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Incidence of dissemination strategies of school research results in teachers' methodological guides

Incidencia de las estrategias de difusión de los resultados de la investigación escolar en las guías metodológicas de los docentes

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ABSTRACT

This research work focused on analyzing the communication strategies of research results in the school context used by teachers in their methodological guides. The main objective was to identify how these results are implemented in teachers' pedagogical practices through documentary analysis of methodological guides and area plans. The methodology used was based on documentary analysis using settlement matrices and checklists to categorize and relate the information collected. The results highlighted using technology and digital resources as tools to strengthen pedagogical practices and learning processes. In addition, the findings showed the importance of including practical activities related to research in the study plans and promoting the development and implementation of research projects as part of teaching. Finally, the need to promote technological integration processes in research was evident, as well as the inclusion of the research competency approach in area plans.

Keywords: communication process, educational personnel training, research, teacher qualifications.

JEL Classification: I2, I21, I29

RESUMEN

Este trabajo investigativo se centró en analizar las estrategias de comunicación de los resultados de investigación en el contexto escolar utilizadas por los docentes en sus guías metodológicas. El objetivo principal fue identificar cómo se implementan estos resultados en las prácticas pedagógicas de los docentes, a través del análisis documental de guías metodológicas y los planes de área. La metodología empleada se sustentó en el análisis documental mediante matrices de asentamiento y listas de chequeo para categorizar y relacionar la información recopilada. Los resultados destacaron el uso de tecnología y recursos digitales como herramientas para robustecer las prácticas pedagógicas y los procesos de aprendizaje. Además, los hallazgos mostraron la importancia de incluir actividades prácticas relacionadas con la investigación en los planes de estudio, así como promover la elaboración e implementación de proyectos de investigación como parte de la enseñanza. Finalmente, se evidenció la necesidad de fomentar procesos de integración tecnológica en la investigación, al igual que la inclusión del enfoque de competencias investigativas en los planes de área.

Palabras clave: competencias del docente, formación del personal docente, investigación, proceso de comunicación.

Clasificación JEL: I2, I21, I29

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INTRODUCTION

This manuscript seeks to address a relevant problem in the educational field: the influence of different strategies for disseminating school research findings on teachers' educational practices (Diery et al., 2020). The study was conducted at the school research center of the Madre María Mazzarello educational institution in Medellín, where the problem arose from the need to understand how the effective dissemination of research findings can positively impact the quality of teaching and learning in this specific educational context. Judging by the results of multiple previous research studies, the feedback obtained

can significantly contribute to the improvement of educational processes (Chakraborty & Biswas, 2019; Riordan, 2022).

Therefore, the research was justified due to its potential to contribute to the development and continuous improvement of educational practices at the Madre María Mazzarello institution. This idea is based on the fact that by identifying the influence of the dissemination strategies of research results, the findings will make it possible to optimize the resources and efforts invested in the educational process. Consequently, the goal was to ensure that teachers had access to relevant and up-to-date information that could enrich their teaching work.

Furthermore, the research seeks to fill a knowledge gap regarding the perception and effectiveness of school research results dissemination strategies among teachers at this institution. By better understanding the opinions and experiences of education professionals in this specific context, it will be possible to design more relevant interventions tailored to their needs and preferences.

Likewise, exploring successful practices implemented in other similar educational institutions will enrich the landscape of possibilities and provide valuable insights for improving dissemination strategies at the Madre María Mazzarello School Research Center. This comparative approach will facilitate the identification of good practices and lessons learned that can be effectively applied in this particular context (Bremner, 2021; Roca Marín et al., 2020; Vahed & Rodriguez, 2021).

Finally, the research will not only focus on describing the current situation but will also seek to offer concrete recommendations and specific proposals to improve and optimize strategies for disseminating school research results. These recommendations will aim to strengthen the positive impact of research on educational practices and teachers' professional development, thus contributing to the continuous improvement of educational quality at the institution. According to the literature on comparative education, these types of studies and the recommendations derived from them are crucial in the development of school institutions (Fekih Zguir et al., 2021; Garzón et al., 2020; Su et al., 2022).

