Chapter 11 / Capítulo 11

New literacies in the age of AI: Ethics, teaching, and writing (English Version)
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AI Literacy for Research: Study of Primary School Teachers in Greater Caracas

Alfabetización en IA para la Investigación: Estudio en Maestros de Educación Primaria de la Gran Caracas

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ABSTRACT

This paper analyzes the integration of Artificial Intelligence (AI) as a support tool in pedagogical research practices by primary school teachers in Greater Caracas, based on workshops developed in both public and private educational institutions. To this end, it adopted a mixed approach, with a predominance of the qualitative component (systematization of experiences) for understanding the exchange with teachers (Mera, 2019), and a quantitative component (descriptive study) for recording and analyzing the use of Generative AI tools. The main conclusions include: a) research by primary school teachers is practically non-existent prior to direct training intervention, b) the initial diagnosis, convergent in both private and public institutions, revealed an incipient approach and a general lack of knowledge about the effective integration of these technologies, and c) the study corroborates that the research carried out by primary school teachers is not theoretical or basic in nature, but deeply pragmatic and oriented towards immediate pedagogical action.

Keywords: Literacy; Artificial Intelligence; Primary Education; Research; Teachers; Greater Caracas.

RESUMEN

El presente trabajo analiza la integración de la Inteligencia Artificial (IA) como una herramienta de apoyo en las prácticas de investigación pedagógica por los maestros de primaria en la Gran Caracas a partir de talleres desarrollados en instituciones educativas tanto públicas como privadas. Para ello adoptó un enfoque mixto, con predominio del componente cualitativo (sistematización de experiencias) para la comprensión del intercambio con los maestros (Mera, 2019), y un componente cuantitativo (estudio descriptivo) para el registro y análisis de la utilización de herramientas de IA Generativa. Entre las principales conclusiones se señalan: a) la investigación por parte de los docentes de primaria es prácticamente inexistente antes de una intervención formativa directa, b) el diagnóstico inicial, convergente tanto en instituciones privadas como públicas, reveló un acercamiento incipiente y un desconocimiento general sobre la integración efectiva de estas tecnologías y c) el estudio corrobora que la investigación practicada por los maestros de primaria no es de naturaleza teórica o básica, sino profundamente pragmática y orientada a la acción pedagógica inmediata.

Palabras clave: Alfabetización; Inteligencia Artificial; Educación Primaria; Investigación;

Maestros; Gran Caracas.

INTRODUCTION

The presence of AI in education has skyrocketed in recent years. Evidence of this can be found in the specialized literature, which has been on the rise, focusing not so much on challenges and tensions but rather on developing proposals for training, literacy, and ethical and responsible use. It is important to note that literacy implies knowledge, while application corresponds to skills (Chiu, Ahmad, Ismailov, & Temitayo, 2024). In addition to these points, there has been interest in some reflections on levels of training, where one path indicates the recognition of AI in the field of education, and, after this step, where resistance is addressed, it is possible to achieve literacy (Peña, 2023).

However, within the narratives of international organizations, UNESCO (2023, 2025) insists on bringing this emerging technology to everyone, provided that it is linked to ethics, while Gómez, Del Pozo, Martínez, and Martín del Campo (2020) call for the common good in the regions. Both coexist coherently with the proposals. However, how has research been presented in teaching? This is a broad question with many answers. For example, the role of teachers has undergone significant changes in recent decades. Especially in Latin America, qualification and recognition have been promoted through research and innovation in educational practices (Aguilar & Cifuentes, 2021/ Barragán, Castilla, Martínez, Ruiz, Franco, & Montoya, 2009). In line with this, national objectives have been identified, such as the 2016–2020 Sectoral Education Plan in Bogotá, Colombia, which seeks to build an educated city. Similarly, the National Fund for the Development of Peruvian Education (FONDEP) seeks to implement Participatory Action Research in Education (IAPE) in public schools (Aguilar & Cifuentes, 2021/ Santandreu, 2019).

Including research in a state's proposals implies valuing education and seeking necessary approaches to coexisting problems. While this implies considering the level of teacher preparation, it is also necessary to associate them as professionals in constant training. Only then can one consider, for example, one criterion for affordable education (teacher training). Based on this consideration, it is possible to find some data in South America. It is worth noting that in Colombia, it is estimated that around 30 % of teachers have a postgraduate degree (Universidad Autónoma de Bucaramanga - UNAB, n.d.), in Bogotá, more than 60 % of teachers have a master's degree, and more than 120 have doctoral training (Aguilar & Cifuentes, 2021); while in Venezuela, according to Fundaredes (2024), 41 % of teachers have a specialization.

