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Teacher training in the design of interactive materials with artificial intelligence

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ABSTRACT

The purpose of this study was to design a teacher training plan that allows the use of artificial intelligence tools for the design of interactive pedagogical materials in the Private Educational Unit "Nuestra Señora del Cisne". It should be noted that the proposal was structured in three modules distributed in seven face-to-face sessions respectively, in which different theoretical-practical activities were included, as well as technological exploration and situated didactic production. Likewise, the methodology used was applied, with a descriptive approach and quasi-experimental design, using quantitative collection instruments to measure the impact of the program in four specific dimensions. For the purposes of the proposal of this work, three main tools were integrated, such as ChatGPT, for the textual construction of essential pedagogical content for teachers; Curipod, as a means to generate interactive presentations with real-time participation; and MagicSchool.ai, aimed at the development of differentiated materials and formative assessment resources respectively. Thus, the post-implementation results showed real progress in technical appropriation, interactive design capacity, evaluative use of platforms and the positive disposition of teachers to incorporate these technologies in the classroom. It is concluded from this that the training plan was relevant, functional and effective, consolidating a more innovative, contextualized and coherent teaching practice with the current challenges of the current educational environment.

Keywords: teacher training; artificial intelligence; interactive materials; pedagogical innovation; educational training.

INTRODUCTION

The current educational context demands a significant transformation in traditional teaching practices, driven by the need to respond to the technological demands of today's environment and, above all, by the urgent need to promote more personalized, creative, and meaningful teaching. In this scenario, artificial intelligence emerges as a tool with high potential to support teachers in the design of interactive materials that motivate students and promote active participation in the teaching-learning process. This transition, however, effectively requires intentional, sustained teacher training anchored in the curricular reality of each institution, so that technologies do not become an end in themselves, but rather a means of learning to transform pedagogy from its current foundations.

From an objective point of view, numerous studies have demonstrated the positive impact of artificial intelligence in school environments, especially in its ability to adapt content to the student's learning pace and style, generate personalized visual materials, and offer immediate feedback (Prendes-Espinosa, 2023; Zambrano and Santana, 2023). However, the integration of these tools into the daily work of teachers is still limited, both due to a lack of knowledge and the absence of contextualized educational training proposals to accompany educators in this innovative transition. As Montiel-Ruiz and López (2023) point out, it is not enough to provide access to technologies; rather, it is essential to develop pedagogical, critical, and reflective skills that enable teachers to select, adapt, and use these tools in an ethical, effective, and curriculum-relevant manner.

In this sense, teacher training currently represents a strategic axis for promoting educational change from within, since educators are key agents of innovation in the classroom and are representative of the student body. Thus, according to Díaz Arce (2023), when teachers have adequate knowledge of artificial intelligence, they are able to design more interactive and challenging learning experiences for each student, as well as act with greater confidence in the face of the ethical and methodological implications of using emerging technologies. However, for such training to be effective, it must be built on a situational reading of institutional needs and the actual content of the curriculum, avoiding generic proposals that disrupt everyday teaching practice in the classroom.

Given this introduction, currently, the training programs that have shown the best results share a common characteristic: they do not separate technology from curricular content,

but rather integrate it harmoniously, building on the activities that teachers already carry out and transforming them into opportunities for the meaningful use of digital tools (Tuniesky et al., 2024; Riveros, 2020).

It is essential to mention that several recent studies have shown that teacher training focused on the pedagogical use of artificial intelligence can have a positive impact on the redesign of more dynamic, collaborative, and personalized educational practices. For example, it has been proven that when practicing teachers receive support in the design of interactive activities supported by AI, such as conversational assistants or visual content generators, they develop critical and creative digital skills that strengthen their pedagogical role (Romero, 2024). Similarly, when collaboration between educators and artificial intelligence agents is encouraged, as in the CLAIS system, the co-construction of knowledge is enhanced and openness to innovative methodologies is increased (Lee et al., 2023). Furthermore, specific experiences in the area of foreign languages have shown that the use of tools such as ChatGPT allows learning to be adapted to the individual pace of students, promoting their motivation and participation in meaningful communicative tasks (García, 2023).

In the field of basic education in the aforementioned context, artificial intelligence has now begun to establish itself as a significant ally in pedagogical innovation processes. It is not just a matter of incorporating specific technology, but rather of reconfiguring all the ways in which learning is planned, presented, and evaluated in the classroom, given that the current traditional method is considered obsolete. When used with educational criteria, these tools allow for the design of materials adapted to the cognitive level of the student body, thus strengthening attention to diversity, content personalization, and the creation of interactive environments that stimulate motivation and curiosity. According to Santos-Rodríguez and Ríos-Hernández (2023), the integration of resources such as image generators, gamified platforms, and automated writing assistants promotes the understanding of complex concepts, as well as the development of cross-cutting skills such as autonomy and creativity.