School research

School research is an educational methodology that promotes collaborative and purposeful learning, allowing students to develop research skills under the guidance of teachers (Markula & Aksela, 2022). This practice, characterized by its reflective nature and its location in specific contexts, enriches the teaching-learning process. However, it also highlights the importance of scientific dissemination to make the results accessible to a broader audience. Teaching planning, essential in this process, requires constant reflection to adapt pedagogical strategies to the needs of students and available resources. As various sources point out, it has a remarkable influence on student development and performance (Chang et al., 2022; Gentrup et al., 2020; Shen et al., 2020).

When we talk about school research, we refer to a methodological strategy implemented as a teaching practice that fosters student learning through collaborative, purposeful, and investigative exercises (Areepattamannil et al., 2020). In light of this, González Tovar (2021) asserts that school research refers to an educational proposal for teaching, whether as a methodological approach or a specific activity. It is distinguished by its particular characteristics that reflect its unique nature, with specific objectives and requirements.

In this context, teachers often present various project proposals to their students, thus presenting school research from a methodological and reflective perspective. In the international literature, the results of various investigations indicate that the development of joint projects, whose essence is directed towards research as a learning process, reinforces school learning, promotes student empowerment and participation, facilitates the development of critical thinking, as well as encourages creativity (Albar & Southcott, 2021; Fredagsvik, 2023; Leggett & Harrington, 2021; Saad & Zainudin, 2022).

On the other hand, Hernández-Flores (2020) states that, even with the emphasis on the research process, this approach does not abandon the humanistic and situated nature of education. This implies that understanding educational phenomena requires considering both the individual and social dimensions and the environment in which they develop. Recognizing the human nature of educational research underscores the importance of understanding the experiences, perceptions, and emotions of those involved in the educational process, as well as the evolution of their mutual relationship (Darling-Hammond et al., 2020; Scales et al., 2020). At the same time, highlighting its situated and contextualized nature recognizes that cultural, social, and political contexts significantly influence educational processes and research outcomes (Hermino & Arifin, 2020; Lucas et al., 2021; Yan et al., 2021).

Finally, Aparicio Gómez and Abadía García (2019) define school research as a process in which students conduct research under the methodological guidance of teachers, with the goal of generating products that reflect advances in the research process. This perspective highlights the active role of students in the construction of knowledge, as well as the crucial role of teachers as guides and facilitators of the process.

Scientific dissemination

It is well known that, after academic research processes, it is necessary to foster scenarios and tools that allow the dissemination or dissemination of results to the community. In this regard, Sánchez Fundora and Roque García (2021) state that this process involves offering scientific data to the general public, non-specialists in the field, through activities that explain and disseminate knowledge, culture, and scientific and technical thinking. The above ideas highlight that scientific dissemination is not limited to transmitting information but also seeks to explain and disseminate culture and critical thinking (Strat et al., 2024; Sund & Gericke, 2020).

On the other hand, Gertrudix et al. (2020) state that the communication or dissemination of research results must be understandable and accessible to all social sectors involved, such as the scientific community, educators, businesses, policymakers, and the general public. In this context, scientific outreach is not limited solely to specialists in the field but seeks to reach diverse social sectors to promote a broader understanding and greater application of scientific knowledge.

In this context, it can be asserted that scientific outreach is a process of utmost importance in research. According to Ojeda-Serna and García-Ruiz (2022), the process of communicating scientific findings and data has advanced as science, the historical context in which it is produced, and its socioeconomic development have evolved. Currently, scientific production processes play a key role, suggesting that new knowledge and technology drive this evolution, where socioeconomic factors are fundamental to academic socialization and fair and sustainable social development (Chaleta et al., 2021; Kopnina, 2020; Krishna, 2020; Nagaraj et al., 2020).

Finally, it is emphasized that available resources, which can range from technology to financing and labor, are fundamental to this evolution (Alò et al., 2020; Nsengimana et al., 2024). In summary, the analysis underscores the interconnectedness and importance of multiple influences in the development of any complex phenomenon, especially in research-based education.