Although the figures above reflect some realities, the status of teachers as researchers must be defended within educational institutions. This observation is based on the premise that research conducted by school teachers is often "dragged along and co-opted by higher education institutions" (Aguilar & Cifuentes, 2021, p. 135), thereby rendering invisible the knowledge produced in school contexts.

DEVELOPMENT

In the context of Artificial Intelligence (AI), some ideas associated with direct pedagogical practice and professional research and development practices have been identified. These are two distinct and complementary dimensions. However, how has each been viewed? Camones, Bardalez, Pérez, and Padilla (2023) indicate that classroom educational practices primarily serve as an assistant or collaborator to the teacher, transforming the dynamics of teaching and learning. Here, we are already looking at the appropriation of AI tools within the processes.

In UNESCO's narrative (2025), it is also common to identify some challenges associated with learning in the age of AI, one of which is the personalization of learning. In recent years, there has been an emphasis on using educational agents for subjects, thus going beyond simply consulting chatbots for planning student-oriented activities. With this new level, not only are content and activities adapted to students' individual needs (Montes, n.d.), but assistance can also be provided when needed.

While teachers' experiences in creating personalized activities for students have been identified, neurodivergent students have also been taken into account. Consequently, thanks to AI, there has also been a commitment to understanding and inclusion in the classroom. In this regard, it is worth noting that: "60 % of primary and secondary school teachers admit to now using AI to plan lessons, communicate with parents, and assist with grading" (Kozak, 2025, para. 7).

AI in education has come to be understood in terms of its possibilities for reflective actions. This arc involves understanding this technology from the perspectives of teaching, learning, and assessment processes. Interest in studying each process continues. From interpretive horizons, it is possible to review proposals and searches.

Therefore, it is not just a matter of whether to use a tool and of being clear that offerings are constantly updated at the mercy of changing consumer tastes, but rather that communication and technological skills need to be developed to respond to current dynamics. In this regard, concerns about automating teachers' administrative tasks have likely been gradually overcome in light of new issues.

The use of generative tools, such as ChatGPT, Gemini, or Copilot Chat, has already become a trend. Indeed, statistics from AIPRM (n.d.) indicate that the most common AI tools used in education by teachers are AI-powered educational games, which are employed by more than half (51 %) of teachers. As a result, interest is shifting to new areas, such as AI gamification. Teachers must therefore adopt a proactive stance that adapts the pedagogical approach to this new reality (Bustamante & Camacho Bonilla, 2024). At the same time, reflecting on the possible consequences of working with AI will likely ensure its responsible use in fields of action.

Beyond the challenges of creating effective, clear, and specific *prompts* (Montes, n.d.), it is necessary to specify how it is being used in the field of research. Is it only for searching or for data analysis? It is worth pausing to consider this particular issue. On the one hand, it is well known that AI is being incorporated into the research practices of teachers and university researchers studying teaching (Camones, Bardalez, Pérez, & Padilla, 2023). It is worth noting that AI is also a recurring theme in teachers' research. In Bogotá, for example, it is mentioned in 47.2 % of the cases analyzed (Aguilar-Forero & Cifuentes, 2021). Award-winning research has even been identified, such as the case of the AI-based tool for assessing learning in constructionist environments (Aguilar-Calderón, 2023).

Regarding AI research in education, adoption is still in its infancy, marked by significant structural challenges and knowledge gaps (Reza & Guemez, 2024).

More specifically, the incorporation of AI into education poses significant challenges that slow its full integration into classrooms (Bustamante & Camacho, 2024; Solano, 2025). More specifically, in Venezuela, the situation of AI in the basic education system shows a limited presence, although it is observed that teachers are exploring the technology. According to

Duque-Rodríguez, Piña-Ferrer, and Isea-Argüelles (2025), it is rated as having little presence in the teaching processes of the Basic Education Subsystem (which includes Early Childhood, Primary, and Secondary Education), with an average of 2.54. This contrasts with the study by Fundación Telefónica (2025), which revealed that "4 out of 10 teachers already use AI tools in their teaching practices" (paragraph 1).

