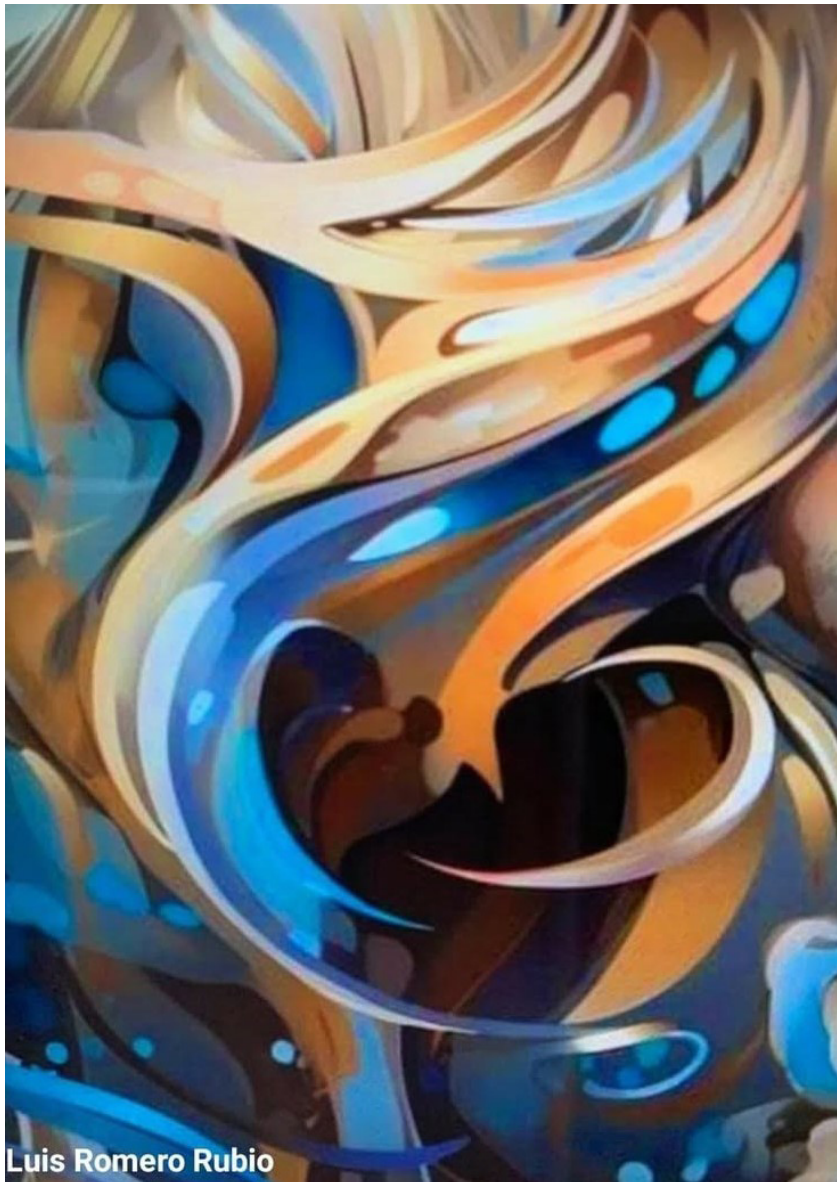




ESPACIO ABIERTO

Cuaderno Venezolano de Sociología



Luis Romero Rubio

En foco

Temas y escenarios de la era Digital

Volumen 36
Nº 1

ENERO-MARZO, 2027

1

Auspiciada por la International Sociological Association (ISA)
y la Asociación Latinoamericana de Sociología (ALAS).
Revista oficial de la Asociación Venezolana de Sociología (AVS)

**ESPACIO
ABIERTO**

Cuaderno Venezolano de Sociología

Volumen 36 No. 1 (Enero-Marzo) 2027, pp. 68-87

ISSN 1315-0006. Depósito legal pp 199202zu44

DOI: 10.5281/zenodo.21315351

The Research Culture in Pre-service Teachers within the Bachelor's Degree in Basic Primary Education

**Betty Otálora Calderón, **Israel Moreno Pinzón y
***Yuranny Romero Archila*

Abstract

Research is often perceived as scientific, complex, and mainly done by experts who are seen as holders of the truth. This study seeks to characterize the research culture of the Bachelor's Degree in Basic Primary Education at the Faculty of Distance Studies of the Universidad Pedagógica y Tecnológica de Colombia between 2022 and 2025, as reflected in the research processes carried out by pre-service teachers. From a mixed methods approach, 73 interviews and an analysis grid of research proposals were used to collect data from 479 pre-service teachers. The findings show that future teachers identify real-world problems and propose solutions from classroom practice across various mandatory subject areas. The range of topics addressed in the Research Seminars reflects this commitment. It is concluded that formative research strengthens comprehensive, critical, and analytical learning, influences pedagogical practices, and contributes to the construction of a more reflective society.

Keywords: Research culture; teaching strategies; teacher competencies; distance education

*Universidad Pedagógica y Tecnológica. Tunja, Colombia. [ORCID: 0000-0001-5617-039X](https://orcid.org/0000-0001-5617-039X)

E-mail: betty.otalora@uptc.edu.co

**Universidad Pedagógica y Tecnológica. Tunja, Colombia. [ORCID: 0000-0003-1928-0439](https://orcid.org/0000-0003-1928-0439)

E-mail: israel.moreno@uptc.edu.co

***Universidad Pedagógica y Tecnológica. Tunja, Colombia. [ORCID: 0009-0001-4007-8983](https://orcid.org/0009-0001-4007-8983)

E-mail: Yuranny.romero@uptc.edu.co

Recibido: 19/04/2026 Aceptado: 21/06/2026

La Cultura investigativa en la Formación Docente del Licenciado en Educación Básica Primaria

Resumen

La investigación suele percibirse como científica, compleja y reservada a expertos considerados poseedores de la verdad. Este estudio busca caracterizar la cultura de investigación del programa de Licenciatura en Educación Básica Primaria de la Facultad de Estudios a Distancia de la Universidad Pedagógica y Tecnológica de Colombia entre 2022 y 2025, tal como se refleja en los procesos de investigación llevados a cabo por los futuros docentes. Desde un enfoque mixto, se emplearon 73 entrevistas y una rejilla de análisis de propuestas investigativas para recolectar datos de 479 maestros en formación. Los resultados evidencian que los futuros licenciados identifican problemáticas reales y plantean soluciones desde el aula en diversas áreas obligatorias. La variedad temática trabajada en los Seminarios de Investigación refleja este compromiso. Se concluye que la investigación formativa fortalece el aprendizaje integral, crítico y analítico, impacta las prácticas pedagógicas y favorece la construcción de una sociedad más reflexiva.

