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Pedagogical strategies to prevent school dropout among adolescents in the rural mountain region (Chimborazo, Ecuador)

Estrategias pedagógicas para prevenir el abandono escolar entre los adolescentes de la región rural montañosa (Chimborazo, Ecuador)

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Abstract

School dropout among adolescents remains a persistent problem in Ecuador, particularly in rural Andean areas, where digital divides, adverse socioeconomic conditions, and structural limitations undermine educational continuity. The aim of this study was to analyze pedagogical strategies that contribute to preventing school dropout among adolescents in rural Ecuadorian highland contexts, with a specific focus on the province of Chimborazo. To this end, a narrative literature review was conducted based on studies published between 2015 and 2025, identified through specialized scientific databases. The selection process considered methodological quality, thematic relevance, and territorial applicability, resulting in the analysis of 20 articles drawn from an initial corpus of approximately 900 documents. The findings indicate that school retention is explained by the interaction of pedagogical, socioemotional, and family–community factors. The reviewed literature shows that access to connectivity and digital resources, academic support through tutoring and active learning methodologies, and the strengthening of socioemotional skills have a positive impact on educational continuity. Likewise, family involvement and cultural relevance were identified as key elements in rural and Indigenous contexts. The study concludes that preventing school dropout requires a comprehensive approach that integrates pedagogical innovation, socioemotional support, community participation, and territorially sensitive educational policies. These findings provide contextualized evidence for the rural Ecuadorian highlands, with practical implications for the design of sustainable and culturally relevant educational strategies.

Keywords: School dropout; Rural education; Pedagogical strategies; Socioemotional support; Ecuadorian highlands



Resumen

El abandono escolar entre los adolescentes sigue siendo un problema persistente en Ecuador, especialmente en las zonas rurales andinas, donde la brecha digital, las condiciones socioeconómicas adversas y las limitaciones estructurales socavan la continuidad educativa. El objetivo de este estudio fue analizar las estrategias pedagógicas que contribuyen a prevenir el abandono escolar entre los adolescentes en los contextos rurales de la sierra ecuatoriana, con un enfoque específico en la provincia de Chimborazo. Para ello, se realizó una revisión bibliográfica narrativa basada en estudios publicados entre 2015 y 2025, identificados a través de bases de datos científicas especializadas. El proceso de selección tuvo en cuenta la calidad metodológica, la relevancia temática y la aplicabilidad territorial, lo que dio como resultado el análisis de 20 artículos extraídos de un corpus inicial de aproximadamente 900 documentos. Los resultados indican que la permanencia escolar se explica por la interacción de factores pedagógicos, socioemocionales y familiares-comunitarios. La bibliografía revisada muestra que el acceso a la conectividad y los recursos digitales, el apoyo académico a través de tutorías y metodologías de aprendizaje activo, y el fortalecimiento de las habilidades socioemocionales tienen un impacto positivo en la continuidad educativa. Del mismo modo, la participación familiar y la relevancia cultural se identificaron como elementos clave en los contextos rurales e indígenas. El estudio concluye que la prevención del abandono escolar requiere un enfoque integral que integre la innovación pedagógica, el apoyo socioemocional, la participación comunitaria y políticas educativas sensibles al territorio. Estos hallazgos proporcionan evidencia contextualizada para las zonas rurales de las tierras altas de Ecuador, con implicaciones prácticas para el diseño de estrategias educativas sostenibles y culturalmente relevantes.

Palabras clave: Abandono escolar; Educación rural; Estrategias pedagógicas; Apoyo socioemocional; Sierra ecuatoriana



Introduction

School dropout among adolescents is one of the most persistent challenges for education systems in Latin America and, in particular, for Ecuador. This phenomenon highlights deeply rooted structural inequalities and the fragility of educational environments in rural and marginal urban contexts. Recent data from the Ministry of Education and UNICEF (2024) indicate that dropout rates are higher in areas with limited connectivity, little family support, and adverse socio y conditions. These realities directly impact the educational continuity of adolescents, who are forced to face tensions between their personal aspirations and the restrictions imposed by their daily context.

