practice of active patience.	-Wait for your turn to roll the dice and move your piece. -Getting frozen and not being able to reach the treasure right away, but only after obtaining the exact number.	-Wait your turn. -Freeze them using a timer. -Knowing the answer when it's someone else's turn and waiting until it's your turn.
Empathy	Recognition and validation of peers' emotional responses.	-Take action to calm the sharks by demonstrating empathy through symbolic gestures. -Express and understand their feelings when they see their partner win.	-Listen to how others felt and choose the appropriate response in order to understand them.
Empathy	To help others cope with negative emotions such as anger, sadness, and fear through empathetic verbal and nonverbal responses.	-Help children cope with emotions such as anger, sadness, and fear. -Offer words of comfort when they fall behind or when they don't win the gold coin.	-Being able to ask others for help when it's their turn. Help those in need.

Table 2
Elements of a Gamified Strategy for Developing Emotional Skills

Emotional Intelligence	Development indicator	Emotiburones Game	Catch the Bears Game
Empathy	Understand and acknowledge your partner's joy.	-Expressing their feelings when they see a victory.	-At the end of the game, express your feelings about seeing the team win.
Social Skills	Taking the initiative.	-Find partners to form the team for the game. -Choose the "calm" card and act it out.	-Address situations involving social initiative in the game.
Social Skills	Peaceful Conflict Resolution	-If a player fails to follow any of the rules or if their behavior affects others, they lose their turn—that is, they do not take a turn until the next round—and it is up to the team to decide when a player is committing a foul.	-Choose a conflict resolution strategy for the situations presented in the game.

Phase 3. Implementation of the Gamified Strategy

This phase serves to implement the gamified strategy with the experimental group (see Figure 1), ensuring a real classroom context under controlled and pedagogically relevant conditions. The program runs for four weeks with 25 girls and boys in kindergarten, during school hours and under the guidance of the homeroom teacher, who is the author of this research. The behaviors observed during implementation are incorporated into the descriptions in the data analysis.

While playing the game *Emotiburones*, the teacher introduced basic emotions through open-ended questions and explanations that related to the children's own experiences. The presentation of the game board, the materials, and the game's storyline created an atmosphere of enthusiasm and active participation. Throughout the sessions, the dynamics of taking turns, choosing tokens, and using calming techniques enabled the children to interact, resolve conflicts, and follow the rules of the game with increasing independence. The activity concluded with a reflection session in which the participants shared what they had learned about identifying, expressing, and regulating their emotions.

The digital game *Catch the Bears* is implemented with the experimental group one week after Emotiburones. The teacher begins by projecting the first image of the game in a PowerPoint presentation and explains the concept of frustration using age-appropriate symbolic language. He explains the instructions, and one by one, they enthusiastically operate the virtual claw from the computer. The game of catching teddy bears—combined with everyday situations and the practice of self-regulation techniques—fosters high levels of concentration and a willingness to follow the rules, while allowing children to express their emotions in response to success or failure in catching the bear. The session concludes with a group discussion in which participants share their experiences and insights regarding frustration and ways to cope with it.

Figure 1

Implementation of the gamified strategy: Emotiburones Game and Catch the Bears Game

Phase 4. Validation of the Gamified Strategy

The validation aims to demonstrate the learning acquired through data analysis by comparing the results obtained by the experimental group and the control group following the implementation of the gamified strategy. To this end, the questionnaire is administered again through individual interviews.

When comparing the results of the experimental group with those of the control group, as shown in Table 3, it is evident that the Z-scores are highly negative, suggesting a significant difference in the mean rank scores. The (two-tailed) asymptotic significance is 0.000 for all areas, indicating that the differences between the groups after implementation are highly statistically significant.

Table 3

Statistics Before and After the Gamified Strategy

	PRE SELF-AWARENESS	PRE SELF-REGULATION	PRE EMPATHY	PRE-SOCIAL SKILLS
Mann-Whitney U test	300,000	277,500	247,000	293,000
W for Wilcoxon	625,000	602,500	572,000	618,000
Z	-,288	-,798	-1,397	-,443
Asymptotic sign (bilateral)	,773	,425	,162	,658

	POST SELF-AWARENESS	POST SELF-REGULATION	POST EMPATHY	POST SOCIAL SKILLS
Mann-Whitney U test	125,000	81,500	110,500	12,500
W for Wilcoxon	450,000	406,500	435,500	337,500
Z	-4,583	-4,953	-4,633	-6,298
Asymptotic sign (bilateral)	,000	,000	,000	,000

Mann-Whitney Test	GROUP	N	Average range	Sum of Ranks
SELF-AWARENESS	Control	25	25.00	625.00
	Experimental	25	26.00	650.00
	Total	50		
PRE-SELF-REGULATION	Control	25	26.90	672.50
	Experimental	25	24.10	602.50
	Total	50		
PRE-EMPATHY	Control	25	28.12	703.00
	Experimental	25	22.88	572.00
	Total	50		
PRE-SOCIAL SKILLS	Control	25	26.28	657.00
	Experimental	25	24.72	618.00
	Total	50		
POST-SELF-AWARENESS	Control	25	18.00	450.00
	Experimental	25	33.00	825.00
	Total	50		
POST-SELF-REGULATION	Control	25	16.26	406.50
	Experimental	25	34.74	868.50
	Total	50		
POST-EMPATHY	Control	25	17.42	435.50
	Experimental	25	33.58	839.50
	Total	50		
POST: SOCIAL SKILLS	Control	25	13.50	337.50
	Experimental	25	37.50	937.50
	Total	50		

The Mann-Whitney test confirmed the initial homogeneity among groups and the significant differences following the implementation of the gamified strategy, suggesting that the strategy is effective in developing emotional intelligence. For each skill, you can compare the increase in the average score in the experimental group for that skill:

Emotional self-awareness: It had a positive impact, with a significant increase in the average score of the experimental group from 26 to 33.

Emotional self-regulation: The data suggest that the strategy also improves emotional management and self-control skills in the experimental group, with an increase in the average range from 24.10 to 34.74.

Empathy: The difference in average scores reflects progress in the ability to understand and connect with the emotions of others: 22.88 to 33.58

Social skills: The most notable improvement has been observed in these skills, with an average range of 24.72 to 37.50; this may indicate that the gamified strategy promotes effective interaction and relationship building.

The qualitative and comparative analysis revealed significant changes in the emotional expression of the experimental group, whose members began to express their emotions with greater clarity, specificity, and confidence. There is a shift from general expressions such as "I don't feel well" toward more elaborate statements such as "I feel sad when I'm not invited" or "I feel angry when people don't listen to me," which indicates greater emotional awareness and recognition of the cause. These expressions reflect progress in self-awareness and an expansion of the linguistic repertoire associated with emotions. These findings confirm the positive effect of the strategy on the development of self-awareness

Similarly, autonomous self-regulation emerges in the form of phrases such as "I take a deep breath and speak" or "I think I can do better," which reflect an internalization of coping strategies fostered by the calming techniques used in the games; instead of reacting with aggression or impulsive crying, they now use deep breathing, visualization of safe spaces, and actively seeking emotional support. A shift can be observed in how fear is managed, moving from avoidance responses—such as hiding under a blanket or freezing—to conscious strategies such as rationally acknowledging the fear or verbalizing empowering thoughts: "I take a breath and tell myself I'm brave." There has been remarkable progress in learning patience and waiting, taking turns, and understanding the collective nature of the game. This evidence supports the conclusion that emotional self-regulation processes manifest themselves in observable behaviors: verbal expression of emotions, impulse control, positive coping with fear, and independent resolution of frustrations.

There has also been a notable increase in emotional awareness and empathy among peers, as reflected in their ability to recognize and validate negative emotions, with expressions such as "I understand that you feel bad" or "It's okay to be sad." Active helping responses are identified through specific behaviors aimed at supporting, comforting, or improving someone's emotional state, such as "I explained the math problem to Salomé" or "I helped Johan when he was crying." These manifestations reflect a significant development in the capacity for empathetic response, integrating the verbal recognition of others' emotions and the use of prosocial strategies such as shared play, affectionate physical contact, and verbal support, which suggests an internalization of complex emotional principles fostered through play.

Social skills include assertive and collaborative behaviors. There is an increase in social initiative, shifting from passively waiting to be included in games to actively inviting others to participate, which reflects greater confidence in social interaction. When faced with rejection, they adopt less reactive and more self-regulated responses, choosing instead to ask questions assertively or integrate into new groups. When it comes to conflict resolution, there has been a shift from avoidance toward the use of dialogue and negotiation, such as "we do what one person wants, and then the other." These changes reflect a shift from reactive attitudes to proactive practices, in which respect for turn-taking, inclusion, and reaching agreements are valued.

Discussion and Conclusions

The findings show that the gamified strategy had a significant impact on the development of emotional intelligence skills among the girls and boys in the experimental

group. This effect was confirmed both by inferential statistical analysis (the Mann-Whitney U test, with two-tailed significance levels < 0.001 across all dimensions evaluated) and by qualitative analyses, which revealed notable changes in narratives and emotional behaviors.

When comparing these results with previous research, a significant methodological advance in the field can be observed. It employs a mixed-methods quasi-experimental design, which allows for causal inferences with greater internal validity. This robust approach reinforces the link between the structured use of gamification and children's emotional intelligence, particularly when it is combined with elements such as narrative, feedback, challenges, and symbolic rewards, as proposed by Torres and Romero (2018) and Tobares (2023).

In qualitative terms, there was evidence of a shift from reactive attitudes to proactive responses in social situations. The children learned to identify their emotions, use self-regulation techniques, and engage in prosocial behaviors. These changes are consistent with the approaches outlined by Mayer and Salovey (2004) and with CASEL's (2020) framework for social-emotional learning, which states that emotional intelligence is a set of skills that can be developed from an early age.

The consistency of the scores achieved by the experimental group—with means and medians of 1.0 and a standard deviation of zero for emotional skills—suggests a highly positive and uniform effect of the gamified strategy. Although this finding is promising, it should be interpreted with caution, given the specific conditions of the context and the characteristics of the sample. Furthermore, specific improvements were identified in emotional verbalization, in the causal recognition of basic emotions, and in the expansion of emotional vocabulary, in line with Barrett's (2018) proposal regarding the cultural construction of emotions.

The development of self-awareness, empathy, self-regulation, and social skills in this age group supports the arguments of Bar-On (2018), who maintains that these competencies are not only teachable but also fundamental to overall well-being and social harmony.

In summary, the results obtained strengthen the empirical evidence regarding the use of gamification as an effective teaching tool for emotional education in early childhood. The integration of theory, instructional design, and rigorous evaluation makes this experience a significant contribution to the fields of neuroeducation and emotional psychopedagogy.

Based on a comprehensive analysis of the results, it can be concluded that the gamified strategy implemented had a positive and statistically significant impact on the development of emotional intelligence among 5- and 6-year-old girls and boys at Tibabuyes Universal School in Bogotá. The emotional skills of self-awareness, self-regulation, empathy, and social skills showed notable improvements in the experimental group, both quantitatively and qualitatively.

This study confirms that the use of analog and digital games, designed pedagogically using gamification principles, fosters active and meaningful emotional learning environments. The results show that, through symbolic scenarios, immediate feedback, and cooperative dynamics, it is possible to foster self-regulation, empathy, coping with rejection, and conflict resolution from an early age.

It also validates the feasibility of incorporating gamified approaches into the early childhood education curriculum as intentional pedagogical tools. This research contributes to this field by providing a structured, validated, and contextualized strategy that can be replicated and adapted in similar educational settings.

Finally, the report emphasizes the need to strengthen teacher training in emotional intelligence and gamification, as well as to integrate these competencies into public policies and school curricula, in accordance with the provisions of Law 2383 of 2024. Investing in emotional education from an early age not only improves children's well-being today but also serves as a cornerstone for a more equitable, empathetic, and resilient society.

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ANALYSIS OF INFLUENTIAL FACTORS OF ACADEMIC PERFORMANCE IN COMPUTER ENGINEERING STUDENTS AT THE ISPB

ANÁLISIS DE FACTORES INFLUYENTES DEL RENDIMIENTO ACADÉMICO EN LOS ESTUDIANTES DE INGENIERÍA INFORMÁTICA EN EL ISPB

Roberto Cruz Acosta
Instituto Superior Politecnico Benguela, Angola
[cubaneox72@gmail.com] [https://orcid.org/0000-0002-7282-8857]
Ruth Chana Cassungo Cruz
Instituto Superior Politecnico Benguela, Angola
[ruthrbcc@gmail.com] [https://orcid.org/0000-0002-7034-1332]

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ABSTRACT

This research aims to understand the factors that affect the academic performance of computer engineering students at ISPB. Using a mixed-methods approach that combines quantitative and qualitative techniques, key variables related to academic performance were explored. Through surveys, socioeconomic factors, family environment, motivation, learning styles, and health were identified as key elements affecting the academic performance of engineering students at ISPB. These findings highlight the importance of considering and addressing these factors to promote academic achievement among engineering students at ISPB. The results support the hypothesis by demonstrating a positive correlation between the independent variable of academic performance and the dependent variables of socioeconomic status, family environment, motivation, learning styles, health, and well-being. The study has demonstrated the relevance of considering and addressing these factors to promote optimal academic performance in students, helping them overcome barriers and maximize their academic potential. This study can serve as a basis for further research to delve deeper into the topic and make significant contributions.

Palabras clave:
rendimiento académico, socioeconómico, entorno familiar, motivación, estilos de aprendizaje, salud y Bienestar.

RESUMEN

La presente investigación tiene como objetivo comprender los factores que afectan el rendimiento académico de los estudiantes de ingeniería informática en el ISPB. Mediante un enfoque mixto que combina técnicas cuantitativas y cualitativas, explorándose variables claves relacionadas con el desempeño académico. A través de las encuestas realizadas, se identificaron factores socioeconómicos, el entorno familiar, la motivación, los estilos de aprendizaje y la salud como elementos clave que afectan el rendimiento académico de los estudiantes de ingeniería en el ISPB.

	Estos hallazgos resaltan la importancia de considerar y abordar estos factores para promover un rendimiento académico en los estudiantes de ingeniería en el ISPB. Los resultados respaldan la hipótesis planteada al demostrar una correlación positiva entre la variable independiente de rendimiento académico y las variables dependientes socioeconómico, entorno familiar, motivación, estilos de aprendizaje, salud y bienestar. El estudio ha demostrado la relevancia de considerar y abordar estos factores para promover un rendimiento académico óptimo en los estudiantes a superar las barreras y maximizar su rendimiento académico. A partir de este estudio, se pueden plantear diversas investigaciones adicionales para profundizar en el tema y realizar aportes significativos.

Introduction

Assessing the academic performance of college students is of vital importance to educational institutions, as it provides valuable information about the effectiveness of academic programs and the quality of instruction. Understanding the factors that influence academic performance is essential for identifying areas for improvement and designing educational strategies that promote student success.

Assessing the academic performance of college students and identifying the factors that influence it are essential for improving the quality of education (Aranda et al., 2023). By gaining a deeper understanding of these factors, educational institutions can implement more effective strategies, provide personalized support, and promote their students' academic success. Ongoing research in this field is essential to continue improving educational practices and ensure an enriching learning environment for all students (Silva Castillo, 2021).

In the academic setting, it is essential to understand the factors that influence college students' performance. Specifically, at the Benguela Higher Polytechnic Institute (ISPB) in Angola, the goal is to conduct a comprehensive analysis of the factors that affect the academic performance of engineering students. This study focuses on identifying the multidimensional factors that have a significant influence on the academic performance of college students (Segura, 2022).

Research conducted by the Department of Engineering at the Benguela Higher Polytechnic Institute (ISPB) has revealed that there are several factors contributing to the poor academic performance of engineering students. Difficulties have been identified in the understanding of fundamental concepts in mathematics, programming logic, and algorithms among computer engineering students in the Engineering Department at ISPB. In addition, teachers' approach to curriculum management, the lack of adequate teaching resources, and the lack of a systematic approach to teaching and learning also contribute to poor performance.

Students face difficulties applying these concepts to solve practical problems, which is reflected in their performance on exams and projects related to these subjects (Gutiérrez-Monsalve, et al., 2021). These difficulties have a negative impact on their overall academic performance.

In addition, it has been observed that factors such as the family's economic situation, family structure, and parents' educational level can influence the academic performance of engineering students (Rodríguez, 2021). Intrinsic or extrinsic motivation, attitudes toward learning, and perceptions of the value of education also play an important role. Similarly, preferences for visual, auditory, or kinesthetic learning styles, as well as physical and mental health and the balance between work and rest, can be determining factors in students' academic performance (Verdugo-Guamán et al., 2023).

It is essential to identify and address these specific challenges in order to improve the academic performance of engineering students at ISPB. Understanding the factors that affect student performance will enable the institution to identify areas for improvement and design more effective educational strategies. Based on this premise, the following scientific research question arises: What factors at the Benguela Higher Polytechnic Institute (ISPB) influence the academic performance of engineering students and could be related to their academic performance? To address the scientific question, this study sets the following objective: to examine and understand the factors that influence academic performance among engineering students at the ISPB. Using a multidimensional approach, the study aims to analyze key variables that may be related to academic performance.

Academic Performance

Academic performance among college students refers to students' performance and success in their academic activities, such as exams, assignments, and class participation. This performance is generally measured through grades, grade point averages, and rankings. The academic performance of college students is a multifaceted issue that encompasses various aspects (Cala and Castrillón, 2023). In addition to grades and test scores, academic performance may also include participation in extracurricular activities, conducting research projects, presenting papers at conferences, and receiving scholarships, internships, or academic awards, among other things.

In this study, academic performance is defined as students' performance and success in their academic activities, which include exams, homework, and class participation. This perspective highlights the holistic nature of academic performance, which encompasses various aspects of learning. On the other hand, when determining the study variables, academic performance is considered to be measured primarily through grades, scores, or rankings—specifically, the grade point average.

This duality does not imply a contradiction; rather, it reflects a complementary approach. Grades are quantitative indicators that objectively reflect students' performance in their academic activities. Thus, the grade point average serves as a numerical summary of that overall performance, allowing for a clearer assessment and comparison of academic success.

Academic performance is a multidimensional concept that, while defined in terms of overall performance, is effectively measured through grades, providing a more comprehensive view of students' educational success.

Therefore, academic performance should be viewed as a comprehensive concept that combines both quantitative assessment (grade point averages) and qualitative assessment (performance in academic activities) to provide a more complete picture of a student’s progress and success.

College students' academic performance is the result of a complex interplay of multidimensional factors that encompass socioeconomic aspects, family environment, motivation and action, learning style, health, and well-being. Socioeconomic factors include access to educational resources, family income level, and the availability of educational opportunities (Medina, 2022). The family environment plays a crucial role, influencing the quality of family relationships, the level of emotional and educational support provided by the family, and the stability of the family environment.

Student motivation and behavior are also key factors, as levels of intrinsic and extrinsic motivation, study habits, and participation in extracurricular activities influence academic performance (Luna Cevallos, 2022). Learning style—which encompasses learning preferences and adaptation to the teaching methods used at the university—also plays a significant role (Curriñir, 2023). Finally, physical and mental health, a balance between work, study, and rest, as well as access to health services and emotional support, are essential factors that influence academic performance (Cala and Castrillón, 2023).

The study conducted by Parra-Aguirre and Padilla Contreras (2022), titled "Socioeconomic Factors and Academic Performance Among Nursing Students." "Integrative Literature Review" addresses the challenges faced by students from disadvantaged socioeconomic backgrounds and how these factors may influence their academic performance. It highlights that limited access to educational resources, family support, the balance between work and school, living conditions, and social stigma are key factors that affect academic performance when students face socioeconomic

challenges. These findings underscore the importance of addressing these barriers and providing the necessary support to ensure equal opportunities in education.

The study conducted by Tamayo-Cabeza et al. (2022), titled "Family Functioning, Support from Friends, and Academic Performance in Dental Students," examines the relationship between family functioning, support from friends, and academic performance in dental students. It is important to consider the individual circumstances of each student and family, as these can influence the impact of the family environment on academic performance. The study highlights that a lack of support from family can lead to feelings of discouragement and a lack of motivation among students. Family conflicts can cause additional stress and distract students from their studies. Financial difficulties can limit access to educational resources, causing concern and anxiety among students. Emotional difficulties within the family environment, such as a lack of emotional stability or the presence of challenging situations, can also negatively affect students' emotional well-being and their ability to concentrate on their studies.

The study conducted by Luna Cevallos (2022) focuses on the relationship between motivation and academic performance among students at a private university. This study was conducted in response to the need to understand the basic aspects of motivation and its influence on learning. The research conducted by Luna Cevallos (2022) highlights the importance of motivation in students' academic performance. Socioeconomic issues play a significant role in this relationship, as they can affect students' motivation and learning strategies. It is crucial to provide specialized supervision and training to help these students overcome barriers and reach their full academic potential.

The study titled “The Relationship Between Learning Style Preferences and Academic Performance Among College Engineering Students,” conducted by Sánchez et al. (2022) examines the relationship between learning style preferences and the academic performance of engineering students. The study provides insight into the relationship between learning style preferences and the academic performance of engineering students. It is important to keep in mind that learning style can have an impact on students' academic performance. Various theories suggest that understanding one's individual learning style can help students reach their full academic potential. By adapting teaching methods to each student's preferred learning style, it is possible to improve their academic performance.

The research conducted by Sinchigalo-Martínez et al. (2022) titled “Emotional Well-Being and Academic Performance Among College Students: A Two-Dimensional Relationship and Its Impact on Support Strategies.” It focuses on the relationship between emotional well-being and academic performance among college students. Although there are conflicting findings in the scientific literature, this specific study suggests that there is no strong relationship between emotional well-being and academic performance among college students. However, it is important to emphasize the importance of promoting healthy habits to improve college students’ emotional well-being, as this can have a positive impact on other aspects of their lives.

College students' academic performance is intrinsically linked to a healthy emotional balance. Family support plays a vital role in emotional and socioeconomic development, which in turn influences academic performance. However, this support alone may not be enough if the student lacks the motivation to achieve his or her goals.

To achieve optimal academic performance, it is essential for college students to maintain a healthy emotional balance. Emotional well-being is essential for focusing on your studies and effectively tackling academic challenges. A student who feels emotionally stable and at peace with himself or herself is more likely to achieve good

academic results. Family support plays a vital role in the emotional development of college students.

In this scenario, students must develop their own learning styles. Every student has their own way of absorbing the material and retaining information. By identifying and using the learning styles that best suit their individual needs, students will be able to optimize their learning process and improve their academic performance. These interrelated factors can have a significant impact on students' ability to concentrate, absorb new information, and remain engaged in their studies.

Method

Design

The methodology used in this project is based on a mixed-methods approach, which combines data collection techniques drawn from both quantitative and qualitative methodologies. Data were collected through a review of the literature and documents, as well as through the use of questionnaires to measure the variables under study and determine research output and related activities.

Instruments

1. Quantitative Survey:
    - Description: A structured questionnaire with closed-ended questions that assess various factors, such as the family environment, motivation, study habits, and use of educational resources.
    - Validation: Before it is implemented, the questionnaire can be validated through a pilot test with a small group of students.
2. Qualitative Interviews:
    - Description: Semi-structured interviews with students and teachers to gain deeper insight into their perceptions and experiences related to academic performance.
    - Recording and Transcription: The interviews are recorded (with consent) and then transcribed to facilitate analysis.
3. Analysis of Academic Records:
- Description: Review of academic records to obtain data on grades, attendance, and academic progress, which will serve as indicators of academic performance.

Procedure

1. Definition of the Population and Sample:
- Description: A representative group of computer engineering students from the ISPB will be selected. This may include different academic levels (first, second, third year, etc.).
2. Data Collection:
- Surveys: The survey will be administered to all selected students. It can be done online or on paper, ensuring a high response rate.
- Interviews: Interviews will be scheduled with a smaller sample of students and teachers, selected either at random or purposefully to enrich the analysis.
3. Data Analysis:

- Quantitative: The data obtained from the survey will be analyzed using statistical tools (such as SPSS or Excel) to identify significant correlations between variables.
- Qualitative: A thematic analysis of the interview transcripts will be conducted to identify patterns and recurring themes.

4. Interpretation of Results:

- Quantitative and qualitative findings will be integrated to provide a more comprehensive understanding of the factors that influence academic performance.

5. Drafting of the Final Report:

- The findings will be presented in a structured format, discussing the implications of the results and proposing recommendations based on the research.

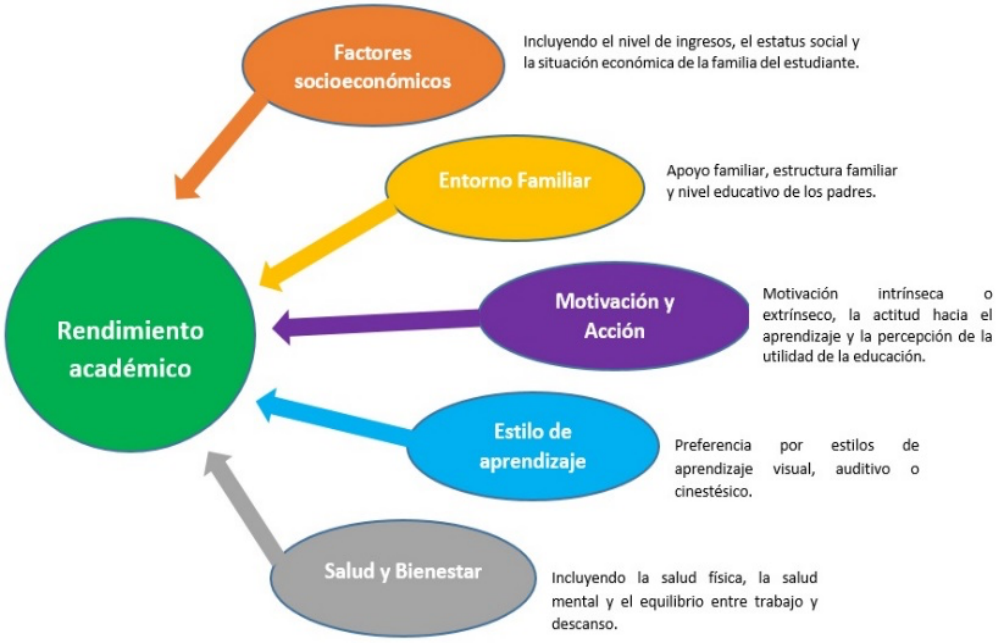
With regard to the study population, there are a total of 227 participants, of whom 88.11% are students and 11.89% are professors in the computer engineering program. Purposive sampling, a type of non-probability sampling, was used to gather the opinions of a large number of ISPB faculty and students through an attitude questionnaire.

The research takes an exploratory-descriptive approach, which allows for a detailed understanding of the situation under study. In addition, the analysis and evaluation of the training model are highlighted, as they provide accurate data compared to other qualitative methods. The methodology used in this project combines quantitative and qualitative techniques, employing questionnaires and document analysis, with an exploratory-descriptive approach.

Study variables

The study variables and their dimensions were structured based on the theoretical framework. This is illustrated below in Figure 1:

Figure 1
Study variables



Academic performance refers to students' achievements or results in terms of grades, scores, or rankings. It is a quantitative variable used to assess students' academic success. It is measured using various metrics, such as grade point averages, pass rates, and other indicators. Academic performance is an important tool for assessing student progress and the impact of educational interventions.

The "Socioeconomic Factors" variable refers to the student's family's income level, social status, and economic situation. These factors are important for understanding the context in which the student finds themselves and can influence their academic performance (Rodríguez, 2021). Socioeconomic factors are a quantitative variable, since they can be measured and quantified, for example, by assessing income level or classifying social status. These factors can have an impact on access to educational resources, extracurricular opportunities, and family support, which can affect a student's academic performance and achievement.

The "Family Environment" variable is analyzed qualitatively using methods such as in-depth interviews and content analysis to gain a detailed understanding of how the family environment influences students' academic performance. By using these qualitative techniques, we aim to capture participants' experiences and perceptions in a more holistic and contextualized way. This allows us to explore how family support, family structure, and parents' educational attainment affect students' academic performance (Verdugo-Guamán et al. (2023). Through in-depth interviews and content analysis, it is possible to identify patterns, themes, and relationships between the family environment and academic performance. The family environment plays a crucial role in students' academic performance (Nevárez-Espinoza and Barcia-Briones, 2022). Family support—both emotional and academic—can have a positive impact on academic performance. When students receive support and encouragement from their families, they feel motivated and supported in their education. This can lead to greater commitment to studies, improved performance, and greater academic achievement.

The "Motivation and Action" variable is quantitative. In the context of educational research, this variable refers to the measurement of students' motivation and actions (Rea, et al. (2023). Motivation can be measured using scales that assess the level of motivation, such as questionnaires or surveys. In quantitative terms, motivation can be measured using assessment scales such as questionnaires or surveys, in which numerical values are assigned to students' responses (Luna Cevallos, 2022). These numerical values make it possible to quantify and compare levels of motivation across different groups or points in time.

The "Learning Style" variable, which includes a preference for visual, auditory, or kinesthetic learning styles, can be considered qualitative. Methods such as in-depth interviews or content analysis are used to measure it. Learning style can have a significant impact on students' academic performance (Cala and Castrillón, 2023). Those who prefer a visual learning style can benefit from using images, graphs, and diagrams to process and retain information. On the other hand, students with an auditory learning style may learn best through verbal explanations and discussions. Students with a kinesthetic learning style can benefit from hands-on and manipulative activities to grasp new concepts.

The Health and Well-being variable can be considered qualitative. To measure this variable, methods such as in-depth interviews, content analysis, or qualitative questionnaires can be used. A lack of adequate rest can negatively affect students' ability to study and their academic performance (Ramírez Lemus et al., 2023). A lack of physical activity, poor diet, and lack of sleep can affect students' concentration, memory, and ability to learn (Morán Carpio, 2022). It is important for students to have access to support resources and stress management strategies to maintain good mental health and effectively cope with academic challenges. A proper balance between work and rest allows students to recharge, reduce stress, and maintain higher productivity in their studies (López, 2023). Students should strive to find a healthy balance so they can effectively tackle academic challenges without negatively affecting their ability to study and their academic performance.