Palabras clave: Cultura investigativa; estrategias educativas; competencias del docente; formación a distancia

Introduction

According to Aguinaga-Doig et al. (2023:34-35), “formative research (FI) is consolidated as a strategy par excellence to promote inquiry competence in students at different levels and modalities, especially at the university stage”. However, developing research processes within the classroom is one of the biggest challenges teacher education programs have for transforming education, as it is necessary to understand better the particular situations to provide accurate solutions based not only on students’ needs and interests but also on strengthening the teaching and children’s learning processes in elementary schools. Therefore, it is necessary to acknowledge the importance of research in the construction of knowledge in teacher education programs at undergraduate levels, concerning the design of research proposals that aim at strengthening processes of interaction, interdisciplinary work, communicative skills improvement, significative learning construction, as well as favoring processes such as empathy, inclusion and diversity.

Different national and international studies were analyzed; for instance, Esquivel-Grados et al. (2023) conducted a study that explored Peruvian university students’ perceptions regarding formative research. 80 students were surveyed and 12 were interviewed. The findings revealed students’ views about formative research that should be integrated throughout the undergraduate program and not just limited to research

methodology courses. Additionally, Arana-García (2022) conducted a qualitative study and used semi-structured interviews and document revision to examine students' perceptions of formative research in order to strengthen the research training in a B.A. program. The author mentions that formative research is important for the development of students' research competencies for preparing students to contribute to educational and social transformation. Based on the participants' perceptions, the researcher identified some gaps in the curricular structure as well as in the availability of resources and teachers' training for research.

Rodríguez and Ruano (2023) reflect on the role of formative research; they consider formative research as a tool for fostering learning and constructing knowledge, rather than being an end in itself. In this sense, pre-service teachers generate knowledge through investigative processes. Similarly, Caicedo et al. (2021) highlight that formative research enables pre-service teachers to engage in questioning and reflection on their educational practice, fostering meaningful changes in education. Furthermore, Vicuña et al. (2023) reveal teachers' perspectives on the importance of formative research as a key element in strengthening autonomous thinking. This process is driven by self-regulation, the development of procedural and conceptual skills, and meaningful learning.

Additionally, Verney et al. (2024) highlight how research training and formative research in higher education complement each other. Rather than being just a requirement, research should emerge from the motivation, interests, and skills of both students and teachers, and its main aim is to benefit the community.

Hernández et al. (2020) carried out a study to examine the importance of formative research in higher education; the authors identified a need to make changes in the curriculum and look for strategies to better integrate research into undergraduate programs. In the same line of thought, Aguinaga-Doig et al. (2023) also conducted a systematic review to analyze the definitions and perceptions of interdisciplinary formative research at the undergraduate level. After reviewing 41 studies, the authors categorized the perceptions into four areas including curricular policy, investigative culture and researcher training. This study identified a significant gap regarding research training in Latin America. That is why we decided to conduct this research to better understand how the formative research processes are carried out in our context to take further action.

Within the Bachelor's Degree in Basic Primary Education program belonging to the Faculty of Distance Education (henceforth FESAD, for its Spanish acronym) at UPTC, the formative research process is visible as pre-service teachers constantly question about what surrounds them and how they can contribute from their own learning experiences. This challenge entails strengthening the research competencies and the creation of a culture of research which also promotes critical and reflective thinking focused on real problems within the educational context. Students at the Bachelor's Program take two courses or subjects called Research Seminar I and II (See Figure 1) in the eighth and ninth semesters, respectively. In these courses, students understand research as a phenomenon that ends with the oral defense of a research proposal aligned with the research lines or areas of the Program which are: Teacher Education, Diversity in Education, and Rural Education. Those proposals must be sent to the program's academic committee for approval and development.

Figure 1. Description of the Main Themes in the Research Seminars at the Program

Research Seminar I	Research Seminar II
Unit 1: Basic concepts of the research process.	Unit 1: Research Methodology (Second part)
Unit 2: Description and problem statement.	Unit 2: Data Collection Instruments and techniques.
Unit 3: Theoretical Framework.	Unit 3: Final considerations
Unit 4: Research Methodology (First part).	Unit 4: Research Proposal oral defense

Note. Own Elaboration Based on the Learning Guidelines at the Bachelors Program at UPTC.

According to Coelho (2024) research is a systematic process about an issue that is worth to be studied because of its impact in different areas of interest. It is not only done in scientific areas but also in different social ones. Furthermore, Ruiz-Guanipa (2020: 315) states that “when future teachers get excited about learning to research, obstacles do not matter as they transform them into creative opportunities to conduct educational projects related to their pedagogical practices and the demands of the ever-changing and diverse societies”. Consequently, training on research is key for pre-service teachers as in their professional lives, they must constantly conduct formal or informal research to solve problems in their teaching practices of educational contexts.

Currently, there is a generalized concern among the professors who guide the research seminars about students who struggle to attain the research seminar goals at the same pace as their peers. Various factors make it difficult for them to formulate a research proposal. It makes our students feel frustrated regarding their pedagogical activities and most of the time, they decide to graduate using other alternatives for graduating such as taking one semester of a graduate program at the UPTC proposed in Resolution 16 issued in 2009 by the University.

For this reason, we decided to conduct a study to characterize the research process for the aforementioned teacher education program to delve deeper and better understand the found difficulties as well as pre-service teachers’ needs and interests concerning research processes. The following research question emerged: What do the research processes carried out by pre-service teachers reveal about the research culture at the Bachelor’s Degree in Primary School belonging to the Faculty of Distance Learning at UPTC? Based on the previous question, three specific objectives were stated. The first objective was to identify the research proposals submitted by pre-service teachers based on the research lines of the program. The second one intended to analyze the areas and/or fields of action where the research proposals are developed. The last one was to determine the investigative and intervention actions proposed in the research proposals.

Every research process entails a series of research competencies where competent students know what to do, take action, participate and get involved and passionate about what they do (Espinoza et al. 2016); in this sense, the teacher training process requires

to awakening curiosity for inquiring and letting students be surprised by the results considering that entering to the world of research requires constantly reading, analyzing, reflecting, and interacting with others which allows future teachers to be updated and competent in different fields like pedagogy, didactics, assessment, among others.

According to Espinoza-Freire (2022), research competencies in teacher education are required because nowadays education traces challenges that go beyond merely reproducing knowledge. Teachers are required to develop research skills that enable them to seek solutions to pedagogical problems arising during teaching and learning processes. One of the strengths of educational research is its emergence from the particularities of each context. Consequently, in the B.A. program at FESAD, the process of formative research is visible from the pre-service teachers' experiences during their studies where they constantly question what happens in their surroundings and how they can contribute from their learning experiences. The analysis within this research process allows us to reflect on the challenges from the teaching practice for transforming education through the development of research inside the classroom to better understand particularities and look for appropriate answers according to the students' needs and whose final aim is to strengthen elementary school students' learning and teaching processes.

Methodology

1 Approach and Design

The research approach refers to the strategy used by the researchers to address the research gap. Based on this foundation, this research employed a mixed-methods approach, which allows to collect comprehensive data about the phenomenon under study. According to Hernández et al. (2014), the mixed-methods approach combines qualitative and quantitative methods to facilitate a deeper understanding of the data. Likewise, the embedded design supports the research process carried out. Creswell (2014) explains that this type of design involves the integration of either qualitative or quantitative data within a larger research design, where the secondary component plays a supportive role in relation to the primary methodological approach.