Teaching planning

The evaluation of teaching planning tools is crucial for measuring the impact of the inclusion of school research on teaching practices (König, Bremerich-Vos, Buchholtz, & Glutsch, 2020). In a constantly evolving educational environment, it is essential that teachers not only impart knowledge but also foster research skills in their students (Meulenbroeks et al., 2024). By analyzing and improving planning tools, we can ensure that pedagogical strategies effectively incorporate research methods, promoting deeper and more meaningful learning. This evaluation helps identify areas for improvement, ensure that educational objectives align with current student needs, and ensure that teaching practices remain up-to-date and effective.

Regarding this need, Moreno Restrepo and Soto Triana (2019) view planning as an exercise in strategic thinking that encompasses the procedures through which pedagogical objectives are defined, an exhaustive search for relevant information is carried out, and teaching strategies are structured and implemented as part of the knowledge-sharing process. This process involves levels of analysis, reflection, and feedback to achieve a specific objective based on content, teaching methods, and pedagogical resources (König, Bremerich-Vos, Buchholtz, Fladung, et al., 2020).

The assessment of these factors highlights the importance of planning in education, which can be described in terms of strategic thinking that encompasses the definition of pedagogical objectives, the search for relevant information, the structuring and implementation of teaching strategies, as well as ongoing reflection to achieve those objectives. It also involves the analysis of content, teaching methods, and available pedagogical resources, which is why it is considered in the literature to be a competence in itself and a crucial content of teacher development (König et al., 2021; Ní Bhroin & King, 2020). Therefore, teacher planning must be a reflective work of teachers since, according to Ruiz-Espinoza and Pineda-Castillo (2021), it is essential that the educators themselves develop it based on their reflection, considering the environment in which they work, their students, their needs, and the essential resources.

METHODOLOGY

Research question

Based on the arguments presented in the introduction and the referential framework, the following research question arose:

How do the different strategies for disseminating the results of school research affect the methodological guides of the teachers of the *Centro de Investigación Escolar de la Institución Educativa Madre María Mazzarello* in Medellín?

In order to answer this question, it was necessary to analyze the incidence of the strategies of dissemination of the results of school research in the methodological guides of the teachers of the *Centro de Investigación Escolar* (CIE).

Approach and design

The research process was conducted using a qualitative approach aimed at an in-depth and descriptive analysis of the impact of the results on educational practices. Furthermore, the project considered the possibility of accessing information through documentary analysis tools. This design is characteristic of the qualitative approach to research. As Espinoza Freire (2020) states, qualitative research uses various methodologies aimed at leveraging the researcher's self-referentiality, primarily variants of ethnography such as classical, holistic, reflexive, structural, and micro-ethnography. Furthermore, foundations of content analysis and discourse analysis were used to identify the main trends within the analyzed data. However, it is important to highlight the presence and relevance of documentary analysis as a crucial research technique within the study.

This analysis involved a detailed examination of textual and audiovisual documents in understanding contexts, interpreting meanings, and constructing knowledge related to the research question and objectives. This type of research, according to Torres Gómez (2019), seeks to analyze written production in detail in order to gain a deeper understanding of a specific topic, phenomenon, or object of study.

This process allowed the author to decompose the text into its essential components and critically evaluate each of them. In doing so, not only were the arguments and evidence presented, but also the context, the intentions of the sender, and possible underlying influences were explored. Finally, these data were contrasted with the author's experience, field notes, and the results of preceding national and international studies.

The study focused on the implementation of the results of school-based research in the pedagogical practices and strategies employed by teachers. To achieve this, it was necessary to access the various methodological guides, which serve as planning tools for teachers. Once this step was achieved, concrete evidence of the presence of this phenomenon in these guides was collected.