In recent years, the country's educational dynamics have been marked by an accelerated transition to digital modalities and the need to sustain learning in vulnerable environments. Studies such as those by Cabrera et al. (2021) and Tusa et al. (2025) have pointed out that the digital divide is one of the main determinants of school dropout, especially in rural Andean communities where limited access to technology affects participation and academic performance. In turn, research conducted in the context of the pandemic shows that students' emotional well-being has a decisive influence on their educational retention, as anxiety, stress, and domestic responsibilities increase the likelihood of dropout if there are no socio-emotional support networks (Asanov et al., 2021).

The literature has also emphasized that school dropout cannot be understood exclusively through individual factors; rather, it is deeply conditioned by the family and community environment, particularly in rural areas such as Chimborazo. This can be explained through sociological and educational frameworks, such as Bronfenbrenner's ecological theory of human development, which posits that adolescent development is influenced by interrelated systems—family, school, and community—that shape educational and social opportunities. From this perspective, recent studies have identified poverty, distance to educational institutions, cultural practices, and child labor as persistent barriers that hinder educational continuity (Noboa, 2023).

Similarly, from the standpoint of social capital theory, as proposed by Bourdieu and later applied in educational contexts, it is recognized that when schools establish strong ties with families and communities, networks of support, trust, and a sense of belonging are strengthened—factors that positively influence educational persistence. Research within this framework shows



that, in such contexts, adolescents perceive that their educational trajectories and expectations are acknowledged and supported, which in turn reduces the risk of school dropout (Astudillo-Terán, 2023; Castillo & Castro, 2024).

In light of this complexity, there is a need to analyze pedagogical strategies that respond to the specific characteristics of the Ecuadorian territory while also recognizing the student as a holistic individual. This approach has become particularly relevant in the current context, marked by post-pandemic effects, the widening of educational gaps in rural areas, and the persistence of structural inequalities that continue to affect adolescents' educational trajectories.

Based on this analysis, the present article aims to review and synthesize the available scientific evidence on pedagogical strategies that contribute to preventing school dropout among adolescents in Ecuador, with a particular emphasis on rural Andean contexts. Through a systematic review of the literature, the study seeks to understand how the interaction among pedagogical, socioemotional, family, and territorial factors influences school retention, and how these elements can inform timely, contextually appropriate, and culturally sensitive educational decision-making within the contemporary Ecuadorian educational landscape. Specifically, this study aims to identify academic strategies that strengthen learning, examine the role of socio-emotional support, analyze family and community participation in educational retention, and contextualize these elements in the rural situation of the country, thereby it is hoped to provide a comprehensive view that will not only allow for an understanding of the phenomenon, but also guide practices and public policies that respond to the cultural, territorial, and emotional diversity of Ecuadorian adolescents. In this sense, education, understood as a deeply human process, requires constant reflection on the ways to sustain the presence, voice, and dreams of those at risk of dropping out of school. This article seeks to contribute to that reflection.

Materials and methods

This research adopted a qualitative approach in the form of a narrative literature review, the purpose of which was to synthesize the available knowledge on pedagogical strategies applied to prevent school dropout among adolescents in the rural Andean context of Ecuador. The narrative design allowed for the comparison of findings and approaches from different authors in order to



identify trends, theoretical gaps, and recommendations applicable to the context of the province of Chimborazo.

An advanced bibliographic search was conducted in scientific databases of recognized academic rigor, including Scopus, Web of Science, SciELO, ERIC, and Google Scholar, using combinations of keywords and Boolean operators. Within this search strategy, the terms employed included: (“school dropout” OR “educational abandonment”) AND (“pedagogical strategies” OR “educational interventions”) AND (“adolescents” OR “rural education”) AND (“Ecuador” OR “Andes”). This strategy made it possible to identify relevant studies related to the prevention of school dropout in rural Andean contexts, ensuring both thematic breadth and territorial relevance.

In addition, filters were used to prioritize peer-reviewed articles, case studies in Latin American contexts, and documents that provided empirical evidence or implemented educational programs. The inclusion criteria are presented below:

1. Publications in Spanish or English between 2020 and 2025.
2. Studies focused on adolescents in upper secondary education or high school.
3. Research conducted in Ecuador or countries with similar rural Andean contexts (Peru, Bolivia, Colombia).
4. Articles addressing pedagogical strategies or programs to reduce school dropout rates.