In this study, the qualitative part constitutes the primary strand, focusing on the understanding, description and interpretation of the findings through the organization and categorization of data. The quantitative component, meanwhile, serves as a secondary role through the use of statistical data and graphical representation that support and help to explain the qualitative findings.

2 Scope of the Study

Regarding the scope of a study, it determines the depth and purpose of the research (Arias-González & Covinos-Gallardo, 2021). This study has a descriptive scope as it seeks to identify and characterize the attributes and features of a phenomenon without establishing causal relationships among variables. In this regard, this study aims to describe and interpret what the research processes developed by pre-service teachers reveal about the research culture within the undergraduate program.

3 Participants

The participants of this study were pre-service teachers from the B.A. in Basic Primary Education at the Faculty of Distance Learning of UPTC. The documentary corpus consisted of 479 research proposals developed by ninth semester students from the branches of Tunja, Duitama, Sogamoso, and Chiquinquirá. These proposals were the result of the Research Seminar I and II courses and were the primary source of information for identifying research tendencies and characteristics associated with the program's research culture. A convenience sample of 73 pre-service teachers volunteered to participate in the structured interviews.

4 Data Collection Instruments

Two instruments were used for data collection: a documentary analysis matrix and a structured interview. First, a documentary analysis matrix was designed to systematically organize and classify information extracted from the 479 research proposals. The matrix included categories related to research topics, educational problems addressed, methodological approaches, populations under study, and other relevant aspects associated with the students' research processes.

Second, a structured interview was developed and administered to 73 pre-service teachers. The interview consisted of predetermined questions aimed at exploring participants' perspectives on research, their experiences during the development of research projects, and their perceptions of the research processes promoted within the program. To ensure content validity and methodological rigor, both the documentary analysis matrix and the structured interview were evaluated by a panel of three experts with experience in educational research and teacher education. Their observations and recommendations contributed to refining the instruments.

5 Data Analysis

Qualitative analysis was the main analytical procedure. Initially, the information gathered through the documentary analysis matrix and the structured interviews was reviewed systematically. The documentary matrix was used to review, classify and analyze the 479 research according to the chosen criteria, including year of submission, Regional Center for Distance Education (CREAD), and research line. This process allowed the identification of general tendencies in students' research interests and participation in research activities.

The qualitative data obtained from the structured interviews were analyzed through thematic content analysis. Initially, participants' responses were transcribed and organized according to each interview question. Then, recurrent words, ideas and concepts were identified through an iterative reading process. Similar responses were grouped into thematic categories that emerged from the data and were later contrasted with the theoretical framework on formative research, teacher education, and research culture.

The quantitative component complemented the qualitative interpretation through descriptive statistical analysis. Percentages were calculated for each phase identified in the documentary analysis and interview data. The results were represented through tables and graphs to support the interpretation of findings.

Finally, the integration of qualitative and quantitative findings occurred during the interpretation stage, where numerical data served to illustrate and reinforce the qualitative understanding of the research culture reflected in the research processes developed.

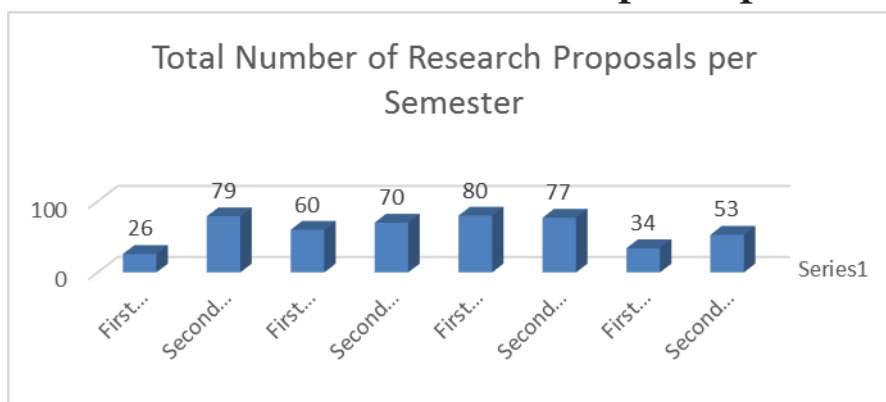
Results and Discussion

In this section, the results are presented and discussed according to the three phases of the research process. Each phase corresponds to one of the specific objectives of the study and highlights both the descriptive findings and the interpretative insights derived from the data. The following subsections detail these phases in sequence.

1 “Research Proposal Identification” Phase

Firstly, the research proposals presented by 9th-semester pre-service teachers were identified based on the selection of one of the program’s research lines; for doing so, the total number of proposals sent to the Academic Committee by the Regional Centers for Distance Education (henceforth CREAD, for its Spanish acronym) from 2022 to 2025 was determined (See Figure 2).

Figure 2. Total Number of Research Proposals per Semester



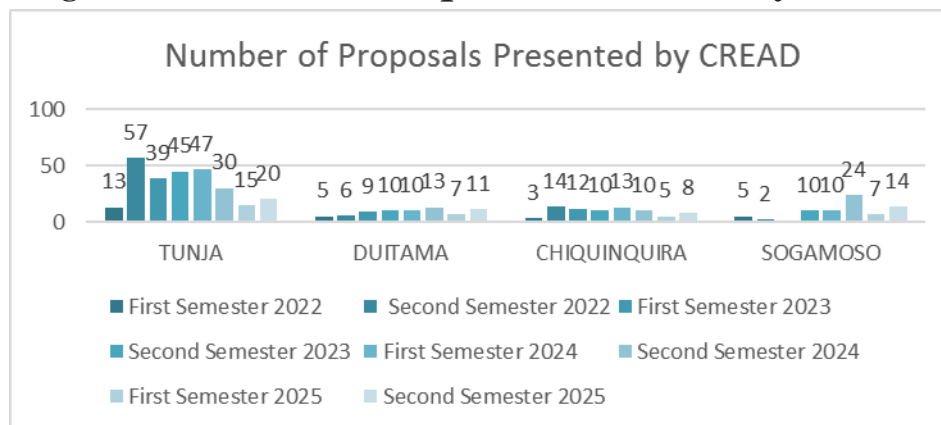
Note. The chart provides a detailed breakdown of the total number of proposals submitted during the first and second semesters between 2022 and 2025.

Figure 2 shows a progressive increase in the number of research proposals submitted between 2022 and 2024. Although this trend is partially associated with enrollment growth in the research seminar courses, its relevance goes beyond the growth in numbers. It suggests that research activities have become an increasingly consolidated component of teacher education within the program. The research proposals evidence the development of the process carried out at the teaching program in order to favor the research culture in future teachers; therefore, the process of writing and submitting allows students to consciously develop research skills which contribute to a critical and reflective evaluation of sources, authors and at the same time, pre-service teachers present proposals that are feasible and relevant to different contexts to answer real educative problems (Akkerman et al., 2021). In this sense, the number of research proposals developed by pre-service teachers can be understood as an indicator of their engagement and their progressive

incorporation into research.