Data analysis and processing

Settlement matrix of methodological guides

Data analysis began with a process of ongoing coding and categorization. Once the data were coded, they were grouped into categories for the subsequent extraction of common themes. This facilitated the identification of patterns and trends in the data, so we actively sought to identify relationships between the different categories and themes identified. This facilitated a better understanding of the interaction between the different codes analyzed.

List of institutional documents

In this instrument, data analysis was conducted by organizing the data based on the responses verified by the author and classified as "Yes," "No," and "Partially," according to the established guide. This allowed responses to be grouped by categories or thematic areas related to school research, such as curriculum documentation, research competencies, research resources, and project evaluation, among others. Assigning these labels to each response served as the basis for identifying patterns and trends in the responses while also exploring emerging patterns or concepts in the educational institution's curricula.

Units of analysis and collection instruments

The first instrument involved conducting a documentary analysis based on the methodological guides that serve as pedagogical planning tools. The guide contained various components, as shown in figure 1.

Based on these components, each teacher designs their own tool, which serves as a foundation for the academic management of the educational institution. To collect data, a matrix was implemented for each of the methodological guides to demonstrate the impact of the results of the research processes on teaching practices. Another documentary input was the consolidated compilation of the different subject plans, which were analyzed to develop the overall objective. Thus, the design of the data collection instruments is presented below (tables 1 and 2).

Figure 1.
Components of the methodological guide

Source: own elaboration
Note: the figure appears in its original language.

Table 1.
Matrix for the methodological guides

Subject.	Grade.	Main findings.			Position in the methodological guidelines
		Yes	No	Partially.	
(Subject name).	6				
	7				
	8				
	9				
	10				
	11				

Source: own elaboration

Table 2.
Checklist for institutional documents

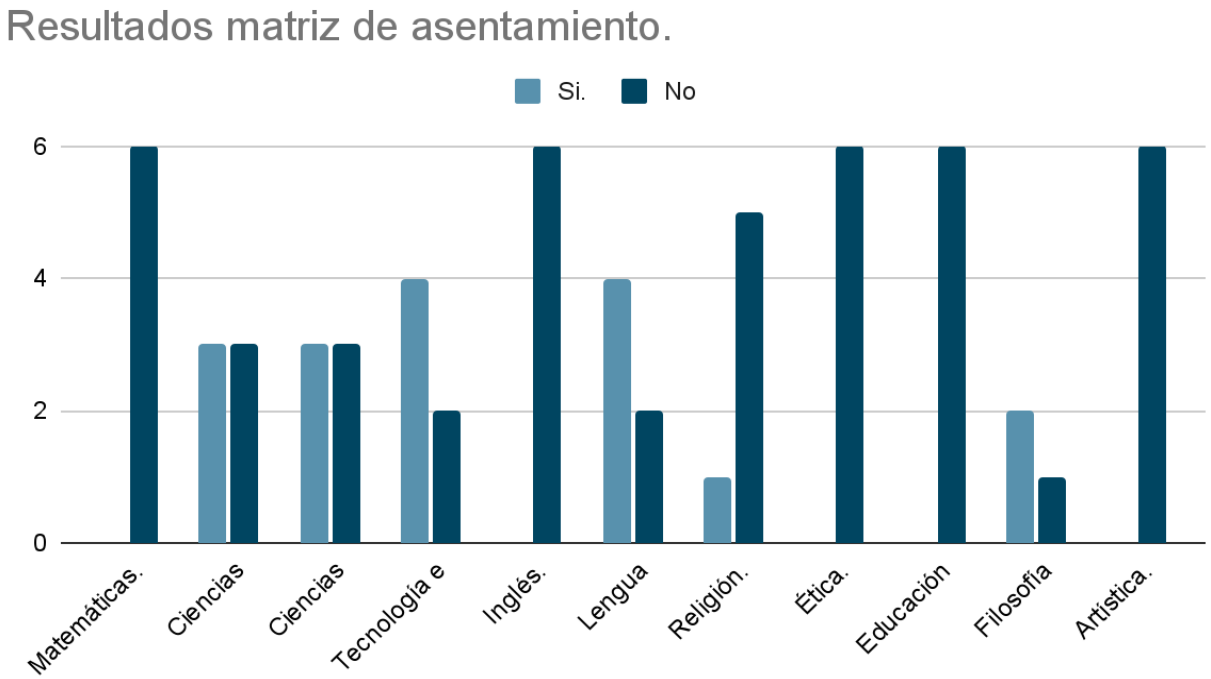
Analysis of institutional documents				
Question	**Yes**	**No.**	**Partially**	**Observations**
Teacher training in research				
Are there any training programs for teachers in research methods?				
Does the institution promote continuing education in research for teaching staff?				
Inclusion of practical activities				
Are practical activities related to research included in the curriculum?				
Is research projects encouraged as part of teaching?				
Inclusion of technology and digital resources				
Is the use of technology and digital resources encouraged for research?				
Are specific tools mentioned for searching and analyzing information?				