Results

Through observation tools, classroom visits, questionnaires, interviews, and student assessments, it was possible to gain a deeper understanding of the shortcomings in the academic performance of ISPB engineering students. These instruments yielded results that support the existence of difficulties in understanding fundamental concepts in curriculum management, as well as the individual and contextual factors that influence students' academic performance.

Table 1
Results Table

Instrument	Group	Key Result	Percentage (%)
Attitudes Questionnaire	Students	Positive Attitude Toward Support and Resources	75
	Teachers	An agreement in which commitment is crucial	85
Note	Students	Active participation in class	65
	Teachers	Open interaction with students	80
Evaluations	Students	Average Increase in Grades	10
	Students	Correlation with Family Support and Personal Commitment	-

Interpretation of the Results

Attitudes Questionnaire

Students: About 75% of students have a positive attitude toward attending classes and using additional resources, indicating that they value academic support and recognize its importance in their academic performance.

Teachers: 85% of teachers believe that student engagement and motivation are critical to academic success. This suggests a correlation between teachers' perceptions and students' attitudes toward education.

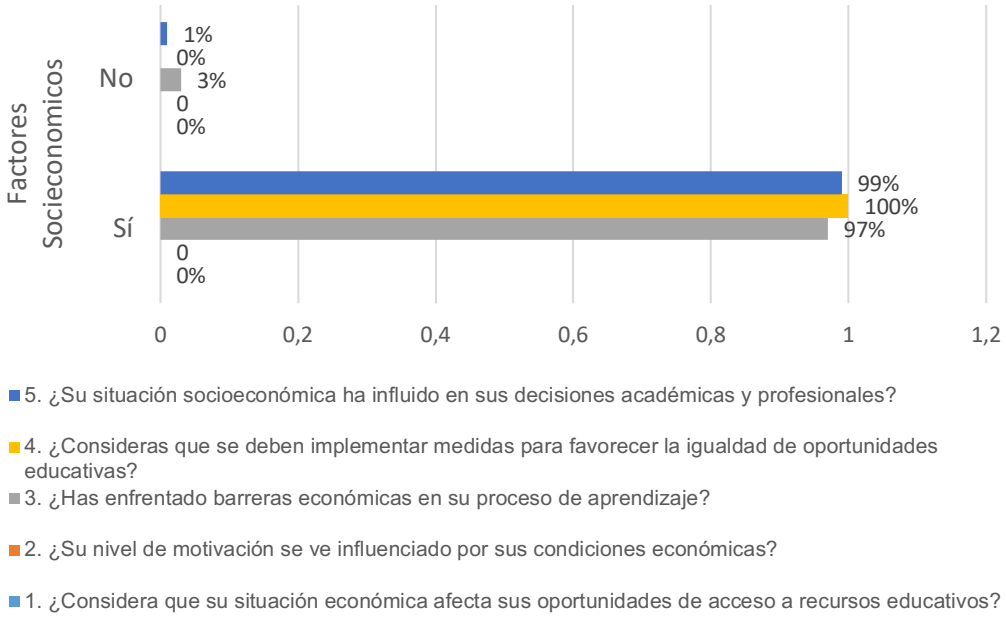
Note: Active Participation: 65% of the students actively participated in class, which is a positive indicator of their engagement. Class participation is linked to better learning and greater retention of information.

Student-Teacher Interaction: About 80% of the teachers were open to students' questions, which fosters a collaborative learning environment where students feel comfortable asking for help.

Assessments: An average 10% increase was observed in the grades of students who demonstrated positive attitudes toward studying and made effective use of academic resources. This finding highlights the positive relationship between attitude and academic performance.

The correlation found between family support, personal commitment, and grade point averages suggests that external factors also influence academic performance, reinforcing the importance of a supportive environment.

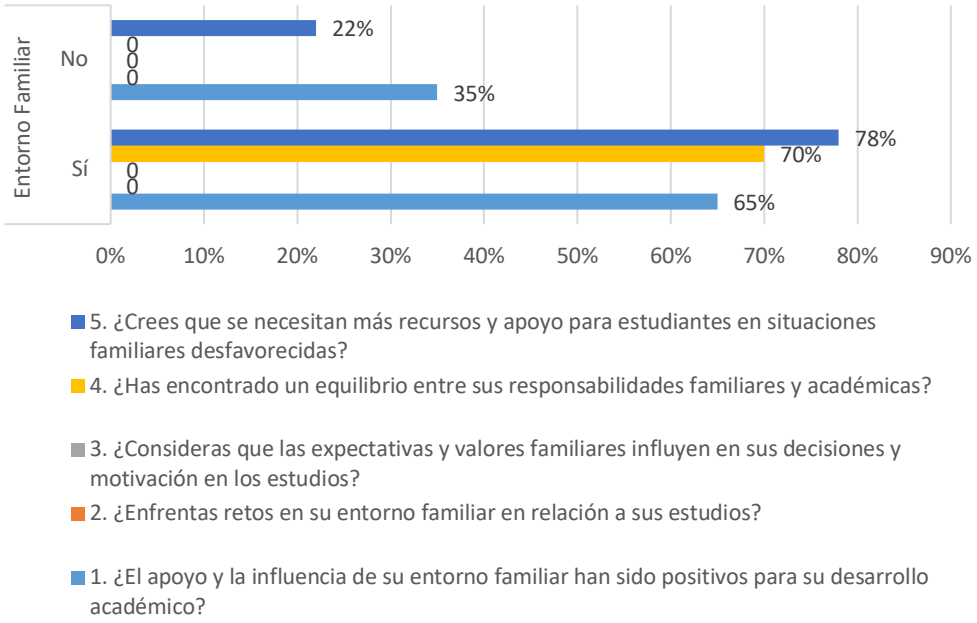
Figure 2
Socioeconomic factors



The results show that 97.5% of students believe that their economic situation affects their access to educational resources. In addition, 97% of students have faced financial barriers in their learning process. On the other hand, 198% of students indicate that their socioeconomic status has influenced their academic and career decisions. Similarly, 83.5% of students say that their level of motivation is influenced by their financial circumstances. Based on the results obtained, it appears that several factors influence the academic performance of computer engineering students at ISPB. A high percentage of respondents indicated that their economic situation affects their access to educational resources, that they have faced financial barriers in their learning process, that their socioeconomic status has influenced their academic and professional decisions, and that their level of motivation is influenced by their economic circumstances (Medina, 2022).

These findings highlight the need for a comprehensive approach to addressing the socioeconomic factors that influence the academic performance of computer engineering students. It is important to consider strategies that provide financial support and educational resources to students, as well as to promote intrinsic motivation and the development of academic skills (Páez and Ramírez, 2022). In addition, policies and programs should be implemented to promote equity and equal opportunities for all students, regardless of their economic status.

Figure 3
Family Environment

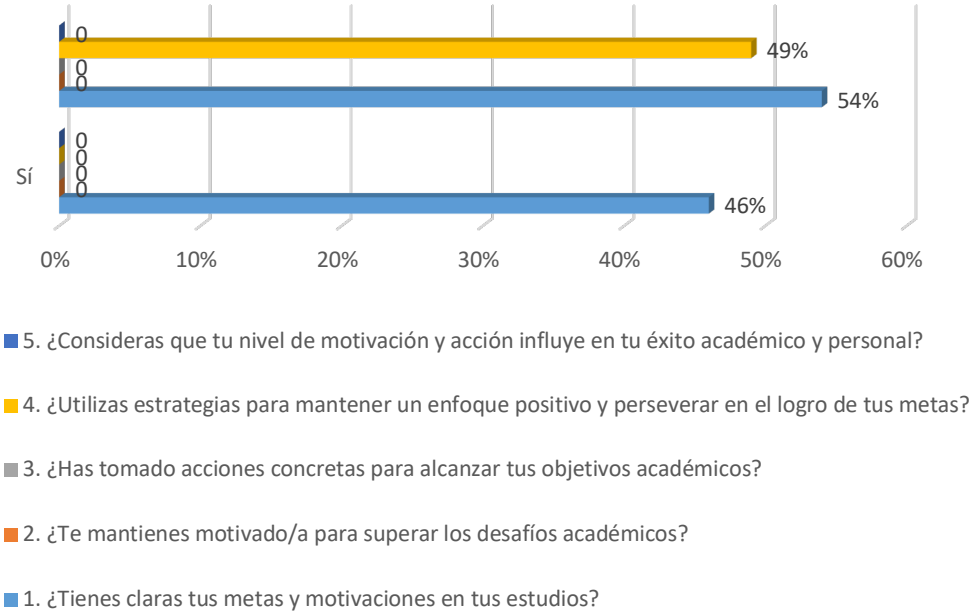


The results show that the support and influence of the family environment have had a positive impact on their academic development, with a percentage of 65%. In addition, 91.5% of students believe that family expectations and values influence their decisions and motivation regarding their studies. On the other hand, 81.5% of students report not facing any challenges in their family environment related to their studies. In addition, 70% of students have managed to strike a balance between their family and academic responsibilities. However, 78% of students believe that more resources and support are needed for those who come from disadvantaged family situations.

These results highlight the importance of the family environment on the academic performance of computer engineering students. Family support and positive influence are key factors in academic development (Nevárez-Espinoza and Barcia-Briones, 2022). Family expectations and values also play a significant role in student motivation. It is encouraging to see that many students do not face obstacles in their family environment when it comes to their studies and have managed to balance their family and academic responsibilities.

However, it is important to note that there is still a need to provide additional resources and support to students from disadvantaged family backgrounds. These results highlight the importance of recognizing differences in students' access to resources and opportunities and working to close those gaps.

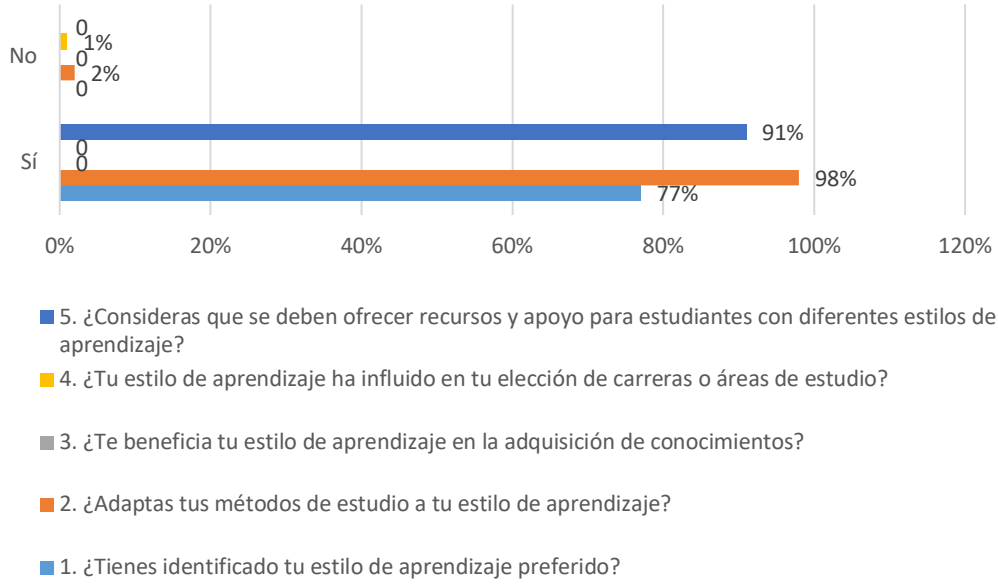
Figure 4
Motivation and Action



According to the results, several factors have been identified that have a significant impact on these students' academic performance. 189% of students believe that their level of motivation and action influences their academic and personal success. In addition, 193% have taken concrete steps to achieve their academic goals. 102% use strategies to maintain a positive outlook and persevere in achieving their goals, and 92% have a clear understanding of their goals and motivations in their studies. These results highlight the importance of motivation, action, and a positive attitude for the academic performance of computer engineering students.

It is essential to understand and take advantage of these factors to promote students' academic success. Motivation and action are key drivers for achieving academic and personal goals (Inlago Lechón, 2023). The use of strategies and a positive approach also play an important role in achieving goals and overcoming academic challenges.

Figure 5
Learning Style

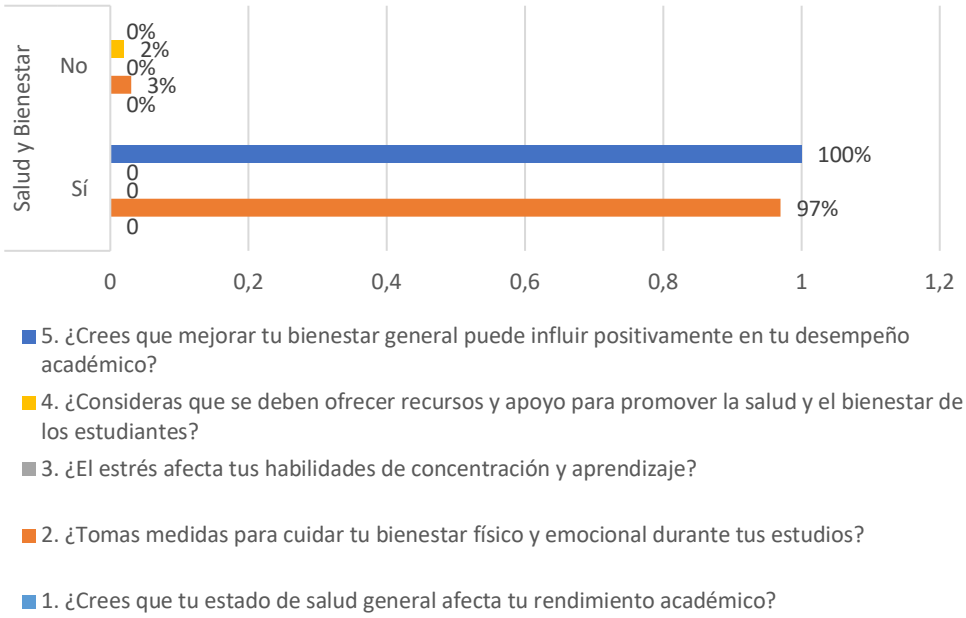


The results show that 154% of the positive responses indicate that students have identified their preferred learning style. In addition, 187% of students benefit from their learning style when acquiring knowledge. 496% of students tailor their study methods to their learning style, and 198% believe that their learning style has influenced their choice of major or field of study. However, 182% of students believe that more resources and support should be provided for those with different learning styles.

These results highlight the importance of understanding and recognizing the learning styles of computer engineering students. Students who have identified their preferred learning style can use it to improve their knowledge acquisition. It is encouraging to see that many students adapt their study methods to their learning style, which can contribute to their academic success (Escobar, et al., 2022). In addition, learning styles can influence students' career choices and fields of study.

However, it is necessary to provide more resources and support for students with different learning styles. This will ensure that all students have equal opportunities and can reach their full academic potential.

Figure 6
Health and Wellness



According to the results, it was found that 100% of the students believe that their overall health affects their academic performance. In addition, they recognize that stress affects their ability to concentrate and learn. Therefore, they believe that improving their overall well-being can have a positive impact on their academic performance. In addition, 196% of students believe that resources and support should be provided to promote student health and well-being.

These results highlight the importance of health and well-being in the academic performance of computer engineering students. Overall health and the ability to cope with stress can have a significant impact on concentration, learning, and academic performance (Morán Carpio, 2022). Therefore, it is essential to provide adequate resources and support to promote students' health and well-being.

The proposed hypothesis has been confirmed, as evidenced by the calculation of Pearson's correlation coefficient, which shows a positive correlation between the independent variable and the three dependent variables (since its value lies between 0 and 1), with a calculated value of 0.713. Furthermore, according to the coefficient of determination, the independent variable of academic performance explains 50.50% of the variability in the dependent variables of socioeconomic status, family environment, motivation, learning styles, health, and well-being.

In addition, multivariate analysis of variance (MANOVA) was performed to conduct global significance tests. In this analysis, Pillai's trace reached a value of 0.372. Due to the complexity of the Pillai trace distribution, its value approximates an F-distribution with a specific value of 1.95, which has a significance level of less than 0.0001. This leads to the rejection of the null hypothesis and the conclusion that there are significant differences between the treatments evaluated.

Discussion and Conclusions

This study has found that several factors—socioeconomic, family-related, motivational, and health-related—have a significant influence on the academic performance of computer engineering students at ISPB. Overall, the findings suggest a positive correlation between students' life circumstances and their academic performance, with a Pearson correlation coefficient of 0.713, indicating a moderately strong correlation. However, these results also reveal a number of complexities and nuances that call for critical reflection.

In this context, our research focused on a broader range of variables that may influence the academic performance of computer engineering students. By including socioeconomic, family, and motivational factors, we seek to identify aspects of the students' context that may be beyond the direct control of teachers and the school. While we acknowledge that future research could delve deeper into the analysis of pedagogical and didactic aspects, as well as the interactions between these factors and the variables addressed in our study, we believe that our work offers a valuable contribution to the field of education by emphasizing the importance of adopting a multifactorial approach to the analysis of academic performance.

Among the study's strengths is its ability to reflect students' level of conceptual understanding by showing how attitudes toward attendance and the use of resources are correlated with academic performance. Seventy-five percent of students have a positive attitude toward attending classes and using additional resources, which highlights the potential in the academic context. These results are supported by an average 10% increase in test scores among those who used these strategies.

However, some weaknesses become apparent when we consider that, although 65% of the students actively participated in class, this still leaves 35% who are not fully engaged (Noriega Luna, 2023). This percentage may indicate that, despite a generally positive attitude, not all students are actively engaged in their own learning (Condori Dueñas, 2023). This raises questions about what factors might be limiting this group's participation and their perception of the value of education (Vargas Quispe, 2023).

The choice of statistical techniques—including Pearson's correlation coefficient, multivariate analysis of variance (MANOVA), and Pillai's criterion—is based on their ability to analyze complex relationships among multiple variables and uncover significant patterns in the data obtained. These tools enabled us to quantify the influence of the factors studied on academic performance, as well as to assess both the strength and the direction of these relationships. It is essential to emphasize that our goal was not to attribute low performance exclusively to external factors; rather, we set out to identify a set of variables that, taken together, could explain a substantial portion of the variance in academic performance.

With regard to the hypotheses initially proposed, the results reveal a correlation between teachers' perceptions and students' attitudes toward education. Eighty-five percent of teachers believe that student engagement and motivation are critical to academic success (Curriñir, 2023). However, this perception contrasts with the data on active participation, which shows that only 65% of students actively participate in class (Condori Dueñas, 2023). This suggests a discrepancy that warrants further investigation; it is possible that teachers' expectations are not fully reflected in the behavior of all students.

A comparison of these findings with previous research confirms the importance of motivation and engagement in academic performance. However, there are also some

contradictions (Medina, 2022). Although there is widespread recognition of the importance of a collaborative environment—as evidenced by the fact that 80% of professors are open to consultations—this does not necessarily translate into greater participation by all students (Morán Carpio, 2022). This situation could indicate that, even though students feel they can seek help, there may be a lack of confidence or a negative perception regarding their ability to contribute or participate in class.

The study's limitations include its focus on a single institution, which may limit the generalizability of the results. In addition, reliance on self-reports can lead to bias. It is suggested that future research look beyond attitudes and analyze additional factors such as access to technological resources and students' prior training. This could provide a more holistic understanding of how these factors interact with student engagement and academic performance.

Theoretically, these data provide further evidence for the debate on the importance of active engagement and collaboration in learning. Educational institutions could benefit from implementing workshops or programs that train students in active participation and collaborative learning skills, thereby promoting a pedagogical approach based on inquiry-based learning (Morán Carpio, 2022). This could enhance students' conceptual understanding by allowing them to explore and grasp concepts in depth, thereby promoting meaningful learning.

The study has shown that socioeconomic and family factors, as well as the academic environment, are interrelated and critical to academic performance at the ISPB. Despite the clearly positive attitudes toward education, the reality of active participation and engagement varies among students. The contradictions observed call for a more in-depth analysis of the dynamics of knowledge and teaching methodologies. These findings suggest that better aligning teachers' expectations with students' realities and fostering an inclusive and collaborative educational environment could be key to improving the academic performance of all students.

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THE INTERNATIONALIZATION OF BRAZILIAN BASIC EDUCACION: SOCIAL IMPACTS AND OPPORTUNITIES

LA INTERNACIONALIZACIÓN DE LA EDUCACIÓN PRIMARIA Y SECUNDARIA EN BRASIL: VIABILIDAD, IMPACTOS Y ESTRATEGIAS PARA LA EQUIDAD GLOBAL

Vanessa Cassol
Fundación Universitaria Iberoamericana, Brazil
[ldvanessacassol@gmail.com] [https://orcid.org/0009-0001-7056-8879]
Mirtha Silvana Garat de Marin
Universidad Europea del Atlántico, Spain
[silvana.marin@unic.co.ao] [https://orcid.org/0000-0003-3044-8087]

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ABSTRACT

The internationalization of basic education has become a key strategy for expanding equitable access to educational, cultural, and professional opportunities worldwide. In the Brazilian context, this practice has historically been restricted to higher education, especially within elite institutions. However, this article examines the feasibility and impacts of expanding internationalization into primary and secondary education in Brazil, aiming to make it a driver of social justice. A qualitative methodology was adopted, based on document analysis, literature review, and the author's empirical experience in implementing internationalization programs in higher education. The proposed framework is structured around six interdependent components: teacher training, revision of political-pedagogical projects, creation of cooperation networks, implementation of exchange programs, inclusion of the local community, and the development of financing strategies. The research findings indicate that adopting intercultural pedagogical practices and aligning with the Sustainable Development Goals (SDG 4) can promote the democratization of internationalization, strengthen global competencies among children and youth, and enhance the appreciation of cultural diversity within the school environment. The conclusion is that the internationalization of primary and secondary education is not only feasible but also necessary, provided it is guided by principles of equity, pedagogical responsibility, and alignment with national and international educational policies. In this context, the school becomes a societal agent and a promoter of inclusive global citizenship.

Palabras clave:
educación, ciudadanía global, internacionalización, educación inclusiva.

RESUMEN

La internacionalización de la educación primaria y secundaria se ha consolidado como una estrategia clave para ampliar el acceso equitativo a oportunidades educativas, culturales y profesionales en todo el mundo. En el contexto brasileño, esta práctica ha estado históricamente restringida al nivel superior, especialmente en instituciones de élite. Sin embargo, este artículo analiza la viabilidad y los impactos de su expansión hacia la educación primaria y secundaria en Brasil, con el objetivo de convertirla en un motor de justicia social. Se adoptó una metodología cualitativa, basada en análisis documental, revisión bibliográfica y la experiencia empírica de la autora en la implementación de programas de internacionalización en la educación superior. La propuesta se estructura en seis componentes interdependientes: formación docente, revisión de los proyectos político-pedagógicos, creación de redes de cooperación, realización de intercambios, inclusión de la comunidad local y definición de estrategias de financiamiento. Los resultados de la investigación indican que la adopción de prácticas pedagógicas interculturales y la articulación con los Objetivos de Desarrollo Sostenible (ODS4) pueden promover la democratización de la internacionalización, el fortalecimiento de competencias globales en niños y jóvenes, y la valorización de la diversidad cultural en el entorno escolar. Se concluye que la internacionalización de la educación primaria y secundaria no solo es viable, sino también necesaria, siempre que esté guiada por principios de equidad, responsabilidad pedagógica y alineación con las políticas educativas nacionales e internacionales. En este contexto, la escuela se convierte en un agente de la sociedad y promotora de una ciudadanía global inclusiva.

Introduction

The internationalization of education has become a key strategy for addressing the challenges of an increasingly interconnected, diverse, and complex world. Traditionally focused on higher education, this trend has begun to expand into primary and secondary education, especially in countries such as Brazil, where significant structural inequalities in access to global educational opportunities persist (Mataluna, 2023; Sahlin & Styf, 2021). Basic education, as the foundation of citizens' education, represents a strategic arena for fostering global competencies, social inclusion, and sustainable development from the earliest stages of schooling (OECD, 2018; UNESCO, 2018).

The magnitude of the problem becomes clear when one considers that more than 80% of Brazilian students are enrolled in public schools (IBGE, 2021). However, internationalization efforts at this educational level are still in their early stages and are largely limited to private, elite, or bilingual institutions, which reinforces social and educational segregation (Mataluna, 2023). This reality limits the transformative potential of schools as agents of social justice and preparation for global citizenship, creating a significant gap in access to educational experiences that, in other contexts, are already recognized as essential.

This issue cannot be underestimated or considered peripheral in contemporary educational discussions. The lack of access to internationalization programs in public elementary and secondary schools is not a minor or marginal problem, but rather a structural issue with far-reaching consequences. If immediate action is not taken, the medium- and long-term consequences will directly affect the ability of millions of Brazilian children and young people to develop critical thinking, intercultural, and global problem-solving skills. This exclusion will limit their academic, professional, and personal paths, in addition to negatively impacting the country's competitiveness, its capacity for innovation, and its integration into the international arena.

Furthermore, this gap reproduces and amplifies historical inequalities, since while economic elites have access to educational models that include global curricula, multilingual instruction, international exchange, and intercultural experiences from early childhood onward, the majority of students in the public school system remain confined to national pedagogical frameworks, disconnected from global flows of knowledge, culture, and innovation (Mataluna, 2023). The absence of these processes in public education not only perpetuates inequality but also prevents these students from gaining access to the cultural, social, and linguistic capital that is now essential for their integration into the 21st-century workforce, academia, and society.

Sahlin and Styf (2021) emphasize that internationalization should not be viewed solely as a strategy for external collaboration, but rather as a fundamental pillar for strengthening schools' internal capacities. In their study, they demonstrate that when internationalization is incorporated as an integral part of school culture, it contributes significantly to teachers' professional development, distributed leadership, continuous improvement, and the creation of learning environments that are more collaborative, inclusive, and open to the world.

On the other hand, multilateral organizations such as the United Nations Educational, Scientific and Cultural Organization (UNESCO) and the Organization for Economic Cooperation and Development (OECD) emphasize that internationalization should be understood as an educational right, essential for shaping citizens capable of addressing current and future global challenges (OECD, 2018; UNESCO, 2018). Ignoring

this aspect of basic education ultimately reinforces structures of exclusion, closes doors to opportunities for development, and limits the formation of citizens capable of acting locally with a global perspective.

However, there are international examples that show it is possible to implement internationalization processes in an inclusive and sustainable manner. In Finland, the national curriculum incorporates intercultural competence as a cross-cutting theme starting in early childhood education, promoting respect for diversity and global awareness. In Canada, the model of multilingual and multicultural schools is aligned with federal integration policies, while in Spain and Chile, regulatory frameworks have been established to promote internationalization at home, with an emphasis on active learning methodologies, international collaborative projects, and the use of digital technologies (Sahlin & Styf, 2021; OECD, 2018).

These experiences show that internationalization should not be limited to physical mobility programs, but should be integrated across the board into the school curriculum, teacher training, and institutional culture. This ranges from developing collaborative projects with schools in other countries to incorporating content that promotes intercultural understanding, language learning, and addressing global issues such as sustainability, equity, and peace (Knight, 2004; Morosini, 2011).

In the Brazilian context, internationalization initiatives in public elementary and secondary education are still in their early stages and are, for the most part, limited to private or elite institutions. This reality limits the transformative potential of schools as agents of social justice and underscores the need to democratize access to international experiences, integrating them into political-pedagogical projects in a cross-cutting and culturally contextualized manner. However, the viability of the internationalization process is based on factors that are becoming increasingly well-established. On the one hand, advances in digital technologies make it possible to overcome traditional physical barriers, facilitating the development of virtual and collaborative internationalization experiences. On the other hand, there is an emerging but significant effort by the Ministry of Education itself (MEC, 2022) to develop guidelines for the internationalization of basic education, which opens up opportunities for its implementation in a more structured and democratic manner. Furthermore, increasing access to theoretical frameworks, international best practices, and methodological resources enhances the potential to conduct robust research that is applicable to the national context.

However, various international experiences have shown that internationalization can be implemented in an inclusive manner within public school systems. For example, in Finland, the national curriculum incorporates intercultural competence as a cross-cutting theme starting in early childhood education, promoting respect for diversity and global awareness. In Canada, the model of multilingual and multicultural schools is linked to federal integration policies, while in Spain and Chile, regulatory frameworks have been developed to promote "internationalization at home," with an emphasis on active learning methodologies, international collaborative projects, and the use of digital technologies. The success of internationalization processes depends on the existence of sustained public policies, adequate funding, ongoing training for teachers in global competencies, and the ability to adapt international models—both culturally and pedagogically—to the Brazilian context, which is characterized by its heterogeneity and deep inequalities (Mataluna, 2023; Sahlin & Styf, 2021). Furthermore, there is a risk that, without a strong institutional commitment, internationalization will become a practice dependent on individual leaders, which jeopardizes its long-term sustainability.

Similarly, multilateral organizations such as UNESCO and the OECD have, in recent years, emphasized the need to incorporate the international and intercultural dimensions

at all levels of education. The OECD's Global Competencies Framework (2018) and SDG 4 of the 2030 Agenda promote a vision of education centered on equity, sustainability, peace, and global citizenship. In this regard, internationalization can no longer be limited to physical mobility or foreign language learning; rather, it must be deeply integrated into institutional culture, teacher training, and the school curriculum.

In this context, Brazil's public elementary and secondary schools are strategic and urgent venues for democratizing access to internationalization and, in doing so, contributing to the development of global citizens who are critical thinkers, show solidarity, and are capable of acting effectively in an interdependent world. This challenge is not only educational, but also ethical, social, and political.

Against this backdrop, this article—based on a master's thesis—aims to analyze the feasibility of implementing internationalization processes in Brazil's public elementary and secondary education systems. This research is based on the recognition that internationalization can help broaden educational horizons, develop intercultural skills, and promote critical and socially responsible citizenship. To this end, the study employs a qualitative methodology based on document analysis, a review of the literature, and the systematization of the author's empirical experience. This paper is organized into the following sections: the methodology used, the main results of the study, a discussion of these findings in light of the theoretical framework, and, finally, the conclusions that summarize the research's contributions, highlighting limitations and suggestions for future studies.

