

Educational Uses of AI in Learning to Write at School Level

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ABSTRACT

The purpose of this article is to report a literature review on the educational uses of Artificial Intelligence in learning to write at the school level. Using a qualitative approach, a review of articles in Scopus and Web of Science indexing databases from the last five years was carried out. The review concluded with twenty-six articles that address the topics of Artificial Intelligence (AI) and writing in a school context. The results show that there are three main trends in research aimed at Artificial Intelligence and school writing, differing in the use they make of AI: Use as a tool for evaluation and feedback; use as a strategy in school writing and evaluation of its application; and use as a skill enhancer for writing in a second language. Recent research on this emerging technology is developing a favorable scenario to delve into the didactic potential of AI in writing.

Keywords

Artificial Intelligence and education; IAGen and education; ChatGPT and school writing.

ACM Classification Keywords

CCS: Social and professional topics; Professional topics; Computing education; K-12 education. CCS: Computing methodologies; Artificial intelligence; Natural language processing; Natural language generation.

INTRODUCTION

Interest in Artificial Intelligence (AI) as an emerging technology has resurfaced regarding generative AI (IAGen) thanks to the ChatGPT tool, a natural language processing model developed by OpenAI and made available to all users in November 2022 [3]. This technological tool has revolutionized the way humans access and interact with knowledge, having a potential impact on education as a discipline focused on the development of learning and evaluation [2]. We talk about potential impact because, although generative AI is used among students, its didactic use has been rather timid, and its recent resurgence makes its incorporation into educational policies or programs still far away [3].

Due to its recent popularity, approaches that generate fear of this emerging technology have spread, weakening the pedagogical discussion and strengthening the mythification of AI [6]. As is often the case with new tools, once the initial reaction subsides, it is necessary to analyze what is the best

way to use them, when it is appropriate to use them and when it is not [23].

Artificial Intelligence requires a change in the way of teaching from the educational discipline [27], such as the presentation of content and subsequent evaluation based on its memorization, the writing of texts based on static discursive genres and works that supervise reading:

“Schools and universities could encourage reflection, research and participation around AI among students. [...] We need opportunities for students to learn to interrogate, unpack and reassemble AI-powered technologies, as well as gain in-depth knowledge about the parameters of these technologies, which will have an increasing influence on their lives.” [27, p. 144].

One of the most common uses of AI in students has been to generate texts, since ChatGPT and other IAGen tools are experts in producing non-pre-established textual content in relation to the requests made by users [20]. Today, AI can imitate an increasingly sophisticated and unique academic discourse, which has raised a series of questions regarding this emerging technology in education and its relationship with the development of writing in learning contexts [3].

Even though in recent years there has been active research interest in relation to AI, studies on its use in school environments are still limited, since the main trend is to investigate AI using qualitative approaches in university contexts [23]. Thus, schools have had difficulties defining the responsible use of emerging AI technology, forcing school institutions and educators to reevaluate their didactic approaches to the teaching of writing [9]. Although new AI ideas and tools appear almost daily, researchers and educators continue to study what exactly IAGen means for teaching, learning, and research [3].

Research that addresses this topic responds to some of the main concerns regarding AI and Writing: How can Artificial Intelligence support the development of writing skills in students, whether in a first or second language? [2, 28, 31, 25, 24, 13]. Can AI enhance plagiarism in the student's schoolwork? [3]. Is it necessary to alphabetize teachers in this emerging technology for the work of textual production in learning contexts? [35, 14, 33, 30, 26, 17, 16, 21].

The questions and challenges regarding writing through Artificial Intelligence become more acute when they are focused on the school context, where the development of the student's autonomy, critical thinking and motivation are aspects that sustain primary and secondary education [23].

In this scenario, it is essential to ask what are the main trends in research studies on the use of AI in school writing? How are the studies distributed methodologically? What are the most significant findings? The objective of this article is to report the results of a literature review on the study of the educational uses of Artificial Intelligence in learning school writing.

Developing a literature review of this type is significant when conceiving a research topic of increasing recent interest, to evaluate the approaches that are being carried out, the type of approach from which the studies are being positioned and the questions that face. In this way, we will be able to draw the current research scenario on AI and school writing, identify future perspectives that are envisioned and thus provide useful information for future studies.

METHODOLOGY

This literature review chose Artificial Intelligence and school writing as its main topic. Using the Eric thesaurus, the search code was defined: “Artificial Intelligence in education” OR “AIED” OR “ChatGPT in education” OR “chatbots in education” OR “AI in education” OR “Generative AI in education” OR “GenAI in education” AND “school writing” OR “K-12 writing” OR “elementary school Writing” OR “secondary school writing.”

The established code was used in two databases: Web of Science (WoS) and Scopus. In WoS the initial result was 3,520 publications while in Scopus 40 publications were obtained. The first selection criterion applied was the type of publication, given that the review would consist of just articles, excluding book chapters, conference papers, and events and conference reviews. This first exclusion criterion reduced the results in WoS to 1,004 and in Scopus to 27.

Then, the second exclusion criterion was applied, which corresponds to the year of publication, since the systematic review only included articles published between January 2020 and June 2024. In this regard, WoS resulted in 793 publications and Scopus 19.

Subsequently, articles from the educational area were selected, excluding all those that addressed the concepts studied from different disciplines such as medicine or computer science. In this way, the search in Scopus resulted in 19 articles, while in WoS it was 141 research studies.

Subsequently, a categorization of the articles was carried out, reviewing their title, journal in which they are included, topic addressed, year of publication, research methodology, sample with which they worked, technique used, summary of the text and main results.