Exclusion criteria were also applied so as not to consider publications containing the following as part of the research:

1. Studies focused exclusively on university education.
2. Publications without empirical evidence or with duplicate information.
3. Opinion essays without methodological support.

During the literature review process, approximately 900 articles from various specialized databases were initially identified. After a preliminary screening, 599 documents were excluded due to duplication, inconsistencies, or lack of thematic relevance. The remaining 301 full-text articles were then assessed based on their relevance, alignment with the study objectives, and methodological clarity, which made it possible to identify 53 articles directly related to school dropout among adolescents. Finally, based on criteria of methodological quality, theoretical rigor,

and applicability to the Ecuadorian context, 20 studies were selected, forming the basis of the final analysis.

The analysis was carried out using a data extraction matrix that included the author, year, and country of study; the type of research and target population; the pedagogical strategy or program implemented; the results obtained and limitations, and the relevance and applicability in the Ecuadorian Andean rural context. Subsequently, thematic coding was performed, grouping the findings into four main categories: the first called innovative academic and teaching support strategies, followed by socio-emotional strategies, family and community strategies, and finally rural contextual conditions.

Based on this categorization, the results were interpreted through comparative analysis and source triangulation in order to identify common patterns and divergences among the reported strategies. To strengthen the validity and consistency of the analysis, the resulting synthesis was contrasted with official reports from the Ministry of Education of Ecuador (2023, 2024) as well as with recent local studies on school dropout in the province of Chimborazo.

Graph #1

Identification of articles



Results

Once the information had been analyzed, strategies of academic support and innovative didactic practices were identified as contributing to school retention. From this perspective, the adaptation of Positive Youth Development (PYD) programs in Quichua Indigenous communities showed that strengthening internal assets—such as self-efficacy and perseverance—along with



transforming adult perceptions of education, influenced adolescents' motivation to prioritize their long-term educational trajectories. In this regard, these findings were consistent with theories of positive adolescent development and human and social capital, which posit that investment in personal skills, support networks, and educational expectations promotes educational continuity. Likewise, the implementation of technological resources—such as the rehabilitation of data networks and improved internet access in rural schools—reduced dropout rates and enhanced educational quality. In the same vein, innovative didactic strategies, including the use of educational applications and holographic resources, increased motivation and academic performance, particularly among students with special educational needs.

Based on the application of the methodology and the analysis of the reviewed information, socioemotional support consistently emerged as a key component in preventing school dropout, especially in rural contexts characterized by economic vulnerability and family-related stressors. The analyzed studies showed that the presence of anxiety, stress, and depressive symptoms was associated with higher levels of absenteeism and an increased risk of school dropout among adolescents.

Accordingly, the results indicated that interventions aimed at strengthening socioemotional skills—among both students and teachers—had positive effects on school retention. Specifically, strategies focused on developing emotional self-regulation, resilience, and stress management enhanced concentration, academic performance, and students' sense of connection to their educational communities.

These findings aligned with the Social and Emotional Learning (SEL) framework proposed by CASEL (2020), which posits that the development of competencies such as self-awareness, self-management, responsible decision-making, and relationship skills serves as a protective factor against school dropout. In the rural contexts analyzed, the integration of this approach made it possible to understand that emotional well-being not only accompanied the learning process but also functioned as a structural element in sustaining adolescents' educational trajectories.

Likewise, abuse prevention and wellness promotion programs implemented in various institutions throughout the country show sustained effects in the medium term. These initiatives have increased knowledge, self-defense, and risk awareness among adolescents, which contributes



to the construction of safer, more protective, and emotionally stable environments. The evidence agrees that these programs are most effective when they are coordinated with personalized tutoring and accessible psychological support, allowing for the timely attention of students' individual needs.

It should be noted that studies highlight how academic support programs, personalized tutoring, active learning methodologies, and flexible learning models can enhance student motivation, participation, and academic performance. In this regard, research conducted in Ecuador underscores digital connectivity as a key factor, as access to the internet makes it possible to sustain educational continuity, particularly during periods of remote education. Conversely, lack of connectivity widens the digital divide and limits student participation, thereby increasing the risk of school dropout.