In light of these findings, it is worth paying attention to the statistics and assessing digital literacy, as recommended by UNESCO (2025), in addition to "managing, understanding, integrating, communicating, evaluating, and creating information through the safe and relevant use of digital technologies" (paragraph 5). However, do primary school teachers in Caracas conduct research using AI?

Research by primary school teachers in Latin America has traditionally focused on action research (AR), the systematization of experiences to transform their own teaching practice, as evidenced in publications on educational websites and in magazines. However, is AI being incorporated into this process as methodological support for research?

This study sought to analyze how primary school teachers in Greater Caracas are integrating (or not) Artificial Intelligence (AI) as a support tool in their pedagogical research practices. To this end, the following specific objectives were set: 1. To determine which specific AI tools (if any) are being used and for which phases of the research process, 2. To identify the main challenges faced by primary school teachers, and 3. To design proposals or recommendations to promote the practical and ethical integration of AI in research.

METHOD

The study adopted a mixed-methods approach, with a predominance of the qualitative component (systematization of experiences) to understand the exchange with teachers (Mera, 2019), and a quantitative component (descriptive study) to record and analyze the use of Generative AI tools.

In the first qualitative approach, emphasis was placed on the systematization of experiences as a research method for producing knowledge through meetings with primary school teachers in Greater Caracas. In this sense, the aim is to: a) Reconstruct and narrate the facilitator's journey and the exchange with teachers from primary schools in Greater Caracas, b) Critically interpret the experiences, identifying the successes, challenges, learnings, and knowledge generated in the interaction, and c) Produce knowledge based on the educational practice experienced.

The scope of the systematization of experiences as a method is presented in the following terms: it is a matter of understanding them within the framework of a complex historical process involving different actors, taking place in a specific economic and social context, and at an institutional moment of which human beings are a part. Systematizing experiences, therefore, means understanding why this process is developing in this way, understanding and interpreting what is happening, based on an ordering and reconstruction of what has happened in this process (Mera, 2019, p. 103).

Based on this scenario, the facilitator's field diary/logbook was used as a technique, which constitutes the primary source for reconstructing the journey, recording observations, reflections, informal dialogues, and decisions made in each school, which were then transcribed and categorized in order to identify emerging themes, patterns in the experiences, and the main lessons learned or difficulties encountered. However, we did not neglect the recommendations

of Castañeda (2014), who points out that systematization requires a documentary review based on the experience itself, which can provide various forms of support for the work carried out and its analysis process, including photographs, educational materials, and records of group work. Furthermore, as Jara (2018) states, it is necessary to "develop the capacity for observation and perception, and educate our sensitivity to the many details that permeate what happens to us in everyday practice and speak to us from there" (p. 107).

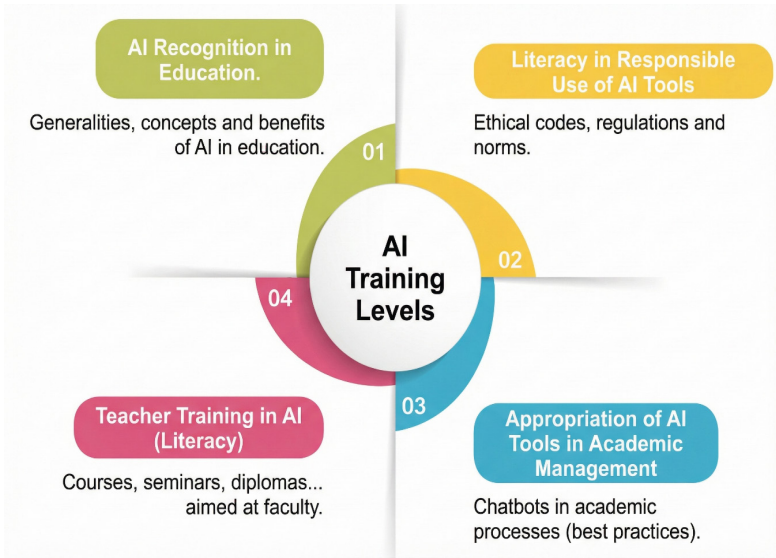
On the other hand, the second approach uses the set of interactions, exchanges, and reflections developed by the facilitator with primary school teachers in Greater Caracas as its unit of analysis. It also includes the educators who participated in the exchange and whose practices were influenced by or reflected the application of the tools.