Method

Methodological Approach

In line with Creswell's (2014) proposal, a qualitative approach was chosen, as it allows for the exploration and understanding of the meaning that individuals or groups attribute to a social or human problem. Given the emerging nature of the phenomenon [...], an exploratory and descriptive design proved to be the most appropriate. According to Denzin and Lincoln (2018), this approach is ideal for investigating complex phenomena in their natural settings, allowing us to understand not only what happens, but also how and why it happens.

This approach is justified because it makes it possible to capture meanings, processes, and dynamics that cannot be objectively quantified, especially when dealing with topics that have not yet been sufficiently systematized in the scientific literature. Such is the case with internationalization in Brazilian basic education, a field still in its early stages of development, with few applied studies conducted in public school settings.

Sources of Information

The analysis drew on three main types of sources:

- Official and Regulatory Documents: The study included national public policies, guidelines from Brazil's Ministry of Education, curriculum frameworks, educational institutions' policy and pedagogical plans, and international documents such as the UN's Sustainable Development Goals (SDGs) and the OECD's global competencies framework.
- Specialized Bibliography: We consulted academic articles, theses, books, and scientific publications—both national and international—focusing on educational internationalization, global education, teacher training, and

inclusion policies. Notable contributions include those by Knight (2004), Morosini (2011), Finardi and Rojo (2015), and Lima (2019), among others.

- Systematization of Empirical Experience: The empirical experience gained in coordinating internationalization programs was incorporated into an institutional project for internationalization in Brazilian higher education. This project was implemented across the board, encompassing all of the university's programs, and structured to integrate the various dimensions of the internationalization process: faculty development, inter-institutional agreements, mobility programs, internationalization at home, and curriculum alignment with global competencies. As part of this project, the author also served as an institutional ambassador in Europe, with the responsibility of representing the institution and coordinating internationalization efforts in collaboration with international academic partners. This role allowed him to interact directly with multilateral cooperation networks, understand European regulatory frameworks, and adapt best practices to the Brazilian context. The success of this initiative not only strengthened the institutional internationalization policy at the home university but also served as a model for other educational institutions within the same educational group in Brazil, which replicated its strategies, methodologies, and management structures. This practical experience provided a valuable empirical foundation for the present study, making it possible to develop proposals tailored to the realities of basic education, based on experiences that have already been validated in higher education.

Analysis Procedure

The data processing was carried out in several complementary stages:

- *Document Collection* - This involved selecting, classifying, and organizing relevant sources. Priority was given to public and accessible documents, as well as relevant institutional experiences. The main criterion was relevance to the subject of study.
- *Thematic Analysis* - An inductive thematic analysis was conducted to identify patterns of meaning, regularities, and emerging categories. The content was coded by identifying keywords, recurring phrases, and common themes in the reviewed texts. This process made it possible to create an interpretive map that guided the subsequent discussion.
- *Methodological Triangulation* —With the aim of strengthening the internal validity of the study, triangulation was performed among the various sources: documents, theory, and empirical experience. This strategy made it possible to compare perspectives and deepen our understanding of the phenomenon from multiple angles.
- *Category Refinement* - In a final stage, the coded data were reviewed to clarify, consolidate, and reorganize the analytical categories. This refinement was carried out iteratively, combining thematic analysis with critical interpretation, which led to the identification of six key dimensions for analyzing internationalization in basic education.

Methodological Design

The study is based on a non-experimental design, a category defined by leading authors such as Hernández Sampieri et al. (2014) and Creswell (2014) define it as research conducted without deliberately manipulating the variables. In this type of

design, the researcher simply observes and analyzes phenomena as they occur in their natural context. The methodological strategy is based on documentary analysis and a literature review, supplemented by a systematization of the author's empirical experiences during the implementation of an internationalization program at a Brazilian educational institution.

Data Collection Techniques and Tools

The literature review focused on sources published between 2004 and 2022, to allow for an analysis of both foundational works and cutting-edge research. The time frame begins with the publication of Knight's (2004) seminal article, considered a turning point in the field of internationalization studies, and extends to the present day to capture the most recent developments. The study included scientific articles, reports from multilateral organizations, and key regulatory frameworks for the internationalization of education. Priority was given to studies that address both the Brazilian context and international experiences, with an emphasis on theoretical, practical, and comparative approaches.

Among the leading scholars in this field are Knight (2004) and Morosini (2011), who provide the conceptual foundations and analyze the institutionalization of internationalization. At the national level, Finardi and Rojo (2015) examine the role of language and inequality, while Lima (2019) discusses strategies applicable to basic education. This framework is complemented by Teixeira (2022), who focuses on equity and public systems, and by authors such as Sahlberg (2011) and Schleicher (2018), who provide benchmark models from countries such as Finland and Canada. In addition, key documents such as the Global Competencies Framework (OECD, 2018), the Education at a Glance (OECD, 2019), and the Incheon Declaration (UNESCO, 2015) were incorporated.

The combination of document analysis, a literature review, and empirical experience strengthens the study's robustness. The literature review provided insight into Brazilian regulatory frameworks, such as the National Parameters for the Internationalization of Primary Education (MEC, 2022), and international commitments such as SDG 4, identifying gaps, challenges, and opportunities for effective and sustainable internationalization.

For its part, the literature review provided a robust theoretical foundation by integrating concepts, models, and experiences of internationalization applied to diverse contexts, which facilitated the adaptation of strategies to the Brazilian basic education sector.

The empirical experience gained in coordinating internationalization programs in higher education provides a practical perspective, making it possible to translate theoretical frameworks into viable and context-specific actions. This experience deepened our understanding of operational challenges and helped us identify sustainable solutions.

Beyond their methodological function, the choice of these three approaches reflects a commitment to democratizing access to internationalization. In a country marked by deep inequalities, providing children and young people in public schools with educational experiences that offer a global perspective means broadening horizons, breaking down social barriers, and creating real opportunities for development.

Analysis Categories

To organize and interpret the findings, six key categories of analysis were established, based on the intersection of the reviewed theory, the author's professional practice, and the documents analyzed:

1. Institutional Management and Public Policy
2. International Cooperation Networks
3. Bilingualism and the Multilingual Curriculum
4. Community Participation
5. Teacher Training in Global Competencies
6. Economic, technical, and pedagogical feasibility

Variables Analyzed

In order to organize and understand the findings, the following key variables were identified:

- Prioritizing internationalization in public and institutional management.
- Existence of inter-institutional agreements and exchange programs.
- Degree of implementation of bilingualism and use of global curricula.
- Local community participation in international activities.
- Teacher Training in Global and Intercultural Competencies.
- Technical, social, economic, and environmental feasibility of internationalization projects.

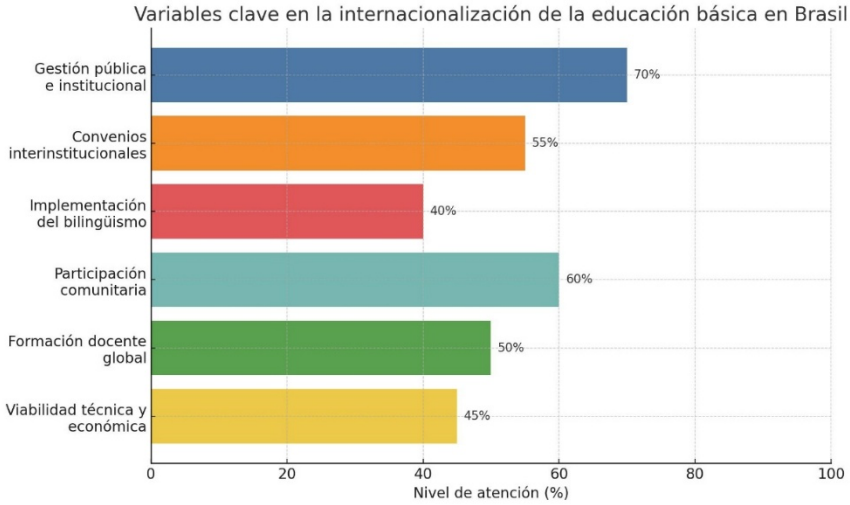
In order to systematically organize, analyze, and understand the findings obtained throughout the research, we identified a set of key variables that allow us to assess the current state of and challenges facing internationalization in Brazilian elementary education. These variables emerge from both the documentary analysis and the literature review, as well as from empirical experience, and serve as analytical frameworks that reflect the multiple dimensions shaping internationalization processes in the school context. These areas cover a wide range of topics, including the following:

- The priorities set by government agencies and educational institutions.
- The existence of inter-institutional agreements and exchange programs.
- The implementation of bilingual practices and the adoption of curricula with a global focus.
- The active participation of the local community in international activities.
- The assessment of the technical, social, economic, and environmental feasibility of projects.

Considering these variables together allows us not only to map the level of progress in each dimension, but also to understand the interrelationships among them and their impact on the development of an education system aimed at shaping global, critical-thinking citizens who are committed to addressing the challenges of the contemporary world. Figure 1 provides a visual summary of these key variables and their estimated level of attention in the Brazilian context.

Figure 1

Key variables in the internationalization of primary education in Brazil, according to the study's methodological approach.



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Analysis Criteria

The data were analyzed using a methodological triangulation approach that combined the theoretical framework, the reviewed documents, and empirical evidence. This triangulation made it possible to identify patterns, contradictions, and opportunities within the process of internationalization in elementary education, ensuring a holistic and contextualized view of the phenomenon.

The methodological triangulation consisted of cross-referencing documentary and bibliographic sources and systematizing professional experience. The data were analyzed using a thematic analysis approach, identifying categories that emerged and were linked to internationalization. In this context, the discussion focused on the empirical experience in designing the university's internationalization process, as well as its implementation and management.

Through this methodological approach, several priority topics were identified, which arose from the specific needs of exchange students and the realities of the international agreements established by the institution.

Furthermore, ethical criteria were applied in the management of sources, respecting the intellectual authorship of the materials consulted and ensuring the academic validity of the data interpreted.

Results

Six key variables were identified that are considered essential to address: public management priorities, institutional priorities, inter-institutional agreements, bilingualism, international programs, and social activities. Each of these variables is a key pillar for consolidating effective internationalization processes in Brazilian basic education, as demonstrated by the study.

One of the key aspects identified was the importance of peer support programs (buddy programs), which are essential for the effective implementation of an

internationalization project. These programs help international students integrate into the host country's academic and cultural environment by creating support networks and helping them adjust.

In addition, it was noted that evaluations of international agreements are predominantly unilateral. This is because, for these agreements to be truly effective, they must not be strictly bilateral, in order to avoid ambiguities in the academic process at both the home university and the host university. Because they are unilateral, these evaluations ensure that the program's standards and requirements are met clearly and consistently, minimizing potential conflicts of interpretation.

1. Public Management Priority: The research reveals that the commitment and planning of public authorities are key factors in the viability of internationalization projects in elementary schools. The level of budget allocation, the frequency of strategic meetings, and the participation of education administrators in global networks emerge as significant indicators. It was found that where local governments truly prioritize these issues, the implementation of international practices is more structured and sustainable.

2. Institutional Priority: The study highlights the leading role that schools themselves play in fostering an organizational culture geared toward internationalization. Institutions that allocate specific resources, encourage the ongoing professional development of their teachers, and set clear goals within their institutional educational plans make greater progress in integrating global competencies into their daily practices. Initiatives originating in the school environment have proven to be an effective driver of change, even in the face of external challenges.

3. Inter-institutional Agreements: Cooperation between Brazilian and foreign schools is one of the most promising pillars of effective internationalization. The research highlights the positive impact of dual-degree programs, curriculum alignment, and bilateral student exchange programs. These agreements not only diversify access to global content, but also promote mutual recognition of teaching practices, thereby strengthening a collaborative learning network.

4. Bilingualism: Proficiency in foreign languages, especially English, serves as a gateway to global citizenship. The study documents successful cases in which bilingual programs enabled graduates to continue their international career paths. Bilingualism, in addition to being a practical skill, promotes inclusion and equity by breaking down cultural and communication barriers.

5. International Programs: Student and teacher exchanges, as well as technology-mediated collaborative projects, yielded significant results in terms of student learning, motivation, and future prospects. The author emphasizes that even in times of financial constraints, it is possible to adopt "internationalization at home" strategies, promoting exposure to other cultures without the need for physical travel.

6. Social Activities: Finally, the study emphasizes the importance of initiatives that connect the local community with the school's international dimension. From the adoption of multilingual signage in public spaces to participation in international artistic and cultural projects, a transformation in the community environment is evident. Internationalization, therefore, has far-reaching social impacts, promoting intercultural coexistence and strengthening the social fabric. Table 1 below summarizes these six key variables and outlines the main findings observed for each of them.

Table 1

Key Variables for Internationalization in Brazilian Basic Education and Their Main Findings.

Variable	Description of the Observed Results
Priority of Public Administration	Significant progress was identified in contexts where there was budget allocation, strategic planning, and a commitment by managers to international initiatives.
Institutional Priority	Institutions with educational programs focused on internationalization showed greater participation in bilingual programs, continuing teacher education, and global cooperation.
Inter-institutional Agreements	Establishing partnerships with foreign institutions promoted curriculum harmonization, academic mobility, and cultural exchange.
Bilingualism	Foreign language programs led to an increase in the number of graduates pursuing international careers and to the development of global competencies.
International Programs	Exchanges and collaborative projects—including virtual ones—increased student and faculty engagement, promoting internationalization at home.
Social Activities	Community initiatives, such as multilingual signage and cultural events, contributed to inclusion, a sense of belonging, and the celebration of diversity.

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The findings from the documentary analysis, literature review, and systematization of empirical experiences indicate that the process of internationalization in Brazilian elementary education is still in its early stages. Despite isolated initiatives, mainly in private institutions, there are marked inequalities in access to global opportunities in public schools, as well as structural limitations that hinder the implementation of sustainable policies.

It should be noted that this article is also based on the findings and reflections presented in the author's master's thesis, which focused on developing viable proposals for the internationalization of primary education based on her practical experience in higher education. This empirical foundation made it possible to identify patterns, institutional gaps, and opportunities for adapting international models to the Brazilian context.

One of the most significant findings was the lack of a consolidated strategic plan in the public school systems. Internationalization efforts, when they exist, are fragmented, with no coordination among levels of government and no specific regulatory framework for primary education. This finding was confirmed both by an analysis of official documents and by the field experience described in the master's thesis.

Based on the identification of the six key variables that are considered essential to the success of the internationalization process at the basic level, these dimensions made it possible to map out the strengths, limitations, and opportunities present in the current context. This figure illustrates the estimated level of institutional attention that these variables currently receive, based on a qualitative analysis of the collected data and the author's empirical experience. This analysis illustrates how these dimensions are prioritized within the institutional context, offering a clear perspective on the challenges and opportunities for strengthening internationalization in basic education. The results suggest that the most developed areas are institutional management (70%), followed by community participation (60%) and teacher training (50%). In contrast, the areas showing the least progress include the implementation of bilingualism (40%) and

economic viability (45%), which underscores the need for greater public investment and institutional innovation in these strategic areas.

Table 2 below summarizes the key findings, organized by each of the previously defined analytical categories.

Table 2

Key categories and main findings regarding the challenges of internationalization in Brazilian basic education.

Category	Key Finding
Public and Institutional Management	Lack of structured public policies for elementary education
Agreements and Networks	Lack of international coordination in public schools
Bilingualism	Limited presence, concentrated in private settings
Community Participation	High potential, but still underutilized
Teacher Training	Urgent Need for Training in Intercultural Skills
Feasibility and Financing	Lack of specific funding; reliance on external resources

Note. Adapted from [Title omitted for peer review]. Author (2025). Copyright 2025 by the European University of the Atlantic and empirical experience.

In addition to the gaps identified, specific proposals for action were identified based on the systematized experience with internationalization programs in higher education. These were adapted to the context of elementary and secondary education and gave rise to a preliminary model consisting of six interdependent structural components. Its purpose is to serve as a practical guide for schools interested in launching or strengthening internationalization processes in a context-specific manner. Table 3 details the components of this proposed model, its main objectives, and the suggested actions for its implementation.

Table 3

Components of the proposed model for internationalization in elementary and secondary education.

Component	Main Objective	Suggested Actions
Teacher Training	Training Teachers in Global and Intercultural Competencies	Continuing education courses, educational workshops, certifications
Political-Educational Project	Incorporating an international perspective into the school curriculum	Curriculum Review, Integration of Global Issues and the SDGs
Cooperation Networks	Establish partnerships with national and international institutions	Agreements, collaborative projects, school partnerships
Exchanges and Experiences	To promote contact with other cultures and ways of life	Virtual or in-person exchanges; participation in international trade shows and events
Community Participation	Involve families and community stakeholders in the development of the project	Extracurricular activities, cultural forums, open houses
Sustainable Financing	Ensure that resources are available to keep the process moving forward	Public funds, international cooperation, partnerships with NGOs and the private sector

The model is flexible and intended as a guide, allowing it to be adapted to different school settings. It is intended to serve as a practical and strategic guide for developing internationalization plans at the elementary school level, always taking into account the sociocultural, institutional, and economic context of each school.

Taken together, these findings confirm that, while there is growing recognition of the importance of internationalization in elementary education, significant barriers that limit its scope still remain. However, the existence of successful initiatives and the recent development of guiding frameworks, such as the National Parameters for the Internationalization of Primary Education (MEC, 2022), indicate that conditions are favorable for moving toward a more inclusive and sustainable policy.

Discussion and Conclusions

The findings presented in this study confirm that, although internationalization has been a priority in Brazilian higher education, it has not yet been adequately incorporated into primary and secondary education, particularly in the public school systems. This structural deficiency creates a significant barrier to children's and young people's access to comprehensive educational experiences, perpetuating the system's historical inequalities and limiting the school's social role as an agent of change.

An analysis of the key categories—institutional management, cooperation networks, bilingualism, community participation, teacher training, and financial sustainability—reveals a fragmentation of initiatives, a lack of specific public policies, and a reliance on isolated individual or institutional efforts. However, concrete opportunities are also emerging, especially when internationalization is viewed as a pedagogical, cross-cutting, and context-specific process that goes beyond academic mobility.

Consistent with the findings of Sahlin and Styf (2021), the failure to integrate internationalization into the institutional culture of schools leads to this process being viewed more as a peripheral project than as an essential component of school improvement. Their case study demonstrates that when internationalization is incorporated as a strategy for strengthening internal capacities, it not only impacts teachers' professional development and distributed leadership, but also enhances collaboration, pedagogical innovation, and teaching-and-learning processes. This perspective is particularly relevant in the Brazilian context, where public schools can and should be viewed as active agents in fostering global citizenship, rather than merely reproducing parochial or nationalist educational frameworks.

With regard to cooperation networks, the data show that these are virtually nonexistent among Brazilian public elementary schools. Unlike the models implemented in Finland, Canada, or Chile, where schools actively participate in formal international networks, in Brazil these initiatives are limited to isolated projects, which often lack continuity or alignment with educational policy initiatives (Sahlin & Styf, 2021). This disconnect highlights the urgent need to build platforms for international cooperation that are also accessible to public education.

With regard to bilingualism and the use of global curricula, significant disparities have been identified. While bilingualism is widely promoted in Brazilian private education, it remains the exception in public education. This limitation deprives students of access not only to a second language, but also to cultural, epistemological, and cognitive frameworks that would enable them to interact with the world more critically and effectively (Mataluna, 2023). The lack of curricula with a global perspective also limits

opportunities to integrate topics related to sustainability, human rights, peace, and the Sustainable Development Goals (SDGs).

Community participation is a strategic element, but one that is underutilized. Public schools, being deeply embedded in their local communities, have enormous potential to promote internationalization processes that are not only external but also internal, by valuing the cultural diversity present in their communities. This dimension, strongly emphasized by both Sahlin and Styf (2021) and UNESCO (2021), shows that internationalization should not be understood solely as a relationship with "the outside world," but also as a process of critical reflection on the community itself, its connections to the world, and its role in global citizenship.

One of the most critical issues identified is teacher training, a pillar whose fragility threatens the sustainability of the entire process. The research confirms that teachers' lack of training in global and intercultural competencies is one of the main barriers to the effective implementation of internationalization in basic education. This empirical finding echoes the early concerns of Knight (2004), who had already warned that, without an institutional commitment to faculty professional development, internationalization initiatives risk being merely cosmetic.

Along these same lines, as Mataluna (2023) and Sahlin and Styf (2021) forcefully argue, without a teaching staff that is well-prepared, aware, and committed to a global education, any attempt becomes a superficial and unsustainable effort. Therefore, education must go beyond the mere mastery of foreign languages. As suggested in the OECD's (2018) guidelines on global competencies, it is imperative to develop the ability to work with active learning methodologies, promote genuine intercultural education, address global problem-solving in the classroom, and use technology to facilitate international collaboration. The absence of this comprehensive approach, as noted, relegates internationalization to an unfulfilled promise in the context of public schools.

Ultimately, the technical, social, economic, and environmental feasibility of the process appears to be a constant source of tension. Although the literature and international experiences show that internationalization can be implemented even with limited resources—especially through internationalization at home, the use of technology, and virtual networks—in the Brazilian context, severe limitations persist in terms of funding, technological infrastructure, faculty workload, and the lack of clear and sustainable public policies (Mataluna, 2023).

Despite this complex assessment, the research identifies clear opportunities for progress. First, adopting a model that views internationalization as a comprehensive educational process—rather than a one-time mobility initiative—makes it possible to overcome many of the current barriers. This model, proposed based on a systematization of the author's empirical experience, is structured around six interdependent components: teacher training, review of political-pedagogical projects, creation of cooperation networks, implementation of exchanges (both in-person and virtual), involvement of the local community, and definition of funding strategies.

This approach is in line with the recommendations of Sahlin and Styf (2021), who demonstrate that when internationalization is linked to the development of internal capacities, schools not only improve pedagogically but also strengthen their social role as spaces for fostering global citizenship, equity, sustainability, and social justice. Furthermore, empirical evidence shows that internationalization, when properly implemented, acts as a catalyst for educational innovation, community cohesion, and teacher professional development.

Consequently, this research reaffirms that the internationalization of Brazilian primary and secondary education is not only feasible but also constitutes an ethical,

social, and pedagogical imperative. Its implementation can serve as a strategic vehicle for transforming public schools into spaces for educating global citizens who are critical thinkers, empathetic, and committed to building a more just, sustainable, and peaceful world. However, its consolidation urgently requires clear regulatory frameworks, adequate funding, ongoing teacher training, institutional support, and sustained political will at all levels of the education system.

Limitations of the Study

Among the limitations of this study is the lack of quantitative and systematic data on internationalization in Brazilian elementary and secondary education, particularly in the public school system. Furthermore, most existing studies focus on the university setting, which makes a direct comparison difficult. The qualitative and exploratory nature of this study also imposes limitations on the generalizability of its findings, although it provides a solid foundation for the design of educational policies and programs.

Proposals for Continuity

As a follow-up, it is recommended to conduct case studies in different regional contexts across the country, implement the proposed model in pilot schools, and evaluate the results in terms of its educational and community impact. It is also suggested that inter-institutional research networks be established to monitor successful initiatives and strengthen public policies that align internationalization with national curriculum frameworks and multilateral commitments, particularly the Sustainable Development Goals (SDGs 4 and 17).

In summary, the findings of this study confirm that the internationalization of Brazilian elementary education goes beyond the mere implementation of bilingual programs or cultural exchanges. As suggested, the data show that when guided by principles of equity and pedagogical responsibility, this process becomes a powerful driver of inclusion and global justice. This study, therefore, is not limited to an academic contribution; rather, it reaffirms the viability of an ethical and social project: that of transforming public schools into spaces for educating global citizens capable of engaging in dialogue, collaborating, and taking action in an interconnected world, while promoting peace, sustainability, and human rights.

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TEACHERS' AND STUDENTS' ASSESSMENTS OF THE TEACHING VOCATION AND ITS RELATIONSHIP WITH PROFESSIONAL PERFORMANCE IN EDUCATIONAL PRACTICE

VALORACIONES DE DOCENTES Y ESTUDIANTES SOBRE LA VOCACIÓN DOCENTE, Y SU RELACIÓN CON EL DESEMPEÑO PROFESIONAL DE LA PRÁCTICA EDUCATIVA

Fausto Agustín Figueroa Reyes
Universidad Pedagógica Nacional Francisco Morazán, Honduras
[ffigueroa@upnfm.edu.hn] [https://orcid.org/0009-0004-6834-5459]
Carlos Javier Ossa Cornejo
Universidad del Bío-Bío, Chile
[cossa@ubiobio.cl] [https://orcid.org/0000-0002-2716-2558]

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ABSTRACT

Teaching vocation is a fundamental element of educational practice and an essential factor for achieving quality in educational systems. However, its study and analysis have been minimized, diminishing the importance of identifying its development in teachers. The general objective of this study is to analyze the ideas that teachers and students at a teacher training center have about teaching vocation and how it relates to professional performance. This analysis will focus on the ideas of teachers and students at the Regional University Center of Juticalpa in Honduras. An exploratory qualitative methodology with a phenomenological approach was used. Data was collected through semi-structured interviews with teachers and students; the participants consisted of 90 teachers and student teachers. The student teachers agreed that motivation is fundamental for teachers, and that creating motivational spaces fosters a favorable environment for achieving the objectives of the educational process. This intrinsic and extrinsic motivation is related to the ethics that each teacher must demonstrate to achieve the expected performance. It is concluded that self-realization and a passion for teaching are the most outstanding pillars on which the vocation of each teacher is forged and consolidated, triggering internal processes that demonstrate results in the integral formation of young people and children.

Palabras clave:
vocación docente, formación del profesorado, desempeño docente, enfoque fenomenológico, análisis temático.

RESUMEN

La vocación docente se convierte en un elemento fundamental de la práctica educativa, es un factor imprescindible para lograr calidad en los sistemas educativos. Sin embargo, su estudio y análisis ha sido minimizado restando importancia en identificar su desarrollo en los docentes. Se establece como objetivo general analizar las ideas que poseen docentes y estudiantes de un centro formador de maestros

acerca de la vocación docente y cómo se relaciona con el desempeño profesional a través del análisis de las ideas que poseen docentes y estudiantes del Centro Regional Universitario de Juticalpa en Honduras. Se utilizó una metodología cualitativa exploratoria, esta metodología tiene un enfoque fenomenológico. Se realizó el levantamiento de información a través de entrevistas semiestructuradas aplicada a docentes y estudiantes; los informantes corresponden a 90 docentes y estudiantes profesores. Los estudiantes del profesorado formador coincidieron en que la motivación es fundamental en un docente, así como la generación de espacios motivacionales logra crear la inducción favorable para que se logre los objetivos del proceso educativo. Esta motivación intrínseca como extrínseca se relaciona con la ética que debe mostrar cada docente para tener un desempeño esperado. Se concluye con que la autorrealización y la pasión por enseñar son los pilares más sobresalientes en los cuales se forja y consolida la vocación en cada docente desencadenando procesos internos que demuestran resultados en la formación integral de jóvenes y niños.

Introduction

Historically, the teaching vocation has been viewed as one of the main pillars underpinning the work of teachers; it is a key element in ensuring quality education, especially in contexts marked by challenges and socioeconomic and educational inequalities. In the 21st century, teaching has undergone a profound transformation, shifting from a purely technical approach to the implementation of reflective practice that centers on the holistic development of the student as the core of the teaching and learning process. This transformation has made it clear that the teaching vocation should not be limited to an abstract desire or cultural heritage of peoples; rather, the teaching vocation is a living experience that is strengthened and demonstrated throughout the training process and is subsequently put into practice in professional work, leading to personal and institutional achievement (Torres, 2023).

The Honduran education system has failed to educate young people and children in line with expected educational progress; enrollment rates and educational quality have not been sufficient to improve the living conditions of the country's inhabitants; Studies show that there has been a decline in the quality of national education over the past few decades, a trend that has worsened, as stated in the ASJ report (2022), which details that no improvements have been made in educational teaching processes over the past four years; on the contrary, teacher performance has declined, affecting the education of young people and children entering the various grades and levels of the educational system. Furthermore, teachers' motivation and competencies have been underestimated in educational assessments and studies in Honduras, as no research has been conducted that focuses specifically on these aspects of teacher training in the country.

Understanding the importance of teachers' sense of vocation and its relationship to performance will help improve the quality of education because the effective use of human resources has an impact on educational success; these factors, which are interrelated with teacher performance, will lead to students' comprehensive achievement and educational improvement, reflected in higher standards in national education; furthermore, the importance of vocation as a factor in teacher performance will ensure that we have teachers who are highly committed to the education and instruction of children and young people, leading to significant improvements in national education and, consequently, in the quality of life of Honduran society.

A systematic search for articles related to the teaching vocation reveals that, in Latin America, results from platforms such as Scielo and Ciencias Latina show that the countries with the highest output of published articles are Mexico, with approximately 300 articles; Colombia, with 100 published articles; Chile, with 200 articles; and several other countries, such as Costa Rica, Uruguay, Venezuela, and Ecuador, where the number of articles on the teaching vocation does not exceed one hundred. At the national level, a review of various sources at the main national research centers revealed only three articles addressing the topic of the teaching vocation; most of the studies conducted were quantitative in nature and did not focus on the qualities that teachers demonstrate as necessary for practicing this profession.

The few studies found refer to quantifying classroom resources without focusing specifically on the intrinsic qualities of teachers; in various studies, the teaching vocation is often confused with teacher identity or job motivation, and it must be understood that vocation refers to that passion and love for the development of educational practice. Therefore, this study is established as an initial stage of analysis with an exploratory approach to begin investigating this topic in the country, carried out at the teacher

training institution so that its results can later serve as a basis for understanding what occurs in other educational institutions, allowing for the extrapolation of findings to the entire country through further research. This research will serve as a starting point that will positively impact other regional schools, leading to the formulation of comprehensive intervention proposals.

