Pedagogical Innovation In Basic Education: A Systematic Review

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Traditional teaching methods in basic education are not very relevant and the expected results are not achieved, we live in a world of constant change with the advances of science and technology, therefore the good performance of students depends on many factors, one of them is the pedagogical innovation to apply, with the use of various means and concrete materials or tics. This systematic review research article aims to analyze and systematize research articles about pedagogical innovation in basic education. For this systematization of the work, the search and selection of many research articles is used, applying the PRISMA flowchart, this strategy allows us to select relevant articles that are related and justified with the topic to be dealt with in the present investigation. The results They show us selected articles in three thematic fields, one of them is the use of various active methodological strategies where many authors agree on their conclusions, then the use of different ICT tools and devices supported by authors where they agree with their conclusions and also another group of authors argue that ethical leadership prevails over pedagogical leadership. It is concluded that the use of various active methodological strategies, with the support of ICT tools and devices, plus the ethical leadership of the teacher, generates pedagogical innovation in educational work.

Key words: Pedagogical innovation, active methods, tics.

Resumen

Los métodos de enseñanza tradicional en la educación básica no tienen mucha relevancia ni se logra los resultados esperados, vivimos en un mundo de constante cambio con los avances de la ciencia y la tecnología, por lo tanto, el buen desempeño de los estudiantes depende de muchos factores, uno de ellos es la innovación pedagógica a aplicar, con el uso de diveros medios y materiales concretos o de las tics. El presente artículo de investigación de revisión sistemática tiene como objetivo analizar y sistematizar artículos de investigación acerca de la innovación pedagógica en la educación básica. Para dicha sistematización del trabajo se recurre a la búsqueda y selección de muchos artículos de investigación, aplicando el diagrama de flujo PRISMA, dicha estrategia nos permite seleccionar artículos relevantes que se relacionan y se justifica con el tema a tratar en la presente investigación, Los resultados nos muestran artículos seleccionados en tres campos temáticos, uno de ellos es el uso de diversas estrategias metodológicas activas donde coensiden muchos autores en sus conclusiones, luego

el uso de las diferentes herramientas y dispositivos de las tics sustentados por autores donde coinsiden con sus conclusiones y también otro grupo de autores plantean que el liderazgo ético prima sobre el liderazgo pedagógico. Se concluye que el uso de diversas estrategias metodológicas activas, con el apoyo de las herramientas y dispositivos de las tics, más con el liderazgo ético del docente, generan innovación pedagógica en la quehacer educativo.

Palabras clave: Innovación pedagógica, métodos activos, tics.

Introduction

As stated by Flórez and Tobón (2001), pedagogy is the science that studies the processes of teaching and learning, methodological strategies to be applied to achieve stated purposes, and pedagogy to be applied must be flexible, diversifiable, and innovative, depending on the circumstances such as time, educational policies, and the socio-cultural context. This fact motivates teachers to apply innovative and relevant methodological strategies with much creativity and commitment. Likewise, Montesino and Koskinen (2015) posit innovation in educational domain entails consideration of existing practices, the development of strategies are not commonly employed, and formulation of unique and novel methodologies. In this context, innovation is not synonymous with invention; rather, it entails improvement of existing practices, a comprehensive approach, and integration of the most crucial actors in field of education. The educational curriculum is inherently flexible, open, and adaptable, allowing for contextualization and alignment with specific needs and circumstances of each educational institution. As Macanchi and Orozco (2020) assert, pedagogical innovation is a complex yet indispensable process. To successfully implement it, it is essential to cultivate an environment conducive to reflection and transformation in conceptualization of new processes in pedagogical and didactic strategies. This calls for presence of reflective, critical, proactive, and committed teachers who are deeply invested in their service. In accordance with the UNESCO (2019), educational processes are enhanced by the integration of interactive and motivating tools, which foster student engagement. For educators, application of these tools enables management of information in its various dimensions, thereby facilitating improvements in pedagogical practice. The efficacy of learning outcomes in educational process is contingent upon a multitude of factors. One such factor is the role of the teacher, which encompasses the implementation of innovative pedagogical strategies supported by the utilisation of ICT tools and materials. This complex process necessitates the cultivation of a multitude of skills and abilities, which in turn requires the acquisition of a plethora of skills and attitudes from teachers. The objective of educational process is to provide a quality service, which in turn enables formation of critical, reflective, and analytical students who contribute to the advancement and progress of society. The objective of this systematic review article is to analyze and systematize research articles on pedagogical innovation in educational practice of basic education. For Macanchi et. al (2020), pedagogical innovation is a research process proposes innovative teaching strategies. These strategies are designed to address difficulties of teaching work by taking a proactive and committed attitude on part of teacher. The objective is to create a culture of change in educational process of institution. Similarly, Troncoso (2022) defines pedagogical innovation as a structured process designed to cultivate and develop creativity in a systematic manner. The objective of education is to prepare future

generations with the capacity to embrace new perspectives and visions, embracing change and risk-taking. Similarly, Muñoz (2004) posits innovation is a directed, singular, and precise process, comprising planned actions with objective of enhancing efficacy of desired learning outcomes. According to Rivas (2000), innovation is the introduction of something new, taking into account a multitude of known pedagogical processes, such as novel strategies and applications, which have the capacity to generate improvements in the educational process.