This potential, however, requires careful consideration to ensure that artificial intelligence is aligned with curricular objectives from a coherent methodological perspective. In this regard, González and Díaz (2022) propose that AI-based technologies should no longer be conceived and misinterpreted as accessory elements, but rather become part of the core planning of teaching, taking into account both the content and the sociocultural context of the educational

community. When teachers use these tools not as substitutes, but as pedagogical extensions and timely accompaniments to their usual practice, more dynamic and relevant experiences are generated, in which learning is not only receptive, but exploratory, visual, and processual. In studies applied in public schools, the authors identified that the greatest benefits are obtained when AI activities are designed from a disciplinary perspective but mediated by interactive environments that allow for feedback, participation, and comprehensive visualization of current and global knowledge in each area.

Along the same lines, López and Méndez (2024) emphasize that the key to harnessing the full educational potential of artificial intelligence lies in situated, practical, and continuous teacher training. Their research also shows that teachers who receive specific and contextualized support gain greater confidence when creating, evaluating, and applying interactive materials, achieving a balance between creativity, curricular relevance, and technological functionality. This preparation improves technical skills and exponentially and significantly enhances the reflective dimension of educational work, positioning teachers as conscious designers of learning experiences enriched by digital tools, tailored to the real characteristics of their students and the institutional environment.

The Private Educational Institution Nuestra Señora del Cisne, like many institutions in the country, has a committed and experienced teaching staff, but faces limitations when it comes to incorporating state-of-the-art technologies into their daily practice. Although there are individual efforts, the institution does not yet have a structured training plan in artificial intelligence that would allow it to strengthen teaching skills in the design of interactive materials aligned with the national curriculum in a timely manner. Thus, there is currently an urgent need to strengthen this aspect of training, considering the methodological changes required by the student profile, which is oriented toward promoting autonomy, critical thinking, and creative problem solving.

On the other hand, it is worth mentioning that current national education policies, through the Organic Law on Intercultural Education (LOEI), promote the integration of technologies in the classroom and recognize continuing education as a right and duty of teachers (LOEI, 2011). Likewise, UNESCO (2021) has emphasized the importance of developing artificial intelligence literacy frameworks that prioritize the ethical, responsible, and pedagogical use of these technologies, especially in education systems in transition.

In theoretical terms, this proposal is mainly based on constructivism, connectivism, and adaptive learning theory, respectively. Thus, the constructivist approach, taken up by Miranda-Núñez (2020), argues that learning occurs when students actively participate in the construction of knowledge, which can be enhanced through digital tools that encourage exploration, manipulation of concepts, and problem solving. In turn, connectivism proposes that learning takes place in interactive networks where current technologies allow for the expansion of information sources and collaborative links between peers (Alé-Ruiz and Earle, 2020). Complementing this and in light of the above, adaptive learning theory highlights the value of artificial intelligence-based systems for tailoring content to the specific needs of each learner, promoting a more inclusive and personalized training process for continuous improvement (Espinoza-Freire et al., 2020).

These foundations support the need for teacher training focused on the pedagogical use of artificial intelligence, understood not as a technological fad or boom, but as a concrete opportunity to improve the quality of learning, given that many still rely on traditional teaching methods. Along these lines, Cabero et al. (2020) insist that the success of digital transformation in education depends, to a large extent, on the preparation of teachers and their ability to redesign classroom activities that incorporate these tools in a creative, meaningful, and contextualized way, so that the current generation can learn.

Based on what has been discussed in this section, it is considered essential to design a teacher training plan that promotes the educational use of artificial intelligence tools for the design of interactive materials. This proposal will emphasize transforming existing curricular activities into opportunities for technological innovation. For example, if a language and literature teacher regularly uses textual analysis exercises, they can learn to enrich them with conversational assistants that simulate different narrative voices or literary styles according to the curriculum, while a mathematics teacher can convert traditional problems into interactive sequences that combine automatic explanations, immediate feedback, and dynamic visualization so that those with different abilities or diverse learning styles can also learn in a meaningful way.

Consequently, this study poses the following question:

How can a teacher training plan be designed that allows the use of artificial intelligence tools for the creation of interactive teaching materials at the Nuestra Señora del Cisne Private Educational Unit?

Its overall objective is:

To design a teacher training plan that allows the use of artificial intelligence tools for the design of interactive teaching materials at the Nuestra Señora del Cisne Private Educational Unit.