In this case, a structured instrument was used as an information-gathering technique and applied to teachers in order to report how regularly they use the specific tools shared by the facilitator and in what contexts. In this sense, the data will be presented using frequency distribution tables and graphs (bar charts, pie charts) to describe the intensity and scope of the use of the tools.

Finally, to ensure credibility, sources were triangulated (facilitator, teachers, documents). Transferability is also ensured by providing a detailed description of the context of Greater Caracas and the facilitator's journey, allowing other researchers to evaluate the applicability of the results.

ANALYSIS AND RESULTS

In accordance with Peña's (2023) proposal on levels of training in Artificial Intelligence (figure 11.1) and in line with outreach activities, assistance to schools focused on teacher training. Specifically, the fourth level of this proposal concerns teacher training in AI. However, the actions carried out did not necessarily cover the third level of the proposal, which corresponds to the use of chatbots in academic processes.



Note: Taken from Peña (2023).

Figure 11.1. Levels of training in Artificial Intelligence

Initially, the approach was to target private institutions in vulnerable areas; subsequently, with the collaboration of other UCAB units, public school teachers were invited to two events. The first was part of Book Week 2025 (organized by the Abediciones team), and the second was a series of free workshops held during the Educational Innovation Congress (organized by the School of Education).

UEP Colegio Agustiniano la Divina Pastora

The school was registered with the Ministry of Education in 1936. In 1945, it abandoned the name "asilo" (asylum) and became known as UEP Colegio Agustiniano la Divina Pastora, the name it has since borne. It caters exclusively to girls from early childhood education through high school. The facilitator traveled to the school to teach two workshops. The first, on active methodologies, took place on November 5, 2024. The second workshop, focused on the use of Artificial Intelligence (AI) in document review processes, was scheduled for November 19, 2024.

Twenty-two teachers, accompanied by two academic coordinators, the head of Academic Control, the head of Guidance, and the principal, attended the school's newly inaugurated laboratory. During the first phase (diagnosis), the participants indicated that they had a limited understanding of AI, limited to a single ethics talk. However, they pointed out a general lack of knowledge about the effective integration of Artificial Intelligence into teaching, learning, and assessment processes.

In the second phase (demonstration with chatbots), it was possible to: a) define a prompt based on the RITA model, b) develop a prompt for requesting a teaching strategy framed within active methodology for their course, based on working with a *prompt* guide, and c) review sources using AI tools for research (Elicit). Applications of AI tools in research were identified, as shown in the table 11.1.

Table 11.1. Application of AI-based tools in research

Use of tools for research	Applications associated with research	Specifications
Elicit	Review of progress on topics for classroom projects.	"Having documents from specialized journals allows me to justify the projects" (informant 2) "I would teach sixth-grade girls to play at being detectives, fishing for reliable sources" (informant 6)
	Preparation for interviews with parents	"I can stay up to date and suggest work plans to parents" (informant 10)
Chatbots	Use of the prompt guide	"After reviewing the guide, I now have a clearer understanding of the structure for requesting adjustments to the title of a research project" (informant 5)
Other tools (Slidesgo)	Preparing presentations for classroom projects	"The content is easy to find as long as you know what to look for" (informant 12)

Given that only eighteen computers were available for the workshop and some teachers expressed difficulties with digital skills, it was decided to work in pairs (figure 11.2). This strategy was implemented specifically to encourage integration and mutual support among participants, as shown below.

Two materials were provided to the workshop participants. A link was sent to them via email, and the *Prompts Guide: Your Key to Exploration and Discovery* was shared as a writing reference. In addition, a Google Sites space for consultations called IAG for Educators was

shared, where articles, presentations, and publications related to the workshops, authored by the authors, can be found.

Note: the photos were shared publicly on a social network (Instagram)
Figure 11.2. Teachers attending the workshop

Furthermore, work on classroom project topics was collected via email, and a sample was shared on Google Sites.

In terms of research, the classroom work indicated by the teachers followed three possible routes:

1. Review of literature to support classroom projects in line with current trends. In particular, primary school teachers considered that this added value to the work the girls carried out. For example, the SDGs are addressed at least once a year. In this regard, it is appropriate for teachers to be sufficiently prepared to address their students' concerns based on current information.
2. Preparation of materials to facilitate understanding (study guides, for example). From their searches in Elicit, they identified academic literature, and in Perplexity, they obtained guidance on adapting digital guides or workbooks for their work. Therefore, it is not enough to know what to look for; it is also necessary to know which suggestions are relevant as teaching and learning strategies.
3. Teaching proposals (derived from the literature review). Based on their interpretation of the documents, the teachers thought of games with digital tools for the girls and possible role-playing games.