Source: own elaboration.

RESULTS AND DISCUSSION

The instruments presented above were applied to curriculum documents developed by teachers from different areas of knowledge at the basic and secondary levels. The results obtained from the settlement matrix, which compiled information from the methodological guides, are presented below.

Figure 2.
Settlement matrix results



Source: own elaboration.
Note: the figure appears in its original language.

Regarding the findings of the methodological guides, the inclusion of research results in teaching practices was reflected in the following way:

Figure 3.
Evidence of research results in the methodological guides

Source: own elaboration.
Note: the figure appears in its original language.

These quantitative results reflect a series of common elements resulting from the analysis, which were further triangulated in the instances indicated in the methodology. The triangulation process revealed the following trends:

Inclusion of Performance Indicators

It was observed that teachers in Social Studies and Spanish Language incorporated performance indicators at certain levels. This suggested a concern with assessing student performance and guiding the teaching-learning processes.

Use of Timelines

Teachers in Natural Sciences, Technology and Information Technology, English, Spanish Language, and Philosophy used timelines at different levels. This indicated detailed time planning in structuring educational content and activities.

Absence of Findings in Some Subjects

In subjects such as Mathematics, Ethics, Physical Education, and Art, research-related findings were not specified in the methodological guides. This could indicate a lack of integration of the results of research processes into the planning of these subjects.

Diversity in the Application of Research Results

Each subject demonstrated a different way of incorporating research findings into methodological guides, reflecting the diversity of pedagogical approaches and adaptation to the specific needs of each area of knowledge.

Overall, the analysis highlighted the importance of considering the results of educational research in the development of methodological guides. A comparison with the author's notes and previous research showed that these research products can provide the empirical evidence necessary to improve the quality of teaching and learning in different subjects.

The analysis matrix for institutional documents is summarized below (table 3). It shows the categorical results but also offers qualitative syntheses based on the author's observations and the analysis of the research framework.

Table 3.
Checklist results for the CIE statute

Analysis of institutional documents.				
Question.	**Yes**	**No.**	**Partially**	**Observations**
Teacher training in research				
Are there any training programs for teachers in research methods?	X			Teacher training programs in research methods are offered. These programs seek to strengthen teachers' research skills, enabling them to develop critical thinking, scientific competencies, and comprehensive training to improve their teaching practices.
Does the institution promote continuing education in research for teaching staff?	X			
Inclusion of practical activities				
Are practical activities related to research included in the curriculum?	X			Through the Structuring, Conception, Design and Product phases, educational research is promoted that transforms the school environment, involving students in meaningful and innovative learning processes.
Is research projects encouraged as part of teaching?	X			Research projects are encouraged as part of teaching. These projects allow students and teachers to explore social problems, pose questions, and seek solutions through investigative processes.
Inclusion of technology and digital resources				
Is the use of technology and digital resources encouraged for research?	X			The use of technology and digital resources for research is encouraged. Through research incubators such as Rapsodia, LunaTICs, Distópicas, and LIC: Learning in Context, the use of technological tools is promoted to strengthen pedagogical practices and learning processes.
Are specific tools mentioned for searching and analyzing information?		X		

Source: own elaboration.