In background of this problem, numerous theories and research works have been examined seek to understand and improve learning achievements through application of innovative methodologies and use of ICT tools in the teaching and learning process. For instance, Abdías and Moscoso (2021) posit implementation of active learning methodologies in context of competency-based education in a region of Peru led to development of a range of skills within educational process. Similarly, Cyrulies and Schamne (2021) posit that, in a teacher training conducted in Argentina on project-based learning (PBL), it was found that a significant number of teachers have embraced this approach to learning, yet they also identified challenges in its implementation due to diverse contexts within educational institutions. Morales (2022) posits integration of playful activities in physical education represents a novel strategy based on previous games, which serves to motivate learners and facilitate the development of psychomotor skills. In their 2022 publication, Araya and Majano posit incorporation of ICT tools into learning environment can facilitate positive changes in student learning outcomes. They therefore advocate for educators to prioritize the development of their own skills in the use of ICT tools and devices. Morgad (2022) posits pedagogical work conducted through modality of collaborative networks represents a novel and impactful strategy, which encourages support among teachers. Likewise, according to Martinez (2022), teachers in rural areas of Peru adapted to virtual learning during pandemic due to numerous advantages it offers, with a positive and proactive attitude. López (2022) posits methodological strategy of gamification, based on playful activities, engenders greater participation with positive and negative emotions, involving learners in all types of activities, thereby fostering a positive classroom climate. Rivera (2022) posits innovative pedagogical strategies are employed in an environment with a positive institutional climate, characterised by dialogue and continuous collaboration, with the objective of enhancing learning outcomes. Likewise, Troncoso (2022) raises issue of the appreciation of creativity and innovation among teachers, where they assign a significant value to these concepts in pedagogical practice. However, some argue they still have doubts about distinction between these terms. In their 2021 study, Parra and Rengifo found teachers employ ICT tools in accordance with their specific needs and circumstances. Additionally, Ventura (2020) proposes utilization of Geogebra in dispersion measurements, which has been demonstrated to result in significantly enhanced learning outcomes compared to traditional approaches. Deroncele (2021) posits pedagogical autonomy, a strength in teacher training, is not sufficiently applied in training of educational agents. He therefore proposes development of this competence as a great strength of teachers. González (2021) posits that in a project on cooperation and inclusion in pedagogical practice, results were attitudes of confusion and indifference. However, they assume the great significance and benefits generated by these work strategies in educational process.

Macías (2021) posits that the utilization of tics and educational innovation in the educational field has enhanced student participation in a proactive manner, fostering a team-oriented and collaborative approach to work, which has led to the emergence of virtual work with a multitude of advantages and strengths. In their analysis of pedagogical leadership and ethical leadership, Miras and Longás (2020) conclude that the ethical training of teachers, their virtues, and values influence pedagogical leadership. In his 2019 work, Dorce asserts that the history of mathematics is an effective pedagogical tool, yet recommends combining it with other strategies to prevent the development of rote learning. Goris (2020) additionally asserts, despite digital divide, digital tools and devices can be integrated into teaching and learning process, particularly in relation to use of information and communication technologies (ICTs) in pedagogical work. Likewise, Medrano (2022) posits incorporation of ICT tools and devices into pedagogical practice enhances quality of instruction. Furthermore, he suggests that these competencies should be regarded as an integral aspect of teaching profession. Similarly, Alvarez (2022) posits that the use of ICTs in pedagogical work enhances image and prestige of teachers by facilitating interactive engagement and efficient information processing. In a similar vein, Durango (2022) on policies and pedagogies for people with disabilities, asserts pedagogical strategies are essential, flexible, and complex simultaneously, adapting to diverse realities and circumstances contingent on the students.

For Nuñez (2022), the pedagogical strategy of storytelling is widely accepted in both daily work and research. However, he also notes that it is still in process and should be a priority. Similarly, Mancanchi (2020) emphasizes significance of organizational, communicative, and collaborative efforts among educators in implementation of innovative pedagogical strategies. These elements should be accorded a high priority, as they serve as a catalyst for their creative endeavors. In their 2021 publication, Bonilla and Ferra propose innovation in basic education can be achieved through collaborative work, dynamic and committed interaction, and proactive teachers engaged in their pedagogical work. Landa and Ramiréz (2018) report on implementation of an inverted learning pedagogical model in a high school in Mexico City. Their findings indicate a high level of acceptance and satisfaction with this approach. Valbuena and Medina (2020) elucidate that teacher empowerment in utilization of ICT tools and materials for mathematical learning encompasses multifaceted aspects. A discrepancy is identified in utilization of these tools in conjunction with pedagogical and didactic work. It is thus concluded ICTs are efficacious instruments for management of knowledge information. However, it is still necessary to fortify pedagogical, didactic, and technological knowledge in order to empower teachers. In Spain, Sarmiento and Ramón (2020) posit utilization of ICT tools in teaching innovation is intended to facilitate establishment of connections between students in an engaging, dynamic, accessible, and constructive manner. The incorporation of technology, media, and materials into education is a highly motivating and attractive factor. It allows for sharing and management of relevant information, saving time and space in pedagogical task. Cadena and Napa (2019) posit resolution of school conflicts is contingent upon the timely and assertive intervention of educators, and is contingent upon their emotional intelligence as much as of their students. These events should be regarded as an opportunity to cultivate self-awareness skills. It is therefore of great importance to create student conflict mediation plans in order to facilitate their personal and integral formation. Rodriguez and Noe