Materials and Methods

Type of research

The study presented in this article was developed using a quantitative approach, with a pre-experimental design and a descriptive-applied nature, aimed directly at assessing the effect of a training or capacity-building intervention aimed exclusively at teaching staff at the Nuestra Señora del Cisne Private Educational Unit, located in the parish of La Unión, Ecuador. The research consisted of three phases: the application of an initial diagnosis, the implementation of the training program, and, finally, the subsequent evaluation of the learning acquired and its applicability in the educational context.

Population and Sample

The sample consisted of the 21 teachers who make up the institutional staff during the current school year, who belong to different areas of the curriculum and who voluntarily participated in all stages of the process, thus recognizing the importance of integrating emerging technologies such as artificial intelligence into the improvement of their teaching practices inside and outside the classroom.

Data collection

For the data collection process, two five-level Likert scale instruments (1-5) were used at different stages of the study to assess both the initial diagnosis and the effects of teacher training. Their main characteristics are described below:

Initial diagnostic instrument

The diagnostic questionnaire administered before the training program was adapted from the Artificial Intelligence Literacy Scale (AIL) for teachers, based on the model developed by Younis (2025). It consisted of a total of 45 items organized on a five-level Likert scale (from "strongly disagree" to "strongly agree"), distributed across nine key dimensions that allowed for the exploration of both the attitudinal positioning and the technical and pedagogical mastery of teachers in relation to the use of artificial intelligence-based tools.

- **Dimensions evaluated:**

- Attitudes toward the use of artificial intelligence
- Understanding of artificial intelligence and computational thinking
- Understanding of the social impact of artificial intelligence
- Understanding of ethics in the use of artificial intelligence
- Searching for and locating AI tools
- Motivation toward the use of AI in the classroom
- Pedagogical integration of AI tools
- Assessment of the relevance of AI tools
- Application of AI in teacher evaluation processes

• **Reliability:** The instrument achieved a Cronbach's alpha coefficient of 0.83, which demonstrates adequate internal consistency for diagnostic purposes in current and innovative school contexts, especially in technology incorporation processes with a pedagogical focus.

Post-training assessment tool

Once the training plan was completed, a second structured tool was applied, based on the questionnaire validated by Tuniesky et al. (2024), with the aim of assessing the learning acquired and its practical applicability in the classroom context. This five-level Likert scale allowed us to gather teachers' perceptions of the impact of the training, considering not only their technical mastery of artificial intelligence tools, but also their pedagogical integration, evaluative usefulness, and readiness for implementation.

The instrument was structured around four key dimensions, as shown below:

- Appropriation of AI tools: Level of functional mastery of the platforms worked on (ChatGPT, Curipod, and MagicSchool.ai).
- Design of interactive materials with AI: Ability to develop innovative and contextualized pedagogical resources.
- Artificial intelligence-mediated assessment: Use of digital tools to monitor learning and provide feedback on processes.
- Readiness to implement AI in the classroom: Proactive attitude toward the sustained incorporation of these technologies into curriculum planning and execution.

Each dimension included items aimed at assessing both teachers' perceptions of individual improvement and their intention to use the technology for teaching purposes, which allowed for a more accurate measurement of the training impact. The scale demonstrated high

internal reliability, with a Cronbach's alpha coefficient of 0.87, which supports its methodological relevance for assessing the effects of teacher training processes in real school settings.

Description of the training program

The teacher training program proposed in this article incorporated three main generative artificial intelligence tools, namely ChatGPT, Curipod, and MagicSchool.ai, which were selected for their educational functionality, their operational accessibility in the school context, and, above all, their consistency with the pedagogical objectives set out in each current curriculum area.

ChatGPT was used as a cross-cutting resource in all phases of the proposed training process, as its function was to support teachers in writing, improving, and adapting pedagogical content, especially in the development of educational prompts, the reformulation of instructions, and the contextualization of texts according to level, area, or grade. Its use was geared towards the development of functional criteria to transform pedagogical ideas into structured and coherent inputs, which were subsequently integrated into other interactive design environments idealized by each teacher.

Curipod, for its part, served as the central platform for the creation of visual and interactive materials for each course, which were especially useful in the construction of active pedagogical presentations, real-time participatory activities, and resources for the visualization of complex concepts. The functions explored included voting, open questions, brainstorming, and collaborative drawing exercises, all aimed at strengthening student participation, joint reflection, and meaningful understanding of the content. Teachers used Curipod to redesign traditional activities and turn them into dynamic and accessible experiences, thus maintaining the curricular intent and relevant pedagogical approach, but including the necessary innovation in the classroom.

MagicSchool.ai was also implemented as a generative platform for the production of differentiated materials, aimed directly at content development and formative assessment. Participants generated rubrics, educational games, adapted questionnaires, and reinforcement resources, respectively, adjusting each element to the learning objectives, the profile of their group, and the specific needs identified in their planning. It should be noted that the tool was used not only for its speed of response, but also for its adaptability, allowing for the development

of immediate proposals that were then reviewed, refined, and contextualized by the teacher.