Figure 3 shows that the CREAD in Tunja has a higher number of research proposals submitted, as it is the CREAD with the highest number of students enrolled in the research seminar course. Similarly, it is observed that the CREADs of Duitama, Sogamoso, and Chiquinquirá have a lower number of research proposal submissions which could be due to the selection of other graduation options according to the University regulations in Resolution 16 (2009). (See figure 3)

Figure 3. Number of Proposals Presented by CREAD



Note. The figure presents a detailed breakdown of proposal submissions by Cread during the first and second semesters between 2022 and 2025

Within the Bachelor's Degree in Basic Primary Education Program at FESAD, research is conceived as an articulating axis that seeks to generate changes in educational practices through the promotion of innovative and creative pedagogical strategies that are consistent with the realities of different contexts; consequently, in the program's Academic Educational Project (PAE) the following research lines: Teacher Training, Rural Education, and Educational Diversity are detailed.

The research line in teachers' training seeks to recognize pre-service teachers' teaching experiences and their reflections on being an active member of the educational community and what it entails to be working in the classroom to highlight the scope and implications of the term "training". It includes using learning and teaching strategies that foster the teaching practices, complement life experiences, promote interaction in the classroom and questions about actions taken within the classroom.

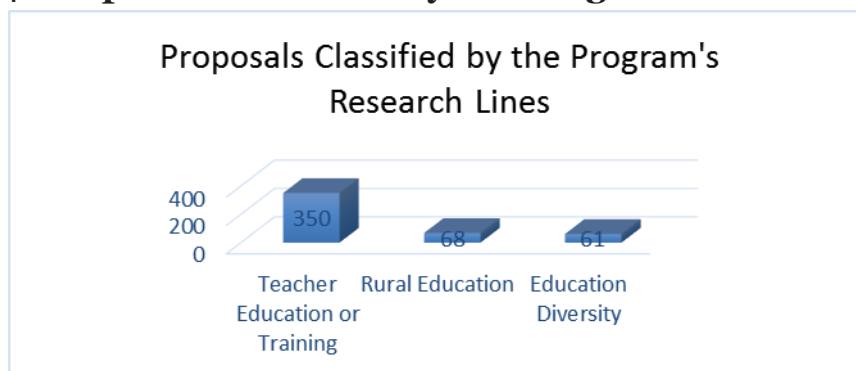
In the same sense, the research line focused on rural education allows an approach to the diverse school realities in these contexts where the teaching and learning processes are carried out in a particular way. The idea in this research line is to organize and present those experiences based on the multigrade or "Escuela Nueva" school model. Additionally, it acknowledges the teachers' role and their contributions in this environment with specific cultural and individual needs.

Education diversity is another research line the program has, and it focuses on two specific objectives. The first one is to present the research practices regarding school organization, including PEI modifications, student regulations manual, and institutional

pedagogical model among others, as a contribution from an administrative perspective. The second objective is to make visible the research processes conducted by future teachers and that contribute to pre-service teachers as citizens. It includes peaceful coexistence, respect and diversity among other cross-curricular issues whose aim is strengthening social, ethical and political construction through education.

It can be observed that in their research process, pre-service teachers show a preference for the teachers' training research lines because out of the 479 research proposals submitted to the Academic Committee, 350 of the focus on this research line, corresponding to a 73,3% (See Figure 4). In the Education diversity research line, 68 proposals (14,4%) were presented and in the rural education research line just 61 proposals (12,3%) were submitted. It is important to highlight that it is because of each of the pre-service teachers' interest considering their work context, the specific needs, and the region they live.

Figure 4. Proposals Classified by the Program's Research Lines



Note. The figure illustrates the research lines selected in students' research proposals

Taking into account Mezquita and García (2023) the culture surrounding research requires a training process starting from childhood to favor the initial and progressive development of skills, attitudes, habits, values and research competencies throughout the different stages of kindergarten, elementary and junior high school. Vargas and Aravena (2022) advise promoting a research culture in higher education to awaken students' curiosity to deepen the acquisition of knowledge, skills, and ability to reflect and increase critical thinking which contributes not only to students' personal and particular level, but also to the university and the communities. Therefore, it is important to recognize the Bachelor in Basic Primary Education teaching program is not detached in supporting these processes for pre-service teachers. It starts with the need to inquire about real situations that must be faced within the classroom and that require pre-service teachers' experience to be solved. In the research seminar I and II courses, research proposals are developed in stages; it starts with a reflection on the importance of research from specific concepts; then, a problematic situation is identified to construct all the scaffolding that allow pre-service teachers to build an alternative to solve the identified issue.

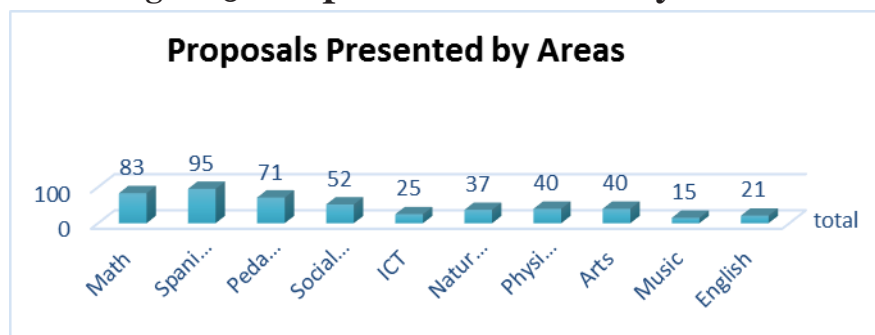
Consequently, pre-service teachers include in their research proposals different strategies such as games and dynamic activities which are an essential part of children's development and their learning processes; through different activities and games children wonder, imagine, classify, formulate hypothesis, find solutions, as well as similarities and

differences (Cano-Valderrama & Quintero-Arrubla, 2022).

2 “Assessing Key Areas and Fields of Action in Research Proposals” Phase

Another finding in this study refers to the second stage where there was an analysis of the areas or fields of action in which pre-service teachers' research proposals are conducted (See Figure 6); it is worth mentioning that the chosen topics are because of the participants pre-service teachers' interests from a needs analysis conducted in different schools.

Figure 5. Proposals Presented by Areas



Note. The graph displays the total number of preliminary projects based on students' selected areas.

In this bar graph, the different areas of knowledge where pre-service teachers show their preferences to develop their research project are presented. It can be evidenced that the areas pre-service teachers are keener to work on are Spanish, pedagogy, and mathematics. There is less interest in social studies, physical education, natural sciences, arts and ICT. The areas with the least interest in conducting a research project by those pre-service teachers are English as a foreign language and music.