(2017) posit assertiveness plays a pivotal role in effective functioning of individuals. Students who are adept at asserting themselves are better equipped to address bullying issues. Furthermore, assertiveness workshops can be utilized to cultivate qualities such as empathy, self-esteem, and problem-solving abilities, which may be necessary in context of bullying. The management of emotions and other social skills are factors that help to improve the classroom climate and, at same time, solve different problematic situations based on decision-making, conflict resolution, and others. This is done with the intention of creating an atmosphere of peace, tranquility, and harmony, which is conducive to the cultivation of skills in schoolchildren. In order to achieve stated objective and maintain the consistency of this article, we pose following questions: What pedagogical strategies are most pertinent to pedagogical innovation? How does use of different ICT tools and devices influence pedagogical innovation? What conditions and qualities should an innovative teacher have? What are most important ones?
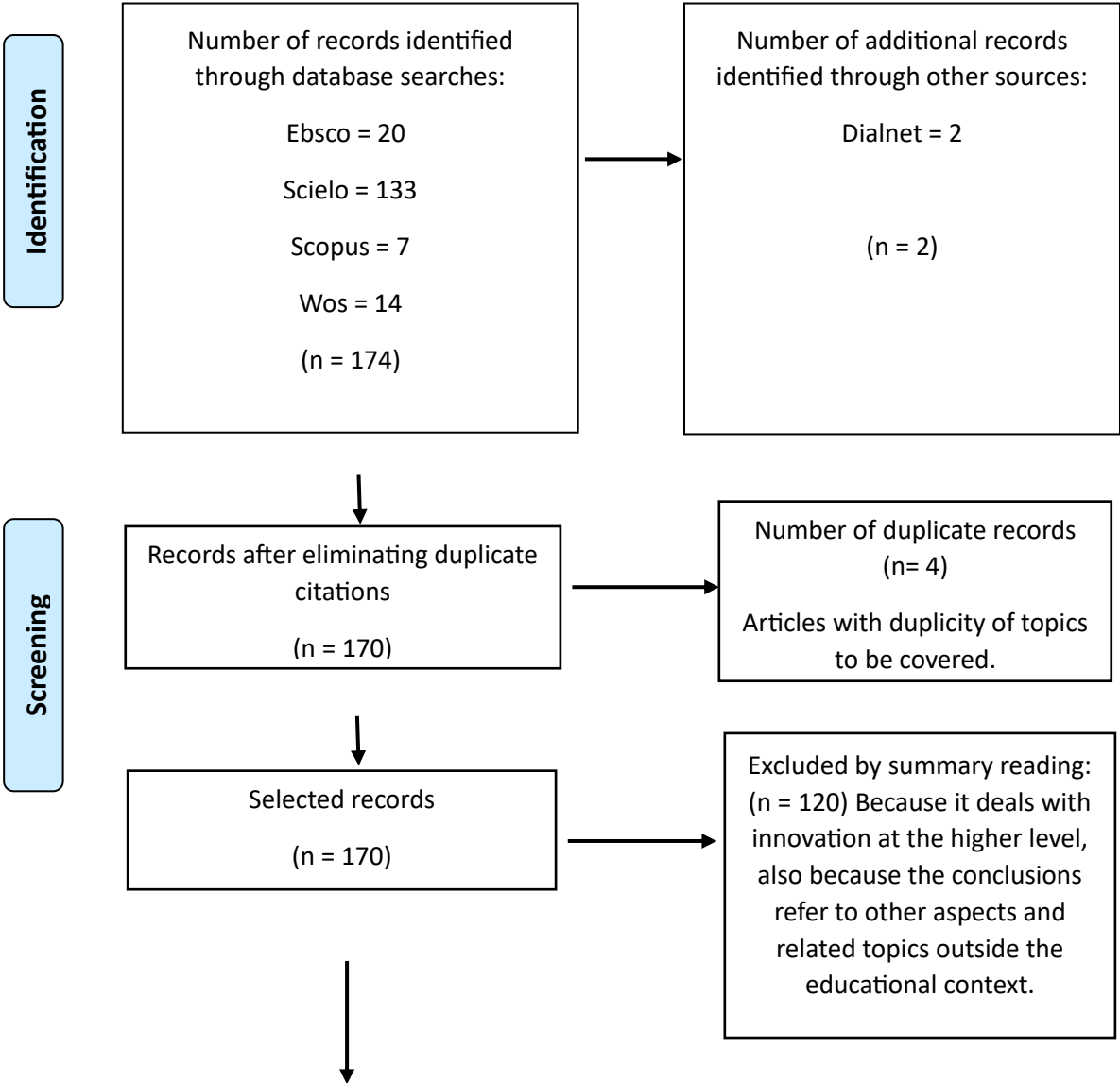
Methodology

In order to address pedagogical innovation in basic education, a systematic review is conducted through rigorous and well-defined methods. Such methodology is a systematic procedure for development of problematic situations in science, based on known verifications of the reality environment (Hillman, 2001). A systematic, clear, and precise approach was essential to achieve the set objectives and certify achievement of the established goals. To this end, a comprehensive bibliographic search was conducted in the most significant databases of articles and research works, including Scielo, Scopus, Ebsco, WOS, and others. The search was based on keywords related to article's title, such as "innovation," "pedagogical innovation," "innovation in educational process," "active methods," "tics in education," and "social skills." A total of 174 articles and research papers were identified in the aforementioned databases. In order to select most relevant papers and articles, inclusion and exclusion criteria were applied. In order to include articles, we proceeded to a peer review process, which included articles presented in English and Spanish. These articles dealt with pedagogical innovation in general and in teaching of mathematics in basic education. Similarly, research papers were deemed to be of limited relevance and lacking a clear connection to proposed title were excluded. Additionally, articles that were found to be duplicates and those that had been published more than five years ago were also removed.