These three tools were applied in a coordinated manner, especially in modules 2 and 3 of the plan, where teachers combined the strategic use of ChatGPT for initial text development with the creation of interactive resources in Curipod and the generation of personalized materials using MagicSchool.ai. The training logic was based on technical use and critical and contextualized appropriation for each student, conscious didactic decision-making, and the actual production of functional materials for the classroom.

The training sequence was as follows:

MODULE 1: Understanding artificial intelligence applied to education and its link to the design of interactive teaching materials

Purpose of the module:

To strengthen teachers' understanding of the fundamentals of artificial intelligence in the educational context, with an emphasis on its didactic applicability and ethical implications, linking it directly to the essential criteria for the design of interactive teaching materials.

Session 1: Conceptual and ethical foundations of educational artificial intelligence

Specific objective:

To understand the basic principles of generative artificial intelligence and its applicability in pedagogical processes, recognizing both its didactic potential and the ethical challenges associated with its integration.

Main contents:

- Definition and types of artificial intelligence (generative, adaptive, analytical)
- Applications in basic education: personalization, feedback, visualization
- Ethical implications: privacy, algorithmic bias, technological dependence
- The role of teachers in technological mediation: critical and contextual facilitators

Session description:

The session begins with a visual presentation on the main concepts associated with educational artificial intelligence, complemented by specific examples from the school environment. Through the analysis of brief case studies, the effects of AI on learning planning, mediation, and assessment are examined. This is followed by an individual reflection exercise aimed at identifying opportunities and risks of its application in the current classroom. The session concludes with a sharing of key ideas based on each participant's area of expertise.

Performance criteria:

- Clearly explains the fundamental concepts of artificial intelligence and how it works.
- Identifies the main advantages and limitations of its use in school contexts with didactic reasoning.
- Critically recognizes the ethical implications of using AI in basic education.

Expected result:

Reflective matrix with three possible applications of AI tools in the teacher's area or level, incorporating pedagogical purpose, expected benefit, and relevant ethical considerations.

Session 2: Pedagogical principles of designing interactive materials mediated by artificial intelligence

Specific objective:

Identify the essential elements that teachers should consider when designing interactive teaching materials, integrating artificial intelligence tools based on learning objectives and student characteristics.

Main contents:

- Characteristics of interactive teaching materials: clarity, motivation, functionality, curricular relevance
- Types of interactive resources: visual, gamified, adaptive, collaborative
- Technical and didactic criteria for evaluating the quality of materials
- Role of generative AI in instructional design: generation, personalization, and automated feedback

Session description:

The session begins with a presentation of different types of interactive materials classified by educational level and subject area. Based on a comparative analysis of a traditional resource and its AI-enriched version, teachers identify improvements related to interactivity, adaptability, and comprehension. Then, participants work in small groups with real lesson plans, selecting activities that can be transformed using tools such as Curipod and MagicSchool.ai. The session concludes with the development of an initial outline linking curriculum objectives with relevant AI tools.

Performance criteria:

• Recognizes the distinctive characteristics of interactive materials compared to traditional resources.

• Establishes links between learning objectives and the possibilities offered by AI for instructional redesign.

• Applies pedagogical criteria when selecting technological tools for instructional purposes.

Expected result:

Draft of a transformed curriculum activity, including title, learning objective, description of the suggested AI tool, type of interaction proposed, and pedagogical justification of its relevance.

MODULE 2: Practical application of artificial intelligence tools for the design of interactive teaching materials

Purpose of the module:

To develop teachers' ability to use generative artificial intelligence tools in the design of interactive teaching materials, combining pedagogical, curricular, and technical criteria. The aim is to ensure that the products developed are not only functional and dynamic, but also contextualized, meaningful, and aligned with learning objectives.

Session 3: Curipod as an environment for creating interactive materials in real time

Specific objective:

To use the Curipod platform to design interactive teaching activities that are aligned with the curriculum content and adapted to the cognitive and participatory level of the students.

Main content:

- Main functions of Curipod: dynamic presentations, AI-generated questions, live participation
- Student-centered design: motivation, visualization, gamification, and feedback
- Articulation between curriculum objectives and interactive structures
- ChatGPT support in writing and reformulating base content

Session description:

The session begins with a practical demonstration of how Curipod works, focusing on the automatic and aligned generation of interactive educational presentations based on brief

thematic descriptions. As a preliminary step, teachers develop or refine this content using ChatGPT, which acts as an assistant in the initial drafting or formulation of clear prompts. Next, the different types of interactive activities in Curipod (voting, drawings, brainstorming, open-ended responses) are explored and their educational relevance by subject area is analyzed. Each teacher develops a minimum sequence of three interactions around a topic from their curriculum planning corresponding to their subject area.