In light of the foregoing, it can be noted that, at the national level, there is insufficient evidence to support a meaningful analysis of teaching vocation and its relationship to the professional performance of teachers.

In Honduras, it is unclear how the teaching vocation is valued and developed in university education, given that this element represents an essential pillar of teachers' comprehensive training; various factors limit its proper development. It is noted that teachers lack passion and love for the teaching profession (ASJ, 2024), which negatively impacts students' education, limits their performance in the classroom, and prevents the achievement of educational quality; however, the issue has not been explored in great depth.

It is therefore necessary to conduct an analysis to determine whether teachers possess the necessary qualities to carry out this important work, starting with an essential element such as vocation, since it is a key factor in a teacher's commitment, passion, and dedication to the education of children and young people. It is a vital profession in society; According to García (1999), "not everyone is cut out for this profession, contrary to what is so often believed; one must have the right personal profile" (p. 436).

In 2004, Honduran education authorities implemented a series of changes aimed at modernizing the obsolete and traditional national education system at all levels. The National Basic Curriculum was launched, with its main goal being to transform traditional teaching methods and establish an education system based on the constructivist model; This evolution responds to current social changes that demand a more timely and comprehensive education for the individual, equipping students with knowledge complemented by skills and abilities so that they can interact effectively in their learning process, thereby preparing the kind of individuals sought by the globalized educational and labor markets.

In the 21st century, society underwent a transformation toward globalization, reflected in a technological and knowledge-based society. The demands placed on inclusive educational systems created challenges for teachers. Reforms were implemented in Latin American educational systems that adopted active and participatory teaching methods, and educational legislation was part of this transformation process by adopting a national curriculum based on constructivism. Under this approach, the student's role is transformed by placing them at the center of the teaching and learning process. Students cease to be passive recipients and become the primary agents of the educational process, where they draw upon their prior knowledge to complement it with new information, creating spaces for reflection that lead to meaningful learning. This establishes an education based on learning by doing.

The introduction of constructivism into classrooms presented an opportunity for the education of future generations to be reflected in quantitative and qualitative changes that would position the educational system as one capable of preparing students to compete in this globalized world; however, 20 years after its implementation, it is evident that the changes expected from the adoption of a methodology designed to educate students holistically have not been substantial.

Recent research studies conducted in Latin America have shown a decline in the vocational commitment of new teachers and students in various teacher-training programs, raising alarm and concern about the effectiveness and efficiency of education

systems and the achievement of standards that promote quality in education (Ponce, 2025). In Honduras, the most recent curriculum reform implemented by the Ministry of Education dates back to 2004; despite the changes that have been made, challenges related to teacher identity, motivation, and retention in the teaching profession continue to pose obstacles in the Honduran education system (Ministry of Education, 2024).

There are various factors that influence the choice of a teaching career as a lifelong profession; these factors can be either extrinsic or intrinsic, such as family influence, socioeconomic conditions, personal interests, or the lack of other alternatives. However, the discovery of one's vocation during the formative process is a topic that has received little attention from a phenomenological perspective (Fernández et al., 2024).

The most recent studies in education highlight the need to understand, from the perspective of future teachers, how they view their training, the conditions they encounter in the workplace, and the predominant social role of teachers in society. This understanding of the reality of teaching influences job performance, emotional well-being, and retention in the profession (Carrera et al., 2024). If these aspects are not analyzed in depth, teaching performance may be misunderstood from a purely technical perspective, without recognizing that it is closely linked to the real-life experiences gained through professional development and the emotions that shape an educator's identity.

Vocation as a Teacher

From a contemporary perspective, the teaching vocation can be defined as a dynamic construct that reflects a passion and love for teaching, an ethical commitment, and a sense of identification with the profession that shapes all other professions. It is not understood from a natural, innate perspective, but rather as a day-to-day process shaped by the desire to teach within a social, institutional, and personal context (Ponce, 2025).

Formal education begins with the instruction provided in elementary school, where teachers are responsible for academically preparing the children who will be the future of the country. But what happens when a teacher lacks the necessary skills to instill in children a love of learning? This is when academic development exhibits visible deficiencies; these weaknesses manifest as poor teaching practice or didactogenia, which, according to Cukier (1996), is defined as "the negative influences caused by inadequate teaching" (p. 228).

Teachers must be agents of change—individuals who become transformers, whose educational practice focuses on bringing about meaningful changes in each student. They must carry out their work with the goal of equipping students with the tools necessary for a holistic education. According to Prieto (2010), teachers today fulfill various roles, including "instructor and subject matter specialist, educator, problem solver, mediator in conflict situations" (p. 330). This requires proper preparation to leave a positive mark on each young person and address the didactogenic issues that so greatly affect students' educational development.

When a teacher shows shortcomings in their teaching methods or in fostering a love of learning among their students, it becomes necessary to investigate which factors are preventing the expected outcome from being achieved; In this regard, Velásquez (2017) found that a calling to teaching influences a teacher's ability to achieve a fulfilling professional life, resulting in greater motivation in their work, which positively impacts the quality of teaching and student learning.

The following is a review of research addressing the importance of a calling to teaching in the teaching process and how this formative aspect is necessary for achieving educational quality among students.

Among the research studies on the importance of a calling to teaching for achieving quality in the teaching-learning process, Herrera et al. (2023) stand out through their study titled "Professional Identity and the Calling to Teach." Herrera set out to determine the relationship between professional identity and the calling to teach at the elementary school level; This study proposes maintaining or enhancing the teaching vocation as a viable measure for achieving higher educational quality from the earliest years of schooling. At the conclusion of this study, it was concluded that

Professional identity is closely linked to the teaching vocation, and it is of the utmost importance that the teachers surveyed strengthen their identity in order to maintain or enhance their vocation, thereby providing a quality educational service that meets the expectations of Peruvian society and contributes to its comprehensive development. In a fragile context, a calling becomes an act of hope, in which the teacher becomes an agent of change and is seen as a leader capable of bringing happiness to those around them. Therefore, there is a need for professionals with strong ethical principles who work not only in the realm of knowledge. (Herrera et al., 2023, p. 114)

This highlights the need to foster a sense of vocation among teachers in order to achieve greater empowerment and a sense of belonging in their educational work, using professional identity as a starting point—which will serve as the catalyst for improving the quality of teaching.

Similarly, Enríquez (2018) conducted a study on teaching vocation and professional performance that focused on analyzing the relationship between teaching vocation and professional performance, concluding that there is a relatively strong correlation between teachers' sense of vocation and their professional performance; This relationship manifests itself in the acquisition and prevalence of psychological and social characteristics that significantly impact educational work and the achievement of the objectives and expectations of the educational process.

Similarly, Gómez (2019) conducted the study "Teacher Reflection as a Strategy for Acquiring Practical Knowledge: Supervision Interactions in the Practicum." The general objective of this study was to describe professional practice based on the motivations and challenges perceived by student teachers, as well as to determine what student teachers learn during their training that enables them to reflect on their work. At the conclusion of this study, Gómez concluded that student teachers observed more positive than negative incidents during their reflection on their own practice, both when working with a peer and with a mentor. This is because, during reflection on a teaching experience, it is easier to discuss motivations than the challenges encountered, since student teachers lack sufficient training to critically reflect on more abstract aspects of the session, relying instead on superficial ideas.

In addition, Sánchez et al. (2021) conducted a study on "How do teachers understand their calling?" Implications of the perceived vocation in the teaching profession, with the findings showing that the perceived vocation, from the participants' perspective, is influenced by various educational role models from childhood and adolescence, which encourage them to choose a career in teaching as their primary option in their academic and professional development. The participants indicated that this sense of vocation was present at the outset and throughout the course of their professional careers. That is why new questions or research topics may arise here, such as: Is a calling necessary to be a teacher? Is a calling something innate? And so, the age-old debate: Is a vocation "innate or acquired"?

Continuing with the research background, Camacho (2023) conducted a study on the teaching vocation and attitudes toward research among education students at a national university in Metropolitan Lima. The main objective was to determine the

relationship between the teaching vocation and attitudes toward research. The study concluded that there is indeed a significant relationship between the teaching vocation and attitudes toward research, This is fundamental to understanding that teaching is a process of constant professional development; teachers must continually research methods, strategies, techniques, and ideas necessary for implementation in their teaching practice. This reinforces the assertion that a calling to teach is essential for the training and development of the teaching profession.

At the national level, the evidence points to weaknesses in research on teacher education with regard to the teaching vocation. Notable among these are the studies by García (2008) and Rivera (2014), who set out to determine whether students' academic performance is linked to their motivation during the educational process. They concluded that teacher preparation is essential for understanding student behavior in each educational process; This preparation is strongly linked not only to the strategies teachers employ but also to their intrinsic qualities—whether they demonstrate motivation and possess the necessary skills to perform their duties. This latter element is linked to the teaching vocation required for proper educational induction at all levels.

Teaching Vocation and Professional Performance

Furthermore, teaching performance demonstrates the efficiency with which educators carry out their duties, both in the development of knowledge and in instructional and methodological planning, with the aim of contributing to the achievement of educational objectives and the promotion of educational quality. Yaranga-Rodríguez & Yaranga-Rodríguez (2024) define it as the essential factor in educational quality, resulting from the integration of instructional planning, pedagogical implementation, assessment, and professional development.

A teacher's professional performance encompasses a series of competencies that are demonstrated in the classroom, including elements such as teaching methodology, lesson planning, and interactive strategies designed to achieve positive outcomes. Moreno (2023) states that teachers who are truly dedicated to their calling tend to demonstrate stronger performance. As a result, they are willing to innovate, reflect on their practice, and improve processes to enhance teaching.

Recent research has shown that a sense of vocation in teaching has a direct impact on job performance. Torres Hernández (2025) demonstrated that teachers with a stronger sense of vocation reported greater satisfaction with their work, which was reflected in lower levels of emotional exhaustion and improved effectiveness in their work.

Finally, the teaching vocation is not a category isolated from teaching performance; its influence is significant because it creates opportunities to promote reflection and action. Strengthening the teaching vocation will lead to better performance, and it must be fostered from initial training through professional practice (Morales, 2025).

Method

This study was an exploratory qualitative study, according to Hernández and Mendoza (2023). In this type of research, "exploratory studies are conducted when the objective of the study is to examine a research topic or problem that has been little studied, about which there are many uncertainties, or that has not been addressed in greater depth before." (p. 358). It is well-suited because it allows us to describe phenomena from a qualitative perspective, understanding the phenomenon throughout

its entire process; in this way, it enables us to understand and, at the same time, reflect on the behavior of the elements under study.

The research design is a phenomenological study. According to Hernández and Mendoza (2023), "its main purpose is to explore, describe, and understand people's experiences with regard to a phenomenon and to identify the common elements of those experiences" (p. 493). This study employed a phenomenological design because it focused on understanding the essence of lived experiences related to the teaching vocation; its significance lies in exploring how teachers perceive the value of the teaching vocation and its influence on educational quality; This study does not aim to quantify how many teachers and students feel they have a calling, but rather to understand, from the perspective of the study participants, the meaning of vocation and how it influences educational quality and practice. In this type of study, the focus is on subjective experience; this is identified from the outset and may vary depending on human experience. "It can encompass exceptional events, but also routine and everyday occurrences" (Hernández & Mendoza, 2023, p. 493).

Phenomenological qualitative research seeks to understand participants' accounts of the phenomenon under study based on their prior experiences; it focuses on understanding the impact that event has on human development, emphasizing the changes or modifications in behavioral patterns that have been achieved.

Why is this research qualitative? The qualitative approach is adopted because it allows for an exploration of essential aspects of teaching—aspects that require interpretation from the perspective of qualities rather than quantification—taking into account the importance of teaching from the perspective of actions.

Population and Sample

For the purposes of addressing the central theme of this research, the study population consists of 90 teachers and students from various teacher-training programs in 2025 in the following degree programs: Social Sciences Teacher Education, Spanish Language Teacher Education, English Language Teacher Education, and Elementary Education—the program includes teacher educators from each of these specializations.

A non-probabilistic, purposive sample was defined because 54 participants—including both faculty and students from teacher-training programs—were selected to be representative of the degree programs, and a random sample was defined because the individual participants will be selected at random. Furthermore, the relationships identified correspond to perceptions and meanings constructed by the participants, which helps prevent undue generalizations in the research process.

Data Collection Procedures

Semi-structured interviews were used as the data collection method because they offer the interviewee greater freedom and autonomy and enrich the study by yielding reliable data. This instrument was adapted from the National Institute for the Evaluation of Education (INEES) (2015), which was developed as part of a report on teachers' perspectives on the factors that influence their performance; it was validated by five specialists holding doctoral degrees who are experts in research and teacher education. The categories of analysis and indicators related to the topic under study were based on an adaptation of indicators from Cabarcas and Contreras (2019) and Vásquez (2020), which were also analyzed in the expert review.

Data Analysis Procedures

Data analysis was conducted using open-coding and axial coding processes, which, according to San Martín (2014), allow for the identification of concepts and relationships among the categories obtained during coding; this relationship is determined by the properties and dimensions of the subcategories and categories to be linked, bearing in mind that "a category represents a phenomenon—that is, a problem, an issue, an event, or an occurrence—that is defined as significant to the interviewees" (Strauss and Corbin, 2015, p. 137).

Ethical Procedures

The research was reviewed by the ethics committee of the Universidad Internacional Iberoamericana in a document dated July 19, 2024. In addition, an informed consent form was included, requesting participants' authorization to collect data, record audio, take photographs, and do whatever else is necessary to enhance the research. The identities of the individuals involved, as well as their ideas and opinions, were kept confidential; in the data analysis, the informants and their opinions were assigned numerical codes.

- The information was protected through confidentiality measures; the names and characteristics of the participants are not disclosed.
- Attached to the data collection instruments is the informed consent form, which requests participants' authorization to collect data, record audio, take photographs, and do whatever else is necessary to enrich the research.
- This research protects the intellectual property of the authors who provide the theoretical basis for the study and includes a section listing the bibliographic references used.
- The identities of those involved, as well as their ideas and opinions, will remain confidential. In the data analysis, the informants and their opinions will be numerically coded.
- Participants will have access to the information collected in order to verify the accuracy of the information provided.

Results

In the open coding established in this study, teaching vocation and factors influencing teaching performance were considered as categories of analysis; in the axial coding, it was found that teaching vocation is understood as a fundamental and necessary link between the personal goals that teachers express and the shared demands of their work in the classroom. In the research dimension, it is concluded that the motivation demonstrated by teachers and the personal satisfaction associated with self-actualization are not understood solely as an intrinsic feeling within each teacher; rather, these aspects grow when teachers find real and fulfilling meaning in the constant pursuit of becoming better professionals, through deep and sincere reflection combined with the creation of knowledge that extends beyond the classroom: ""My vocation also drives me to keep learning and give my best to my students" (informant 4, personal communication, 2025) and "It is an internal motivation that drives me to want to share knowledge, inspire others, and contribute to the personal and academic development of my students" (informant 51, personal communication, 2025).

The ideal of being a teacher involves adapting to changes and the evolving demands of educating people, especially at a young age—aspects that are inherent to the profession, such as ongoing professional development, the use of teaching methods that

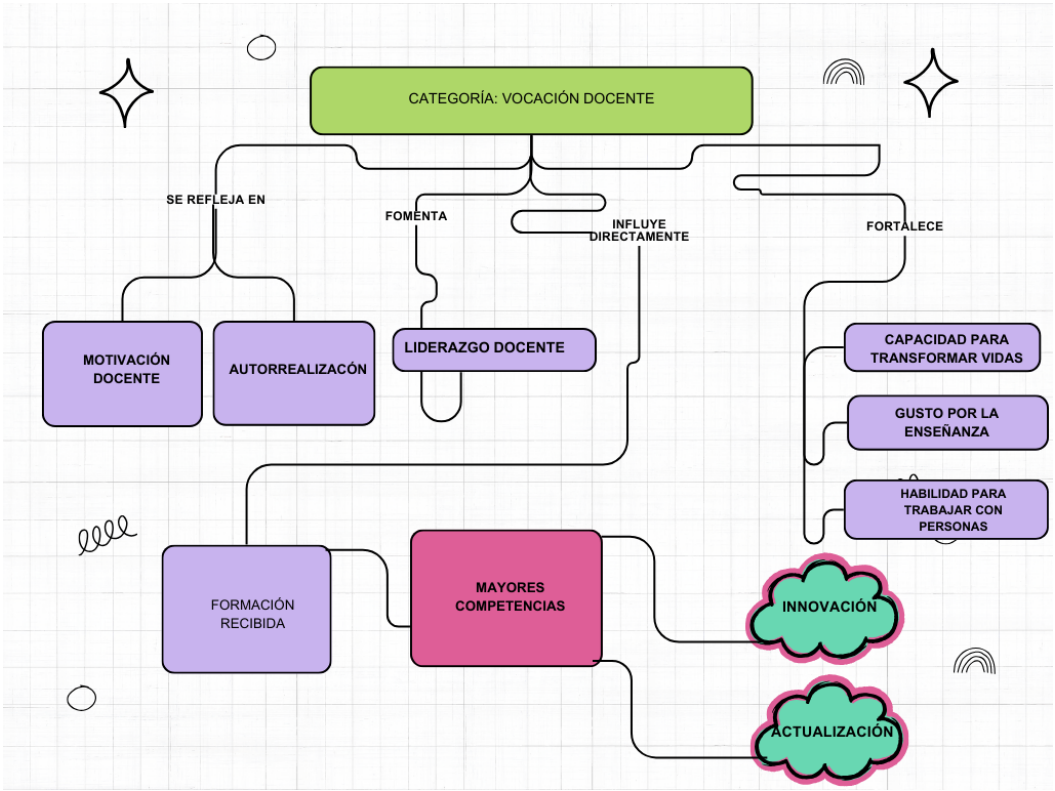
bring about substantial change in students' learning, and the continuous professional development that teachers must pursue to be more effective in their practice. This demonstrates that the teaching vocation is not something fixed or static, but rather a dynamic, flexible path that is strengthened day by day with the goal of improving the quality of teaching. In this regard, it is clear that the quality of a teacher's work depends greatly on the level of dedication they demonstrate; based on this, the quality of education improves. The academic team confirmed that initial training and professional development are solid foundations for a teaching vocation, as they enhance both teachers' confidence in their work and the quality of learning they facilitate for their students. A teacher with a strong sense of vocation will be able to respond to the challenges that arise in the classroom: "It's also a matter of classroom management, because conflicts arise, and through those conflicts, one teaches what values are" (informant 4, personal communication, 2025).

A calling is nourished by real-life experiences in teacher training that enable educators to be more innovative and proactive in adapting to and responding to various challenges in their environment; this reinforces the link between a calling to teach and professional performance. It is also confirmed that a teacher who loves and values their profession and demonstrates a calling never stops learning; they are always willing to improve, stay up to date, and innovate, strengthening their pedagogical identity through continuing education: "Learning about different pedagogical approaches has motivated me to innovate and keep my passion for my work alive" (informant 45, personal communication, 2025). Finally, in the social dimension, it was found that the teaching vocation goes beyond the purely individual level and the nature of the work itself; it manifests itself in a commitment to the educational community and to the society that surrounds the teaching and learning process, and is reinforced by the promotion of values of solidarity and the pursuit of social equality in education, as stated by Informant 1: "Teachers are not only there to impart scientific knowledge but also to teach aspects that will help students thrive in society, in their families, and elsewhere" (personal communication, 2025).

From the above, it is clear that a commitment to teaching in all its dimensions is part of a holistic approach to developing teachers as agents of change in personal, social, and collective reality, thereby contributing to the improvement of social development. A vocation is not something one is born with, but rather the result of a process of creation and interaction with one's environment, society, and peers; it is complemented by training and the need to make a meaningful contribution to society. It is not merely about performing a job, but about leaving a legacy that will endure in the minds and across the generations of a nation.

The following is a summary outline of the "teaching vocation" category:

Figure 1
Category summary: Teaching Vocation



By summarizing the category of teacher performance factors, we can understand that a teacher's vocation is not a construct that arises spontaneously; rather, it is a virtue that is forged through the development of personal skills, abilities, and attitudes. The social and educational context is a necessary factor in shaping a teacher's professional identity. On a personal level, the results indicate that self-confidence, the ability to understand and empathize with others, a personal commitment to becoming a better teacher every day, enthusiasm for teaching, and the teacher's ability to overcome the challenges that arise in the teaching profession are fundamental, in addition to empathy, which is essential for understanding the teaching profession from the perspective of educating with integrity and responsibility, as Informant 45 put it: "A good teacher is not limited to what they already know, but seeks to improve day by day to respond to the changing needs of their students" (personal communication, 2025).

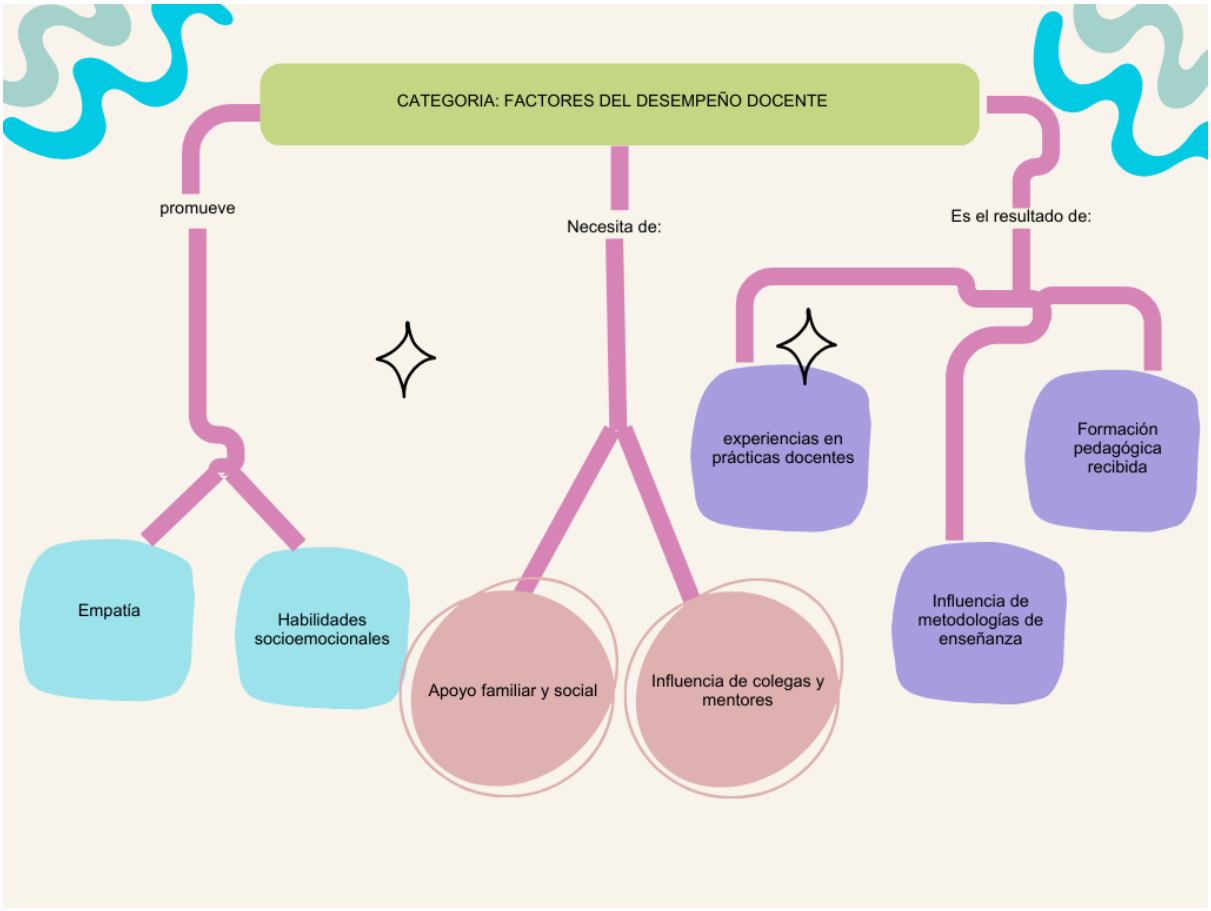
These results confirm that education is not an isolated, disconnected activity; rather, it draws on experience and the interactions with the environment surrounding the educational process. Academically speaking, it has been confirmed that teaching practicum experiences strengthen effective teaching practices; the pedagogical training received serves as the foundation upon which teachers' work is built, providing a solid basis that reinforces classroom instruction. Informant 15 highlights the importance of observing different teachers and adopting the best practices from each one: "Everyone has their own way of teaching, and I try to take the best aspects of each teacher and incorporate them into my own teaching style" (personal communication, 2025).

Thus, teaching is understood as a process of constant learning—a process of reflection, action, and continuous interaction that requires willingness, innovation, and critical thinking. In summary, the results in this category show that the factors influencing teacher performance are diverse and combine to shape a strong, adaptable teaching vocation oriented toward social change.

The following is a summary diagram of the "Teacher Performance Factors" category:

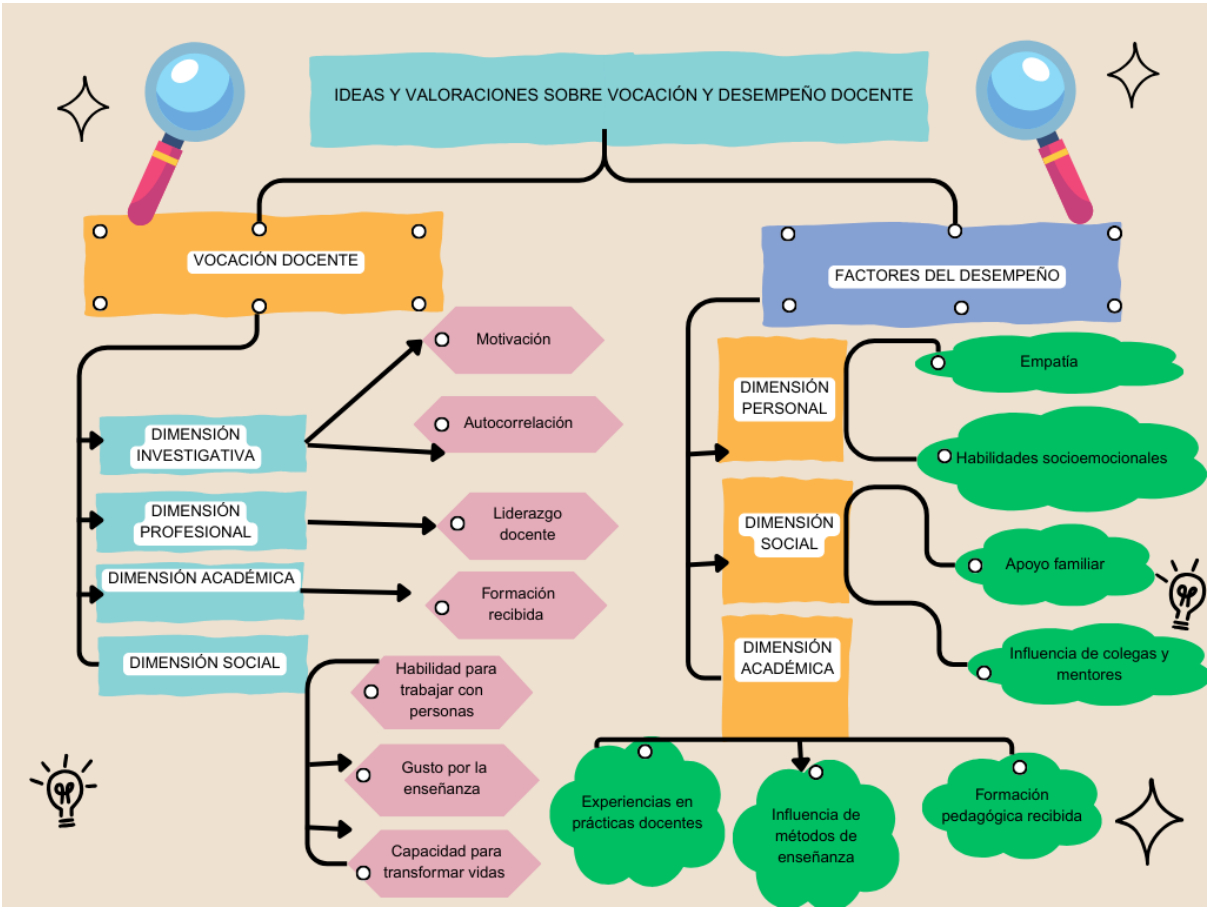
Figure 2

Category summary: factors affecting teacher performance



Finally, the following is a summary overview of the analysis of the categories. It provides a concise presentation of the results found across the categories, dimensions, and indicators; it serves as an executive summary of the findings from the interviews conducted with 54 participants, including teacher educators and students in the teacher-training programs at the Juticalpa Regional University Center of the Francisco Morazán National Pedagogical University.

Figure 3
General overview of the categories



Discussion and Conclusions

The findings are presented as a profound result of the interaction between vocation and teaching performance. According to García et al. (2023), in initial teacher education contexts, teacher self-actualization is driven by three main factors: an emotional connection to teaching, social recognition of the role, and alignment between personal values and pedagogical practice.

Self-actualization is valued not only as the satisfaction of achieving academic goals, but also as the constant reaffirmation of establishing a life purpose. This is supported by recent literature, in which authors such as Villalobos Vergara (2022) point out that self-actualization in teacher education increases professional commitment, improves resilience in the face of adversity, and strengthens the capacity for pedagogical innovation.

In short, the personal and professional fulfillment that stems from a calling to teach not only strengthens their commitment to teaching but also serves as an endless source of motivation and resilience. This sense of satisfaction, which is renewed with every meaningful experience, strengthens the connection between personal identity and the role of a teacher, thereby fostering a richer and deeper understanding of the phenomenon under study.

With regard to the professional dimension, it is evident that teaching leadership is understood as a commitment that goes beyond the purely academic, as it reveals how a

sense of vocation influences the way future teachers conceive of educational leadership. According to Mendoza Laz et al. (2025), vocation-based management fosters motivation and mutual respect, leading to more meaningful learning.