The following table summarizes the most representative studies reviewed in this category, allowing us to observe the methodologies used, the contributions to the objective of this study, and the main findings of each research project.

Table # 1

Analysis of scientific articles on teaching strategies and school dropout prevention

Author and year	Methodology	Contribution to the objective of the study	Main finding	Download link/source
Cabrera et al. (2021)	Mixed study; SROI analysis in 40 rural schools in Nabón.	Evidence of the relationship between school connectivity and educational retention.	The rehabilitation of data networks reduced the digital divide and decreased rural dropout rates.	https://doi.org/10.1109/IH-TC53077.2021.9698970
Asanov, I. et al. (2023)	Randomized experimental trial with more than 45,000 students.	Evaluates multilevel interventions to improve virtual participation.	Centralized management increased participation and reduced the risk of school dropout.	https://doi.org/10.1073/pnas.2216686120
Asanov et al. (2021)	Cross-sectional study on time use and mental health during lockdown.	It links emotional well-being with educational continuity.	Anxiety and domestic burdens increased the risk of dropping out.	https://doi.org/10.1016/j.worlddev.2020.105225



Author and year	Methodology	Contribution to the objective of the study	Main finding	Download link/source
Coyago Simbaña (2025)	Qualitative interviews with adolescent dropouts.	Reveals psychosocial and economic causes of dropout.	Teenage work and lack of emotional support are direct factors in dropping out.	https://repositorio.uasb.edu.ec/bitstream/10644/10259/1/T4475-MIE-La%20desercion.pdf
Noboa (2023)	Mixed study in rural institutions in Chimborazo.	Provides direct territorial evidence on rural dropout rates.	Poverty, distance, and student demotivation are critical causes.	https://prometeojournal.com.ar/index.php/prometeo/article/download/41/68/107
Astudillo-Terán (2023)	Mixed study in rural high schools.	Analyzes factors affecting school retention in rural areas.	Child labor and lack of resources affect school continuity.	https://repositorio.utn.edu.ec/handle/123456789/14442
Tusa et al. (2025)	Documentary review and media analysis.	Examines the digital divide and post-pandemic motivation.	Poor connectivity strongly influences dropout rates.	https://www.mdpi.com/2076-0760/14/10/600
Ministry of Education & UNICEF (2024)	National descriptive study.	Assesses the impact of tutoring and psychosocial support.	Personalized tutoring significantly reduces dropout rates.	https://educacion.gob.ec/

The evidence summarized in the table # 1 shows that adolescent school retention does not depend solely on academic performance, but rather responds to a network of pedagogical, technological, emotional, and community factors that interact with each other. Several studies agree that access to connectivity is an enabling factor for educational continuity, especially in rural areas where the digital divide limits student participation and increases the risk of dropout (Cabrera et al., 2021; Tusa et al., 2025).

Similarly, systematic and structured academic interventions have been shown to improve participation and reduce absenteeism, particularly when educational management is coordinated from a centralized and sustained approach, as evidenced by the results of Asanov et al. (2023) in the Ecuadorian context. Added to this component is the socio-emotional dimension, as studies conducted during the pandemic conclude that anxiety, stress, and domestic overload directly influence educational continuity, reinforcing the need to incorporate emotional tutoring and psychological support as part of everyday school life (Asanov et al., 2021).



Likewise, territorial realities revealed nuances that cannot be overlooked. Studies conducted in the province of Chimborazo confirmed that poverty, distance to educational institutions, and child labor continued to function as structural factors that hindered school retention, thus requiring coordinated responses from educational management and public policy (Noboa, 2023). From the perspectives of strategic educational management and structured learning, these findings make it possible to understand that institutional planning, intersectoral coordination, and the systematic allocation of resources directly influenced school retention. Recent literature further emphasized that personalized tutoring and psychosocial support programs constituted highly effective strategies for reducing dropout among adolescents in vulnerable situations, as they strengthened the organization of educational support and extended educational action beyond the classroom within a comprehensive and planned approach (Ministry of Education & UNICEF, 2024).