Once articles and scientific papers had been selected, an exhaustive evaluation of their methodological quality was carried out. According to Burgos (2011), methodological quality encompasses many dimensions, allowing for determination of the type of design applied, the methodology used, the analysis performed, and all other relevant data of research. The collection of pertinent and significant data was conducted in a systematic manner, with a focus on most crucial elements, including the objective, population, sample, research design, conclusion, and other pertinent details. The aforementioned data permit the examination of articles identified and the resolution of posed questions.

The methodology proposed in systematic review is based on a comprehensive examination of existing literature and previous methodological studies. The exclusion and inclusion criteria

are applied in accordance with methodology proposed by numerous authors. In order to analyze this systematic review, the Prisma method (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) was applied, which represents preferred reporting items for systematic reviews and meta-analyses of research papers. The process of inquiry and selection of articles was developed based on the parameters of exclusion and inclusion, as presented in flow chart of Prisma method (Page, 2021).
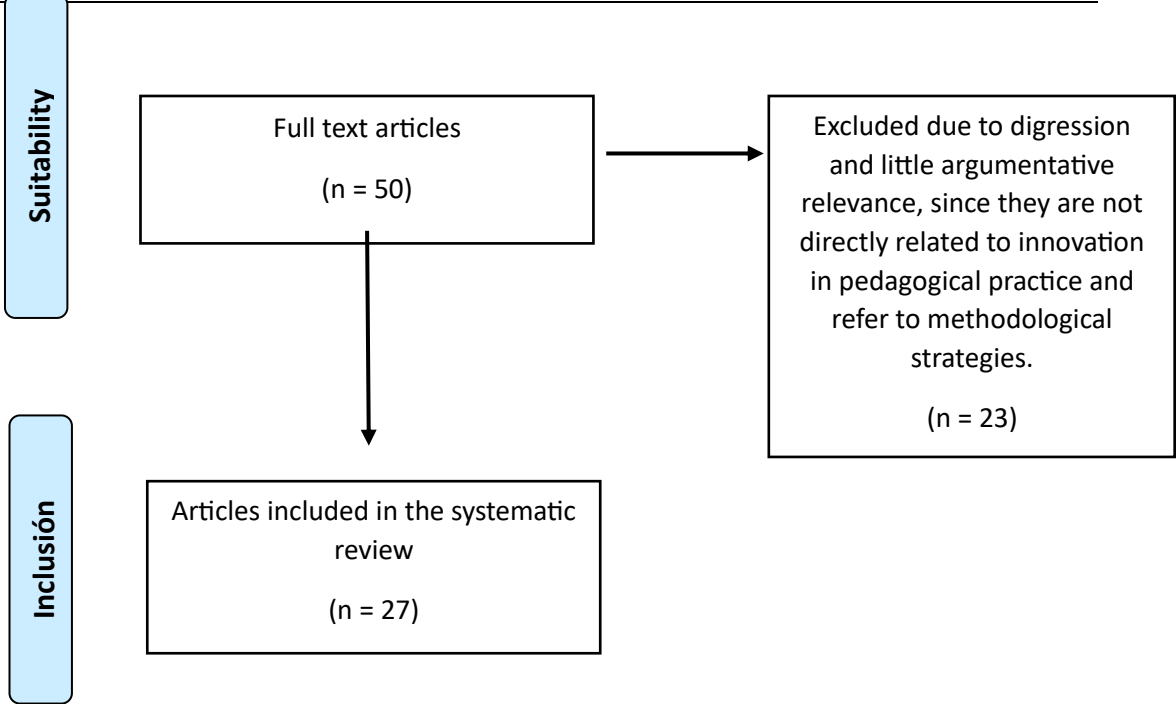
Flowchart: PRISMA

Identification	Number of records identified through database searches: Ebsco = 20 Scielo = 133 Scopus = 7 Wos = 14 (n = 174)	Number of additional records identified through other sources: Dialnet = 2 (n = 2)
Screening	Records after eliminating duplicate citations (n = 170)	Number of duplicate records (n= 4) Articles with duplicity of topics to be covered.
	Selected records (n = 170)	Excluded by summary reading: (n = 120) Because it deals with innovation at the higher level, also because the conclusions refer to other aspects and related topics outside the educational context.

Fig. No. 1: PRISMA flow chart focused on pedagogical innovation in basic education.

Results

Table 1 presents the 27 articles included in this review. Each article is identified by the author, the year of publication, the objective of the study, the sample size, the instruments used, and the main results and conclusions.

Table 1.

Publications included in the review.

Source	Objective or purpose	Unit of analysis or sample	Data Collection/Instruments	Results, conclusions
(Abdias Chavez, Epiquen and Moscoso Marilu, 2021)	The objective of this study is to ascertain relationship between active learning and development of mathematical competencies.	Twenty-two students from the third grade of Awajún primary school.	Pre-experimental design, with a mixed approach.	The application of active methods in development of mathematical competencies contributed to development of skills and competencies in this area in these students.