Professional development for teachers is presented as an ongoing process that is closely linked to one's calling. According to the Costa Rican Ministry of Public Education (2025), career guidance should be adapted to educational contexts and meet the needs of students.

With regard to teacher performance, in line with Ainscow and Messiou (2023), cited in Morales (2025), the accounts show that, in terms of the social dimension, teachers with a strong sense of vocation act as agents of social change by including students at risk of exclusion and providing them with support beyond the classroom, thereby contributing to the students' holistic development.

These accounts reflect the findings of Mu et al. (2024), who argue that teachers' self-efficacy affects motivation, resilience, and classroom climate. These findings confirm that confidence in teaching is a driving force behind future teaching performance. According to Llorent et al. (2024), teachers with stronger social-emotional competencies are able to create more inclusive environments with higher levels of trust and learning.

In summary, in line with this, Vásquez (2024) emphasizes that communities of teaching practice promote professional development by fostering the exchange of knowledge and strengthening pedagogical identity.

Furthermore, from an academic perspective, it is shown that teacher performance is not an isolated outcome, but rather a comprehensive formative process influenced by professional development, educational practices, pedagogical training, learned methodologies, and perceptions of educational quality. The testimonials show that students view these experiences as essential to solidifying their commitment to teaching and to establishing themselves as leading professionals capable of responding to current and ever-changing educational contexts.

Conclusions

1. The teaching vocation is understood as the most decisive factor in educational practice; it is the central axis around which the other elements of the educational process interact, since participants recognize that motivation, pedagogical identity, and ethical commitment determine the way in which teaching is carried out.
2. Teacher performance is based on personal and professional factors related to the teaching vocation; the most notable of these are self-efficacy, empathy, and social-emotional skills, all of which directly influence the quality of teaching.
3. The relationship between vocation and teaching performance is dynamic and reciprocal: a sense of vocation among teachers drives continuous professional improvement; at the same time, successful and effective teaching performance reinforces the sense of vocation among current and future teachers.
4. Initial teacher training provides a necessary space for both practicing teachers and teacher-candidates to solidify their vocation and professional performance, as it allows them to integrate personal motivations linked to pedagogical competencies into the development of their professional identity.

Limitations

In any research process, limitations arise that hinder the theoretical and data collection phases. In this research process, the main limitations include limited access to studies related to the topic at hand that are specific to the local context, and the fact that the analysis of the teaching vocation in the country has not been prioritized, which makes it difficult to establish a starting point for understanding the local background of the research.

In addition, there were challenges in reaching some participants in person; in some cases, it was not possible to conduct a face-to-face interview, so the interviews were conducted via email and social media. This required adjustments to the data collection plan, including rescheduling the interviews and focus groups.

Finally, given the subjective nature of the data, it is not possible to generalize to all teachers in the country. This study was conducted at the Juticalpa Regional University Center of the Francisco Morazán National Pedagogical University, located in northeastern Honduras, which means that the statements, perceptions, assessments, and experiences expressed in this study reflect the specific situation of teacher education in this locality; therefore, they cannot be generalized to the entire country; therefore, the findings should be interpreted as a situated and localized analysis; they are not universal observations or conclusions that apply to the entire country and cannot be applied to all educational contexts in Honduras.

Proposals for Continuity

First, it is suggested that a study be conducted to advance analysis at the national level, involving teacher training at the country's various regional centers, This line of research will allow for a comparison of the findings obtained at the Juticalpa Regional University Center of the Francisco Morazán National Pedagogical University with those from other regions of the country, with the aim of identifying unique characteristics, differences, and similarities, thereby generating patterns that converge in relation to the country's educational and sociocultural contexts.

This would provide an overview of how the teaching vocation is perceived and how it influences teacher performance, while also generating insights that can be shared with the country's educational decision-makers for implementation in national educational curricula and teacher evaluations, and that can be useful in designing educational proposals and policies that promote the teaching profession in Honduras.

Second, it is suggested that a course of action be developed to conduct research focused on observing teaching and learning practices in the classroom, identifying educational practices that demonstrate, through action, how educational processes shaped by the teaching vocation are applied. It is important to conduct a study that goes beyond the discursive level by adopting an approach that allows for the observation of vocational elements within educational practice. In this way, we can develop a pedagogical bridge between theory and practice, fostering a pedagogical connection through teaching work to understand how teachers apply their vocation, thereby highlighting their educational and formative experiences.

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THE IMPULSA WORKSHOP-PROGRAM: A CASE STUDY OF DIVERSE GROUPS AT RISK OF SOCIAL AND LABOR EXCLUSION

EL PROGRAMA-TALLER IMPULSA: UN ESTUDIO DE CASO CON PERFILES DIVERSOS EN RIESGO DE EXCLUSIÓN SOCIOLABORAL

Magdalena Suárez Ortega
Universidad de Sevilla, Spain
[msuarez@us.es] [https://orcid.org/0000-0002-0188-3074]
Carolina Romero-García
Universidad de Sevilla, Spain
[cromero@us.es] [https://orcid.org/0000-0001-9766-4599]
José Manuel Trujillo
Universidad Pablo de Olavide, Spain
[jmtrujillo@upo.es] [https://orcid.org/0000-0003-1772-0285]
Ana Fernández-García
Universidad Nacional de Educación a Distancia, Spain
[anafernandez@edu.uned.es] [https://orcid.org/0000-0002-7600-8768]

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ABSTRACT

Introduction. The current labour market is characterised by dual dynamics that exacerbate barriers to social and labour market exclusion, making training and career guidance a social and ethical responsibility, which is particularly relevant in certain contexts and for vulnerable groups. These groups have needs relating to improving the self-management of their professional careers and employability, which must be met through comprehensive training and career guidance programmes and initiatives. Consequently, this study analyses the implementation and subjective impact of the Impulsa workshop programme. Method. Adopting an interpretative approach, a mixed-method case study design was employed, involving nine service users from a social organization. Discourse analysis of individual and collaborative resources (forum, chat, support networks and focus groups) was combined with a questionnaire ad hoc on perceived impact. Results. The results highlight the importance of methodological and technical support in ensuring the accessibility and effectiveness of the intervention; as well as the role of external validation and recognition from the wider community, which emerge as decisive factors in the development of identity and the transformation of professional and life trajectories. It was also found that collaborative resources demonstrate their value as ecosystems of mutual support, strengthening self-efficacy, a sense of belonging and the development of collective strategies, in the face of professional and social isolation. Discussion/Conclusions. Despite the exploratory nature of the findings, significant improvements have

been observed in career self-management and risk-taking and career difficulties. Highlighting the potential for transfer of the CPC Model (Building My Professional Career, Sánchez y Suárez), which forms the theoretical basis of the workshop-programme implemented.

RESUMEN

Palabras clave:
exclusión sociolaboral, programa-taller *Impulsa*, formación y orientación profesional, empleabilidad, estudio de caso

Introducción. El mercado laboral actual presenta dinámicas de dualidad que intensifican las barreras de exclusión sociolaboral, situando la formación y orientación profesional como una responsabilidad social y ética, especialmente relevante en contextos y para colectivos vulnerabilizados. Estos presentan necesidades para la mejora de la autogestión de la carrera profesional y la empleabilidad, que deben ser cubiertas mediante programas y acciones integrales de formación y orientación profesional. En consecuencia, este estudio analiza la aplicación y el impacto subjetivo del programa-taller *Impulsa*. *Método*. Desde un enfoque interpretativo, se aplica un diseño mixto de estudio de caso, con la participación de nueve personas usuarias de una entidad social. Se combinó el análisis discursivo de recursos individuales y colaborativos (foro, chat, redes de apoyo y grupos de discusión) con un cuestionario *ad hoc* de impacto percibido. *Resultados*. Los resultados destacan la relevancia del soporte metodológico y técnico para garantizar la accesibilidad y eficacia de la intervención; así como, el papel de la validación externa y el reconocimiento del entorno, que emergen como elementos decisivos para el desarrollo de la identidad y la transformación de las trayectorias profesionales/vitales. Se detecta también que, los recursos colaborativos demuestran su valor como ecosistemas de ayuda mutua, fortaleciendo la autoeficacia, el sentido de pertenencia y la construcción de estrategias colectivas. *Discusión*/C*onclusiones*. Pese al carácter exploratorio de los hallazgos obtenidos, se concluyen mejoras significativas en la autogestión de la carrera y en el afrontamiento de riesgos y dificultades. Se destaca el potencial de transferencia del Modelo *CCP (Construyendo Mi Carrera Profesional, Sánchez y Suárez)*, que está en la base del programa-taller aplicado.

Introduction

The current labor market situation is characterized by a duality that exacerbates the gaps and barriers to social and labor market inclusion (World Economic Forum, 2025). According to data from the National Institute of Statistics (INE, 2025), although the overall unemployment rate stands at 11.21%, pockets of structural vulnerability persist, disproportionately affecting specific groups (particularly young people, adults, and women, with unemployment rates of 25.5%, 9.20%, and 12.54%, respectively). Given this situation, there is now an inescapable social and ethical responsibility to provide support and guidance for individuals' career development and employability, especially for those in vulnerable situations (Hooley et al., 2021). All of this is in line with the Sustainable Development Goals (United Nations 2030 Agenda, 2015) (SDG 8: Decent Work and Economic Growth, SDG 5: Gender Equality and SDG 10: Reducing Inequalities), and employment, social, and vocational training policies. This support is based on: a) Law 3/2023, of February 28, on Employment, which promotes equity in access to decent work and establishes the right to personalized career guidance; b) Law 15/2022, of July 12, on Comprehensive Equal Treatment and Non-Discrimination, which calls for the elimination of social and labor barriers faced by the most disadvantaged individuals; and, c) Organic Law 3/2022, of March 31, on the Organization and Integration of Vocational Training, which supports this vision. Consequently, career guidance is promoted as an essential service starting at an early age, and regulations establish an integrated training model that prioritizes guidance.

However, the scientific literature points to the persistence of a gap between the regulatory framework and the operational reality of public employment services, highlighting structural limitations that create tensions in their practice (Echeverría and Martínez-Clares, 2024). This situation makes it difficult to provide a response that is tailored to the population's actual needs. The fact is that education and career guidance cannot be viewed solely as the transfer of technical knowledge. Rather, and above all, priority should be given to a comprehensive and holistic approach that fosters the development of life skills, personal autonomy, and social and labor market inclusion (Savickas, 2013). This proposal encompasses career development, employability, and professional performance; therefore, action frameworks are needed to enable individuals to manage change throughout their professional and personal lives (Anonymous, 2025). In this vein, the CCP Model (Building My Professional Career) (Sánchez-García and Suárez-Ortega, 2018) emerges as a strategic approach capable of systematizing the necessary support, viewing guidance as a process of empowerment and personal and social transformation. This model allows for a critical analysis of the demand, considers guidance as a factor in personal and community transformation, and enables the development of guidance strategies that strengthen critical awareness, resilience, and other necessary life skills (Anonymous, 2025; Ribeiro and Figueiredo, 2025).

Specifically, the CCP Model is a sequential and adaptive system that promotes autonomy in the development of professional and life projects (Sánchez-García and Suárez-Ortega, 2018). This model is based on a reflective and cyclical career development process structured around five core competency areas: 1) exploration and definition of initial goals, 2) a strategically structured process of self-awareness and personal development, and engagement with related environments, 3) readjustment of initially set goals and realistic decision-making with vital significance, 4) strategic planning grounded in a personal sense of purpose for the professional project, and 5) the management and evaluation of this project and its associated subprojects and pathways (Pantoja, 2020;

Suárez Ortega et al., 2023). Consequently, applying the CCP Model to career guidance programs aimed at unemployed individuals and those in situations of social and labor vulnerability (Cruel et al., 2024) presents an opportunity to test the relevance and effectiveness of an innovative methodology that combines personalized learning, collaborative work, digital skills, and the creation of support networks. Skills in exploring, planning, managing, and evaluating one's professional career are developed, enabling individuals to learn how to reshape their professional and life plans in a way that is meaningful to them (Ribeiro and Figueiredo, 2025).

At the same time, in situations involving career transitions or reinvention, the development of support networks emerges as a key factor in successful integration (Stead et al., 2025). These networks go beyond their informational role to become strategic social resources that catalyze the creation of social capital in volatile and uncertain environments. Through these networks or support groups, meaningful connections are formed among participants, professionals, and community members. The intervention is no longer an isolated event but is integrated into a sustainable career ecosystem (De Vos et al., 2020; Marín-Zapata et al., 2022). This collaborative approach strengthens the community fabric and provides emotional and relational support for the subproject and its programs aimed at job search, integration, and social and occupational advancement. In turn, it ensures that the impact of the training and guidance process is sustained over time. Similarly, it contributes to the development of key competencies and skills, such as adaptability and self-directed career planning (De Valverde et al., 2020). This facilitates a tailored response to various career transitions, taking into account the diversity of needs (Cruel et al., 2024). Here, the guidance professional plays a key role (Blustein and Lyon, 2022; López-Medialdea et al., 2025), acting not only as a facilitator of technical tools but also as a strategic mediator capable of translating the demands of a volatile market into meaningful career projects and life paths, and empowering individuals to take an active role in their professional development.

In this context, selecting and adapting the intervention model to the target group is an essential step that requires rigorous coordination among the organizing and collaborating entities, institutional leaders, and the participating group itself. This perspective is consistent with the findings of Steen et al. (2025), who conclude that the most effective interventions for promoting the labor market integration of vulnerable groups are those that combine career guidance, ongoing support, skills development, and social support. Similarly, Kluve et al. (2017), based on a systematic review of youth employment programs implemented in various international contexts, note that comprehensive interventions that combine guidance, training, and support services for job placement yield more consistent results in terms of employability. For his part, Suárez-Ortega (2025), in his review of the current state of the field regarding educational and career guidance, as well as guidance for developing career and life plans, emphasizes the need to adopt a transformative approach to guidance as a strategic mediator between personal and community empowerment, interconnecting resources and actions through reflective, narrative, and co-performative work. In this process, career counselors serve as "keys" that weave together opportunities for action, inclusion, and social and occupational improvement.

Consequently, the CCP workshop program is implemented with a personalized approach, taking into account the specific needs of the participants and promoting meaningful learning to help them build and advance their careers (Suárez Ortega et al., 2023). This type of implementation requires flexible methodologies capable of integrating innovative resources and collaborative work dynamics. It reinforces the idea that career guidance should be a space for inclusion and conscious development (Cruel et al., 2024;

Bautista Bou and Roselli, 2025). This also requires the generation of scientific evidence through evaluation (Chhabra et al., 2022) and enables an analysis of processes and outcomes, thereby assessing their impact on people and the environments in which they live.

Method

The study is based on the implementation and monitoring of the CCP workshop program, which is part of an R&D&I project (reference MCIN/AEI/10.13039/501100011033). Specifically, it consists of a case study (Baxter and Jack, 2008) involving a specific group of participants with diverse backgrounds who are at risk of social and labor market exclusion. To evaluate the work process, quantitative and qualitative tools have been integrated into a mixed-methods design (Obilor and Ikpi, 2025) and an evaluative design (Stufflebeam, 2003; Marín Solórzano et al., 2021) with the aim of obtaining triangulated results (Flick, 2004). However, the design used is primarily interpretive in nature, guided by an analytical, reflective, and comprehensive approach based on the shared perspectives of the people who participated in the experience.

Objectives

The *overall objective* was to analyze the implementation and subjective impact of the CCP workshop program. This is based on the CCP Model (Sánchez-García and Suárez-Ortega, 2018), applied to a group of unemployed individuals facing social and labor-related vulnerabilities. Through the implementation of a virtual learning environment in Moodle, the instructional sequence is applied, evaluating both the process and the outcomes (Requejo et al., 2022; Suárez Ortega et al., 2023; López-Medialdea et al., 2025) from an interpretive perspective.

Specifically, the *specific objectives* were:

1. Evaluate the workshop program's development process based on the main support tools and personal interaction.
2. Explore the contributions made by the support network that developed throughout the process.
3. Assess the subjective impact of the program on the acquisition of career development skills.

Participants

The exhibition features the nine people who completed the workshop program; the group is predominantly female (89%) and of middle-to-older age, with seven of the participants over the age of 39. Given the group's relatively advanced average age (77% are between 39 and just over 60), the profiles reflect the challenges of labor market integration documented in the literature. This includes exposure to the informal economy (ILO, 2023) and the precariousness and invisibility experienced by women in certain sectors of the labor market (Alberto-Carbó, 2025). On the other hand, two participants were in their twenties (21 and 28 years old, respectively), and in terms of education, only one of the participants had a college degree, while another had completed only compulsory education; thus, the majority had a high school diploma or vocational training (66.7%). This vulnerability is exacerbated by family responsibilities in 5 of the cases and an unemployment rate that affects 7 participants. The participants come from diverse backgrounds, including rural (3), semi-urban (4), and urban (2) areas, although all of

them reside in a municipality of Seville, which could be characterized as semi-urban due to its proximity to the capital, yet rural due to the preservation of a traditional culture. The sample was selected using a sampling method based on criteria of vulnerability, motivation, and feasibility. This case is of interest as an *intrinsic case*, for the following reasons: 1) The group consists of individuals with vulnerability profiles, and these profiles are significant in and of themselves; 2) These individuals share common needs for training and career guidance, are seeking or looking to improve their employment situation, and place a demand on the collaborating organization's guidance services; 3) It serves as a representative sample (structural, not statistical) from an exploratory research perspective. During the period in which the workshop program was implemented, the unemployment rate stood at approximately 16.5%, a figure significantly higher than the national average (11.21%) (Argos Observatory, 2024).

Information-Gathering Techniques

On the qualitative side, a variety of data collection activities and techniques were used throughout the process; for this study, information was selected from interactive forums, private chats, and reflective discussion groups (2)—both ongoing and final—which were used to evaluate the progress of the workshop program. These tools made it possible to capture the group's evolution and the richness of its discourse, incorporating reflections on the program's subjective impact and outcomes.

To complement the qualitative study (quantitative component), the CGCE Questionnaire (Entrepreneurial Career Management Competencies) was administered (online). This validated questionnaire uses reliable criteria for assessing competencies related to entrepreneurship and professional career management (Sánchez-García and Suárez-Ortega, 2017). The instrument consists of two scales that assess entrepreneurial competencies (21 items) and career management competencies (12 items). Expert review confirmed that the content was valid in terms of relevance and clarity. Furthermore, confirmatory factor analysis confirmed its construct validity and reliability, identifying four factors in the first scale and two in the second, all with robust psychometric properties. The first scale consists of four factors: self-efficacy and productivity, assertiveness and emotional control, participatory leadership, and coping with risks and difficulties (Cronbach's alpha coefficients, respectively, of 0.887, 0.819, 0.702, and 0.701). The second scale consists of two dimensions: decision-making competencies and life-and-career management competencies (Cronbach's alpha coefficients of 0.843 and 0.852, respectively). Initially, before the intervention (t0), baseline data were collected to assess the participants' career competencies. Once the program was completed, the questionnaire was administered again in a second phase (m1) to measure the changes in competencies achieved. Three months elapsed between the initial and final phases (October 2024–January 2025), during which time the workshop program was carried out. Data were collected by having respondents rate each statement on a 10-point Likert-style scale.

Analysis Procedures and Techniques

In general, the analytical procedure developed is characterized by its use of a mixed-methods approach, which allows for the triangulation of the study of participants' narratives and subjectivities with statistical analysis, thereby providing a deeper understanding of the subject of the study. On the qualitative side, a content analysis method was applied that was descriptive in nature—identifying discursive frequencies—

as well as reflective and interpretive at the group level. This approach makes it possible to systematize the flow of communication generated by the interactive tools used in the workshop program and the discussion groups. The frequency of theme-based interventions and their meanings were systematically analyzed (Krippendorff, 2018). The coding system (Table 1) was developed by identifying central themes and patterns of meaning in the participants' perceptions.

The category system was developed through an iterative process of coding and thematic organization. First, units of meaning related to the study's objectives were identified; these were then classified into categories and subcategories based on their conceptual proximity and frequency in the discourses.

The final system integrated categories derived from the theoretical framework with others that emerged from the analyzed data. An inter-rater process was followed, in which three researchers (acting as coders) developed and compared the ratings. Quantitative criteria (higher frequencies) were established for the analysis of inter-coder reliability. To this was added a qualitative criterion, including the meaning (discursive significance) of the content coded in each category and dimension.

TABLE 1

Category System

Categories	Subcategories	Frequency
Orientation and Guidance	Labor Mediation	7
	Confirmation of Procedure	3
	Resource Contribution	2
	Clarification of Procedures	9
	Clarification of Activities	10
Reviews of the Workshop Program	Positive reviews	20
	Negative reviews	2
	Areas for improvement	5
Entrepreneurial Skills	Self-Efficacy and Proactivity	13
	Assertiveness and Emotional Control	2
	Participatory Leadership	3
	Coping with Risks and Challenges	7
	Help with assignments	15
Career Management Skills	Decision-making	7
	Professional Network	13
	External Recognition of Competencies	5
	Occupational Preferences	2
	Professional and Personal Project Management	3
	Vocational Clarity	1
	Lack of Motivation at Work	4
	Setting Objectives and Goals	4
	Awareness of Acquired Skills	7

Note: Created by the author using NVivo 15.

For the quantitative analysis, descriptive statistics (means and frequencies) were used to characterize the data (Field, 2018), as well as to assess variability using standard deviation and to calculate classical and robust measures of variation. The analytical procedures applied to the questionnaire data are statistical in nature; specifically, they

involve descriptive analysis and comparisons of means. Note that, given the small sample size, in addition to the mean and standard deviation, the information for the different constructs has been supplemented with robust analyses (Wilcox, 2012), specifically the Huber estimator and MAD (median absolute deviation). To compare the means between the two time points, Yuen's method (*t-test* with truncated means) is applied. For these analyses, we combined work within the SPSS environment (IBM, version 27) with the use of several packages in the R program, specifically MASS (Venables and Ripley, 2002) and PairedData (Champely, 2018). This study adhered to the necessary ethical considerations, ensuring the group's voluntary and informed participation and anonymity. The participants received an information sheet and signed the corresponding informed consent form before beginning the process. The "Impulsa" R&D&I Project, from which this study is derived, was approved by the Seville Ethics Committee (Protocol Ref. No. 2213-N-22).

Results

The results are summarized in three subsections aligned with the specific objectives. Although the sample is very limited and predominantly female (89%), and no statistically significant differences were detected in the variables studied, the qualitative analysis revealed gender gaps regarding: a) identity formation and career aspirations; b) the way in which women assimilate what they learn and express their expectations of their environment; and c) mediating variables (the informal economy, family responsibilities, migration, and qualifications), which influence women's professional development.

Public and Private Opinions on the Effectiveness of the "Impulsa" Workshop Program

The analysis distinguished between "private voices"—individual chat-based tutoring sessions focused on personalized follow-up—and "public voices," which consisted of the collective reflections generated during the mid-course discussion group. An initial analysis of the interactions recorded in the chat reveals that users clearly prioritize the need for *task support*, which has the highest frequency among the recorded interactions. This is evident in the narratives:

> I wanted to know why Activity 2 shows up as both in progress and completed, and since there are more than one like that, I don't really know how to use this tool (AMO) very well.
>
> I'm not sure if Activity 1 should be turned in before the next session. Even if we send it, I don't know if we'll be able to resume operations at any time (CTR).
>
> I'm working on Activity 8. I answer the questions, but then I have to step away, and when I come back, I can't find the answers. The same thing happens in Activity 7. Could you please let me know if you received it? Thank you (IEP).

These responses highlight the importance of the facilitator's role in actively supporting the learning process by answering questions and resolving technical issues with the platform. In addition, the tool helps participants develop digital skills.

Based on the data provided on *Self-Efficacy and Proactivity*, beyond simply completing tasks, the results reflect a deep introspection into one's own potential and professional interests—a process undertaken by the participants in the training program:

> It occurs to me that I have an artistic side that I haven't explored much, and that is acting. The thing is, that would be more a matter of exploring it on a personal level to see how I can connect it to my professional life (CTR).

> After giving some thought to my background and my interests, I registered for the entrance exam for the advanced vocational training program with the intention of improving my qualifications for a new job. At first, I thought about social integration because it seemed pretty interesting to me, but after looking at the profiles of the integrators, I don't really see myself in that role (EBL).

In the subcategory *Risk-Taking*, we observe a persistent attitude in the face of technical obstacles, where commitment prevails over the initial frustration that digital tools may cause. At the same time, dealing with *frustration* over the lack of realistic goals gives way to strategic decision-making. There have been concrete improvements in the development of *time management* skills and the definition *of educational and career paths*.

> You can choose a simple goal to explore, and then you can apply the same steps to other goals that interest you. At the same time, you can think about what you wouldn't want to do to see if that helps you identify some motivation (AGF).

Building Bonds: The Program's Contributions to Building Support Networks

Based on the guiding question posed by the counselor, the participants' responses were recorded, revealing a significant pattern of reciprocal interactions among them. Beyond the program's educational purpose, the high level of interaction made the activity a key setting for building networks and peer support. The discussion began with participants sharing their individual backgrounds and goals, quickly evolving into a collaborative dialogue in which they established a support network, drawing strength from the group:

> Good afternoon. There's a company called X in the M industrial park that keeps posting job openings for call center agents. If you're interested, you could check out InfoJobs. Another company that offers similar services is Iberempleos.es (AMO).
>
> There is also Company P, which is constantly looking for telemarketing staff and others (CTR).

This collaborative dynamic took shape through the proactive ex*change of training opportunities and resources* related to their areas of interest. This fact reinforces the group's collaborative nature, while also demonstrating a proactive approach to continuous learning, with a commitment to democratizing access to information in order to improve the group's overall employability.

> Free, 30-hour online courses on word processing software (Word) are set to begin soon; they are funded by SEPE (AMO).
>
> My goals—which I wasn't clear about when we started—are to focus on patternmaking and sewing. I've started a sewing workshop, and I realize I need to prepare more thoroughly. I haven't found any learning resources yet, but I'm working on it (MGC).
>
> I know a girl who teaches pattern-making classes in S; she does it at her shop, which is called L.S. Here's her phone number (X), which she also uses on Instagram and Facebook, in case you're interested (AMO).
>
> I saw this training course on industrial garment manufacturing at the W–S Foundation; here's the link (X)—you might find it interesting (OSM).

Along these same lines, the *support network* evolved into *informal job placement*, transforming the forum into a *collaborative job search environment*. This exchange marks the transition from an isolated search to a shared strategy that maximizes employment opportunities for the entire group.

> They are looking for social workers (working Friday through Tuesday) in XX. For more information, visit LinkedIn, Jooble, and Clickajobs. If you log in via XX as a social integrator or employee at XX, you'll get access to everything I'm telling you about (AMO).

The reflective discussion helped participants view the group space on the platform and in the classroom as an effective guide, reinforcing the blended learning methodology as *a driver of collaboration and mutual support*.

Overall Impact of the Workshop Program: A turning Point

General perceptions were gathered following the completion of the training and guidance program. First, we looked at the opinions regarding how participating in the program has impacted the *management of professional and personal projects*. Empowerment is reflected in the transition from uncertainty to a self-directed roadmap, valuing peace of mind and planning as steps toward the maturity of the process and the sustainability of the results.

Furthermore, the presentations emphasize that the *strategic value of the network* of contacts lies in the diversity of the participants' profiles. This diversity has not only enriched the debate but has also served as a *catalyst for generating synergies*, allowing the variety of backgrounds to become a *collective asset* for mutual learning.

> It helps me develop the ability to create a path that will truly set my professional life back on track (UP).
>
> The interactions have been most positive between older and younger participants. Here are two clear examples: the youngest member of the group has gotten along perfectly with the oldest, and one of the younger participants has connected better with the older ones because the experience of someone with a long professional career has been valuable to the person who is just starting out and is about to launch a project (UP).
>
> Each person's experience helps the others, and everyone brings different skills to the group; in the end, everyone learns from everyone else, and each person's skills help the others (UP).

As for the *feedback on the workshop program*, participants described the platform as a comprehensive resource that goes beyond conventional job searches. Particular emphasis was placed on the *integration* of elements involved in professional career development, as well as the *multidimensionality* of the analysis and the *orientation* of the professional project from an *eclectic approach*. From their perspective, this duality not only provided them with tools but, above all, facilitated their understanding of and learning about job skills. This is how they put it:

> It covers many aspects of the job search process; it doesn't just focus on tools or the traditional activities carried out with job seekers (UP).
>
> The most positive aspect I see is both the immediate and long-term outlook, as well as the self-awareness that comes with the entire process—expanding one’s knowledge to the limit that each person has or desires at this moment (UP).

At the same time, the need to *coordinate the actions* carried out by *guidance services and other related services at the community level* became apparent. Emphasizing the importance of *clarifying and updating the profile of career counselors* in light of current demands, and in line with the contributions of the CCP Model.

> It would be necessary to establish a system of coordination among centers within the network, with at least two professionals from each center (UP) participating.
>
> In many cases, I see that the profiles of professionals working in career counseling are becoming obsolete. Just look at what this training and

> counseling entail, and think about who could provide it here without the support of this project (UP).
>
> We are aware that career counseling must keep pace with the times and be constantly evolving (UP).

The professionals' remarks highlight the need to update the role of the guidance counselor, pointing out a disconnect between traditional practices and current market demands, as well as between performance expectations and professional profiles. This perspective validates the Impulsa workshop program in the eyes of the participants not only as a tool, but as a necessary process to be carried out with the people who use these services, including the professionals who work there.

To complement this perspective with statistical analysis (using an exploratory, rather than inferential, approach), the data are examined from a descriptive standpoint. Tables 2 and 3 list, respectively, all the variables that make up each of the scales and the constructs included, along with their respective descriptive statistics, both at baseline (m0) and after the program was implemented (m1). On the entrepreneurial competencies scale, there has been an overall positive trend across measurements, except for item 21. In terms of self-efficacy and productivity, item 9 stands out initially, followed by item 2, while item 4 has the lowest scores. In terms of assertiveness and emotional control, item 14 has the highest mean scores and item 15 has the lowest in both measurements. In participatory leadership, teamwork (item 18) is rated highest, compared to shared leadership (item 16). Finally, when it comes to coping with risks and difficulties, item 19 shows an increase in its mean score, and items 20 and 21 have the highest scores based on the time of measurement.