From the perspective of formative research, students' thematic preferences can be understood as indicators of the research culture promoted within the program. The predominance of projects in pedagogy and main school subjects suggests that pre-service teachers tend to focus their inquiry efforts on areas they perceive as most closely related to their future professional practice and to the educational challenges they encounter during their teaching experiences. This finding aligns with the notion that formative research emerges from students' interests and from their need to understand and transform educational realities (Verney et al., 2024; Rodríguez & Ruano, 2023).

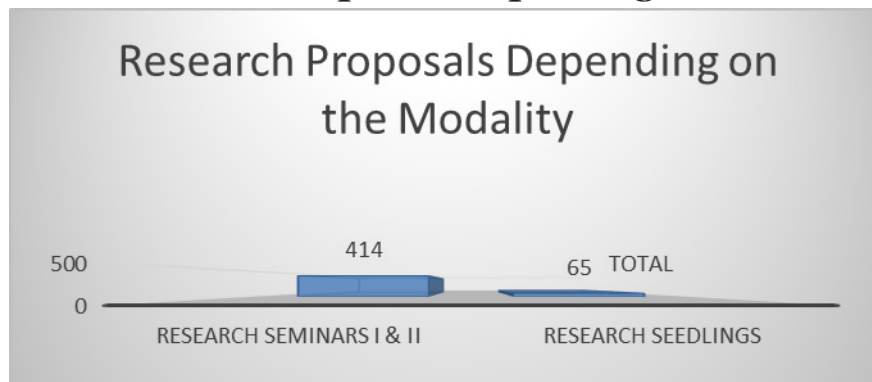
Furthermore, the concentration of research projects in a limited number of disciplinary areas may indicate that the research culture of the program is strongly oriented toward addressing pedagogical and curricular concerns associated with elementary education. While this tendency demonstrates coherence between research activities and professional training, it also raises questions regarding the relatively low participation of areas such as ICT, arts, music, and foreign languages. Considering the growing relevance of these fields in contemporary education, their limited presence may suggest opportunities to diversify research interests and broaden the scope of formative research within the program.

Therefore, the distribution of research topics not only reflects students' preferences

but also reveals how the program's research culture shapes the ways in which future teachers identify educational problems, establish research priorities, and connect inquiry with their professional development.

The research proposals worked in the Research Seminar course can also be worked from the research seedlings. Figure 7 presents an overview based on the research proposals designed according to the modality of work done by research seedlings and as part of the work within the research seminar courses.

Figure 6. **Research Proposals Depending on the Modality**



Note. The figure shows the total number of research proposals based on the selected modality.

One of the strengths the program has is pre-service teachers' participation in research seedlings and how they use it as an alternative to graduate; it is worth recognizing that Research Seminars I and II courses also provide guidance for constructing the proposal; however, the foundational training emerges directly from the professors who are in charge of the research seedlings.

3 “Identification of Investigative and Intervention Actions” Phase

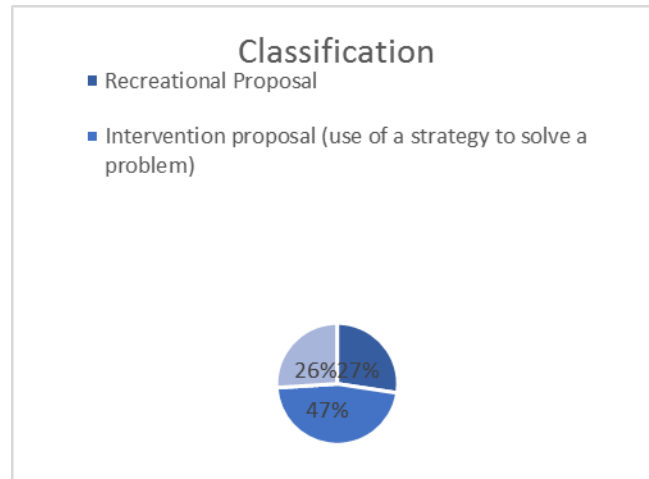
Finally, in the third phase of this research, we identified the research and intervention actions proposed in the different research proposals by the pre-service teachers. Once data was collected through interviews, it was possible to analyze a series of contributions based on the presented questions and statements.

The development of the research proposal takes place over two consecutive semesters. It involves the identification of problematic situations within the context, considering the cross-disciplinary areas, and recognizing those elements that significantly contribute to the teaching and learning processes (See Figure 7). We conducted a thorough exercise of inquiring and sharing experiences with experts in the area in which the proposals are focused. This leads to proposing a solution based on the process of inquiring, selection of information and construction of descriptive arguments that help to understand the research topic.

The research proposals have the following possible classifications: *Recreational proposal*: It aims to present a didactic strategy mediated by games for creating and promoting dynamic learning environments for children where teamwork, development of emotional competencies, creativity, and imagination among others are strengthened. *Intervention proposal*: It aims to determine the use of methods and methodologies for

solving a problem, using significant experiences as a starting point for its implementation. *Investigative proposal*: It focuses its attention on going deeper into a study to identify and analyze the existence of a problem.

Figure 7. **Classification of the Research Proposal Based on its Types**



Note. The figure shows the type of proposal in which pre-service teachers' studies are classified

About the type of proposal in which the research projects presented for the research seminar courses are classified. It can be said that 47% of them correspond to intervention proposals where the researchers want to implement didactic strategies in the classroom with a specific population for improving the teaching and learning processes in different areas. In this same line of thought, 27% of the proposals want to be implemented with the support of recreational strategies as a way to foster the pedagogical processes; the remaining 26% correspond to the projects that are classified as investigation proposals for identifying and analysing different problems within the elementary and junior high school educative contexts (See Figure 8). About intervention proposals, Granados-Beltrán (2018) mentions that action research is the most commonly used design in ELT (English Language Teaching) programs, and it can also be confirmed not only in that area but also in other teacher education programs

About the statement of augmenting the chosen type of proposal, interesting reflections regarding the contribution to the teaching practices. On the one hand, Leiton-Quintero et al. (2022) express that teaching has to be the priority each teacher has as students' inspiration, motivation and cognitive stimulation emerge from teaching. On the other hand, Herrera-Gutiérrez and Villafuerte-Álvarez (2023) highlight that a deep understanding of didactic strategies allows the construction and organization of different pedagogical work which will serve later as a reference for teachers to organize their own teaching practice. The previously expressed is evidenced in pre-service teachers' perceptions as they emphasize that through recreational proposals, they can catch students' attention by using strategies that lead them to meaningful learning. Besides, pre-service teachers mention that the use of didactic strategies in their research proposals must help to search for different tools and means to contribute to the processes in the classroom.

Having said that, active methodologies become a fundamental element when pre-

service teachers design their research proposals. According to Zapata et al. (2024), active methodologies use three essential elements for guiding the learners and position them as active participants in the learning process. These elements are: learning by discovering, research and problem-solving. Based on this reality, pre-service teachers highlight that when studying and better understanding the specific needs and challenges of education, effective solutions that benefit society and that promote a positive change in different contexts can be found.