Source	Objective or purpose	Unit of analysis or sample	Data Collection/Instruments	Results, conclusions
(Cyrulies, Ernesto and Schamne, Mariana, 2021)	Document information about teacher acceptance of project-based learning.	Teachers in a province of Buenos Aires.	Observation, interview.	In this training on project-based learning for teachers in city of Argentina, it was concluded many teachers have accepted this modality, but they state some of them have difficulties in its implementation for various reasons.
(Morales Acosta, Edwin José, 2022)	To offer a playful alternative to make physical education class more didactic, where opportunity to guide a class in the theoretical and practical aspects is provided.	Students at an educational center in Colombia	Observation, unstructured focal interview.	It is a novel strategy is based on play activities for their personal development and as part of society; at same time it contributes to their well-being and also to benefit of society as a whole.
(Araya-Muñoz, Isabe and Majano-Benavides, Jilma 2022)	To identify use of technological means in virtual platforms in teaching-learning process at national university of social sciences.	220 students and 56 faculty members of FCS of the University of Costa Rica.	Students and teachers of the faculty of social sciences are certified and used.	It is concluded that working with ICT tools as part of didactics changes learning. Teachers should prioritize their capacity building for use of ICT techniques and devices.
(Morgado, José Carlos, 2022)	To know what teachers think about contributions that continuous training can bring them in terms of technology, so they can respond more fully to these challenges.	70 long-serving teachers.	Questionnaires applied	The work under the modality of collaborative networks generates impact in a culture of innovation, creating results in a collaborative strategy and support among them.

Source	Objective or purpose	Unit of analysis or sample	Data Collection/Instruments	Results, conclusions
(Martínez-Huamán, Edgar L. et., 2022).	Understanding teachers' perceptions of innovation and educational process in rural educational institutions in Peru in times of pandemic.	28 teachers from selected institutions	The quantitative data were operationalized by a questionnaire applied by google tools and qualitative data were provided by the interviews through a script by the educational platforms.	In times of pandemic, teachers in rural areas of Ayacucho region adapted to virtual education, showing a proactive attitude and at same time expressing that they need more support in use of ICTs.
(Lopez-Mari, Maria, 2022)	To examine use of gamification as a methodological strategy focused on inclusive education, to assess its effectiveness in improving the education received by students with specific educational support needs in primary education.	18 classrooms of the Valencian educational community Spain.	Qualitative methodology.	Playful activities in students generate more participation, with many good and bad emotions, involving them in all kinds of activities. In turn, it improves the classroom climate, cultivating a pleasant environment and encouraging practice of autonomy.
(Rivera Olguin, Patricio, 2022)	We sought to identify pedagogical practices teachers in this region are applying to achieve this citizen learning in their students.	Teachers in the subject of citizenship training, in the commune of Iquique (Tarapacá Region-Chile).	Through analysis of the information obtained from the interviews conducted with active teachers, their strategies of appropriation, modification and incorporation into curriculum are analyzed.	The pedagogical innovation applied by teachers is sustained in an environment based on dialogue and permanent collaboration to provide a good service to students.

Source	Objective or purpose	Unit of analysis or sample	Data Collection/Instruments	Results, conclusions
(Troncoso A., Andrés et. , 2022)	Identify the perception and experiences about creativity, pedagogical and educational innovation - these two aspects are terms that have many differences and similarities.	Teachers who are just beginning their training process in a postgraduate Master's degree program in Didactics, Chile.	An opinion questionnaire with open-ended questions was used as the main data collection technique.	Teachers appreciate creativity, define the concept of pedagogical innovation, but are hesitant to identify differences between these terms due to breadth of concepts and definitions.
(Parra Bernal, Lina and Rengifo Rodríguez, Karen ,2021)	It examines innovative pedagogical work through tics carried out by the teachers of an educational institution in Popayán - Cauca, (Colombia).	Three IE teachers in Popayán - Colombia	Descriptive scope and developed through semi-structured interviews.	It is concluded that teachers apply ICT tools and devices, depending on the needs, affirming they use them when necessary according to development of the thematic fields and needs.
(Ventura Janampa, Miguel Angel et al. 2020)	To explain learning of dispersion measures through GeoGebra Software in the students of Laboratory of Pedagogical Research and Innovation of National University Daniel Alcides Carrión of Pasco.	112 students of Laboratory of Pedagogical Research and Innovation UNDAC - Pasco.	The method of study followed in research was scientific, observational and documentary method.	As a result, there was a significant difference between results after using GeoGebra software in experimental group. It is concluded applying the independent variable significantly improves the students' learning of dispersion measures.
(Deroncele Acosta,	The objective of research was to evaluate, based on	Actors in educational process.	Analysis of specialized scientific	Processing information allowed us to recognize an insufficient application of

Source	Objective or purpose	Unit of analysis or sample	Data Collection/Instruments	Results, conclusions
Angel et al., 2021)	scientific evidence, approach to pedagogical autonomy as a formative potentiality in educational actors in classroom.		literature, focused essentially on Scopus, Web of Science and Scielo.	pedagogical autonomy in agents of the educational process in classroom, so we propose to move from a traditional centralist perspective that places pedagogical autonomy as a competence of the state, to a perspective of pedagogical autonomy as a great strength and socio-praxiological tool.
(González Alba, Blas et. al., 2021).	To analyze and evaluate the results of an educational, cooperative and inclusive project developed in a primary school in province of Malaga after an on-site training.	Groups of 3º A and 4º A of Primary Education.	Participant observation, documentary analysis, focus groups and individual interviews with teachers.	As conclusions, it is worth highlighting appearance of three teaching profiles, characterized respectively by indifference, confusion and incompetence before task, and proactivity and motivation; and, on other hand, we find comments and evaluations made by both teachers and students pointing out benefits that the experience has brought them.
(Macías Arias, Enrique Javier et. al., 2021).	To analyze technologies applied to education and educational innovation, specifically to new learning environments that have been developed in Faculty of Philosophy, Letters and Educational Sciences of Technical	Faculty of Philosophy, Letters and Educational Sciences of Technical University of Manabí, Portoviejo, Ecuador.	Mixed methodological approach in a study represents a set of systematic, empirical and critical research processes and involves collection and analysis of quantitative and qualitative data, as well as their	It can be concluded utilization of these devices and materials has facilitated enhanced dynamic participation among students, collaborative work and communication within work teams, as well as motivation received by the group and teacher. Additionally, it can be posited overcoming of limitations constitutes the interaction characterizes virtual work as a human interaction.