Another important dimension identified in the literature is the role of families and communities. Family participation is a decisive factor, as communication between teachers, parents, and students strengthens adolescents' commitment to their educational process. However, particular challenges persist in rural Andean areas: many families prioritize productive or domestic activities over schooling, which increases absenteeism and disengagement. Studies such as that by Noboa (2023) show that when a constant dialogue is established between the school and the community, the sense of shared responsibility increases and with it student motivation. Complementarily, Astudillo (2023) highlights that when family expectations are not aligned with adolescents' life plans, tensions arise that influence educational continuity, especially in rural areas where child labor continues to be a daily reality.

The bibliographic analysis showed that, in the post-pandemic period, inequalities in access to digital technologies deepened and disproportionately affected households with fewer resources. In this regard, Tusa et al. (2025) demonstrated that the lack of devices and limited connectivity hindered school participation, generated learning gaps, and weakened students' sense of belonging to their educational institutions. In response to this reality, the reviewed literature highlighted that support policies—such as school feeding programs, transportation for remote areas, the provision of community-based learning spaces, and strategies to promote social participation—help mitigate technological inequalities while also strengthening the links between schools, families, and communities, thereby fostering more sustained and inclusive educational participation.



To conclude the analysis of the findings from the literature review, studies contextualized in the Ecuadorian Andean region indicated that structural factors such as poverty, unequal access to education, geographic distance, cultural affiliation, mother tongue, and community practices continued to significantly shape school retention. These elements, identified in studies such as those by Noboa (2023), made it possible to understand that preventing school dropout in rural contexts required strengthening intercultural education supported by flexible curricula and intercultural bilingual education models capable of responding to the cultural and linguistic diversity of the territory. Within this framework, public policies aimed at school retention assumed a central role, as programs implemented by the Ministry of Education and UNICEF (2024) demonstrated that personalized tutoring and psychosocial support, when developed in a sustained and contextually grounded manner, significantly reduced dropout rates among adolescents in vulnerable situations.

Table # 2

Table of contributions to research

Top Contributors		
Type	Name	Papers
👤 Authors	I. Asanov	16 14 2 papers
	Sergio Tobón	13 1 paper
	Isabel M Espinosa	1 1 paper
📖 Journals	<i>Sustainability</i>	4 12 18 3 papers
	<i>World Development</i>	16 1 paper
	<i>BMJ Paediatrics Open</i>	1 1 paper

Discussion

The objective of this study was to analyze the pedagogical strategies that contribute to preventing school dropout among Ecuadorian adolescents, with an emphasis on rural Andean territories. Based on the literature review, points of convergence were identified between empirical evidence, territorial conditions, and the educational experience that students live on a daily basis.



When these elements are considered together, it becomes clear that school retention is the result of multiple interactions and not a single isolated factor.

Likewise, pedagogical strategies acquire true meaning when they are articulated with the socio-emotional, family, and territorial conditions of the student. From this perspective, digital connectivity appears as a cross-cutting theme in studies such as those by Cabrera et al. (2021) and Tusa et al. (2025), access to technological infrastructure supports learning and reduces the risk of dropout, especially in communities where geographical distance and lack of resources have historically limited access to education. When these results are contrasted with the objective of the study, it can be seen that strengthening connectivity is a technical measure, but also a pedagogical condition that enables more equitable and sustainable educational processes.

Likewise, the findings show that emotional well-being is a determining factor for educational continuity, as research such as that of Asanov et al. (2021) shows that anxiety and stress deteriorate the bond with school and directly affect attendance. In the author's view, these results reaffirm that no pedagogical strategy can be effective if it does not recognize the student as a whole person, affected by emotions, family pressures, and economic conditions that impact their permanence. Therefore, emotional guidance programs, psychosocial tutoring, and emotional support should not be seen as complements, but as structural elements of the educational process.

With regard to family and community strategies, territorial, cultural, and familial conditions demonstrated a structural weight that cannot be overlooked. Specifically, in the province of Chimborazo, a predictive model identified that public institutions located in rural areas exhibited significantly higher school dropout rates (Castillo & Castro, 2024), reinforcing the findings of Noboa (2023) concerning poverty, geographic distance, and cultural barriers. From the perspective of intercultural education and territorial justice, this evidence confirmed that pedagogical strategies achieved sustained results when they were culturally contextualized and supported by public policies aimed at reducing territorial inequalities. In this regard, reports from international organizations such as the Economic Commission for Latin America and the Caribbean (ECLAC, 2024) warned that school dropout prevention measures needed to comprehensively address digital divides, youth employment, and rural vulnerability as structural conditions that directly influence educational retention.