Public schools in Greater Caracas

As part of Book Week 2025, the Abediciones team invited teachers from schools in Antímano, Carapita, El Paraíso, and San Juan to a workshop on AI. The data for this call was collected through a Google Forms questionnaire. Unlike the previous experience, two education students specializing in pedagogical sciences, who were taking the courses Research Methods II and Comparative Pedagogy, joined the team of facilitators to integrate them into work with schools in Greater Caracas.

83,3 % of the participants were women and 16,7 % were men (figure 11.3), reflecting the feminization of primary education in the country. Educational institutions such as Tito Salas, Simón Bolívar, UEN Andrés Bello, and Unidad Educativa Colegio Divino Maestro were present.

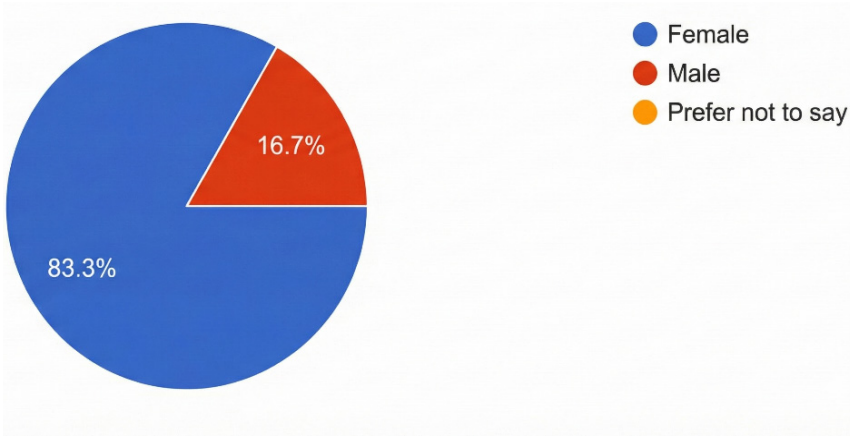


Figure 11.3. Percentage distribution by gender

This group of teachers was mainly represented by adults between 40 and 50 years of age, followed by those between 20 and 30 years of age (figure 11.4).

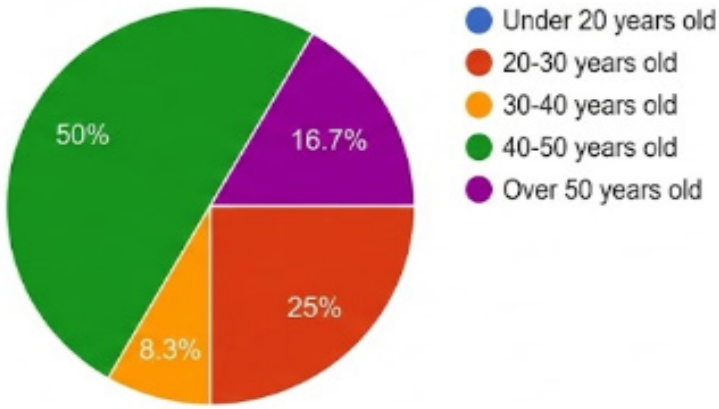


Figure 11.4. Ages of workshop participants

The workshop was conducted in two phases. The first phase involved an initial assessment using the Padlet digital tool, which yielded interesting responses. In addition to identifying the lack of initial AI training among teachers, it was found that they had not used any tools, even though they had the Perplexity app on their cell phones.

The introduction to AI began with the use of the RITA Model to construct prompts and was followed by a demonstration using Gemini, Copilot, and DeepSeek, with the participation of Professor Claritza and student Silvia Castro. Next, Sabrina León, a student in Research Methods II, explained to those present the research tools she had already used and adapted to possible applications in primary education.