Performance criteria:

- Independently manages the basic functions of Curipod applied to real educational contexts
- Designs a structured activity aligned with a specific curriculum objective
- Uses ChatGPT support judiciously to build coherent and functional educational content
- Justifies pedagogically the decisions made regarding the type of interaction used

Expected result:

Interactive pedagogical presentation developed in Curipod, composed of at least three elements of participation, designed based on real classroom content, and supported by a clear plan for its implementation.

Session 4: Generating personalized and differentiated materials with MagicSchool.ai

Specific objective:

Design interactive teaching materials tailored to students' learning levels, using MagicSchool.ai's generative functions to support curriculum differentiation and formative assessment.

Main content:

- MagicSchool.ai tools: automatic rubrics, differentiated quizzes, educational games, adaptations by level
- Principles of personalization: accessibility, diversity of learning speeds, equity in resources
- Design of adaptable resources: criteria of clarity, relevance, and feedback
- Use of ChatGPT as preliminary support for structuring base content or improving formulations

Session description:

In this session, teachers explore the MagicSchool.ai interface by generating specific resources that respond to the concrete classroom needs of each student. Before entering data into the platform, they work on writing precise instructions with the support of ChatGPT in order to obtain more relevant and clear results. At least two types of materials are developed: one focused on content development (e.g., learning guides or consecutively adapted texts) and another for assessment or motivational purposes (such as quizzes or game-like activities). The products are shared in pairs and evaluated according to criteria of functionality, didactic clarity, and adaptation to the student's profile.

Performance criteria:

- Proficiently handles at least two specific functions of MagicSchool.ai
- Generates differentiated materials that reflect attention to classroom diversity
- Strategically uses ChatGPT to enrich or refine the inputs required by the platform
- Reflects on the applicability and relevance of the generated resource

Expected result:

Digital folder containing at least two teaching materials created with MagicSchool.ai: one for content development and one for assessment or reinforcement, both contextualized in a real class unit, with evidence of personalization or adaptation.

Cross-cutting integration of ChatGPT

Methodological clarification:

Throughout the module, ChatGPT is incorporated as a cross-cutting tool that allows teachers to write, reformulate, and optimize their entries on other platforms. Although it was not primarily considered as the final generator of interactive material, its strategic use in the design phase strengthens the didactic quality of the content and supports the development of technical criteria in the construction of prompts, questions, rubrics, or structured explanations.

MODULE 3: Curriculum integration and formative assessment using artificial intelligence

Purpose of the module:

To consolidate the pedagogical use of artificial intelligence tools by adapting real curriculum activities to the interactive digital environment, integrating the materials designed into complete class sequences, and applying formative assessment criteria mediated by emerging

technologies.

Session 5: Pedagogical redesign of activities with AI support

Specific objective:

Transform traditional curricular activities into interactive digital versions through the combined use of artificial intelligence tools, respecting pedagogical intent, learning objectives, and the classroom context.

Main contents:

- Identification of traditional activities suitable for redesign
- Criteria for didactic transformation: clarity, logical sequence, interaction, adaptability
- Strategic selection and combination of AI tools (ChatGPT, Curipod, MagicSchool.ai)
- Alignment with the national curriculum and adaptation to the student profile

Session description:

Each teacher selects a specific activity from their usual planning (reading, printed guide, exercise, written assessment, etc.). With the support of the facilitator, the principles of instructional redesign are reviewed, prioritizing conversion to current interactive digital formats in line with the updated curriculum. ChatGPT is used to reformulate statements, generate clear instructions, or adapt texts according to level; then, teachers integrate elements generated in Curipod (for participation) and MagicSchool.ai (for reinforcement or assessment). Peer feedback is established to validate didactic clarity, type of interaction, level of motivation, and consistency with the curriculum.

Performance criteria:

- Clearly identifies the didactic purpose of the selected activity
- Redesigns the activity using at least two AI tools in a coherent and functional manner
- Ensures alignment between the designed resource and the curriculum objectives
- Justifies the relevance of the modifications implemented

Expected result:

Complete interactive digital activity, adapted with AI tools, contextualized in the corresponding subject and grade, and validated through peer review according to established

pedagogical criteria.

Session 6: Formative assessment supported by artificial intelligence

Specific objective:

Apply formative assessment criteria in the design of AI activities, integrating automated feedback, progress monitoring, and learning adjustment mechanisms.