Another key aspect that emerges from the triangulation is the importance of cultural and linguistic relevance in preventing dropouts. Evidence shows that indigenous students face additional challenges related to their mother tongue, cultural identity, and the distance between school and community (Noboa, 2023). From the author's perspective, this requires rethinking education not as a uniform system, but as a practice that must adapt to the country's multicultural realities. Intercultural bilingual models and curricular flexibility, far from being isolated proposals, constitute concrete responses to the needs of a population that has historically been marginalized by national education policy.

Finalmente, la triangulación entre el objetivo del estudio, los hallazgos y el análisis crítico permitió concluir que las estrategias más efectivas para prevenir la deserción escolar se articularon en un modelo integral de retención escolar, sustentado en la interacción de tres dimensiones fundamentales: la innovación pedagógica, el acompañamiento socioemocional y la participación familiar y comunitaria, esta convergencia se evidenció en iniciativas nacionales como las tutorías implementadas por el Ministerio de Educación y UNICEF (2024), las cuales demostraron reducir la deserción en adolescentes en situación de vulnerabilidad, desde esta perspectiva, los resultados confirmaron que la educación en el Ecuador requirió un enfoque integral que transformó las prácticas pedagógicas al interior del aula, y además fortaleció los apoyos socioemocionales y la articulación con las familias y comunidades, incidiendo de manera directa en las condiciones estructurales que sostuvieron la permanencia escolar.

Based on this comprehensive model of school retention, the discussion shows that preventing school dropout among Ecuadorian adolescents is not only a pedagogical challenge, but also an intersectoral and human commitment. Consequently, it requires supported and trained teachers, families linked to the school, emotionally supported students, public policies sensitive to the territory, and educational practices capable of adapting to the country's cultural diversity. In this sense, the triangulation of these elements shows that school retention is possible when the student is placed at the center and their context is recognized as a fundamental part of learning.



Conclusions

School dropout among Ecuadorian adolescents was configured as a multicausal phenomenon that could be understood through a comprehensive approach in which pedagogical, socioemotional, family, and territorial dimensions were articulated. In relation to the general objective of the research, the findings showed that the most effective pedagogical strategies were those that recognized students as active subjects immersed in contexts marked by structural inequalities, complex family dynamics, and limitations in access to technology.

First, academic and didactic strategies demonstrated that digital connectivity, continuous academic support, and the use of active learning methodologies had a direct impact on school retention. This finding fulfilled the first specific objective and confirmed that, in the absence of basic material conditions—such as internet access, devices, and adequate study spaces—any pedagogical proposal was limited, particularly in rural Andean areas where access gaps persisted significantly. From an applied perspective, this result highlighted the need for educational policies to prioritize infrastructure and academic support as enabling conditions for educational continuity.

Second, the socioemotional analysis revealed that emotions, mental health, and affective support played a decisive role in educational continuity. In accordance with the second specific objective, the results indicated that emotional tutoring programs, institutional psychological support, and the development of socioemotional skills strengthened students' connections with school, improved their academic self-esteem, and reduced the likelihood of dropout, demonstrating that emotional well-being constituted a structural component of the educational process.

Furthermore, family and community participation was identified as an indispensable element for sustaining stable educational trajectories, thus fulfilling the third specific objective. Within this framework, institutions that succeeded in building strong ties with families and communities generated more favorable conditions for school retention. In contrast, the lack of dialogue and misalignment between family expectations and students' aspirations continued to represent significant obstacles to educational continuity in rural contexts.

Overall, it was concluded that the most effective strategy for preventing school dropout among Ecuadorian adolescents was one that combined pedagogical innovation, socioemotional support, community participation, and cultural relevance, framed within territorially sensitive



public policies. In general terms, the study provided contextualized evidence for the rural Ecuadorian highlands, making it possible to highlight the territorial, cultural, and social particularities that influence school retention. Finally, it was established that only through a sustained intersectoral and intercultural approach was it possible to address students' real needs and move toward more equitable educational conditions in the country's rural Andean contexts.

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