Source	Objective or purpose	Unit of analysis or sample	Data Collection/Instruments	Results, conclusions
	University of Manabí, based in Portoviejo, Ecuador.		integration and joint discussion.	
(Jorge and Longás Mayayo, Jorge, 2020)	To analyze theoretically relationship between emerging perspective of pedagogical leadership and ethical leadership.	Educational institutions in Spain.	Literature Review	These characteristics lead us to consider that, apart from elements strictly related to pedagogical leadership, influence of ethical leadership on pedagogical leadership through development of virtues, ethics and morals is essential.
(Dorce, Carlos, 2019)	Analyze impact of history of mathematics on teaching of mathematics.	Primary and secondary educational institutions in Mexico	Literature Review	The analysis of impact of history of mathematics in classroom can be done through CIMT quadrilaterals described. The effectiveness of introducing history of mathematics in primary and secondary classrooms has been widely proven, but at same time it is suggested it should be combined with other more dynamic strategies in order to avoid monotony.
(Goris-Hernandez, Dayra, 2020)	Promote integration of ICT in pedagogical practices of mathematics teachers.	Arístides Fiallo Cabral Elementary School - Dominican Republic	Action research was used to achieve objectives set.	It is concluded, despite problems of ICT use, it is possible to develop strategies appropriate to our environment, which is why it is possible to integrate technologies in the process of teaching and learning mathematics.

Source	Objective or purpose	Unit of analysis or sample	Data Collection/Instruments	Results, conclusions
(Medrano Vasquez, Juana Melina et. al., 2022).	To identify development of teachers' digital competencies in the processes of systematization of experiences.	Teachers in Peru	The analysis and synthesis method was applied, with the selection of articles from different databases, applying inclusion and exclusion criteria.	It is concluded combination of pedagogical and digital competence improves pedagogical practice and contributes to systematization of experiences, and that this interaction should be considered as an integral process in pedagogical work.
(Alvarez-Atencio, Erika et., al. 2022)	Identify use of ICTs in teaching practice.	The tool was used by 13 teachers in initial training, during 10 weeks, with students from 12 to 16 years of age in different regions of Chile.	The present research uses EVALOE-SSD, a digital tool for professional development, built to help teachers design their classes, reflect on their pedagogical practice and make decisions.	It is concluded ICT devices and tools allow improving teachers' perception of their daily practice, developing awareness of students' oral competence, and developing reflective practice, together with a favorable acceptance of the teaching staff towards use of digital tools in their daily work.
(María Durango Llorente, C. Liliana, 2022)	To conduct a review of concepts of quality policies and pedagogical practices for persons with disabilities (PWD).	Students from University of Cartagena - Colombia.	The methodology to be used are the theoretical references from different data sources, electronic resources and documents found.	It can be concluded pedagogical practice is considered as a dynamic, variable and complex tool. This integrates at same time, the relationships of public and curricular policies, thus integrating theories or disciplines support them.
(Nuñez Pacheco et. al., 2022).	The purpose of this exploratory systematic review is to obtain	Context of higher education as part of	Literature review.	The results show storytelling is widely applied in pedagogical practice, but it is used as a research tool. We

Source	Objective or purpose	Unit of analysis or sample	Data Collection/Instruments	Results, conclusions
	information on published papers on use of narrative in Latin American scientific production between 2016 and 2021 found in Scopus and Web of Science databases.	pedagogical and technological innovation processes.		found multimodal and digital narratives, although it is a tool used by teachers and researchers, it is still in development and is an aspect that should be prioritized.
(Mancanchi Pico, ML et,. al 2020)	Analyze the importance of preparation, communication, collaboration and organization to increase teacher participation in innovative processes.	Higher education teachers	Literature Review	Prioritizing preparation, communication, collaboration and organization motivates teacher participation in innovative teaching strategies.
(Bonilla-Santamaria, K.; Ferra-Torres, G.E., 2021).	To present results of a novel proposal carried out within framework of Master's Degree in Innovation in Basic Education at Escuela Normal "Enrique C. Rébsamen" in Xalapa, Veracruz, Mexico.	Students from the Escuela Normal Veracruzana "Enrique C. Rébsamen" in Xalapa, Veracruz, Mexico.	Action-research, a diagnosis and assessment of relevance of the technical-pedagogical support was carried out.	The collaborative work strategy culminated in application of didactic strategies with a view to improving dynamic and committed intervention of classroom teachers.
(Valbuena and Medina, 2020).	Identify the elements of teacher empowerment for integration of ICTs.	Mathematics teacher-trainers	Interviews and observations applied to graduate trainers in mathematics.	It is concluded there are difficulties in use of ICT tools in pedagogical work, and yet it is concluded that ICT are valuable instruments for processing information.

Source	Objective or purpose	Unit of analysis or sample	Data Collection/Instruments	Results, conclusions
(Sarmiento and Ramon, 2020)	Motivate teachers and students to use ICTs in an attractive, dynamic, accessible and constructivist way.	Mathematics teacher-trainers.	Documentary review, interviews and observations applied to mathematics trainers.	Teachers resort to use of different ICT tools, such as mobile apps, social networks, educational platforms and others.
(Cadena and Napa, 2019)	Analyze importance of teacher's role in resolving student conflicts.	Teachers and students of educational units of province of Los Ríos-Ecuador.	Application of emotional intelligence test, conflict mediation test.	The solution of school conflicts is a function of pertinent actions of their teachers according to their emotional intelligence, concluding conflict mediation plans should be created to support their personal development.
(Rodriguez and Noe, 2018)	To determine relationship between bullying and assertiveness at secondary level.	273 high school students	Application of bullying and assertiveness tests.	Assertiveness influences good performance and behavior of students, to face various problems such as bullying, showing more resources to solve these problems, it is also suggested to conduct assertiveness workshops.