The use of active methodologies is related in the research proposals as pre-service teachers use them as possible strategies for addressing problems in their contexts. One active methodology that is used is Challenge-Based Learning (CBL) which according to Leal-Burgos et al. (2024) allows children to connect their knowledge for managing their own learning taking on a critical and reflective stance; it can be complemented with the series of procedures to implement CBL in the classroom (Vilalta-Perdomo et al., 2020). Similarly, another active methodology used is Project-based learning (PBL) as Villanueva-Morales et al. (2021) express, PBL is directly related to the recognition of different situations, where through a previous exploration, projects are designed in alignment with children's interests. This approach enhances motivation in the classroom regarding the development of activities and other competences.

Guerrero-Julio et al. (2024) consider that Problem-Based Learning has a constructivist approach where what really matters is the process and not the end for finding a solution. The child is a fundamental agent who is actively engaged and motivated. It promotes autonomous learning. It promotes team work and thinking processes to use in their daily lives. Moreover, gamification is another technique that promotes the process for constructing knowledge. Londoño-Vásquez and Rojas-López (2020) add that this process involves fun and motivation as main axes to achieve the proposed goals. Through game elements in the educational context, significant changes can be generated not only in the child's learning perception but also in skills for life such as conflict resolution, social interaction, and teamwork, which contribute to the child's educational development.

Integral learning in students requires the development of social competencies that according to B Irrazabal et al. (2023) help strengthen the processes of interaction with others to facilitate coexistence and a better understanding of their realities. That is why pre-service teachers' research proposals, emerging from rural and urban contexts, also seek to promote spaces that highlight the importance of knowing about multiple intelligences, children's emotional management, improvement of school coexistence, problem resolution within family and school communities, and inclusion among other aspects. This approach allows learning from education for life where the child is recognized as a diverse and unique individual who is different from the others.

Consequently. Research proposals can be conducted in such a variety of themes. Then, it is necessary to ask pre-service teachers if they plan to carry out the research proposal designed in the Research Seminar I and II courses, it is surprising to evidence that 65,8% of pre-service teachers want to continue the research process as their graduation requirement (See Figure 9); the remaining 34,2% of the respondents express that they will not continue the research proposal as their graduation option as they plan to take credits in a graduate program offered by the UPTC to fulfill the graduation requirements.

Figure 8. Will you continue the research process?



Note. The figure indicates whether the research proposal is developed or not.

Similarly, regarding the question: From your perspective, how do you think research contributes to your teaching practice? The pre-service teachers' responses were classified and organized in Table 1.

Table 1. Summary of the responses given by pre-service teachers about the contribution of research in their teaching practice

Category	Percentage	Rationale
Solution of problems in the context	35	Research allows teachers to identify problematic issues within the classroom and evaluate the efficacy of different teaching methods in order to take actions of improvement that not only strengthen children's learning processes but also contribute significantly in their integral development.
Teachers' development	34	Research practices favor teachers' development processes, especially in educative practices and new trends in the field of pedagogy. Besides, it gives teachers new perspectives, approaches and methodologies that can enrich the teaching and learning processes.
Research abilities development	21	Teachers strengthen thinking abilities through the research processes that allow analysis and understanding of phenomena to foster critical and reflective learning environments in the classroom, and to explore new knowledge.
Teaching practices reflection	10	The foundation of teaching lies in reflective practices about what is done; therefore, research allows us to think about how to address the challenges current education has and improve our pedagogical practices.

Note. Own elaboration (2026)

Regarding Table 1, 35% of the interviewed pre-service teachers consider that research contributes to their teaching practices for solving problems of the context; additionally, 34% of the respondents mentioned its impact on teachers' development; 21% believe it contributes to the development of research abilities and the remaining 10% of the respondents express that research helps for reflecting on the teaching practice. In this way, it can be inferred that research allows to propose some actions for improvement in the classroom to strengthen the children's learning processes. It also enables them to develop innovative learning environments that motivate them to face the challenges in current

education and to improve teachers' pedagogical practices in different contexts.

Regarding the question: How to promote the research culture in children? Pre-service teachers state that different factors encourage research and they emerge from the intentions of the person who investigates; Blanco (2020) highlights that the research culture allows students to recognize that research strengthens both theoretical and practical training through a series of actions where students and their teachers build experiences, conceptions, knowledge and processes, and whose main goal is to create, transmit and share knowledge about educational realities. This constitutes an ongoing challenge in teaching as not all pre-service teachers seem interested in research.

Some of the answers given by pre-service teachers express that children from an early age can be given favorable scenarios by providing environments where they research what they are interested in. It can be done through everyday situations that catch their attention and make them think, reflect, and analyze. It makes them discover their surroundings and ask questions about why something is happening and what are its possible solutions. In this way, pre-service and in-service teachers can propose recreational and pedagogical research proposals that have innovative and fun solutions that allow them to increase their knowledge through experimentation and exploration.

Pre-service teachers' responses also evidenced that a key ingredient to promote the research culture in kids is to take advantage of children's innate curiosity to ask and wonder. They are curious by nature, and the best way to foster curiosity is by using children's surroundings and the questions that intrigue them. Encouraging them to ask questions, explore their surroundings and look for answers motivates them to do research. Teachers can emphasize that every problem has its solution by giving examples and asking questions about new and previously covered topics for them to answer through their own research. This research can instill in children, even without knowing it, investigative skills such as inquiry, interpretation, and knowledge construction.

Another question was: in your opinion, who do you think research benefits the most? The interviewed pre-service teachers express that research benefits the all-school stakeholders and community. On the one hand, teachers can show their contributions to society and improve their teaching practices based on the specific needs of the context. On the other hand, students have the possibility to use enriched learning environments that contribute to their integral development, and it permits them to develop critical, analytical and problem-solving skills that foster more meaningful learning. It is important to highlight that research is an ongoing and rigorous process, and it must aim at attaining common benefits to construct knowledge from different perspectives. Additionally, it helps to form reflective individuals who are aware of their contexts and the realities they face.

Regarding the question: What is the relationship between research and the construction of knowledge? Pre-service teachers answered that research implies exploration, discovery and development of new ideas, concepts, or methodologies in a specific field. This builds knowledge and strengthens humans' understanding from socio-cultural, economic, and educational contexts because questions about certain facts or situations within a community lead to solutions in diverse fields to complement and articulate knowledge.

In fact, formative research is a pillar in the joint construction of knowledge for the whole educational community. "It is a process that promotes the capacity of amazement at discovery and the effective transfer of information, as well as the day-to-day tasks related to

teaching and memorization” (Turpo et al. 2020: 3). Additionally, it offers the opportunity to transform knowledge and realities by considering possible scenarios to favor children’s learning processes.

Another question was: In your opinion, what competences are strengthened when formative research processes are developed? From pre-service teachers’ answers, it can be interpreted that: Formative research is an opportunity to develop skills to inquire, evaluate and deeply analyze information, recognize possible alternatives for solutions and promote thought spaces based on the specific needs of urban and rural schools. Formative research also allows teacher-researchers to be updated on diverse educational trends that can be successfully implemented to foster learners’ integral learning processes.