TABLE 2

Entrepreneurial Competency Scale, Descriptive Statistics

	Pretest (m0)		Post-test (m1)	
	Media	**DT**	**Media**	**DT**
Dimension: Self-Efficacy and Proactivity				
1. In general, I'm an optimist; I put problems into perspective and see mistakes as opportunities to learn.	6.78	1.72	8.56	1.24
2. I'm passionate about what I do; I usually motivate myself to move forward and work hard every day.	7.44	1.42	9.11	1.36
3. No matter what I do, I have faith and confidence in myself and in the fact that I will succeed	7.00	1.58	8.44	1.88
4. I'm a proactive person; I like to make changes frequently and quickly (without getting stuck in a rut), even if that means stepping outside my "comfort zone."	6.44	1.59	8.11	1.17
5. I tend to alternate between periods of stability and periods of change in what I do	6.44	1.51	8.33	1.41
6. I am consistent over time and persistent when I set a goal for myself	7.56	1.74	8.78	1.39
7. I usually adapt flexibly and rethink my strategy when things don't go as I expected	7.78	1.64	8.22	1.30
8. I'm generally able to cope with the stress and pressure that come with the job; I stay calm when faced with a difficult problem	7.22	1.30	8.22	1.30
9. I'm a practical person; I focus on solutions, not problems.	7.89	1.05	8.67	1.41
Dimension: Assertiveness and Emotional Control				
10. I am able to understand the needs of the people I interact with	8.11	1.45	9.00	1.12
11. I am fully committed to my day-to-day goals	7.67	1.58	9.11	0.93
12. I usually take into account the social and cultural norms (customs, traditions, etc.) of the contexts in which I work	8.22	1.56	9.33	0.71
13. I like to take the time needed to listen to and understand the people I work with	8.00	1.41	9.33	0.87
14. My day-to-day life makes me realize that there's always something to learn	8.56	1.24	9.33	1.12
15. I like to make weekly plans and adapt my strategic plan day by day, based on the needs and circumstances that arise.	7.56	1.81	8.89	1.36
Dimension: Participatory Leadership				
16. I prefer to share leadership with people with whom I feel a strong connection	6.67	1.73	8.56	1.42
17. When it comes to leadership, I believe it's essential to surround myself with highly talented people	8.00	1.94	8.67	1.32
18. I like working as part of a team	8.56	1.24	9.22	1.30
Dimension: Coping with Risks and Challenges				
19. The risks and challenges I often face in my professional life cause me a lot of stress	5.00	1.50	5.89	2.76
20. I have a hard time dealing with uncertainty and unexpected problems	5.11	2.32	5.33	2.83
21. The fear of failing in my job search, at work, and in my life in general is something that's always there	5.89	1.36	5.56	3.21

Note. SD = Standard Deviation).

With regard to the scale of general career management competencies (Table 3), there is also a general increase in scores between the pre-test and the post-test (in this case, without exception). Looking at the results by dimension and item, it can be seen that item 24 has the highest mean score for m0 within the decision-making skills dimension, while item 22 has the lowest. The latter remains at the lowest average (along with item 23) in the subsequent measurement, while item 25 has the highest average. Finally, regarding the dimension related to professional/life management skills, the lowest average score on m0 appears in item 29 and the highest in item 31. These same items also occupy the equivalent positions in the subsequent posttest.

TABLE 3

General Career Management Competency Scale, Descriptive Statistics

	Pretest (m0)		Post-test (m1)	
	Media	**DT**	**Media**	**DT**
Dimension: Decision-Making Skills				
22. I anticipate potential difficulties before making a decision about my career or my personal life	5.11	2.15	7.11	2.71
23. I am able to set realistic career goals	6.33	2.12	7.11	2.71
24. I consider all possibilities and past experiences when making important decisions	7.00	1.50	8.56	1.67
25. My career plan is fully aligned with my personal goals and objectives	6.56	1.51	9.00	1.23
26. The information I have about myself helps me make decisions and develop my career plan	6.78	1.72	8.89	1.36
27. I have a very positive self-image	5.78	1.86	8.00	1.41
Dimension: Professional and Life Project Management Skills				
28. I am able to identify my new needs in order to improve my personal and professional life	6.44	1.67	8.89	1.36
29. I usually notice when interesting opportunities come up, and I know how to take advantage of them	6.22	2.17	8.11	1.90
30. I take my weaknesses into account and make the most of my strengths (qualities, education, experience, etc.) in managing my career	6.33	1.50	8.67	1.58
31. I have a clear idea of the professional roles I'm interested in pursuing	7.11	2.47	9.44	0.88
32. I know exactly where I want my professional future and my life in general to take me	6.56	1.88	9.11	1.36
33. I take a balanced approach to my failures and my successes	6.89	1.36	8.22	1.56

Note. Compiled by the author (SD = standard deviation).

Table 4, meanwhile, presents an analysis of the differences in means between the initial measurement (m0) and the follow-up measurement (m1). The mean and standard deviation for each of the 6 dimensions of the 2 scales are reported. Furthermore, as noted in the section on methodological design, robust statistics are also included in this case to supplement the information given the limited number of cases, with the aim of mitigating potential outliers and deviations from the parametric assumptions; specifically, the Huber estimator and the MAD (median absolute deviation). To assess the differences in means between the pretest and posttest, Yuen's method for paired samples was applied.

TABLE 4

Means and variances (classical and robust) of the dimensions, pre- and post-test, as well as robust mean comparison

	Pretest (m0)		Post-test (m1)		
	Media (DT)	**E. Huber (MAD)**	**Media (DT)**	**E. Huber (MAD)**	**t-test Yuen (p-value)**
Entrepreneurial Skills					
Self-Efficacy and Proactivity	64.56	64.57	76.44	77.10	-3.47
	(9.91)	(10.38)	(10.99)	(11.86)	(0.013)
Assertiveness and Emotional Control	48.11	48.40	55.00	55.05	-2.84
	(7.87)	(4.45)	(4.80)	(5.93)	(0.029)
Participatory Leadership	23.22	23.08	26.44	27.78	-4.82
	(3.73)	(4.45)	(3.32)	(2.97)	(0.003)
Coping with Risks and Challenges	16.00	16.00	16.77	17.90	-0.34
	(4.56)	(5.93)	(8.51)	(5.93)	(0.744)
General Career Management Skills					
Decision-Making Skills	37.56	38.85	48.67	48.71	-2.75
	(8.43)	(4.45)	(7.39)	(7.43)	(0.033)
Professional and Life Project Management Skills	39.56	38.59	52.44	54.05	-3.42
	(7.33)	(5.93)	(7.45)	(4.45)	(0.014)

Note. Created by the author.

As shown in Table 4, there are significant differences in means ($p < 0.05$) in five of the six dimensions—that is, in all but risk and difficulty coping. These data would support the participants' self-reported improvement in career self-management and entrepreneurial skills.

Discussion and Conclusions

The findings from the chat show that the methodological support made it possible to deliver the training in a more accessible way and helped avoid operational barriers related to digital literacy or file management (Bautista and Roselli, 2025). The comprehensive support (Hooley et al., 2021) provided by the program enabled participants to mobilize internal and external resources and to design courses of action with greater awareness and effectiveness (Blustein and Lyon, 2022) in terms of functionality and a sense of purpose. It also made it easier to tailor programs to individual circumstances (balancing work and personal life) when accessing vocational training and career guidance, and improved access to municipal resources

For its part, the process discussion group concluded that external reinforcement (primarily from peers) is important for identifying latent competencies and strengthening identity through recognition by the surrounding community (Ribeiro and Figueiredo, 2025). This external perspective facilitates the transition from a search driven by necessity to a project with personal meaning, serving as the foundation for an exercise in introspection and critical awareness (Marín-Zapata et al., 2022), which transcends the personal to the social. This process makes it possible to transform vague goals into strategic objectives and break free from past labels that acted as barriers. Finally, this situational awareness fosters acceptance of one's own limitations, emphasizing that any career change requires emotional management to ensure the sustainability of one's career and the continuity of one's life plan.

Beyond its academic purpose, the forum established itself as an ecosystem of mutual support (Valencia, 2020) where reciprocity strengthened social self-efficacy and a sense of belonging. This dynamic turned the digital environment into an informal

intermediary network that, through the exchange of resources, transformed isolated searching into a collaborative strategy (Hooley et al., 2021). In contrast to traditional institutional rigidity, the human-centered approach integrated into the CCP Model (Sánchez-García and Suárez-Ortega, 2018) creates safe spaces (involving both professionals and service users) that catalyze the transition from vocational uncertainty to tangible job-search strategies (De Vos et al., 2020; Marín-Zapata et al., 2022).

The final discussion group identified the support network and strategic planning as drivers of change. In this vein, the exchange of social capital and intergenerational transfer helped combat isolation, generating synergies and practical solutions (Requejo et al., 2022).

Overall, the qualitative analysis revealed the existence of gender gaps regarding: a) identity formation and career aspirations; b) the way in which learning is assimilated and demands from the environment are expressed; and c) mediating variables (the informal economy, family responsibilities, migration, and qualifications) that influence women's professional development. These results reflect the precariousness and difficulties women continue to face in the labor market today (Alberto-Carbó, 2025).

In addition, the quantitative analysis made it possible to identify the participants' own perceptions of the intervention's effectiveness in terms of career self-management and employability skills (Sánchez-García and Suárez-Ortega, 2017, 2018). In this regard, it can be confirmed that group-based technical support is crucial for consolidating professional and life goals, especially among marginalized groups (Bautista and Roselli, 2025).

The main limitations of the study relate to the small sample size. Thus, one can identify its limited capacity for generalization, although that is not our intention. The purpose of the study is to understand how the training program is implemented and evaluated by participants, and to what extent they perceive a subjective improvement in their career skills and employability by the end of the process. However, limitations on transferability may stem from the social or organizational context itself, rather than from the program or model being implemented. This is part of a pilot study that allows for the necessary adjustments to be made based on the specific needs and demands of the target group. In this regard, the study highlights the transfer potential of the CCP Model (Building My Professional Career, Sánchez and Suárez, 2018), which forms the basis of the workshop program implemented.

Despite the small sample size, the complementary nature of the quantitative analysis provides indicative results that allow us to explore trends and support the future scalability of the design to multiple-case studies. As a specific consideration for future research, the study design could be expanded to include multiple cases. It would be helpful to establish comparison groups based on situational characteristics, inclusion factors, and the sustainability of career processes. Progress is being made in this area as part of the R&D&I project from which this work stems.

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STUDENT-CENTERED COMMUNICATIVE ACTIVITIES FOR THE DEVELOPMENT OF LINGUISTIC COMPETENCIES

ACTIVIDADES COMUNICATIVAS CENTRADAS EN EL ESTUDIANTE PARA EL DESARROLLO DE COMPETENCIAS LINGÜÍSTICAS

Dulce Brenda Méndez Rojas
Universidad Veracruzana, Mexico
[dumendez@uv.mx] [https://orcid.org/0000-0003-1174-3099]

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ABSTRACT

The development of English language skills among students was affected by the shift from face-to-face classes to synchronous and asynchronous learning due to the limitations of traditional pedagogical approaches adapted to virtual modalities. In the virtual environment, teachers tended to assign written activities, resulting in a neglect of oral skills. Communicative competence depends on contextualized learning experiences that integrate the following dimensions: grammatical, sociolinguistic, discursive, and strategic. Thus, an English teacher of an A2+ level group at a Language Center decided to conduct action research to help students regain their English language skills through student-centered communicative activities such as presentations, role-playing, and conversations. These activities provide opportunities to practice the language in real-life situations. The study was conducted over one semester, and two questionnaires were administered, one at the beginning and one at the end of the course. The results were triangulated with the scores from oral and written exams. They suggest that using student-centered communicative activities in an English as a foreign language class promotes the improvement of the four language skills.

Palabras clave:
expresión oral, redacción, competencia comunicativa, investigación-acción, aprendizaje del inglés post-pandemia

RESUMEN

The development of English language skills among students was affected by the shift from face-to-face classes to synchronous and asynchronous learning due to the limitations of traditional pedagogical approaches adapted to virtual modalities. In the virtual environment, teachers tended to assign written activities, resulting in a neglect of oral skills. Communicative competence depends on contextualized learning experiences that integrate the following dimensions: grammatical, sociolinguistic, discursive, and strategic. Thus, an English teacher of an A2+ level group at a Language Center decided to conduct action research to help students regain their English language skills through student-centered communicative activities such as presentations, role-playing, and conversations. These activities provide opportunities to practice the language in real-life situations. The study was

conducted over one semester, and two questionnaires were administered, one at the beginning and one at the end of the course. The results were triangulated with the scores from oral and written exams. They suggest that using student-centered communicative activities in an English as a foreign language class promotes the improvement of the four language skills.

Introduction

The shift from in-person classes to online classes in 2020 as a result of the COVID-19 pandemic led both students and teachers to continue their education in a new format; however, both groups lacked the digital and pedagogical skills necessary to function effectively in that format. This situation required teachers to make substantial changes to the activities they carried out in the classroom.

The teaching and learning methods that had prevailed up to that point were not suitable for the new approach; instead, students were required to demonstrate a willingness to learn, and the situations presented in class had to be relevant to this purpose. It was necessary for the activities to be organized in a way that fostered knowledge construction; this can be achieved by pacing the delivery of knowledge, while also taking into account the affective dimension of learning (Porlán, 2020). Although the 2021 study by Rojas and García on blended learning and the effect of gamification is not directly related to learning, it showed that teaching during the pandemic relied primarily on providing explanations, while neglecting the development of communicative competence. This practice resulted in limited language development, leading to poor performance.

When in-person classes resumed, students at the Language Center demonstrated language skills below what was expected for their respective English proficiency levels and reported difficulty keeping up with the pace of in-person classes. This showed that online or distance education had not achieved its stated objectives (Quintero et al., 2022). After that period of online learning, teachers returned to using communicative activities for individualized tasks that promote motivation and support learning (Littlewood, 2011).

The recovery of language skills in post-pandemic contexts is a research area of international interest; however, a search in Scopus, ERIC, and Google Scholar using the terms “communicative competence,” “action research,” and “post-pandemic English learning” yielded only five articles on these topics. Therefore, there is little literature on action research in language centers at public universities in Latin America, particularly in Mexico. A study by Godwin-Jones (2021) found that the lockdown period spurred the use of digital technologies, leading to gaps in speech development.

Hernández-Méndez and Caballero-Álvarez (2019) found that language centers at public universities in Mexico face challenges stemming from the diverse student body they serve and the discontinuity in students’ learning trajectories, since this is non-formal education. An action research study conducted with 180 Turkish high school students at the pre-intermediate level found that the systematic use of incomplete information activities and structured conversations increased their oral fluency (Tavil, 2010). Atmojo and Nugroho (2020) studied the transition from online to in-person learning in Indonesia and concluded that students who had taken more semesters of online classes exhibited higher levels of communication anxiety and lower fluency in in-person classes.

Consequently, an intervention was designed and implemented to improve students' language performance through student-centered communicative activities. The study was conducted at the Orizaba Language Center, which is part of the University of Veracruz. The activities carried out included conversations, presentations, role-playing, and the “Find Someone Who” game; these provided opportunities for both semi-controlled and free practice to develop language skills.

The main objective of the research was to demonstrate the effectiveness of conversations, role-playing, and presentations on the performance of English learners.

The second objective was to determine the impact of designing activities based on students' tastes, preferences, and needs on their performance. Consequently, three research questions emerged for this study:

Question 1: How effective are conversations, role-playing, and presentations in improving the performance of English learners?

Question 2: What impact does designing activities based on students' interests, preferences, and needs have on their academic performance?

Question 3: What impact do communicative activities have on the recovery of language skills?

Conceptual Framework

Communicative competence and the recovery of skills

Canale and Swain (1980) proposed a model that integrates four components of communicative competence: grammatical, sociolinguistic, discursive, and strategic; it also encompasses the appropriate use of language in different contexts. Bachman (1990) proposed that context should be taken into account in the development of communicative competence; in this way, language users can determine the most appropriate way to use the language in each situation. This skill can be reacquired through the zone of proximal development and scaffolding proposed by Vygotsky (1978).

Ellis and Shintani (2014) argue that grammatical competence should be developed through structured input activities that enable students to practice grammar by understanding meaning in authentic contexts, following a specific grammatical pattern. This is based on VanPatten's (2004) theory of input processing, which has been shown to be more effective than traditional exercises.

Celce-Murcia et al. (2010) argue that the development of phonological competence requires a communicative approach to pronunciation that combines auditory recognition tasks, guided practice, and production in communicative contexts. These researchers question traditional pronunciation exercises that are isolated from context and propose using relevant communicative situations to achieve intelligibility rather than a native accent.

Student-Centered Communication Activities

In 2020, Nation and Macalister proposed four key aspects of a balanced curriculum for language teaching activities (comprehensible input, language production, fluency, and form). That is, including an equal percentage of activities from each of these areas to foster the comprehensive development of communicative competence; this contrasts with previous approaches that emphasize grammar.

Littlewood (2011) argues that communicative activities motivate students and therefore support the language learning process. The development of productive skills, such as speaking and writing, takes place in the classroom (Rojas, 2020) because these are skills that require teacher supervision; furthermore, the classroom is considered a safe space where feedback is provided to facilitate learning (Harmer, 2007).

Role-playing activities allow students to take on and act out one of the roles provided by the teacher; they must write a dialogue and present it in class (Harmer, 2015; Holmes, 2004; Scrivener, 2005). These conversations enable meaningful dialogue among students, during which they can discuss communication situations typical of both school and non-school contexts, as well as their families, tastes, and preferences (Newton & Nation, 2020).

The "Find Someone Who" activity focuses on asking and receiving information in a structured way, enabling second-language acquisition (Hummel, 2021) through

repetitive practice. Presentations allow students to work individually or in groups, and the teacher assigns a topic that students develop independently or collaboratively using the resources available to them (Mardiningrum & Ramadhani, 2022); they also help develop writing skills, vocabulary acquisition, and oral communication (Alkaff, 2013; Miles, 2009).

Sociocultural Theory and Scaffolding in Post-Pandemic Recovery

The sociocultural theory of learning has provided a solid theoretical framework that demonstrates how activities are social practices that reproduce cultural contexts—that is, they are not isolated tasks and mediate language learning; this theory is based on the work of Vygotsky (Lantolf & Thorne, 2006). In the post-pandemic context, this framework is important because it provides a structure for the gradual recovery of skills that have been affected by social isolation and the lack of in-person interaction.

Language proficiency refers not only to grammatical proficiency but also to communicative proficiency. Vygotsky (1978) states that this skill can be developed through the zone of proximal development, where the teacher acts as a mediator who provides scaffolding so that students can make more progress than they could on their own. The zone of proximal development refers to the progress a person can make with the help and effective guidance of someone who has more knowledge; scaffolding is the temporary, structured support provided to a student to help them develop or regain language skills.

Project- and Task-Based Learning

Benefits of PBL have been documented in English language teaching contexts; one such study was conducted by Stoller in 2006, in which students from two classes—one using traditional instruction and the other using PBL—were compared. The results showed that in projects (which can include role-playing, presentations, or conversations), students were more motivated, vocabulary retention increased, and more complex metacognitive skills were developed. This is linked to the constructivist theory of learning, which states that knowledge is constructed when students have meaningful and socially situated experiences.

Another quasi-experimental study conducted at a public elementary school in Greece with sixth-grade students revealed that the use of PBL in learning helped to: a) improve language skills; b) develop critical thinking, collaboration, and autonomy (Fragoulis, 2009). Fragoulis argues that it also changes the traditional dynamic, making students active participants in their own learning.

In English courses for college students, it was found that interdisciplinary projects foster the development of both language proficiency and subject-specific knowledge (Simpson, 2011). The same study emphasizes the impact of pedagogical scaffolding in structuring projects through short lessons focused on specific competencies, a continuous process of formative feedback, and opportunities to reflect on how learning takes place.

Method

This study is an action research project focused on improving English language proficiency through communicative activities such as presentations, conversations, and role-playing, as well as the “find someone who” activity. Students were required to complete a series of projects, which could take the form of conversations, presentations on topics that interested them, or role-playing exercises based on real-life situations. In

addition, the framework was implemented through the "Find Someone Who" activity, which requires students to use the language both orally and in writing. To carry out the projects, topics were assigned that took into account the participants' interests, with a variety of scenarios for presentations, role-playing exercises, and discussions

According to Burns (2010), action research consists of four phases: the planning phase, the implementation-observation phase, the reflection phase on the collected data, and the process review phase. During the planning phase, the activities to be implemented were selected based on the students' language needs; in addition, the students' preferences regarding classroom activities were taken into account. In this phase, the results of Questionnaire 1 and Questionnaire 3 were analyzed, and a sequence of communicative activities was designed in line with the course curriculum and the identified areas of need. During the implementation phase, the selected activities were carried out, and the participants' involvement and performance were observed. During the reflection phase, qualitative data from the questionnaires and qualitative data from the exams were triangulated to assess the impact of the intervention. Finally, during the review phase of the process, necessary adjustments to the instructional design were identified for future implementations.

Only one action-reflection cycle was completed because the work took place after the midterm exams and before the final exams, which allowed for only one cycle to be completed. However, it is worth noting that a brief reflection on the effectiveness of the selected activities took place each time an activity was implemented in the classroom.

The study was conducted with an Intermediate Level 2 group, corresponding to level A2+, using a non-probabilistic, convenience sample, which facilitated access and continuity of follow-up. The participants were eight students, all women between the ages of 20 and 38 (two 20-year-olds, one 21-year-old, three 22-year-olds, one 34-year-old, and one 38-year-old). The course was held every week for 5 hours on Fridays. All of them began their studies in February 2020; they had attended in-person classes for a month and a half when, due to the COVID-19 pandemic, they were forced to continue their education remotely. This is shown in Table 1, which presents the levels they studied at through in-person, synchronous, and asynchronous classes. A crucial methodological aspect was this change, which made it possible to analyze the impact of the transition from in-person to online instruction and back to in-person instruction with regard to language skills.

Table 1

Levels offered in-person and online

Year	2020	2020	2021	2021	2022
Period	F-J	A-D	F-J	A-D	F-J
Level	B 1	B 2	B 3	I 1	I2
Format	In-person (1.5 months)	Remotely	Remotely	Remotely	In-person

Note. Compiled by the author based on records from the Orizaba Language Center. F: February; J: June; A: August; D: December; B: Basic; I: Intermediate.

On the one hand, this shift from in-person classes to distance learning forced teachers to develop new skills in order to continue teaching and learning English; although each teacher developed these skills to varying degrees, they managed to ensure the continuity of education. In addition, the participants took one and a half months of in-person classes and three and a half semesters of distance learning.

Data Collection Tools

Three questionnaires were administered: Questionnaire 1 was administered at the beginning of the semester to determine each student's needs regarding their English language performance in previous courses; Questionnaire 2 was administered three weeks after the first, with the aim of identifying the areas in which the participants most wanted and needed to improve; and Questionnaire 3 was administered at the end of the semester to assess the improvement in the study participants' performance. In addition, two written exams were administered—one midterm and one final—as well as two oral exams—one midterm and one final. These assessments are marked as required in the language center.

A combination of open-ended and closed-ended questions was used in the three questionnaires; these collected information from the students that was related to the subject of the study. Questionnaire 1 focused on identifying the needs of the students after they had taken classes online for nearly two years; this was an exploratory survey that measured the perceptions and needs of the study participants (Burns, 2010; Dörnyei, 2007).

Questionnaire 2 contained 10 Likert-scale questions and 14 open-ended questions designed to identify the types of skills and activities that the students enjoyed, in order to use this information as a basis for implementing the study; it was administered three weeks after the first questionnaire.

Regarding the content validity of the questionnaires, they were reviewed by two faculty members with experience in applied linguistics research, who verified the clarity of the items and their relevance to the study's objectives. The oral exams were graded using an institutional rubric that includes five criteria: a) fluency (0–4 points); b) completion of the task (0–4 points); c) grammar (0–4 points); d) vocabulary and pronunciation (0–4 points); e) evaluation of the interlocutor (0–4 points), for a total of 20 points. The written exams were graded according to the institutional rubric, which takes into account grammar, vocabulary, content, and language use.

Oral exams are graded with the assistance of another teacher; that is, the regular teacher serves as the interviewer, and the teacher who grades the exam serves as the grader. The respondent can award up to 4 points, while the evaluator has up to 16 points to award. This ensures consistency in grading and prevents bias on the part of the instructor.

Questionnaire 3 gathered information about the results of the implementation, as well as the participants' opinions regarding the activities used and their performance in the language. There is a question at the end that focuses on determining the effectiveness of the classroom activities in improving student performance; this information helps eliminate subjectivity in qualitative studies (Dörnyei, 2007). The data from the three questionnaires were analyzed using content analysis, and the categories identified were triangulated to assess performance before and after the intervention.

Communication Activities Implemented

Role-playing is done in teams, with each student assigned a role to play. Based on that role, they must engage in a dialogue related to the given situation. Like conversations, role-playing promotes collaborative work and helps correct vocabulary, pronunciation, and grammatical errors.

The activities mentioned above allow learners to practice the language in real-life situations, since they can pretend to be someone else or react as themselves because these activities are part of everyday life (Harmer in Spratt, 2008; Gower et al., 1983).

"Find Someone Who" allows students to practice the grammar and vocabulary presented in class in a controlled setting and encourages them to practice new structures (Hummel, 2021). The activity is divided into two parts. The first part focuses on automating questions that can be answered with "yes" or "no." In this phase, students must ask their classmates the questions they have; when someone answers "yes," they write that person's name on the question and move on to the next one. Once all the questions have been asked, phase two begins. In this exercise, students report the information they have gathered using affirmative or negative sentences; this allows them to practice the different types of sentences in the language in a controlled manner.

The activities carried out were based on the participants' responses to the questionnaires. These activities included presentations, discussions, role-playing, and "find someone who" exercises; presentations were assigned weekly, as were discussions or role-playing exercises, and the "find someone who" activity was conducted four times.

The topics were based on the curriculum, the textbook, and the students' interests and preferences, which were mentioned in the questionnaires and during class. Table 2 shows the schedule of activities, which includes both the activities carried out and the questionnaires and exams. The timeline shows how often each activity was carried out during the study period.

The exams used were the midterm and final exams, both oral and written; furthermore, they are based on the topics covered in the syllabus and the textbook. The intervention was implemented after this period in order to establish a baseline for their language proficiency.

Table 2

Schedule of Activities

Activity /	Month	FEBRUARY				MARCH					APRIL				MAY				JUNE	
	Week	1	2	3	4	1	2	3	4	5	1	2	3	4	1	2	3	4	1	2
Quiz 1					■															
Questionnaire 2								■												
Questionnaire 3																				■
Midterm Written Exam											■									
Final Written Exam																				■
Midterm Oral Exam											■									
Final Oral Exam																			■	
Presentations													■	■	■	■	■	■		
Conversations													■		■		■			
Role-playing game														■		■		■		
"Find someone who"													■	■	■		■			

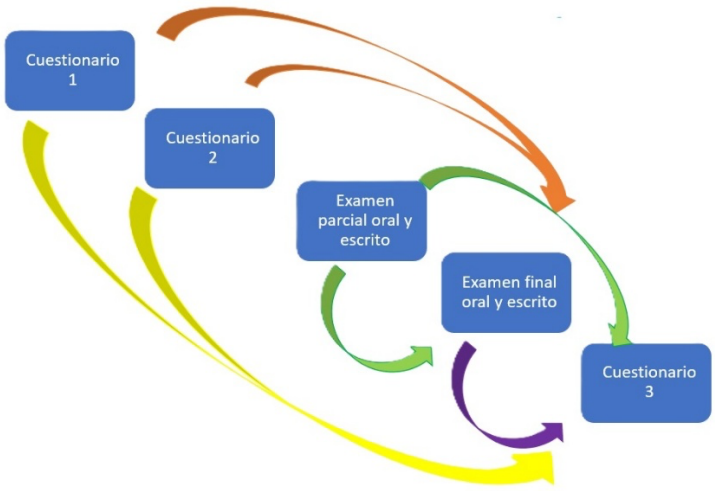
Data Analysis

The data obtained from instruments such as questionnaires and tests were triangulated; this triangulation contributed to the study's reliability and validity. This ensures that each instrument measures the construct for which it was designed, thereby preventing any influence from the researcher, external factors, or errors (Dawson, 2007). The results of both oral exams made it possible to demonstrate their relationship to the participants' comments. Figure 1 shows how the different instruments compared; data analysis was conducted by triangulating Questionnaire 1 and Questionnaire 2 with the final written exam, the final oral exam, and Questionnaire 3.

The qualitative data from the questionnaires were analyzed using content analysis, in which the information was classified into emerging categories that arose inductively

from the participants' responses. These responses were compared with the exam results to achieve data triangulation (the written midterm exam and oral midterm exam were triangulated with the written final exam, oral final exam, and Questionnaire 3; additionally, the oral final exam and written final exam were triangulated with Questionnaire 3).

Figure 1
Data Analysis



The study yielded both qualitative and quantitative data; the former came from the questionnaires, and the latter from the written and oral exams. Next, the results of the midterm oral exam were compared with those of the final oral exam; the same analysis was applied to the written exam scores.