Figure 2 presents a statistical report on databases utilized for the search of pertinent information, along with number of articles selected.
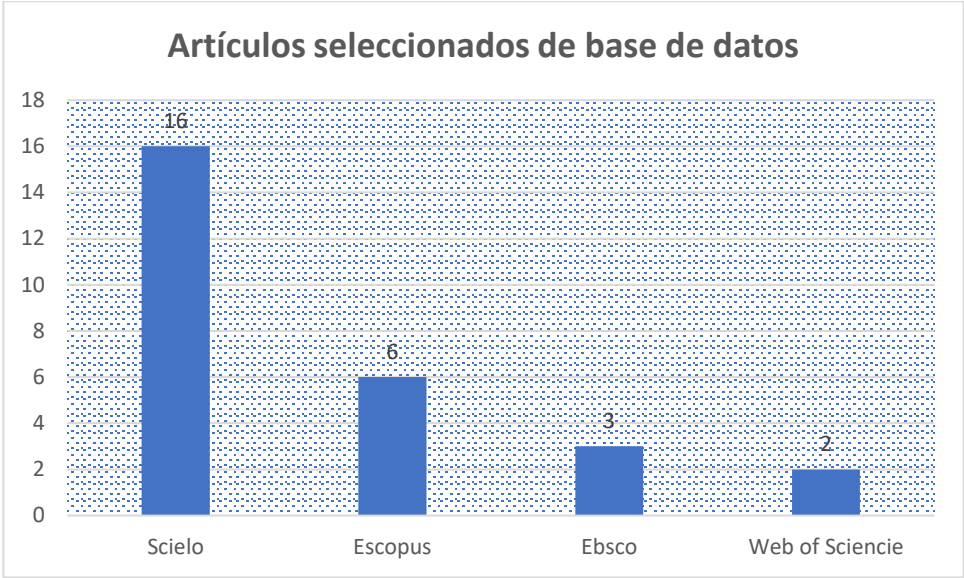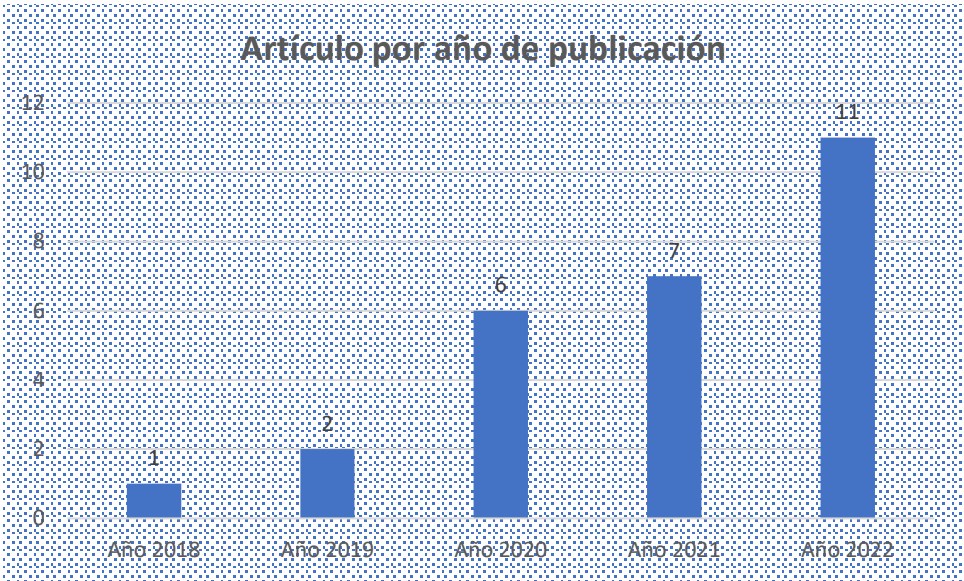
Figure 2.

Artículos seleccionados de base de datos

Figure 3 presents number of articles selected by year of publication

Figure 3

Artículo por año de publicación

The selection of research articles was made based on objective of research work, which is to analyze and systematize research articles about pedagogical innovation in the educational

process, to achieve this purpose we formulated the following questions: What pedagogical strategies are most relevant for a pedagogical innovation? To answer this question, according to analysis and search, we have scientific articles of systematic review about active pedagogical approaches are based on pedagogy of constructivism such as inverted classroom, PBL, collaborative learning and others.

How does use of different ICT tools and devices influence pedagogical innovation? With respect to this question, another novelty to innovate in educational process is to use ICT tools, whether they are educational platforms, social networks, programs or software that process information interactively with active participation of students, since we have many review articles about use of ICT in educational process, with face-to-face, blended and virtual classes, generating improvements in learning achievements of students.

What conditions and qualities should an innovative teacher have, to innovate in educational practice also influences the attitude and aptitude of teachers, where they must be proactive, with commitment to work, with social skills such as emotional intelligence, assertive, leadership, with the ability to resolve conflicts and make relevant decisions, likewise there are some research articles that corroborate about the teaching performance to be innovative in educational task, as it will improve results in learning achievements.