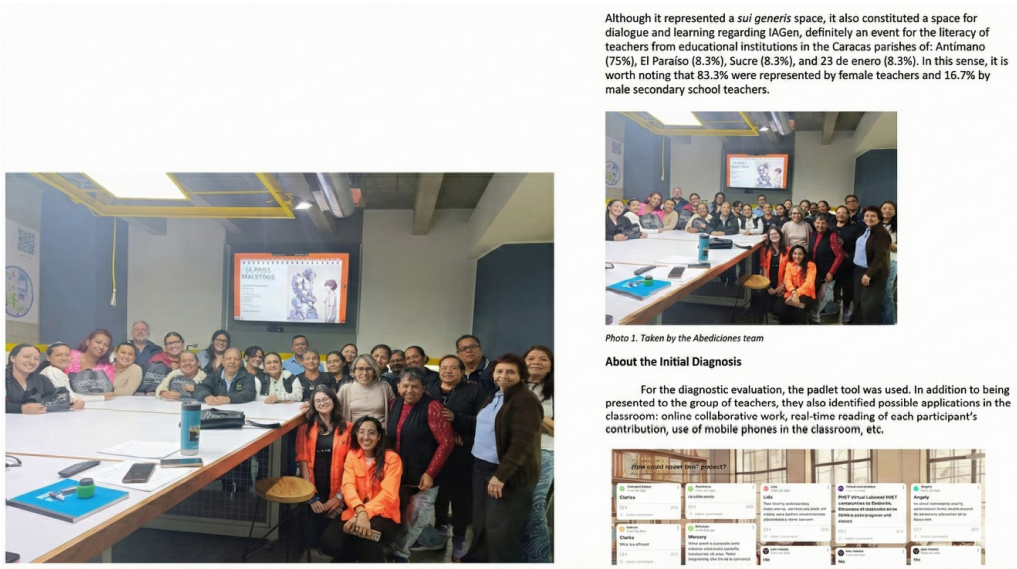
During the exchange, the teachers indicated at least three options, as shown in the following table 11.2.

Table 11.2. Applicability of research tools

Tool	Indication	Challenge	Specifications
Elicit	Preparation of classes based on consultation of academic sources.	Translation of academic language into less technical language for the creation of teaching materials.	"I found it useful. I wish I had known about this tool when I submitted my specialization project" (informant 1). "I found what I was looking for for my science project very quickly and it was up to date" (informant 5).
Chatbot (Perplexity)	Teacher's assistant when you want to consult about a work plan.	Create the appropriate prompt to achieve the best results.	"Depending on the prompt, you can get a good planner for a project. I requested it and it worked well for me" (informant 4). "This tool is not only easy to use but also versatile" (informant 2)
Consensus	Consult sources in other languages to strengthen the work you want to develop.	Translation and interpretation. Relationship with the subject studied.	"As an English teacher, I have no problems, but what about a teacher who doesn't speak English?" (informant 3) "I think it's appropriate; it shows us the work sheets" (informant 5)

Some difficulties associated with the use of specialized research tools were identified. For example, it was not easy to relate the topic to English searches, a limitation compounded by the teachers' reported lack of command of a second language. In view of these considerations, the DeepL.com translation tool should be used.

Figure 11.5 shows the group of workshop participants. It is important to note that this image was not only shared on the Mexican portal Tecnopia, but the university's red X network also actively promoted this exchange. It is presented below.



Note: Photograph taken by the Abediciones team (left image) and excerpt from the review on Tecnopia (right image).

Figure 11.5. Teachers, students, and the Abediciones team attending the workshop

Summary of categories

After gathering the teachers' opinions in each workshop, the emerging categories were identified, as shown in figure 11.6.

Note: Image generated with Copilot

Figure 11.6. Emerging categories

First, AI literacy and digital competence among teachers (diagnosis) in both experiences (private and public schools) are convergent: teachers express an incipient approach, general ignorance about effective integration, and a lack of initial training in AI. Specifically, at Colegio Agustiniano, difficulties in digital skills were reported, and in public schools, teachers had not used any tools even though they were available.

This diagnosis coincides directly with the international literature. UNESCO (2023), in its preliminary guide on generative AI in education, emphasizes the urgency of developing AI skills for teachers, noting that most, like the participants in its study, are at an initial literacy stage. Similarly, Pérez Pérez and González de Pirela (2024) identify the urgent need to implement AI training programs, highlighting that "digital literacy" is the fundamental pillar for any successful pedagogical integration. Their findings therefore confirm that the skills gap is the critical starting point for teacher training.

Second, AI, as a teaching planning and preparation assistant, enabled teachers to identify AI applications to optimize their preparation processes quickly. For example, the use of Elicit for "reviewing progress on topics" and "preparing for parent interviews," and Perplexity as a "teacher's assistant when consulting on a work plan." The use of the RITA model and the "Prompt Guide" also points to the structuring of the planning process. These uses align with García-Peñalvo's (2023) description of the role of generative AI in improving administrative efficiency and as a support tool for subject preparation and lesson planning. The teachers in his study are using AI not only to create content, but also for their own continuing professional development.