Regarding academic research, it was found that the CIE promoted the implementation of joint projects between teachers and students while also encouraging the application of scientific methodologies in the projects. Furthermore, it was also observed that training in research competencies is provided, suggesting a focus on the necessary knowledge, the development of research skills, and the application of both in the educational community. A comparison of these results revealed a growing preference among scholars for project-based learning modalities and the aforementioned research-based education due to the contribution of both to improving academic performance, strengthening motivation, and comprehensive development (Darling-Hammond et al., 2020; Jerrim et al., 2022; Meulenbroeks et al., 2024).

Regarding scientific dissemination, it was evident that the CIE used effective strategies to disseminate academic research results, highlighting the organization of academic events and collaboration with other institutions. It was also found that clear and accessible communication of research findings was promoted. This indicated an effort to make scientific knowledge understandable to the educational community and the general public. Finally, a sustained increase in participation in academic networks and the dissemination of scientific knowledge in different spaces was observed, suggesting an openness to sharing the work carried out. In this regard, multiple studies have supported

the importance of these collaborative networks, not only for their contribution to scientific communication but also for the benefits derived from them (Azorín et al., 2020).

In teaching planning, the Social Studies and Spanish Language subjects included performance indicators to assess student achievement, while Natural Sciences, Technology and Computer Science, English, Spanish Language, and Philosophy used timelines for detailed time planning. No research findings were found in the methodological guides for Mathematics, Ethics, Physical Education, and Art, which could indicate a lack of integration of these results into the planning. Furthermore, each subject demonstrated diverse ways of incorporating research findings, which could be due to the presence of pedagogical approaches adapted to the specific needs of each area of knowledge. This educational practice is vitally important, as it generates clarity and certainty regarding the scope of objectives and the development of competencies (Cañadas, 2023; König, Bremerich-Vos, Buchholtz, Fladung, et al., 2020).

In this instance, Valladares-Durand et al. (2022) assert that, for strategic planning to be effective, it must be executed responsibly after monitoring the implemented processes, considering their control and evaluation. The vision behind these ideas is to leverage the advantages and strengths of having a predetermined plan, a critical aspect if the ideas related to contextual analysis and adaptation to the needs of the teaching process and students are recovered. In this scenario, the multiple available strategies take on special meaning for learners, as Schallert et al. (2022) point out regarding teaching planning in flipped classroom processes, and König et al. (2024) regarding the growing importance of ICTs in lesson plans.

Based on the process carried out, a set of recommendations aimed at improving knowledge dissemination strategies were identified. These, although specifically aimed at the stated purpose, will also contribute to the development of research and project competencies in the school institution. They are listed below:

Recommendations

1. Continue strengthening training processes and supporting teachers through workshops, seminars, and specific training sessions on strategies for disseminating results.
2. Promote opportunities for collaboration among teachers to share experiences, identify common challenges, and develop joint strategies.
3. Establish periodic mechanisms that allow teachers to receive advice on how to improve the integration of research into their practices.
4. Implement ongoing training programs that equip teachers with tools and skills to effectively integrate research into their teaching.
5. Include concrete examples and specific recommendations in methodological guides to facilitate their application in the classroom.

CONCLUSIONS

The study demonstrated that the methodological guides enabled the effective integration of research into teaching practices. Among the main strategies identified were the promotion of research projects and training in research skills, which have positively impacted educational quality.

Regarding the importance of the guides, it was found that they are key tools for guiding teachers, as they promote an evidence-based approach and educational innovation. However, for this practice to be sustainable and adaptable, periodic review and updating of the methodological guides is required. In this sense, the findings and the triangulation process led to the conclusion that they should include concrete examples that facilitate the integration of research findings in the classroom.

Another important support recognized was practical evaluation through direct observations and analysis of teaching materials, which allowed for the identification of areas for improvement and good practices. Finally, the feedback and systematization channels that facilitate educational leaders and teachers in general a better understanding of the perceptions and experiences achieved must be derived from the previous process, which is essential to design relevant interventions that address their specific needs.

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