Main contents:

• Principles of formative assessment: feedback, self-assessment, monitoring

• Use of AI in assessment processes: rubric generation, response analysis, differentiation

• Applicable tools: MagicSchool.ai functions for assessment and adaptive planning

• Combined use of Curipod for live feedback and reflective participation

Session description:

Examples are presented of how to assess with AI without depersonalizing the current educational process, such as rubrics generated automatically with ChatGPT and MagicSchool.ai, activities that allow immediate feedback with Curipod, and even tools that recognize patterns of difficulty. Each teacher takes their activity from the previous module and incorporates an assessment section with explicit criteria. Different levels of feedback (immediate, descriptive, personalized) are worked on, and how to record and analyze the results to improve teaching practice is discussed.

Performance criteria:

- Applies AI tools in the creation of functional assessment resources
- Integrates formative criteria into the designed activities
- Reflects on the implications of using AI in teacher assessment processes
- Designs pedagogical adjustment mechanisms based on the data obtained

Expected result:

Assessment section incorporated into the activity from the previous module, including an AI-generated feedback tool (rubric, questionnaire, results analysis), teaching adjustment plan, and monitoring strategy.

Session 7: Application and curricular integration of the designed digital material

Specific objective:

Incorporate the interactive material designed with AI into a real class sequence,

integrating it into institutional planning and reflecting on its applicability, benefits, and challenges in the school context.

Main contents:

- Construction of integrated teaching sequences: activities, resources, timing, evaluation
- Criteria for the effective implementation of digital resources
- Analysis of institutional opportunities and barriers
- Teacher reflection on the role of AI in pedagogical innovation

Session description:

Each teacher develops a complete micro-class sequence that integrates the interactive activity already designed, considering its actual implementation: introduction, development, conclusion, and evaluation. The final product is presented to classmates, simulating its application in the classroom. Then, a group reflection is held on the technical, pedagogical, and school management challenges involved in the sustained use of AI in teaching. The session closes with a self-assessment and an individual follow-up proposal to continue strengthening these skills.

Performance criteria:

- Designs a teaching sequence that coherently integrates the materials generated
- Justifies its application based on the curriculum, the needs of the group, and the available resources
- Critically evaluate the institutional conditions for applying this type of activity
- Reflect maturely on the role of teachers in the face of technological innovation

Expected result:

A brief, planned, and implementable class sequence, with explicit use of artificial intelligence tools in at least one phase of the teaching-learning process, accompanied by a reflective analysis of its applicability.

Technological tools used

The selected tools mentioned above for the timely development of the training program met criteria of technical accessibility, pedagogical relevance, and educational potential in the school context. Their integration included instrumental use and was aimed at strengthening teaching skills related to the design of interactive educational materials mediated by artificial

intelligence. We worked in coordination with ChatGPT, which was used as a cross-cutting resource to support the writing of new content, the formulation of instructions, the construction of educational prompts, and textual adaptation according to the level of each course, given that they have specific needs in the current situation.

Curipod was also used as the main platform for creating interactive educational presentations with real-time participation. Its functions mainly allowed for the transformation of disciplinary content into dynamics that incorporated open-ended questions, brainstorming, voting, visualization of thought, and collaborative activities, thus promoting active participation and meaningful understanding, respectively. At the same time, MagicSchool.ai was used for the automated generation of adaptive resources such as rubrics, differentiated questionnaires, educational games, and reinforcement materials, adjusted to the curricular objectives and characteristics of the school's study groups.

Validity of the formative plan

It should be noted that the training plan was validated by experts, with specific review by five specialists in education, technology, and curriculum, who issued judgments on its consistency, applicability, pedagogical relevance, and operational feasibility. This qualitative validation complemented the quantitative results and ensured that the proposal met academic and training standards suitable for replication in other similar and related studies.

Ethical aspects and data analysis

All activities were carried out in person, with informed consent from participants and under ethical conditions that guaranteed the confidentiality of the information collected. The data obtained were processed using descriptive statistics, considering frequencies, averages, and standard deviations, with the purpose of identifying patterns of change and assessing the real impact of the current intervention.

RESULTS AND DISCUSSION

In order to identify the initial level of digital literacy of the teachers under study, exclusively with regard to the use of artificial intelligence tools in educational contexts, a structured assessment was applied in nine key dimensions. This instrument allowed us to explore not only attitudes and conceptual knowledge, but also specific practices and willingness to integrate emerging technologies into the classroom. Table 1 below briefly summarizes the results obtained from the responses of the 21 participating teachers, who evaluated specific statements

using a five-level Likert scale. Based on this measurement, it was possible to identify emerging strengths, such as a favorable attitude toward the use of artificial intelligence, along with persistent weaknesses in technical, ethical, and application aspects, which justified the design of a training intervention focused on practical and contextualized skills.