Communication skills can also be reinforced within formative research; as expressed by Cuadros-Ircañaupa and Ogosi-Murillo (2024) when mentioning that communicative competences are synthetized in the ability to infer information from orality, reading, or writing, which makes understanding and processing information easier. Thus, students infer, interpret, and understand situations that imply observation, description, analysis, and synthesis.

Furthermore, the interviewed pre-service teachers mention critical thinking as another skill that is promoted. Critical thinking, according to Aguilar-Vargas et al. (2020:167) is defined as “the mental process that facilitates decision-making and problem-solving from cognitive activities such as analysis, interpretation and evaluation of knowledge”. Therefore, formative research fosters this type of thinking as it involves processes of critical analysis, assertive communication, teamwork, creativity, teaching practices evaluation, generation of new ideas and approaches to address questions and problems as well as preparing students to face the challenges in the constantly changing modern world.

Pre-service teachers also mention that formative research reinforces knowing-how-to-be or soft skills. Responsibility and autonomy allow the researchers to make decisions and manage innovative projects for creating diverse learning environments. At the same time, it enables researchers to reflect on their work and their contribution to society.

Conclusions

Pre-service teachers make relevant efforts in each of the proposed activities in the Research Seminar I and II courses to learn to do research and to evidence that learning with the design of research proposals that emerge from their interests and needs analysis and whose main purpose is to provide solutions to real problems within the educative contexts.

The joint work from Research Seminar I and II courses is visible through the submission to the Academic Committee of research proposals. These proposals are read by some preliminary jurors, who are experts in the proposals’ areas. They decide whether to approve the proposal for its further development based on the graduation modality chosen by pre-service teachers.

The contribution of students in research groups during the Research Seminars I and II courses is significant because they demonstrate certain particular skills, driven from their interest in research and their interest in promoting the construction of knowledge from the activities developed in the research seedling under the guidance of a professor.

It could be inferred that this study contributes to the field as it is possible to clearly

distinguish the preferences pre-service teachers have in terms of topics and alternatives to graduate. Additionally, further research can be conducted to contrast research processes followed within different Faculties of the same university to review the current policies in terms of graduation requirements and formative research.

As a recommendation for further research, the authors of this study argue that understanding how the research lines are chosen by pre-service teachers can offer valuable insights of how future teachers prioritize topics based on their reality. This understanding can help shape curriculum design and support strategies in research seminars. Besides, the study highlights the need to strengthen research training in less-explored areas to expand the social and educational impact of the research projects conducted by pre-service teachers.

References

AGUILAR-VARGAS, L.R.I., ALCÁNTARA-LLANAS, I.T., & BRAUN-MONDRAGÓN, K.A. (2020) "Impacto del Pensamiento Crítico en las Habilidades para el Campo Laboral". **Academo**. Disponible en <https://revistacientifica.uamericana.edu.py/index.php/academo/article/view/348> Consultado el 26/05/2024.

AGUINAGA-DOIG, S.G., CAMPOS-UGAZ, O., CAMPOS-OLAZÁBAL, P., HERNÁNDEZ, R., & TORRES-RUBIO, M. (2023) "Interdisciplinary Formative Research in the Undergraduate-Graduate Field: Definitions, Perceptions and Proposals" **Journal of Educational and Social Research**. Disponible en <https://doi.org/10.36941/jesr-2023-0054> Consultado el 26/05/2024.

AKKERMAN, S. F., BAKKER, A., & PENUEL, W. R. (2021) "Relevance of Educational Research: An Ontological Conceptualization". **Educational Researcher**. Volumen 50, Nro 6, 416-424.

ARIAS-GONZÁLES, J.L., & COVINOS-GALLARDO, M. (2021). Diseño y Metodología de Investigación. Perú: Enfoques Consulting EIRL.

BLANCO, R. (2020). Cultura Investigativa en la Construcción de Saberes del Docente en Formación [Tesis doctoral, Universidad Centroccidental "Lisandro Alvarado"]. Repositorio Institucional de la Universidad Centroccidental "Lisandro Alvarado" <https://espacio.digital.upel.edu.ve/index.php/TD/article/view/1054/929>

CAICEDO-BERNAL, J.P., Peña-Ariza, L.V., & Melo-León, Z. (2021). Percepciones de estudiantes y egresadas de la licenciatura en educación infantil sobre su formación en investigación [Undergraduate thesis]. Universidad Pedagógica Nacional.

CANO-VALDERRAMA, V., & QUINTERO-ARRUBLA, S. R. (2022) "El Juego como Estrategia Pedagógica para el Desarrollo del Pensamiento Lógico Matemático en la Primera Infancia". **Latinoamericana de Estudios Educativos**. Disponible en <https://doi.org/10.17151/rlee.2023.18.2.10> Consultado el 12/007/2024.

CRESWELL, J. W. (2014). Research design: Qualitative, quantitative, and mixed methods approaches. California: Sage Publications. cuarta edición.

CUADROS-IRCAÑAUPA, E., & OGOSI-MURILLO, R. (2024). "Competencias Comunicativas en la Educación". **Horizontes**. Disponible en <https://doi.org/10.33996/revistahorizontes.v8i32.733> Consultado el 12/07/2024

COELHO, F. (/10/2024). "Metodología de la Investigación". Enciclopedia Significados. documento consultado en internet el 28/05/2024 en <https://www.significados.com/>

[metodologia-de-la-investigacion/](#)

ESPINOZA, E., RIVERA, A., & TINOCO, N. (2016). "Formación de Competencias Investigativas en los Estudiantes Universitarios". **Atenas**. Disponible en <https://www.redalyc.org/articulo.oa?id=478049736004> Consultado el 12/07/2024

ESPINOZA-FREIRE, E. E. (2020). "La Investigación Formativa. Una Reflexión Teórica". **Conrado**. Disponible en <http://scielo.sld.cu/pdf/rc/v16n74/1990-8644-rc-16-74-45.pdf> Consultado el 18/09/2024

ESQUIVEL-GRADOS, J., VENEGAS-MEJÍA, V.L., VENEGAS-MEJÍA, C.P., GONZÁLES-BENITES, M.T., BACÓN-SALAZAR, N., & VALDIVIA-HUARANGA, H.A. (2023). "Formative research: Perceptions of communication science students at a Peruvian university". **Journal of Technology and Science Education**. Disponible en <https://doi.org/10.3926/jotse.1758> Consultado el 20/05/2026

GARCÍA, N.M., PACA, N.K., ARISTA, S.M., VALDEZ, B.B., & GÓMEZ, I.I. (2018). "Investigación Formativa en el Desarrollo de Habilidades Comunicativas e Investigativas". **AltoAndinas**. Disponible en <http://www.scielo.org.pe/pdf/ria/v20n1/a12v20n1.pdf> Consultado el 18/09/2024

GRANADOS-BELTRÁN, C. (2018). "Revisiting the Need for Critical Research in Undergraduate Colombian English Language Teaching". **How**. Disponible en <https://doi.org/10.19183/how.25.1.355> Consultado el 18/09/2024