Discussion

A systematic review of this research article on pedagogical innovation in educational process of basic education reveals use of various active methodological strategies with numerous tools is a fundamental aspect of pedagogical innovation. Abdías and Moscoso (2021) demonstrated efficacy of active learning methods in developing competencies in mathematical domain in a region of Peru. Similarly, Cyrulies and Schamne (2021) report that in a teacher training conducted in Argentina on project-based learning (PBL), many teachers have accepted this work modality, but state that there are some difficulties in its implementation due to the different realities in institutions. Similarly, Morales (2022) proposes a novel strategy for learning through playful activities in the area of physical education. This strategy is based on previous games have been shown to motivate students, thereby contributing to the development of psychomotor skills. Additionally, Morgad (2022) presents a pedagogical approach based on collaborative networks, which is a novel and impactful strategy encourages support among teachers. Likewise, López (2022) proposes a methodological strategy of gamification in the field of mathematics, based on playful activities, which generates greater participation and positive and negative emotions. This strategy involves all types of activities and promotes a positive classroom climate. To reinforce preceding argument, Deroncele (2021) posits that pedagogical autonomy is a valuable asset in teacher training and that it has not yet been sufficiently integrated into the training of educational agents. He therefore advocates for development of this competence as a significant strength of teachers. Gonzáles (2021) also states in a project on cooperation and inclusion in pedagogical practice, results were attitudes of confusion and indifference, but they assume great significance and benefits generated by these work strategies in the educational process. In the same way, Mancanchi (2020) suggests importance of organization, communication and collaboration of teachers in

innovative strategies; these aspects should be prioritized as they are a motivating factor for their creativity.

Information and communication technologies (ICT) are indispensable tools in teaching-learning process. We live in information age, and ICT are considered as part of pedagogical innovation. Araya and Majano (2022) posit utilization of ICT tools represents an innovative didactic material that engenders positive alterations in process of learning. Consequently, educators should prioritize cultivation of skills in use of ICT tools and devices. Similarly, Parra and Rengifo (2021) posit that pedagogical innovation with use of ICT tools is contingent upon needs and circumstances of the teachers themselves. Likewise, Ventura (2020) proposes utilization of Geogebra in dispersion measurements, which has led to a notable enhancement in learning outcomes compared to traditional approaches. Similarly, Macías (2021) asserts that educational innovation applied in educational field has improved student participation in a proactive manner, with a focus on teamwork and collaborative work. This has led to emergence of virtual work, which offers numerous advantages and strengths. In a similar vein, Medrano (2022) posits that the utilisation of ICT tools and devices enhances pedagogical practice, which can be regarded as innovative strategies. Furthermore, he suggests that these skills should be integrated into the daily work of teachers as an integral process. Additionally, Alvarez (2022) posits that the utilization of ICTs in pedagogical endeavors enhances reputation and prestige of educators by facilitating interactive and effective information processing. Similarly, for Sarmiento and Ramón (2020), the use of ICT tools in teaching innovation was intended to connect students in an attractive, dynamic, accessible and constructive way. The use of technology media and materials is a very motivating and attractive factor in education, while allowing us to share and manage relevant information, saving time and space in pedagogical task.

The extent to which pedagogical innovation is possible also depends on social skills and professional ethics of teachers. In their analysis of pedagogical leadership and ethical leadership, Miras and Longás (2020) conclude ethical training of teachers, their virtues, and values influence pedagogical leadership. Likewise, Rivera (2022) posits innovative pedagogical strategies are employed in an institutional climate conducive to dialogue and continuous collaboration, with the objective of enhancing learning outcomes. Similarly, Cadena and Napa (2019) posit that the resolution of school conflicts is contingent upon timely and assertive intervention of the teacher, which is contingent upon his emotional intelligence. These events should be regarded as an opportunity to cultivate self-awareness skills. It is thus concluded that the creation of conflict mediation plans for students is of great importance in order to facilitate their personal and integral formation. Similarly, Rodriguez and Noe (2017) posit assertiveness plays a pivotal role in effective functioning of individuals. Students who are adept at asserting themselves are better equipped to address bullying issues. Furthermore, assertiveness workshops can be utilized to cultivate qualities such as empathy, self-esteem, and problem-solving abilities, which may be beneficial in context of bullying.

Conclusions

In order to achieve pedagogical innovation in educational task, it is necessary to apply a variety of active methodological strategies, which must be adapted to context and institutional reality. In addition, student must be considered the main protagonist. Consequently, innovative strategies such as collaborative learning in both teachers and students, project-based learning, gamification, the inverted classroom and others must be employed. The objective is to form students with critical and reflective capacity and relevant decision-making abilities.

In the information age, tools and devices of technology play a crucial role in all aspects, particularly in education. The utilization of these strengths and benefits of technology is regarded as an integral component of an innovative learning process. This process enables the automation of information in various formats, facilitating an interactive and motivating teaching-learning environment. The integration of numerous platforms, use of custom-designed software, and incorporation of social networks contribute to improvement of learning outcomes in students.

The ethical leadership of teachers is of paramount importance in pedagogical leadership. Consequently, leadership influences the pedagogical innovation to be applied. Therefore, social skills of teachers, such as leadership, assertiveness, emotional intelligence, decision-making, conflict resolution, and others, are essential for effective teaching performance. This is achieved through the application of innovative strategies, which are result of the teachers' creativity and ingenuity.

The pedagogical innovation is summarized in use of diverse active methodological strategies, taking into account student as the main protagonist. These strategies are employed in conjunction with use of ICT tools and devices, with a teacher training program that incorporates principles and professional ethics.

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