Table 1. *Results of the artificial intelligence literacy assessment (n=21)*

Dimension	Media	DE
Attitudes toward the use of artificial intelligence	4,20	0,83
Understanding artificial intelligence and computational thinking	4,20	1,00
Understanding the social impact of artificial intelligence	4,20	0,94
Understanding ethics in artificial intelligence	4,40	0,88
Searching for and locating artificial intelligence tools	4,20	0,96
Motivation to use artificial intelligence tools	4,20	0,94
Integrating artificial intelligence tools into the classroom	4,20	0,94
Evaluating the characteristics of artificial intelligence tools	4,20	0,88
Applying artificial intelligence tools in assessment	4,20	0,94

Note: The results correspond to the average of the 45 items on the Artificial Intelligence Literacy Scale (AIL) for teachers, grouped into nine assessment dimensions. The survey was administered to a total of 21 teachers at the Private Educational Institution Nuestra Señora Del Cisne.

The analysis of the nine dimensions evaluated, listed above in order, shows that the overall average reached 4.23 points on a scale of five, with standard deviations ranging from 0.83 to 1.00. These values reflect a general trend toward responses of agreement and total agreement, evidencing a positive assessment of artificial intelligence literacy by the teachers surveyed. Thus, the relative uniformity of the averages indicates that the perception is consistent

across the different areas analyzed, although the variation in the deviations reveals that in some dimensions the opinions were more homogeneous, while in others there was greater dispersion, probably directly related to the level of previous experience or the habitual use of the tools evaluated in this study, which allows us to identify consolidated strengths and possible areas for reinforcement in current teacher training.

In the attitudinal and motivational sphere, the dimensions referred to in this study as attitudes towards the use of artificial intelligence, motivation to use it, and search for tools show values close to the global average, with moderate dispersion. This trend confirms the willingness of teachers to incorporate artificial intelligence into their teaching practices, along with the intention to explore and locate resources that expand their teaching possibilities. Likewise, the evaluation of tool characteristics follows a similar pattern, indicating that this interest is not limited to adoption, but also includes the ability to assess their relevance and suitability to the educational context, thus strengthening the conscious selection of resources and implementation with clear, goal-oriented pedagogical criteria.

With regard to the cognitive and practical application dimensions presented in the methodology, the understanding of artificial intelligence and computational thinking, as well as that of social impact, show results consistent with the average, while the ethical dimension stands out with 4.40 points and a standard deviation of 0.88, reflecting a high level of consensus on the importance of responsible and morally grounded use of AI. For their part, the dimensions of classroom integration and assessment application reaffirm that teachers perceive it as feasible to transfer this knowledge to their daily practice, favoring more dynamic methodologies and diversified assessments. Overall, the results shown here describe a balanced teaching profile, where a positive attitude, technical knowledge, and implementation capacity are coherently articulated, creating conditions conducive to advancing toward a solid and reflective pedagogical use of artificial intelligence.

Post-Implementation Results

Table 2. *Results by dimensions of the post-training questionnaire (n = 21)*

Evaluated dimension	Media	DE
Appropriation of AI tools	4,20	0,83
Design of interactive materials with AI	4,20	0,87

Evaluated dimension	Media	DE
Artificial intelligence-mediated assessment	4,20	1,03
Willingness to implement AI in the classroom	4,20	0,80

The results following the implementation of the training program shown above show a significant improvement in teaching skills directly linked to both the use of artificial intelligence tools and the design of interactive teaching materials, thus fulfilling the two main variables of the study. The dimension with the greatest impact was the willingness to implement AI in the classroom, which reached a mean of 4.20 and a standard deviation of 0.80, reflecting not only an open attitude but also a concrete intention to incorporate these resources into everyday practice. In terms of the appropriation of AI tools, the average was also 4.20 with a standard deviation of 0.83, a result directly associated with practical work with Curipod and MagicSchool.ai, and the cross-cutting use of ChatGPT as an assistant for structuring educational content. The design of interactive materials with AI obtained an average of 4.20 and a standard deviation of 0.87, which shows that teachers not only understood the technical functioning of the platforms, but also managed to transfer that knowledge to the creation of contextualized resources aligned with the national curriculum. Finally, the arduous AI-mediated assessment scored an average of 4.20 and a standard deviation of 1.03, indicating significant progress, although there is still room for improvement, especially in the sustained application of AI-generated assessment tools and automated feedback.

Discussion

The results obtained in this research show a sustained improvement in teaching skills associated with the use of artificial intelligence tools for the design of interactive teaching materials, reflecting the positive impact of the training program implemented. This evolution is consistent and directly aligned with the findings reported by Sundari et al. (2024), who highlighted that the incorporation of accessible and functional digital tools, articulated through practical activities, favors the construction of products applicable to the classroom and reinforces teachers' pedagogical self-confidence. In the present study, this logic was replicated through a progressive and contextualized approach, in which teachers integrated tools such as ChatGPT, Curipod, and MagicSchool.ai in the development of real resources, aligned with the institutional

curriculum.