GUERRERO-JULIO, M.L., AYALA-MORENO, J.B., & AGUDELO-VELÁSQUEZ, O.L. (2024). "Aprendizaje Basado en Problemas Mediado con Simuladores para el Desarrollo de Competencias en Estudiantes de Secundaria". **Academia y Virtualidad**. Disponible en <https://doi.org/10.18359/ravi.6807> Consultado el 7/01/2024

HERNÁNDEZ, R. M., MARIÑO-JIMÉNEZ, M., FORTON, Y. R., & SÁNCHEZ, N. (2020). "Research in university students: Real needs for the implementation of a formative research program". **Academia**. Disponible en <https://doi.org/10.26220/aca.3445> Consultado el 7/11/2024

HERNÁNDEZ, R., FERNÁNDEZ, C., & BAPTISTA, P. (2014). *Metodología de la investigación*. México: McGraw-Hill. sexta edición

HERRERA-GUTIÉRREZ, C., & VILLAFUERTE-ÁLVAREZ, C.A. (2023). "Estrategias Didácticas en la Educación". **Horizontes**. Disponible en <https://doi.org/10.33996/revistahorizontes.v7i28.552> Consultado el 7/11/2024

IRRAZABAL - BOHÓRQUEZ, A.T., RUIZ-RAMÍREZ, A., & AVILÉS-SALAZAR, J. (2023). "Las Habilidades Sociales y la Autorregulación del Infante". **Minerva**. Disponible en <https://revistas.ug.edu.ec/index.php/minerva/article/view/335/980> Consultado el 14/05/2026

LEAL-BURGOS, D.E., NAVARRO-NAVARRETE, J.L., TORRES-VÁSQUEZ, A.A., & SÁEZ-MONTERO, E.I. (2024). "El Aprendizaje Basado en Retos: Percepciones del Estudiantado en Formación Docente de la Universidad Católica Temuco Chile". **Transformación**. Disponible en http://scielo.sld.cu/scielo.php?script=sci_arttext&pid=S2077-29552024000100044&lng=es&tlng=es Consultado el 9/03/2025

LEITON-QUINTERO, M., MESA-BEJARANO, M., & ORTÍZ-CARABALI, M. S. S. (2022). "Retos de la Educación: Una Mirada Durante y Después de la Pandemia (2019-2022)". **Ciencia Latina**. Disponible en https://doi.org/10.37811/cl_rcm.v6i2.1987 Consultado el 9/03/2025

LONDOÑO-VÁSQUEZ, L.M., & ROJAS-LÓPEZ, M.D. (2020). "De los Juegos a

la Gamificación: Propuesta de un Modelo Integrado”. **Educación y Educadores**, Disponible en <https://www.redalyc.org/journal/834/83467003007/83467003007.pdf> Consultado el 9/03/2025

MEZQUITA, E., & GARCÍA, M. (2023). “Investigación y Cultura Investigativa. Su Relación en la Universidad del Siglo XXI”. **Salud y Desarrollo**. Disponible en <https://doi.org/10.55717/FGEK5398> Consultado el 14/05/2025

RODRÍGUEZ CASTILLO, M. C., & RUANO IBARRA, L. E. (2023). “Investigación formativa en el aula: roles, percepciones e innovaciones”. **Ciencia Latina**. Disponible en https://doi.org/10.37811/cl_rcm.v7i1.4999 Consultado el 14/05/2025

RUIZ -GUANIPA, E.G. (2020). “Las Competencias Investigativas en la Formación Docente. Reflexiones Epistemológicas y Pedagógicas”. **Dominio de las Ciencias**. Disponible en <https://doi.org/10.23857/dc.v6i1.1424> Consultado el 14/05/2025

TURPO-GEBERA, O., QUISPE, P.M., CUADROS-PAZ, L., & GONZALES-MIÑÁN, M. (2020). “Formative Research at the University: Meanings Conferred by Faculty at an Education Department”. **Educação e Pesquisa**. Disponible en <https://doi.org/10.1590/S1678-4634202046215876> Consultado el 7/07/2025

VARGAS, A., & ARAVENA, M. (2022). “¿Es la Cultura Investigativa una Constante en las Instituciones de Educación Superior en Colombia?” **Revista Científica Multidisciplinar**. Disponible en https://doi.org/10.37811/cl_rcm.v6i1.1799 Consultado el 26/09/2025

VERNEY, T., PÉREZ, E., CASTELLANOS, G. & GONZÁLEZ, J. (2024). “Desafíos y Oportunidades de la Investigación Formativa y la Formación en Investigación en la Educación a Distancia”. **Pensamiento americano**. Disponible en <https://doi.org/10.21803/penamer.17.34.671> Consultado el 10/06/2026

VICUÑA-URETA, A. M., ROBALINO SANCHEZ, K., VALLADARES DURAND, S. M., & RAMOS QUISPE, J. A. (2023). “La investigación formativa en la escuela: clave para el desarrollo del pensamiento autónomo”. **Horizontes**. Disponible en <https://doi.org/10.33996/revistahorizontes.v7i28.562> Consultado el 26/09/2025

VILALTA-PERDOMO, E. L., MICHEL-VILLARREAL, R., LAKSHMI, G., & GE, C. (2020). “Challenge-Based Learning: A Multidisciplinary Teaching and Learning Approach in the Digital Era – UoL4.o Challenge: A CBL Implementation”. **Engineering Education Trends in the Digital Era**. Disponible en <https://doi.org/10.4018/978-1-7998-2562-3.ch007> Consultado el 26/09/2025

VILLANUEVA-MORALES, C., ORTEGA-SÁNCHEZ, G., & DÍAZ-SEPÚLVEDA, L. (2021). “Aprendizaje Basado en Proyectos: Metodología para Fortalecer Tres Habilidades Transversales”. **Estudios y Experiencias en Educación**, Disponible en <https://www.redalyc.org/journal/2431/243170668022/html/> Consultado el 6/03/2026

ZAPATA, W., MERINO, F., MORENO, E., MOPOSITA, A., & ESCOBAR, V. (2024). “Metodologías Activas para Impulsar el Proceso Enseñanza-Aprendizaje. Otros Horizontes, Otros Desafíos”. **Ciencia Latina** Disponible en https://doi.org/10.37811/cl_rcm.v8i3.11454 Consultado el 6/03/2026

Institucional Documents:

UNIVERSIDAD PEDAGÓGICA Y TECNOLÓGICA DE COLOMBIA (2009). “Resolución. Disponible en : https://www.uptc.edu.co/secretaria_general/consejo

[academico/resoluciones_2009/resolucion_16_2009.pdf](#) Consultado el 7/07/2025

UNIVERSIDAD PEDAGÓGICA Y TECNOLÓGICA DE COLOMBIA (2017). “Proyecto Académico Educativo Licenciatura en Educación Básica Primaria”. Tunja. Consultado el 7/07/2025