Third, implementation challenges and adaptation strategies focus on: a) the skills gap, which was addressed with the peer work strategy, and b) the cognitive challenge of translating academic language, i.e., how to convert Elicit's findings into teaching materials for primary school.

In the case of pair work, it is a recognized scaffolding strategy to overcome teacher resistance or technological anxiety, a challenge identified by Garzón Patiño and Marulanda (2025) in their systematic review. For its part, the challenge of translation is highly relevant; the literature often discusses the digital divide (Arias, Castro, Forero, Della Nina Gambi, Giambruno, Pérez & Rodríguez, 2025), but its findings point to a pedagogical translation gap.

Fourth, in terms of the pedagogical applications of AI, beyond planning, teachers envisioned three possible routes for direct application in the classroom: a) project justification through the use of Elicit to justify projects and substantiate topics such as the SDGs, b) preparing materials by creating study guides or tailored digital workbooks, and c) developing teaching proposals by designing games with digital tools and role-playing games based on the reviewed literature.

These findings are an example of the leap teachers make from reviewing literature (Elicit) to creating teaching proposals (games), illustrating the transition from AI as a search tool to AI as a creative partner. This coincides with García-Peñalvo (2023), who points out that AI can be used to innovate teaching methodologies, as the participants did by connecting AI with active methodologies.

Finally, the teacher's pragmatic research (Assisted Action Research) reveals that the research carried out by teachers is not theoretical or basic, but deeply pragmatic and oriented towards immediate pedagogical action in the classroom.

In general, they do not seek to publish research, but rather to apply it. In this sense, the applications identified include: a) the rationale, where Elicit is used to justify projects and review progress for classroom projects; b) preparation, where it seeks to be up to date in order to suggest work plans to parents; and c) action, which allows academic findings to be translated into teaching materials, study guides, and teaching proposals. In this sense, the findings align directly with Schön's (1983) concept of the reflective practitioner, who argues that the most effective practitioners do not mechanically apply theories, but rather develop a process of reflection-in-action (and on-action). In the experiences, teachers are using AI tools (Elicit, Perplexity) as advanced tools to enhance this cycle of reflection; they seek literature (reflection) to inform their future practice (action).

The teachers' research model is a form of action research. As defined by Kemmis, McTaggart, and Nixon (2014), it is a participatory and situated process whose goal is not generalization, but rather the improvement of one's own practice and understanding of it. In the case of the experiences, the teachers are executing micro-cycles of Action Research: they identify a problem (need for a project), investigate (Elicit), plan (guides), and act (classroom implementation).

CONCLUSIONS

The adoption of AI tools for research by primary school teachers was practically non-existent prior to the direct training intervention. The initial diagnosis, consistent across both private and public institutions, revealed an incipient approach and a general lack of knowledge regarding the effective integration of these technologies. However, once exposed to specific tools through workshops, teachers immediately identified their pragmatic applicability.

The predominant tools were Elicit, for searching and systematizing academic literature, and chatbots such as Perplexity, used as assistants for structuring work plans. The use of these tools is concentrated in specific phases of the teacher's research process, understood as action research: a) Grounding and diagnosis, and b) Planning and design.

In addition, two critical phases were identified that hinder the integration of AI: a) the primary barrier characterized by AI illiteracy, and b) the secondary barrier made visible by the pedagogical translation gap. A relevant finding that transcends mere digital competence is the cognitive challenge of translating academic language.

The study corroborates that the research conducted by primary school teachers is not theoretical or basic, but rather deeply pragmatic and oriented towards immediate pedagogical action. Teachers do not seek to conduct research for publication, but rather to substantiate, plan, and improve their direct classroom interventions. In this sense, recommendations for effective integration should focus on positioning AI as a tool to assist action research.

Training strategies should: a) bridge the skills gap through scaffolding methodologies, b) focus on immediate applicability, providing structured models (such as the RITA model for prompts) that facilitate the connection between the tool and the specific pedagogical need (planning, material design, project justification), and c) address the pedagogical translation gap by explicitly instructing on the use of AI not only to search for information, but also to simplify, adapt, and transform it into teaching formats.

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