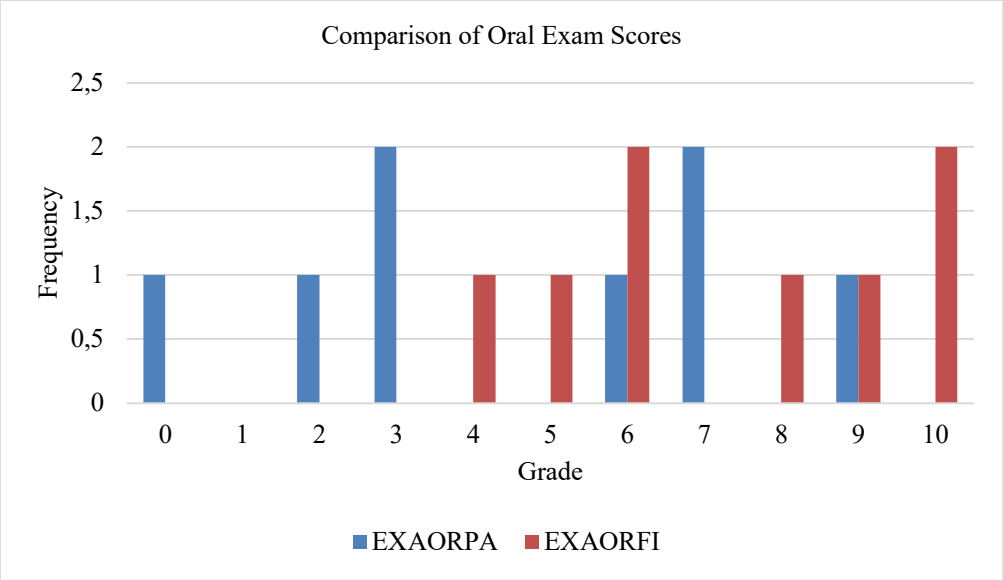
The qualitative data collected from the three questionnaires were analyzed, and categories emerged from the information provided by the participants; first, the comments from questionnaires 1 and 2 were analyzed and the responses were compared with those from questionnaire 3, and these responses were then compared with the test results.

Results

Oral Exam Grades

Figure 2 illustrates the scores on the midterm and final oral exams. An upward trend was observed in the average oral score (from M = 4.63 to M = 7.25); however, given the small sample size (n = 8), it is not possible to establish statistical significance. However, this suggests that the activities implemented were effective in supporting improvements in the participants' performance.

Figure 2
Comparison of Oral Exam Scores



Note. EXAORPA: Midterm oral exam; EXAORFI: Final oral exam.

Measures of central tendency and dispersion are presented in Table 3. The average score on the midterm oral exam was M = 4.63, and on the final oral exam, M = 7.25; this confirms the effectiveness of oral activities in improving performance. The mean score for the midterm oral exam was $\tilde{x}$ = 4.50, and the mean score for the final oral exam was $\tilde{x}$ = 7.00, indicating that the score on the second exam was higher.

Table 3
Analysis of Oral Exam Grades

Measurement	Minimum value	Maximum value	Media	Median	Fashion	Standard deviation
EXAORPA	0	9	4.63	4.50	3rd	3,068
EXAORFI	4	10	7.25	7.00	6th	2,315

Note. EXAORPA: Midterm Oral Exam Grade; EXAORFI: Final oral exam grade: [a]: There are multiple modes, and the smallest value is displayed.

The standard deviation for the midterm oral exam was higher (σ = 3.068), indicating that the scores were more widely dispersed around the mean of 4.63. In the case of the final oral exam, the standard deviation is lower (σ = 2.315), indicating that the scores are closer to the mean of 7.25; consequently, this confirms that the activities have a positive influence on oral performance.

Written Exam Scores

Table 4 shows the distribution of scores on the written exam. The lowest score on the midterm written exam was 3 (12.5%), while on the final written exam it was 4 (12.5%). The highest score on the midterm written exam was 9 (12.5%), and on the final written exam it was 10 (12.5%).

Table 4
Written Exam Scores

Grade	EXAESPA fr	EXAESPA %	EXAESFI fr	EXAESFI %
0	0	0	0	0
1	0	0	0	0
2	0	0	0	0
3	1	12.5	0	0
4	1	12.5	1	12.5
5	2	25.0	0	0
6	1	12.5	1	12-5
7	1	12.5	2	25.5
8	1	12.5	1	12.5
9	1	12.5	2	25.5
10	0	0	1	12.2
Total	8	100	8	100

Note. Created by the author. fr: Frequency; %: Percentage; EXAESPA: Midterm Written Exam Scores; EXAESFI: Final Written Exam Grades.

Table 5 presents the measures of central tendency for the written exams. The average score on the midterm written exam was M = 5.75, and on the final written exam, it was M = 7.50, indicating that the intervention was effective in promoting optimal performance. The mean score on the midterm written exam was $\tilde{x}$ = 5.50, and the mean score on the final written exam was $\tilde{x}$ = 7.50.

Table 5 also shows that the standard deviation for the midterm written exam was σ = 1.984 and for the final written exam was σ = 1.802; in other words, the scores on the final written exam are closer to the mean, while the scores on the midterm written exam are farther from it.

Table 5
Analysis of Written Exam Scores

Measurement	Minimum value	Maximum value	Media	Median	Fashion	Standard deviation
EXAESPA	3	9	5.75	5.50	4	1,984
EXAESFI	4	10	7.50	7.50	7th	1,802

Note. EXAORPA: Midterm Oral Exam Grade; EXAORFI: Final oral exam grade: [a]: There are multiple modes, and the smallest value is displayed.

Reading and Listening Comprehension

Most of the comments made prior to the intervention indicated that reading proficiency was low; however, by the end of the semester, it had improved to a fair to good level. The results of the pre-study questionnaires indicated that the participants' listening comprehension was low and that they had difficulty understanding what was said to them; by the end of the semester, half of the participants reported that their listening comprehension was good.

Oral Production

Preliminary comments indicated that fluency and a limited vocabulary hindered effective communication. The participants reported improvements in fluency, which is consistent with the increase in the fluency criterion of the oral rubric (midterm M = 1.875, final: M = 2.5). With regard to vocabulary, they noted that they had learned more vocabulary, which led to an improvement in their oral production; furthermore, this is corroborated by the results of the final oral exam (midterm M = 1.625, final: M = 2.625).

Written Work

With regard to writing skills, most of the participants considered themselves to be at an intermediate level at the start of the program. However, this contrasts with the final results, which indicate that their level is average.

Communication

With regard to communication, at the beginning of the semester, students' proficiency ranged from basic to low due to a lack of practice, vocabulary, and feedback from the instructor. Subsequently, the comments indicated an improvement in both speaking and writing, consistent with the results presented earlier.

Discussion

The results of this study provide empirical evidence on the effectiveness of student-centered communication activities for the recovery of language skills in a post-pandemic context. The central thesis of this study—that communicative activities designed based on students' needs, tastes, and preferences are effective for language recovery—is supported by both quantitative and qualitative data.

The increase in the average score on the oral exam (from M = 4.63 to M = 7.25, representing a 56.6% improvement) is consistent with the findings of Fragoulis (2009), who reported significant improvements in the language skills of Greek elementary school students following the systematic implementation of communicative projects. However, the effect size in the present study is smaller than that reported by Tavil (2010) with Turkish students, which could be explained by differences in the institutional context, the duration of the intervention (9 weeks versus one semester in Tavil's study), and the participants' initial proficiency level.

With regard to student-centered design, this study agrees with Simpson (2011) that structured pedagogical scaffolding, combined with formative feedback, is crucial for student progress in university settings. However, it differs from that study in that here the design of activities is explicitly based on the students' stated tastes and preferences as reported in questionnaires, which adds a dimension of student agency that is rarely documented in the literature on post-pandemic interventions.

Another significant finding is the improvement in auditory comprehension, which went from being rated as "poor" to "good" in 50% of the participants. It is worth noting that this study does not include direct measures of listening comprehension in the tests, but rather relies solely on self-reported perceptions, which constitutes a methodological limitation that should be taken into account when interpreting these results.

The lower standard deviation on the final exams ($\sigma = 2.315$ for the oral exam and $\sigma = 1.802$ for the written exam, compared to $\sigma = 3.068$ and $\sigma = 1.984$ on the midterms, respectively) suggests greater consistency in performance at the end of the intervention. This phenomenon could be interpreted as a positive leveling effect attributable to gradual scaffolding and systematic feedback, consistent with Vygotsky's (1978) principles of the zone of proximal development and with Littlewood's (2011) findings on the motivational role of communicative activities.

The difference in performance before and after the intervention is evident in the scores obtained on written exams; performance is understood to be the measure of learning. Furthermore, these results show that the proper selection and implementation of classroom activities, combined with the use of appropriate assessment methods, can

help students make progress in their mastery of the language. The current study compares the participants' performance on written exams (midterm and final), which demonstrates the effectiveness of the activities used in the classroom for developing language skills and, consequently, the improvement in the performance of all participants.

Implementing classroom activities is crucial for language teaching and learning; as a result, performance improves because students are consistently exposed to the language during class. In addition, while the participants were in class, they were required to continue using English to give their weekly presentations—which involved reading, listening, speaking (Miles, 2009), and writing—using whatever resources were available to them (Mardiningrum & Ramadhani, 2022).

In terms of implications for curriculum planning at the Language Center, the results suggest that systematically incorporating an assessment of needs and preferences at the beginning of the course can significantly improve the relevance of the activities and, consequently, student performance. For teachers in other contexts, the following is recommended: a) use needs assessments before designing communicative activities; 2) incorporate oral and written production activities in a balanced manner, following the balanced curriculum proposed by Nation and Macalister (2020); and 3) establish mechanisms for ongoing feedback that allow activities to be adjusted based on the group's progress.

Conclusions

With regard to research question 1 ("How effective are conversations, role-playing, and presentations in improving the performance of English learners?"), the results confirm their effectiveness. The oral score increased from M = 4.63 to M = 7.25 (a 56.6% improvement), and the written score increased from M = 5.75 to M = 7.50 (a 30.4% improvement). These findings are consistent with those of Harmer (2015) and Scrivener (2005), who argue that oral activities promote the actual use of the language.

With regard to research question 2 ("What impact does designing activities based on students' tastes, preferences, and needs have on their academic performance?"), the study shows that this impact was transformative and positive. The participants' perception of their communicative competence improved across all skills. This supports Kyriacou's (2007) arguments regarding effective teaching and Scrivener's (2005) views on the role of activities in language learning.

With regard to research question 3 ("What impact do communicative activities have on the recovery of language skills?"), the study shows that student-centered communicative activities are effective tools for the recovery of language skills during the transition back to in-person learning. This recovery manifested itself in a comprehensive manner, combining linguistic knowledge with the ability to use it according to context, as Bachman (1990) notes, and through the gradual scaffolding proposed by Vygotsky (1978).

The main conclusion of this study is that the implementation of communicative activities—such as conversations, role-playing, and presentations—designed based on students' tastes, preferences, and needs is effective in improving English proficiency and restoring language skills in post-pandemic contexts.

Limitations

This study has limitations that should be taken into account when interpreting its findings. First, the sample size (n = 8) is small and non-probabilistic, which limits the

generalizability of the results to other contexts. Future studies should include groups with greater diversity in terms of gender and institutional context.

Second, only one action-research cycle was completed, which makes it impossible to analyze how the results evolved over successive cycles. Third, the scale used is intended for institutional use; however, no evidence of external psychometric validation is reported, which constitutes a limitation of this study.

Furthermore, the improvement in auditory comprehension was documented solely through self-reported perceptions and not through standardized instruments. Finally, the absence of a control group makes it impossible to attribute the improvements exclusively to the intervention; moreover, it must be considered that the return to in-person learning may in itself have contributed to the recovery of skills (Atmojo & Nugroho, 2020), which limits the possibility of attributing the observed effects exclusively to the intervention implemented.

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INTEGRAL TRAINING THROUGH TRANSDISCIPLINARITY FOR HUMANIZED HEALTH CARE: THE COLOMBIAN CONTEXT

LA FORMACIÓN INTEGRAL DESDE LA TRANSDISCIPLINARIEDAD PARA UNA ATENCIÓN EN SALUD HUMANIZADA. CONTEXTO COLOMBIANO

Lelis Sofía Barrera Duarte
Corporación Universitaria Minuto de Dios - UNIMINUTO, Colombia
[lelis.barrera@uniminuto.edu.co] [https://orcid.org/0009-0009-8197-3851]
Harold David Granados López
Corporación Universitaria Minuto de Dios - UNIMINUTO, Colombia
[harold.granados@uniminuto.edu.co] [https://orcid.org/0009-0005-4082-3882]
Tany Giselle Fernández-Guayana
Corporación Universitaria Minuto de Dios - UNIMINUTO, Colombia
[tany.fernandez.g@uniminuto.edu.co] [https://orcid.org/0000-0002-4726-5028]

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ABSTRACT

In the Colombian context, marked by social inequalities and health challenges, the training of healthcare personnel demands a profound transformation. Transdisciplinarity emerges as a key approach to integrating disciplinary and community knowledge, facilitating the understanding of the social determinants of health and promoting ethical, collaborative, and critical competencies in professionals working in vulnerable settings. Therefore, this study adopted a qualitative approach with a descriptive scope and a case study design to analyze how transdisciplinarity is experienced in two healthcare institutions located in Bucaramanga and Armenia, Colombia. Sixteen healthcare professionals participated through semi-structured interviews and document review. Data analysis was conducted using triangulation in an Excel matrix. The findings reveal that both institutions function as training centers with a commitment that goes beyond patient care. Transdisciplinarity is reflected in the way patients are treated and in the continuous professional development of staff, demonstrating a vocation for social responsibility, teaching, and research. These practices contribute to transforming healthcare delivery and to the professional growth of the human team. In the discussion, the results are contrasted with previous research, highlighting similarities, differences, or novel contributions. It is concluded that transdisciplinarity is part of everyday practice and is reflected in the collaborative work among professionals, allowing for a comprehensive view of the patient beyond the disease. Furthermore, mechanisms exist for the integration and ongoing training of staff, positioning the healthcare professional as an educational agent serving the community through clinical practice and research.

Palabras clave:
transdisciplinariedad, formación, profesional, salud, paciente.

RESUMEN

En el contexto colombiano, marcado por desigualdades sociales y desafíos sanitarios, la formación del personal en salud exige una transformación profunda. La transdisciplinariedad emerge como un enfoque clave para integrar saberes disciplinares y comunitarios, facilitando la comprensión de los determinantes sociales de la salud y promoviendo competencias éticas, colaborativas y críticas en profesionales que actúan en entornos vulnerables. Por tanto, este estudio adoptó un enfoque cualitativo, con alcance descriptivo y diseño de estudio de caso, para analizar cómo se vive la transdisciplinariedad en dos instituciones de salud ubicadas en Bucaramanga y Armenia, Colombia. Participaron 16 profesionales de la salud a quienes se les aplicaron la entrevista semiestructurada y la revisión documental. El análisis se realizó mediante triangulación de datos en una matriz de Excel. Los hallazgos revelan que ambas instituciones funcionan como centros de formación con un compromiso que trasciende la atención al usuario. La transdisciplinariedad se manifiesta en la forma de atender al paciente y en la formación continua del personal evidenciando una vocación de responsabilidad social, docencia e investigación. Estas prácticas contribuyen a transformar la atención en salud y al desarrollo profesional del equipo humano. En la discusión se contrastan los resultados con investigaciones señalando coincidencias, diferencias o aportes novedosos. Se concluye que la transdisciplinariedad es parte del quehacer cotidiano y se refleja en el trabajo colaborativo entre profesionales, lo que permite una visión integral del usuario más allá de la enfermedad. Además, existen mecanismos para la integración y formación continua del personal posicionando al profesional de salud como agente educativo al servicio de la comunidad desde la práctica clínica y la investigación.

Introduction

This research addresses the emerging needs of a complex and dynamic social context that calls for innovative and collaborative solutions (Morin, 2020). In the field of health, phenomena such as climate change, pandemics, the rise in chronic diseases, widening disparities in access to care, and increasing disciplinary specialization constitute both community and public health emergencies. The contemporary world is characterized by the interconnection and interdependence of social, economic, cultural, and environmental processes; thus, the fragmentation of knowledge and sector-specific training pose barriers to effectively addressing the multifaceted problems faced by health institutions.

This challenge is particularly relevant in Colombia, where the quality of health care has been governed by various national and international standards. For example, Decree 1011 of 2006, Decree 780 of 2016, Statutory Law 1751 of 2015, and Law 2294 of 2023 aim to ensure efficient and safe services through measures such as updating mental health policy and incorporating territorial and environmental approaches; at the same time, international standards such as ISO 9001 and ISO 7101:2023 provide management frameworks for efficiency, patient satisfaction, and the sustainability of health care systems, promoting qualified professional teams and continuous quality improvements (Vélez and González, 2021). In this context, it is urgent to adopt a transdisciplinary and comprehensive approach in order to overcome the fragmentation of knowledge and move toward a holistic approach, in line with the World Health Organization's definition: "a state of complete physical, mental, and social well-being, and not merely the absence of disease or infirmity" (WHO, para. 1). From this perspective, applying a transdisciplinary and integrative approach in health contexts is based on the urgent need to adopt a holistic approach within the health system, as outlined by the World Health Organization (WHO), which defines health as "a state of complete physical, mental, and social well-being, and not merely the absence of disease or infirmity" (para. 1).

To overcome the limitations of fragmented knowledge, transdisciplinarity and holistic education are presented as key approaches. Transdisciplinarity is understood as an approach that transcends disciplines and promotes the integration of diverse bodies of knowledge; it represents a unique opportunity to overcome these limitations (Santaella and Simón, 2023). "It seeks to analyze a problem or situation from the perspective of different disciplines that are interconnected, that transcend one another, and that are not limited by the current compartmentalization of knowledge" (Nicolescu, 1996). It is not the same as interdisciplinarity, since the latter consists of integrating concepts, methods, and perspectives from two or more disciplines to address a specific question or problem while maintaining disciplinary boundaries and thus establishing a synthesis among established fields (Bell et al., 2022).

In the health sector, the primary goal of a transdisciplinary approach is to train professionals responsible for patient care, fostering intersectoral collaboration that enables the integration of medical, psychological, social, and cultural dimensions. It focuses on improving the quality of care and ensuring that patients' biopsychosocial needs are addressed in a comprehensive manner. Therefore, the true impact of regulations in the field of health depends on their integration with transdisciplinary approaches that bring together knowledge from education, health, and the social sciences. A transdisciplinary approach makes it possible to overcome the fragmentation of knowledge and address the complexity of health issues from a holistic perspective;

meanwhile, comprehensive education ensures the balanced development of the cognitive, emotional, and social dimensions of professionals and citizens, thereby strengthening the quality of health care not only through regulations but also through the development of human capacities that promote well-being and sustainability.

In this regard, a study in Mexico finds that "pseudo-interdisciplinarity" persists in Latin American higher education due to compartmentalized structures of knowledge (Portugal, 2021); Meanwhile, in Colombia, interdisciplinarity is framed as an ethical responsibility of universities, and a study in Valledupar demonstrates the potential of integrated teams to promote healthy lifestyles and empower communities (Sánchez et al., 2015). On the other hand, Garrafa (2022) points out the mismatch between biomedical ethics and transdisciplinarity in the social sciences and humanities, calling for frameworks that are sensitive to their specific characteristics, especially in Brazil. Therefore, a universal and holistic ethical framework—aligned with UNESCO's Universal Declaration on Bioethics and Human Rights—is proposed as a guide for truly comprehensive and responsible research (Téllez and Aragón, 2022). Overall, the evidence points to the need to adopt transdisciplinary approaches and transform university structures into models of research and education capable of integrating different fields of knowledge and addressing complex problems.

The results of previous studies reveal a persistent gap between interdisciplinary rhetoric and institutional practice. Structures and incentives that perpetuate fragmentation remain in place, while interdisciplinary teams demonstrate transformative potential in community settings but require rigorous assessments of sustainability and scalability. Ethical models designed for biomedicine are inappropriate for social and participatory research, hindering the co-production of knowledge; therefore, it is necessary to adopt a more holistic ethical approach and adapted regulatory frameworks. Overall, the evidence calls for a shift from isolated projects and policy statements to institutional transformations that promote academic incentives, transdisciplinary reviews, and participatory mechanisms that enable the implementation, maintenance, and evaluation of integrative practices in health care delivery.

In this context, this study focuses on transdisciplinarity as a means of strengthening the comprehensive training of health care personnel, since the literature indicates that the topic has been addressed only to a limited extent. Therefore, the novelty of this study lies in the integration of knowledge, practices, and worldviews into the training of professionals responsible for patient care, fostering intersectoral collaboration that enables the integration of medical, psychological, social, and cultural dimensions to address complex problems in the health care system. However, it is recognized that hierarchical care structures, excessive workloads, fragmented models, cultural and educational barriers, and legal and patient safety considerations can hinder its implementation.

It is therefore recognized that human well-being is the result of multiple factors, such as nutrition, safe environments, social relationships, and many other factors that influence and enable a person's healthy development. Therefore, it is crucial to train health professionals with a broader, more critical, and more collaborative perspective, emphasizing the importance of adopting transdisciplinary approaches that integrate knowledge from various fields. Thus, there is a need to restructure traditional educational models by promoting interdisciplinary interaction, the co-construction of knowledge, and the integration of theory and practice, which will help strengthen patient-centered care and take into account the patient's social, cultural, and family context. These considerations lead us to the research question: How is holistic education based on a

transdisciplinary approach manifested in the context of selected Colombian healthcare institutions?

Conceptual Framework

Transdisciplinarity in Health

Transdisciplinarity is a methodological and epistemological approach aimed at addressing complex problems through the integration of diverse bodies of knowledge and disciplines. According to Nicolescu (1996), it is based on three principles: the integration of multiple levels of reality, the logic of the included third, and transdisciplinary collaboration. The multidimensional nature of reality is recognized, which allows for interdisciplinary collaboration to foster dialogue among different fields of knowledge and cooperation among researchers, professionals, and communities in order to generate shared knowledge and innovative solutions (Pérez *et al.*, 2013). Therefore, according to Morin (2001), transdisciplinary education promotes intrapersonal, interpersonal, and cognitive skills that are essential for solving complex problems through the collaborative work of multiple disciplines.

In the field of health, transdisciplinarity has established itself as a strategy that goes beyond collaboration among disciplines, involving the transcending of disciplinary boundaries to integrate knowledge, skills, and collective decision-making that includes patients, families, and communities (Van, 2017). Health interventions based on a transdisciplinary approach aim to address contextual complexity, incorporate diverse forms of knowledge, and build inclusive conceptual frameworks, thereby enabling the design of solutions that are sensitive to local realities (UNESCO, 2020). This approach seeks to solve real-world problems through a holistic and participatory lens, which is essential in a world where health issues are becoming increasingly complex and interdependent.

In recent years, it has been noted that transdisciplinarity is key to addressing global challenges such as climate change, pandemics, and social inequality, requiring the development of collective solutions drawn from different fields (Fagundo-Rivera and Gómez-Salgado, 2025). In public health, efforts have been made to integrate disciplines such as the social, environmental, and human sciences into our understanding of the life-disease process (Tirado, 2020). This approach emphasizes that health initiatives must go beyond the clinical realm, integrating different perspectives to achieve sustainable solutions. Thus, transdisciplinarity seeks to break down disciplinary boundaries and build bridges of dialogue and cooperation that foster a deep and holistic understanding of complex contemporary problems, thereby contributing to inclusive and equitable solutions.

Comprehensive Health

Holistic health has evolved into a vision that goes beyond the biomedical approach, incorporating various dimensions. Integrative approaches promote well-being as a multidimensional state that goes beyond the mere absence of disease (Valenzuela, 2016). This perspective emphasizes that physical, emotional, cognitive, and community aspects are intertwined and mutually reinforcing, arguing that care must respond to the complexity of the daily lives of individuals and communities.

Recent studies in Latin America highlight the importance of educational and community policies that integrate comprehensive health with sustainable development

(ECLAC, 2021; Montero, 2021). Promoting healthy lifestyles and shared responsibility for health fosters a sustainable and participatory approach to healthcare from an early age and in diverse contexts such as Colombia's. In this regard, the WHO (2018) states that health systems must ensure a comprehensive approach that incorporates the promotion of healthy environments, community participation, and attention to social determinants.

For its part, the concept of *integrative health* describes a state of physical, mental, and spiritual well-being that encompasses the individual, the community, and the population. This approach is influenced by individual, environmental, and social factors, as well as public policies designed to promote the participation of both the individual and the healthcare team in preventive and therapeutic strategies aimed at holistic well-being (Engineer et al., 2021). Consequently, it is argued that fragmented systems are insufficient to address the complexity of the experience of illness, which reinforces the need for integrative approaches (Sasagawa et al., 2017).

Health and Education

The training of health professionals has adopted a transdisciplinary approach by integrating academic, ethical, and social content. Recent research highlights that healthcare education must incorporate not only technical competencies but also social-emotional and leadership skills to respond to changing contexts (Saleh, 2025). These contributions underscore the need for a curriculum that promotes adaptability, social responsibility, and interdisciplinary collaboration as essential components of health education.

Consequently, several transdisciplinary educational models in health have emerged that emphasize the development of technical, ethical, social, and collaborative competencies, training professionals capable of acting with cultural sensitivity and a holistic perspective in diverse contexts (UNESCO, 2020). One of these is the transdisciplinary pedagogical model for public health research, which aims to transfer skills across different disciplines and contexts (Betancourt, 2013). This model encourages learning that goes beyond technical knowledge and promotes a broad view of the role of healthcare professionals in society.

Another model is that of sustainable health, in which interprofessional education must address cross-cutting environmental threats, which requires collaboration across disciplines and an education focused on global responsibility (Hoyos and Velásquez, 2021). In this way, future professionals acquire the skills needed to tackle the complex challenges of the environment from a holistic perspective. According to Suero and Ferriol (2019), promoting healthy communities involves training health professionals to become agents who reinforce the values of providing selfless and courteous service.

Method

This study takes a qualitative approach in which data are collected from multiple sources that provide information about the case under study, as well as the subject's memories and experiences and the phenomenon under study, with the aim of interpreting it. In this particular case, the study explores how healthcare professionals understand and experience aspects of transdisciplinarity that enable comprehensive training for improved patient education and care, as well as disease treatment. In addition, the study takes a descriptive approach because it grounds transdisciplinarity in the practices, concepts, and factors that shape it within the healthcare setting. Finally, the design adopted is that of a collective case study, as it allows for the analysis of various case

studies on transdisciplinarity and the holistic training of healthcare personnel in their real-world context, interpreting meanings, practices, and relationships. This makes it possible to analyze several cases together to identify common patterns.

The study was limited to two cities in the country: Armenia and Bucaramanga. In the city of Armenia, there is one hospital—a recognized tertiary-level institution that provides supervised academic training in accordance with Law 2333 of 2023. In Bucaramanga, a tertiary-care healthcare facility was established, with a focus on healthcare personnel. Given these circumstances, the sample of participants was selected using non-probabilistic, purposive, or convenience sampling based on selection criteria such as: availability, having a current employment contract, and at least one year of professional experience in the health field. In addition, institutional documents such as protocols, contingency plans, resolutions, research policies, and the institutional mission and vision were reviewed. At Institution 1 (Armenia), the sample consisted of 5 bacteriologists and 3 laboratory assistants from the clinical laboratory subprocess, and at Institution 2 (Bucaramanga), it consisted of 8 healthcare professionals: 6 doctors and 2 nursing assistants. In total, the sample consisted of 16 participants from the health sector, representing both the public and private sectors (see Table 1).

Table 1

Sample from the study

Institutions health	Documents Considered	Participants		Total
Institution 1 (Armenia)	Protocols	Bacteriologists	5	8
	Contingency Plans	Laboratory assistants	3	
Institution 2 (Bucaramanga)	Institutional Resolutions and Policies	Doctors	6	8
	Mission and Vision institutional	Nursing Assistants	2	
Total number of participants:				16

Two qualitative methods were used to collect data: semi-structured interviews and a literature review. Each technique was selected based on its suitability for the study's specific objectives, with the aim of triangulating the information from various sources and perspectives. The document matrix made it possible to collect and analyze the documents that regulate and govern health care institutions. The semi-structured interview made it possible to gather healthcare staff members' accounts of the processes, experiences, and perceptions related to transdisciplinarity and comprehensive training. The interview consisted of 8 questions that had been previously evaluated by experts to ensure their reliability. The experts, who have experience in complex thinking, took into account factors such as writing style, content, consistency, relevance, clarity, and accuracy. Their evaluation highlighted the clear design of the instruments and suggested that some items and terminology be reworded. As a result, the original design of the literature review matrix is retained, and the interview is expanded from 6 to 8 questions (see Tables 2 and 3).

Table 2

Semi-structured interview

No.	Item
1.	Tell us about an experience in which you interacted with other fields of knowledge and professionals from other disciplines while providing care to a client.
2.	Based on your experience, describe how staff training is conducted at the institution.
3.	What institutional practices promote biopsychosocial training for staff at the institution?
4.	Describe the cross-functional projects the institution carries out to serve its users
5.	Describe the cross-functional projects the institution carries out in staff training
6.	Do you believe that the education you received (from the institution) promotes a holistic view of the human being? Why?
7.	In your role at the institution, how do you help make a difference in patients' lives?
8.	Has your work at the institution contributed to your personal and professional development?

Table 3

Literature Review

Institutional Document	**CATEGORIES**							
	Unity of knowledge, not fragmentation	Problem-Solving from Multiple Perspectives	Impact	What about transdisciplinarity?	Biological Development	Psychological Development	Social Development	What about a well-rounded education?
Mission								
Vision								
Protocols								
Programs								
Manuals								
Internal Regulations								
Quality Report								
Clinical Practice Guidelines								
Regulatory Documents								
Training Programs								
Others								

Specifically, this research project, identified by code N02024-01-126, was approved by the Ethics Committee of the PICS Science and Social Innovation Park at the Minuto de Dios University Corporation (UNIMINUTO), which confirms its compliance with ethical, bioethical, and scientific integrity standards and its alignment with the objectives, methodology, and outcomes associated with the research proposal. In addition, two letters of intent were collected from the healthcare institutions and 16 informed consent forms from the participants, in which the project and its objectives were explained, ensuring complete anonymity and voluntary participation in the project.