Similarly, and in light of the above, Efriyanti et al. (2024) noted that 75% of teachers who participated in similar programs were able to design more interactive materials, significantly increasing student participation. This finding is directly linked to the results achieved in the present study, especially in the sessions where teachers used Curipod to transform traditional content into dynamic and visual sequences, and MagicSchool.ai to develop rubrics, guides, and adaptive games, adjusted to learning levels and paces. Similarly, as in the aforementioned study, differences in the level of appropriation were also observed depending on the educational stage: while teachers in lower secondary education showed a more enthusiastic and direct incorporation of digital resources, in higher levels there was some resistance, mainly associated with workload and limited technological infrastructure in some classrooms.

In relation to the methodological strategy, Rahmatudin et al. (2024) and Lasaiba et al. (2024) agree that the most effective training programs are those that combine face-to-face practical sessions with real-time support, which facilitates the immediate production of materials and allows for contextualized application. This current and significant perspective for this work was reflected in the design of the present plan, where each session concluded with the development of a specific educational product, generated using platforms such as ChatGPT or Curipod, and peer-reviewed under pedagogical criteria. This dynamic not only strengthened technical appropriation but also fostered a deeper understanding of the usefulness of artificial intelligence as an integrable and non-substitutive tool in the teaching-learning process.

From an attitudinal perspective, the teachers reported several positive changes after the training, which coincide with the findings of Thi Hong (2024), who argues that teacher training in artificial intelligence has a direct impact on professional perception, increasing the willingness to innovate and experiment with new methodologies. In this case, the sessions focused on the use of ChatGPT as an assistant for planning and textual design, as well as working with Curipod to generate participatory activities; motivated teachers to redesign their plans with greater confidence. This transformation was especially visible when each participant integrated all the resources developed into a complete teaching sequence, adapted to the rhythms and needs of the students, in accordance with the contributions of Klieba et al. (2024) and Wu et al. (2024), who have demonstrated the potential of artificial intelligence to promote personalized, motivating, and differentiated learning processes today.

Finally, the study by Jeon et al. (2020) highlights the need to contextualize the production of digital resources according to the area of knowledge and educational level, a recommendation that was addressed in the planning of this program through specific workshops for each subject and sequences adapted to real classroom situations. Likewise, this methodological decision favored the meaningful appropriation of the tools by teachers and reinforced the connection between technological innovation and everyday teaching practice. However, as in the literature reviewed, certain institutional and cultural barriers to the replacement or transformation of traditional methodologies are still recognized, reaffirming the need to establish continuous, adaptive, and sustained training processes capable of consolidating an innovative pedagogical culture aligned with the current demands of basic education.

CONCLUSIONS

It should be noted that, given the current situation at the educational institution studied, it can be said that the implementation of a teacher training plan focused on the pedagogical use of artificial intelligence tools contributed significantly to the development of skills applied in the design of interactive educational materials. Indeed, this advance not only made it possible to move beyond traditional practices, but also opened up new methodological possibilities that are more dynamic, personalized, and closer to the real needs of the classroom. The proposal was structured in a clear training sequence, distributed over seven face-to-face sessions and three progressive modules, which addressed both conceptual foundations and practical processes, thus ensuring a gradual, situated, and reflective appropriation of the use of emerging technologies in school contexts.

The program was structured around three specific tools: ChatGPT, Curipod, and MagicSchool.ai, each of which played a complementary role in the process of creating teaching materials. ChatGPT provided support in writing and structuring educational content; Curipod facilitated the generation of interactive presentations with real-time student participation; and MagicSchool.ai allowed for the design of differentiated resources, such as rubrics, guides, or questionnaires adapted to different levels of learning. The combination of these platforms was not used in a fragmented or superficial way, but rather strategically integrated into real activities, aligned with the objectives of the curriculum and designed to be applicable in each teacher's immediate environment. In view of this, it is essential to emphasize that the application of these

tools significantly strengthened teaching practice and also promoted a more critical and reflective view of the role of teachers in relation to technological innovation.

To conclude this section and based on the results presented, it can be argued that the achievements reflect progress in the functional appropriation of these tools, in the ability to design interactive materials tailored to the level of the students, and in the willingness to apply what has been learned in daily planning. The strengthening of the evaluative dimension, through automated feedback and learning monitoring, also showed significant improvements; however, challenges remain related to unequal access to devices, limited institutional time for technological integration, and certain cultural resistance to pedagogical models that differ from conventional ones.

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