Data analysis was conducted using a triangulation process that combined two data collection techniques: semi-structured interviews and a literature review. For the semi-structured interview, the epistemological approach that guided the interpretation of the data was the phenomenological one. This allowed us to understand how health professionals experience and interpret transdisciplinarity in their daily practice, beyond what institutional norms or models dictate. For its part, the literature review included a

hermeneutic analysis, which made it possible to interpret the documents governing health centers within their context. Consequently, the purpose of its policies and institutional guidelines was discussed. To achieve this, the following phases were implemented:

1) Finger placement: The semi-structured interviews were transcribed from audio to text using the AI Vocal tool. By reviewing the documents, the noteworthy excerpts from the institutional documents were selected and inserted into a Word document.

2) Selection of relevant data: The sections that define, explain, discuss, and illustrate the phenomenon under study were selected for both instruments. Similarly, anecdotes that contribute to the participants' shared meanings are drawn from the data. All the excerpts were arranged one after another in a Word document.

3) Establishment of categories for analysis: A) Transdisciplinarity: Unifying knowledge, not fragmentation; problem-solving from multiple perspectives; impact. B) Holistic Development: biological development, psychological development, social development.

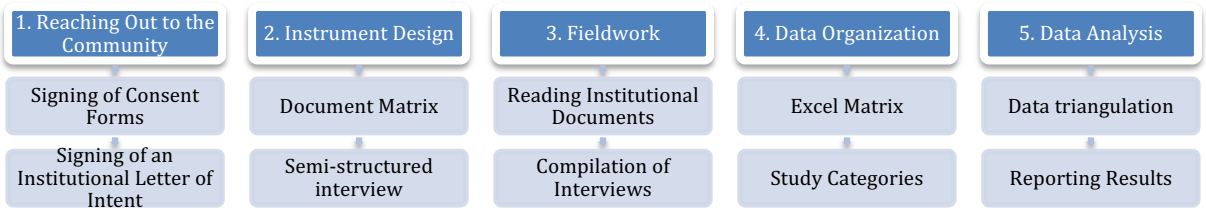
4) Analysis matrix: The study's data and categories were organized in an Excel spreadsheet. The left-hand column contains the selected excerpts from the literature review, and the right-hand columns contain the study's categories and subcategories. Each instrument went through this process on a separate sheet of paper.

5) Triangulation: Once the data has been organized and the categories against which it will be compared have been established, the systematic analysis begins. The process begins by comparing each response with each category, noting their relationship and common themes. Once this step is complete, the information obtained from the two instruments is combined.

6) Interpretation: Through a phenomenological and hermeneutic interpretive approach, the results for each category were documented, highlighting their convergence, divergence, and complementarity—an aspect that enabled a holistic understanding of the phenomenon under study in relation to transdisciplinarity and holistic education (see Figure 1).

Figure 1

Investigation Procedure



Results

Unity of Knowledge, Not Fragmentation

At Institution 1, the laboratory bacteriologists demonstrate the integration of knowledge by playing a key role in comprehensive patient care, validating laboratory results through clinical correlation, interdisciplinary collaboration, and continuous verification to ensure reliable diagnoses. Their work takes place in an institutional

environment that promotes ongoing training, a patient-centered approach to care, technical development, and staff well-being. Through training programs, participation in committees, emotional support, and teamwork, both technical knowledge and interpersonal skills are strengthened. The institution has established itself as an educational and healthcare setting where ethics, empathy, and professional commitment are combined with advanced technologies and patient-centered management; the bacteriologist's experience in this context highlights the value of the clinical laboratory in the diagnostic process as part of coordinated, ethical, and educational care. Thus, the presence of elements such as humanization, patient well-being and care, training and development of human talent, and continuous improvement is evident in all the documents reviewed, whether mentioned directly or explicitly.

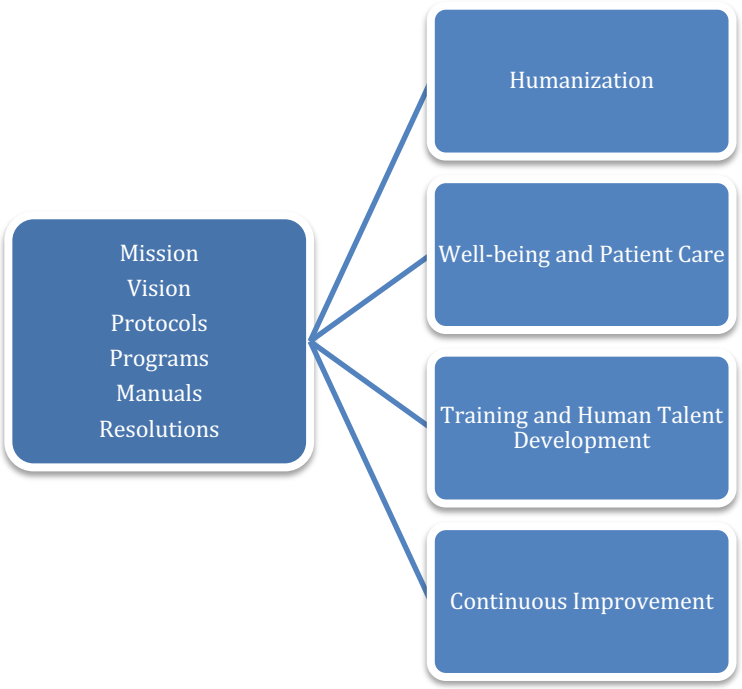
There is a comprehensive integration of technical, clinical, administrative, and human expertise, resulting in seamless, patient-centered care. Constant coordination with various hospital departments, ongoing training, collaborative work, psychosocial support, and participation in educational and feedback processes all strengthen an interdisciplinary approach. This initiative strengthens the comprehensive training of healthcare professionals, promoting patient-centered care and an education grounded in the realities of the hospital setting. It is recognized that this practice promotes diagnostic efficiency, quality of service, and the well-being of both patients and staff, establishing the institution as a place for learning, professional development, and empathetic care, as Bacteriologist 3 notes: "*We promote emotional well-being activities and workshops on empathy and communication with patients—that's very important. We need to keep in mind that we're basically putting ourselves in the patient's shoes, because they're the ones suffering from the pain or illness," "It has greatly strengthened my empathy and my commitment to healthcare*."

Meanwhile, at Institution 2, documents such as Annex D of the Patient Safety Protocol and the Manual Development Template demonstrate an explicit intention to integrate various dimensions of knowledge (clinical, pedagogical, legal, ethical, and administrative), thereby creating a platform that transcends the traditional fragmented approach. This organizational practice echoes the statement made by Doctor 3, who noted that "*Training must be comprehensive—not only to heal, but also to care for, understand, and support patients*." Thus, it is clear that the organization views health care as a space where each discipline contributes specific value and where knowledge flows in an interdependent manner.

Structural coherence between the healthcare team's discourse and institutional tools promotes the integration of knowledge in education and practice, facilitating a complex and transdisciplinary understanding of care. This category is reinforced by the recognition that both professional protocols and testimonials emphasize the need to integrate different fields of knowledge to improve care and training. The integration of knowledge thus becomes a guiding principle that prevents fragmentation and promotes a holistic approach to care (See Figure 2).

Figure 2

Key Elements in Institutional Documentation



Problem-Solving from Multiple Perspectives

At Institution 1, problem-solving demonstrates a comprehensive, collaborative approach to health care, in which the bacteriologist's work in the clinical laboratory is closely coordinated with physicians, nursing supervisors, and other professionals; this includes the validation of critical results, correlation with the patient's clinical status, and active participation in interdisciplinary committees, as noted by Bacteriologist 04, who states: "I actively participate in the Infection Control Committee and the Epidemiological Surveillance Committee, where many issues that cut across all hospital departments are addressed." This reflects a process focused on accurate diagnosis and timely treatment; This model promotes continuing education, patient-centered care, the well-being of staff and patients, and the ethical use of technology, thereby strengthening a healthcare system based on trust, empathy, and continuous improvement.

Laboratory assistants note that the handling and management of samples at the institution reflect a collaborative and comprehensive approach, in which coordination among assistants, bacteriologists, physicians, and administrative staff allows problems to be addressed from multiple perspectives—technical, organizational, ethical, and human. Ongoing training and EPM meetings, as highlighted by Laboratory Assistant 03, who states that: "*Almost every month, at the end of the month, we hold what we call the EPM, which is a meeting with the entire lab staff to see how things are going, to foster camaraderie and teamwork, and to ensure a very good work environment*," and the inclusion of students strengthens collective learning, while coordination among clinical, social, and psychological departments ensures patient-centered care. This model fosters more informed and sensitive decision-making by integrating diverse knowledge and promoting an environment of continuous improvement and shared care.

At Institution 2, institutional protocols—such as the fall prevention protocol and the Immediate Action Guide—provide multifaceted solutions to critical incidents, which are developed with the participation of professionals from various fields (psychology,

physical therapy, medicine, nursing, safety, and nutrition). Accordingly, Doctor 4 emphasizes that "*when we all contribute from our respective roles, the solutions are more comprehensive*." This account illustrates how the collaborative development of knowledge in practice makes it possible to generate more effective responses that are tailored to and contextualized for patients' needs.

This finding shows that problem-solving from multiple perspectives is an established practice at the institution, not merely a theoretical ideal. We develop integrated solutions that enhance patient safety, the quality of care, and the continuous learning of healthcare professionals. This approach also fosters an environment in which teamwork is established as a core value, enabling the team to handle critical situations more effectively and reducing the margin for clinical error.

Impact

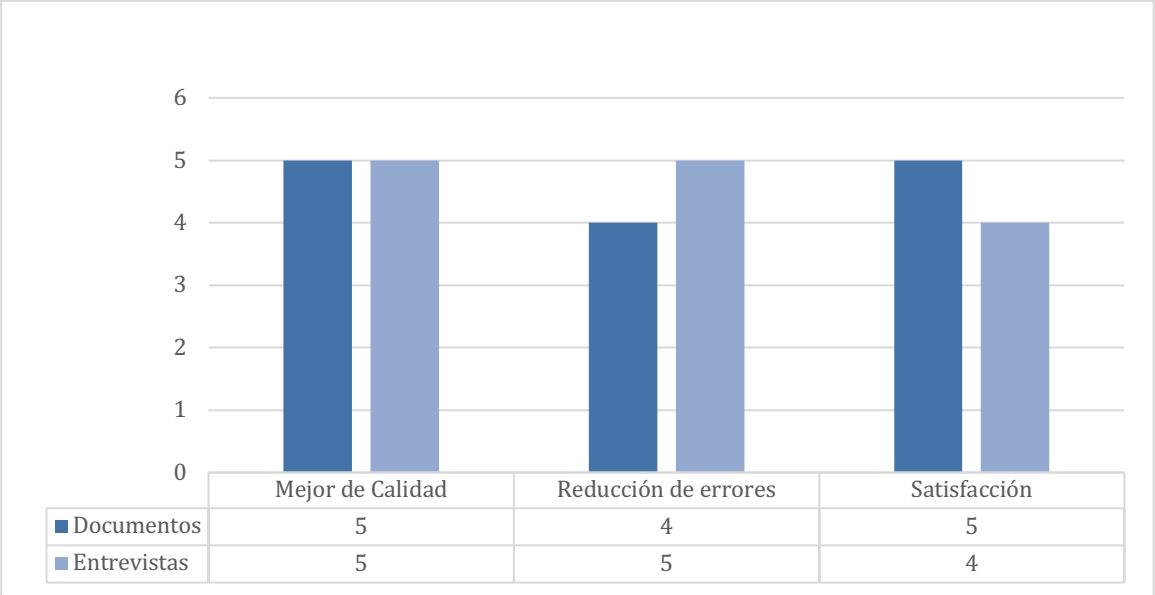
At Institution 1, the laboratory bacteriologists demonstrate the impact of quality on hospital care through the integration of technical knowledge, interdisciplinary work, and a patient-centered approach. The clinical laboratory—and especially the role of the bacteriologist—is key to timely and accurate diagnosis, which guides medical treatment. Effective communication across departments, ongoing training, employee well-being, and an organizational culture centered on empathy and collaboration strengthen both professional development and the patient experience. This comprehensive approach improves the safety, efficiency, and patient-centered nature of the service, reinforcing a patient-centered approach and a commitment to continuous improvement.

Nursing assistants have a direct and positive impact on the quality of diagnosis and patient care; interdisciplinary collaboration, ongoing staff training, and the implementation of organizational strategies—such as EPM meetings, technical training, and psychosocial support—strengthen both professional performance and the work environment. This comprehensive, empathy-centered approach, as Laboratory Assistant 02 points out: "*We must show warmth and empathy toward others*"—in addition to efficiency and teamwork—promotes more humane, safe, and timely care, establishing the hospital as a place of learning, collaboration, and commitment to patient well-being.

At Institution 2, institutional documents acknowledge the positive impact of transdisciplinary training and coordinated protocols on the quality of care, patient safety, and the strengthening of the organizational climate. This statement is corroborated by Doctor 1, who stated: "*Since we've been working together, everything has been running more smoothly and there have been fewer mistakes*." This demonstrates that disciplinary coordination not only affects processes but also has a direct impact on reducing risks and strengthening trust.

The impact of transdisciplinary processes is not limited solely to clinical indicators; it is also reflected in institutional trust, the consolidation of a culture of care, and the creation of a reflective and participatory learning environment. This impact manifests itself in two key areas: for patients, who receive safer, more humane, and more personalized care; and for staff, who find opportunities for professional and personal growth in these practices (see Figure 2).

Figure 2
Impact of Transdisciplinary Processes



Transdisciplinarity

Transdisciplinarity in healthcare institutions is a key factor in providing comprehensive patient care. In this context, collaboration among bacteriologists, physicians, nursing assistants, and patient care staff enables a more effective response to diagnostic challenges—especially when faced with abnormal or inconsistent test results—and fosters a culture of continuous and collective learning. This synergy is enhanced through institutional programs designed for continuing education—such as courses, specialized training, and collaborative discussions—which broaden professional perspectives and enrich clinical decision-making. Thus, the bacteriologist's technical expertise—validated by rigorous quality controls—becomes indispensable for guiding medical practice, even though their work remains largely unseen. Furthermore, the transdisciplinary model emphasizes the human dimension of care, incorporating empathy and the emotional well-being of both patients and healthcare personnel. This comprehensive perspective redefines healthcare as a collaborative practice, in which each discipline contributes, based on its specific expertise, to the common goal of providing more precise, humanized, and effective care (see Figure 3).

Figure 3
Humanized and Collaborative Healthcare Cycle

In this regard, transdisciplinarity is not an abstract ideal, but rather a concrete and necessary institutional practice that is reflected in policy documents and in the day-to-day experiences of health professionals. Manuals, protocols, and plans—such as the IAAS Action Plan, the Patient Safety Manual, and the Immediate Action Guide—require effective cooperation across multiple disciplines, breaking down barriers between traditional roles and fostering the collective creation of knowledge. In this regard, the institutional framework is geared toward establishing processes that do not rely on rigid hierarchies, but rather promote a horizontal approach to work in which each role is recognized for its unique characteristics and for the value it brings to patient care. This creates an environment in which open communication, collaborative decision-making, and participation become standard practices that enhance the quality of care and build team trust.

Transdisciplinarity, therefore, cuts across all the other subcategories identified in the analysis, as it brings knowledge together, enables problem-solving from multiple perspectives, and has a positive impact on the patient's biopsychosocial development. It is not merely a methodological tool for improving care, but rather an epistemological and ethical stance that redefines both the role of the professional and that of the patient in the care process. Transdisciplinary practice thus becomes the cornerstone of comprehensive training and quality care, offering a broader vision of health in which biological, psychological, and social factors are intertwined. This approach paves the way for a profound transformation of care models, placing the patient at the center and viewing knowledge as a collective asset that must be shared and coordinated to achieve more effective and humane outcomes.

Biological Development

At Institution 1, the laboratory bacteriologists demonstrate that the close relationship between the clinical laboratory and patient care—based on constant communication among bacteriologists, physicians, and healthcare staff—is essential to

ensuring accurate diagnoses and timely treatments. Ongoing training and scientific updates for staff, along with the use of advanced technologies—which are of great importance for the diagnosis mentioned by Bacteriologist 02, who states: "*When it comes to technologies in the lab, they vary; some are more complex, so you develop the ability to gain a basic understanding of all these technologies and know how to use them in your day-to-day lab work*."

The proper collection, handling, and processing of biological samples is crucial to ensuring the validity of clinical analyses and diagnostic accuracy, which directly impacts the patient's physical health. This process requires a thorough understanding of physiological and technical principles, as well as effective coordination among hospital staff. Continuing education and training are essential for keeping this knowledge and these skills up to date, while also promoting the physical and emotional well-being of staff through a healthy work environment.

Meanwhile, at Institution 2, initiatives such as IAAS 2025 and the Fall Prevention Protocol directly address patient safety through infection control, fall prevention, and the safe performance of invasive procedures. From a practical standpoint, Doctor 6 emphasizes that "Biological treatment is essential, but it is not enough unless it is accompanied by comprehensive support." This testimony shows that the biological dimension, while a priority, cannot be addressed in isolation but must be complemented by other perspectives.

Biological development is promoted at the institution not only through medical intervention but also through coordination with departments such as physical therapy, nutrition, and nursing. This comprehensive approach prevents the fragmentation of care and promotes patient recovery through a broad view of health. In this way, the biological dimension becomes the starting point for a form of care that is expanded and enriched by other forms of knowledge.

Psychological Development

At Institution 1, laboratory bacteriologists describe how psychological development is assessed by integrating it with the medical history and through interdisciplinary dialogue among bacteriologists, physicians, and nursing staff, as highlighted by Bacteriologist 01: "*We have colleagues here with various specialties, so we rely on them quite a bit, and they're always willing to help us as well—which is truly rewarding*," which allows for a comprehensive understanding of the patient and better therapeutic decision-making. The institution fosters a collaborative environment that emphasizes not only technical training but also the personal, ethical, and emotional development of its staff, recognizing the importance of empathy, communication, and psychological support for both patients and professionals.

Nursing assistants are constantly interacting with patients and other healthcare professionals, which requires them to adapt and manage stress in order to maintain a healthy work environment and provide compassionate care focused on holistic well-being. Continuing education and training strengthen these emotional and social skills, fostering staff confidence, motivation, and resilience. Institutional strategies such as psychological counseling, grief management courses, and integration activities contribute to a supportive environment and group cohesion. Organized, timely, and empathetic care reduces anxiety and stress in patients, improving their experience and emotional well-being.

At Institution 2, institutional documents include modules on self-care, empathetic communication, stress management, and emotional support. These elements were

acknowledged by Auxiliary 2, who stated: "*A patient who is afraid, alone, and without emotional support will not make a good recovery.*" This testimony highlights that the emotional aspect is crucial both for the patient's recovery and for the well-being of healthcare workers. Psychological care is viewed as an essential part of the care process, rather than as a secondary aspect.

The institution strengthens this aspect through programs aimed at humanizing care, training in emotional management, and activities that promote the team's resilience and mental health. In practice, this means that every interaction with a patient should take into account not only the clinical aspect, but also active listening, psychological support, and empathy, thereby fostering a more sensitive and compassionate approach to care.

Social Development

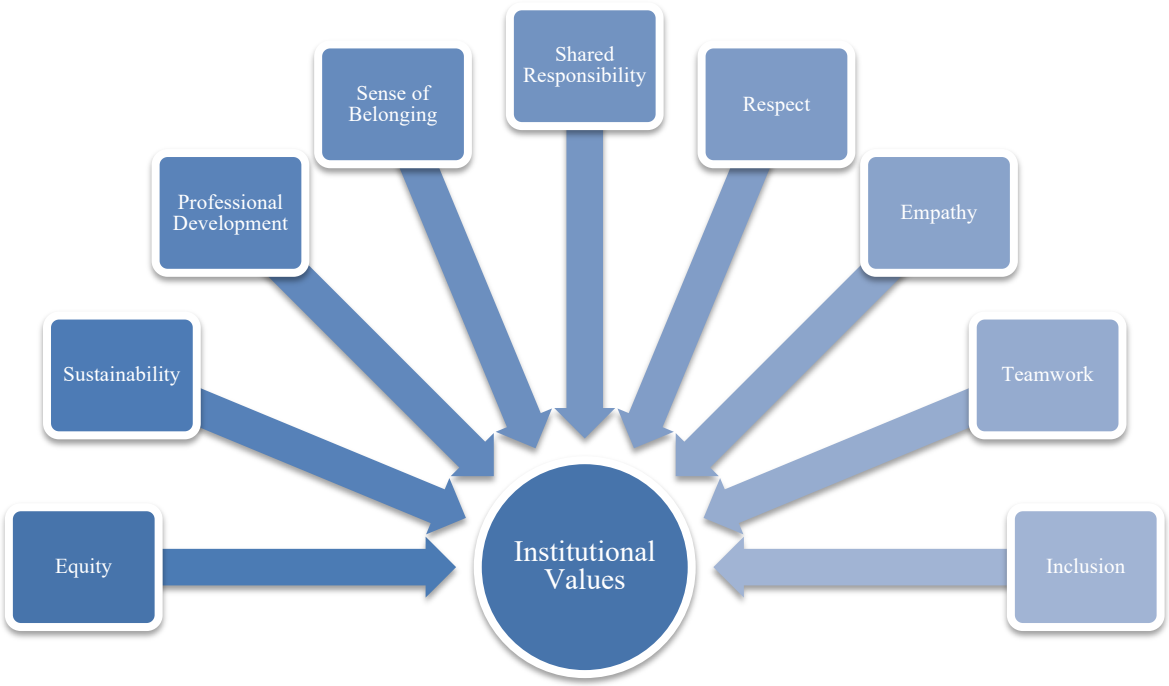
At Institution 1, the bacteriologists in the laboratory demonstrate social development through dialogue and interdisciplinary interaction among health professionals, promoting accurate diagnosis and timely treatment while comprehensively addressing the patient's needs. Teamwork, participation in committees and institutional processes, as well as ongoing training and support, strengthen communication, trust, and organizational cohesion. These dynamics foster a healthy work environment based on values such as respect, empathy, and teamwork, as noted by Bacteriologist 01: "*Teamwork—a colleague's help is always welcome*," which positively impact both the quality of clinical care and the emotional well-being of patients and healthcare professionals.

Nursing assistants are strengthening the communication and cooperation networks that are essential for a cohesive work environment. Coordination and constant communication, along with training and educational opportunities, as Laboratory Assistant 01 points out: "*We have training and improvement meetings for us, the assistants. "From time to time, the institution asks us to update our professional training,*" all of which fosters a sense of belonging, respect, and solidarity within the team; patient support programs and common areas contribute to social integration and collective well-being.

Meanwhile, at Institution 2, both the IAAS Plan and the Fall Prevention Protocol encourage the involvement of family members, caregivers, and the community in care, fostering a sense of shared responsibility. This is in line with the observation made by Doctor 1, who emphasizes: "*We must view the patient in context—within their family and their reality—not just in a hospital bed*." This acknowledges that a patient's well-being depends not only on healthcare professionals, but also on the support they receive from those closest to them.

Social development is reflected in projects such as "Tu corazón en tus manos," which involves patients after discharge, and in continuing education programs for family members and caregivers on risk prevention and home care. This approach recognizes that health is not an individual phenomenon, but rather a social and community one, which means that care must be coordinated with patients' support networks, family context, and social environment. (See Figure 4).

Figure 4
Internalization of Institutional Values



Comprehensive Training

In healthcare institutions, comprehensive training goes beyond the acquisition of technical knowledge, encompassing ethical, human, and collaborative dimensions that are essential to quality healthcare. This approach recognizes the importance of smooth and constant communication among the various healthcare professionals—doctors, bacteriologists, and nurses—integrating clinical findings as well as the emotional, social, and psychological factors that affect the patient's condition. In turn, the well-being of healthcare staff is positioned as an essential pillar, promoted through self-care, stress management, and continuing education, which reinforces an institutional culture based on respect, inclusion, and collaboration. The incorporation of advanced technologies and ongoing scientific updates strengthen technical skills and also foster a more reflective and critical approach to practice, in which teamwork and feedback promote professional and emotional growth. In this context, patient safety emerges as the cornerstone of practice, ensuring that every clinical decision is guided by ethical principles, interpersonal sensitivity, and an ongoing commitment to improving the quality of care.

These documents (Teaching and Service Relationship Manual and Institutional Training Plan 2025) identify it as an essential component for ensuring the quality and relevance of health workforce training. Through the effective integration of theory and clinical practice, and through strategies such as the progressive delegation of responsibilities based on the student's level of training, continuous and context-specific educational processes are established that enable the coherent development of competencies. This training encompasses technical knowledge, critical thinking skills, and ethical and collaborative skills—all of which are essential for patient-centered care adapted to the complexity of the hospital setting. Incorporating clinical, academic, and community perspectives into learning processes enriches analysis, strengthens interdisciplinary decision-making, and reinforces the link between academia and service.

In this way, holistic education becomes a driving force for institutional transformation by fostering professionals who are more aware, committed, and capable of responding ethically and effectively to the challenges of the health care system (see Table 2).

Table 2
Key Elements of Comprehensive Health Care

CATEGORY	SUBCATEGORY
Comprehensive, precise, and compassionate care	Empathy, patient well-being, and team well-being: the ultimate goal of the transdisciplinary model.
Better clinical decision-making	Decisions based on collaboration and technical expertise lead to safer and more efficient actions.
Technical Validation and Knowledge	Quality controls and technical input from the bacteriologist increase diagnostic reliability.
Continuing Education and Collective Reflection	Courses, training programs, specializations, and institutional opportunities enhance knowledge.
Interdisciplinary collaboration	Cooperation among physicians, bacteriologists, nurses, and nursing assistants to address patient care.

Discussion and Conclusions

In the findings, transdisciplinarity emerges as an epistemological stance and an institutional practice that goes beyond interprofessional collaboration to become a framework that integrates teaching, research, patient care, and the community around complex health issues. The findings show that this vision—in which bacteriologists, physicians, nursing assistants, and other healthcare personnel share knowledge and responsibilities—aligns with contemporary proposals that view transdisciplinarity as a response to systemic challenges. Not only does it break down disciplinary boundaries, but it also incorporates non-academic stakeholders and reflective practices to generate sustainable solutions (Sell *et al.*, 2022). Current literature broadens this perspective to include health systems science and the need for transdisciplinary frameworks to promote continuous learning and improvements in complex systems (Méndez, 2015). Overall, the results reinforce the idea that a transdisciplinary approach—when implemented through institutional policies, tools (manuals and protocols), and training opportunities—can transform training and care to comprehensively address the needs of the population.

With regard to the experience of holistic education, the findings of this study show that both institutions promote it through their healthcare workforce. This involves acquiring technical skills, putting values into practice, and engaging in continuing education, which leads to the adoption of a holistic approach that recognizes the inherent complexity of health care. Olivera (2013) emphasizes the importance of integrating knowledge through an interdisciplinary approach, highlighting its practical application in the students' learning process. Similarly, López and Fernández (2025) assert that the comprehensive training of professionals requires them to place themselves at the service of others and their realities; therefore, it entails ongoing preparation. However, it is important to note that the ethical and political tensions arising from the funding crisis facing the current healthcare model hinder its effective implementation.

In conclusion, it is established that transdisciplinarity and holistic education are not isolated dimensions, but rather complementary pillars that redefine health care in the institutions studied. Transdisciplinarity is becoming established as an everyday practice

that integrates technical, human, and community knowledge, fostering a comprehensive approach to patient care and promoting horizontal collaborative processes that enhance the quality of care. In turn, comprehensive training goes beyond technical training to incorporate human values, ensuring that professionals develop critical and collaborative skills focused on the well-being of both the patient and the healthcare team itself.

The study's objectives were achieved by determining that institutional documents reflect policies with a clear transdisciplinary focus, demonstrating an explicit intention to train health professionals capable of applying critical thinking in complex and constantly changing contexts. The report also described how healthcare personnel experience transdisciplinarity and comprehensive training based on their professional experiences, highlighting the importance of caring for patients beyond their illness. Among the most significant features are ongoing training and the involvement of various professionals in the management of the disease—practices that strengthen a patient-centered approach.

Therefore, a holistic education based on a transdisciplinary approach is manifested through continuing education, clinical practice, and transformative assessment. Continuing education is based on flexible, up-to-date modules that address key areas such as comprehensive care, bioethics, and teamwork, with an open, cross-sectoral curriculum that promotes meaningful learning. The clinical school emphasizes hands-on learning in real and simulated settings, incorporating activities such as interprofessional rounds, workshops, and case studies that strengthen collaborative skills and complex thinking. Finally, transformative evaluation focuses on formative, multidirectional processes, with constant feedback and measurement of the impact on service quality, promoting evidence-based plans for continuous improvement.

Among the limitations identified were various difficulties in coordinating efforts among the participating institutions, due to regional particularities, such as climatic factors. In addition, the implementation of transdisciplinary projects faces significant obstacles, such as a lack of time on the part of professionals, stemming from both their heavy workload and their rigid schedules. This situation made it difficult to plan jointly and create opportunities for coordination. As recommendations, we encourage the development of proposals that promote the integration of clinical, community, and humanistic knowledge through collaborative work among professionals from different disciplines. We will also provide comprehensive care for users that goes beyond their illness. However, it is necessary to anticipate and address potential challenges related to the coordination between clinical practice and institutional guidelines, the excessive workload of healthcare personnel, and the specific contextual conditions of each region in order to ensure comprehensive care as a social commitment.

In summary, these findings are considered relevant in the Colombian context, as they demonstrate that transdisciplinarity and holistic education are essential pillars for transforming health care and addressing health inequalities. Its applicability is reflected in clinical practice, as it promotes a comprehensive approach to patient care through collaboration among professionals and the incorporation of human dimensions into care. In the field of education, these findings point to the need to strengthen ongoing educational processes that integrate theory, practice, and critical reflection. In this regard, lines of research are being pursued to examine in greater depth the institutional mechanisms that facilitate interdisciplinary integration, assess their impact on the quality of care, and explore models of social responsibility and community engagement among healthcare personnel.

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