Figure 1: Categorization of scientific articles. Source: Prepared by the authors

This categorization allowed us to reduce the search, because of the total number of articles collected from Scopus and Web of Science, those that addressed the topic of Artificial Intelligence in school writing were selected, excluding all studies that did not address the relationship of school writing with the AI. Therefore, publications that focused on the university context and those that did not address writing as their main topic were excluded for this review. Thus, 26 research papers were obtained from WoS and 9 from Scopus; however, when crossing the databases, the 9 articles from Scopus were part of the 26 publications delivered by WoS. Therefore, the literature review is based on 26 articles in total.

Articles included in the literature review			
Authors	Año	Title of the scientific article	
1	McKnight, L.; Shipp, C.	2024	"Just a tool"? Troubling language and power in generative AI writing
2	Woo, D.; Susanto, H., Yeung, C.; Guo, K.; Yeng Fun, A.	2024	Exploring AI-Generated text in student writing: How does AI help?
3	Kindenberg, B.	2024	ChatGPT-Generated and Student-Written Historical Narratives: A Comparative Analysis
4	Barbetta, P.	2023	Remedial and compensatory writing technologies for middle school students with learning disabilities and their classmates in inclusive classrooms
5	Kwon, S.; Shin, D.; Lee, Y.	2023	The application of chatbot as an L2 writing practice tool
6	Bender, S.	2024	Awareness of Artificial Intelligence as Essential Digital Literacy: ChatGPT and Gen-AI in the Classroom
7	Steiss, J., Tate, T., Olson, C.	2024	Comparing the quality of human and ChatGPT feedback of students' writing
8	Mah, C., Walker, H., Pittman, J.	2024	Beyond CheatBots: Examining Tensions in Teachers' and Students' Perceptions of Cheating and Learning with ChatGPT
9	Woo, D., Wang, DL., Susanto, H.	2024	Teaching EFL students to write with ChatGPT: Students' motivation to learn, cognitive load, and satisfaction with the learning process
10	Stornaiuolo, A., Higgs, J., Martin, R.	2024	Digital writing with AI platforms: the role of fun with/in generative AI
11	Kasepalu, R., Chejara, P., Ley, T.	2023	Studying teacher withitness in the wild: comparing a mirroring and an alerting & guiding dashboard for collaborative learning
12	Wilson, J., Palermo C., Wibowo, A	2024	Elementary English learners' engagement with automated feedback
13	Woo, DJ., Wang, YZ., Guo, K	2023	Understanding EFL Students' Idea Generation Strategies for Creative Writing with NLG
14	Guo, K.	2024	EvaluMate: Using AI to support students' feedback provision in peer assessment for writing
15	McKnight, L., Gannon, S.	2023	Hive writing: a post-pandemic, audience and AI-aware manifesto for writing pedagogies
16	Zhao, RB., Zhuang, YP., Yu, P.	2022	AI-assisted automated scoring of picture-cued writing tasks for language assessment
17	Hsiao, J., Chang, J.	2023	Enhancing EFL reading and writing through AI-powered tools: design, implementation, and evaluation of an online course
18	Lee, J., Lee, G., Hong, H.	2023	Automated Assessment of Student Hand Drawings in Free-Response Items on the Particulate Nature of Matter
19	Abendschein, B., Lin, X., Rijhwani, V.	2024	Credibility and altered communication styles of AI graders in the classroom

20	Zhai, X., He, P., Krajcik, J.	2022	Applying machine learning to automatically assess scientific models
21	Krange, I., Segaran, M., Engeness, I.	2023	A Triple Challenge: Students' Identification, Interpretation, and Use of Individualized Automated Feedback in Learning to Write English as a Foreign Language
22	Araujo, C., Ferreira A., Gaspar, M., Rodrigues, Domingos	2022	Identification of disabilities in educational texts with the application of natural language processing and machine learning
23	Kumar, V., Boulanger, D.	2020	Explainable Automated Essay Scoring: Deep Learning Really Has Pedagogical Value
24	Appleman, D.	2023	A Brave New World Requires Courage: New Directions for Literacy Research and Teaching
25	Cummins, J.	2024	How can emerging technologies advance the creation of language-friendly and literacy-friendly schools?
26	Bonneton-Botté, N., Fleury, S., Jamet, E.	2020	Can tablet apps support the learning of handwriting? An investigation of learning outcomes in kindergarten classroom

Table 1. Source: Prepared by the authors

RESULTS

1. Methodological distribution of research studies

In relation to the objects of study, on the one hand, it is interesting to observe that there is variety in this aspect, since, although most of the studies focus on students, some of them have teachers or AI software as their central axis. Seventeen research studies focus on school-age students, with a predominance of those over twelve years of age.

On the other hand, 10 of the 26 studies come from the United States, 4 from Hong Kong, 2 from China, 2 from Australia and 2 from South Korea; The rest of the countries present research on the topic analyzed in this work: Sweden, France, Canada, Estonia, Norway, South Africa and Brazil.

The research leadership of the United States in AI and school writing is evident considering the rest of the countries.

Likewise, Asia is a geographical area that presents a series of studies that speak of an important interest in the subject. However, Latin America has only one study, which addresses in quantitative terms the performance of AI to review and provide feedback on written works produced by students. The analysis of where the research comes from and its object of study is relevant, since it allows us to visualize the spaces that have not been observed. Research progress must be carried out by observing these areas for it to be an efficient and genuinely valuable development.

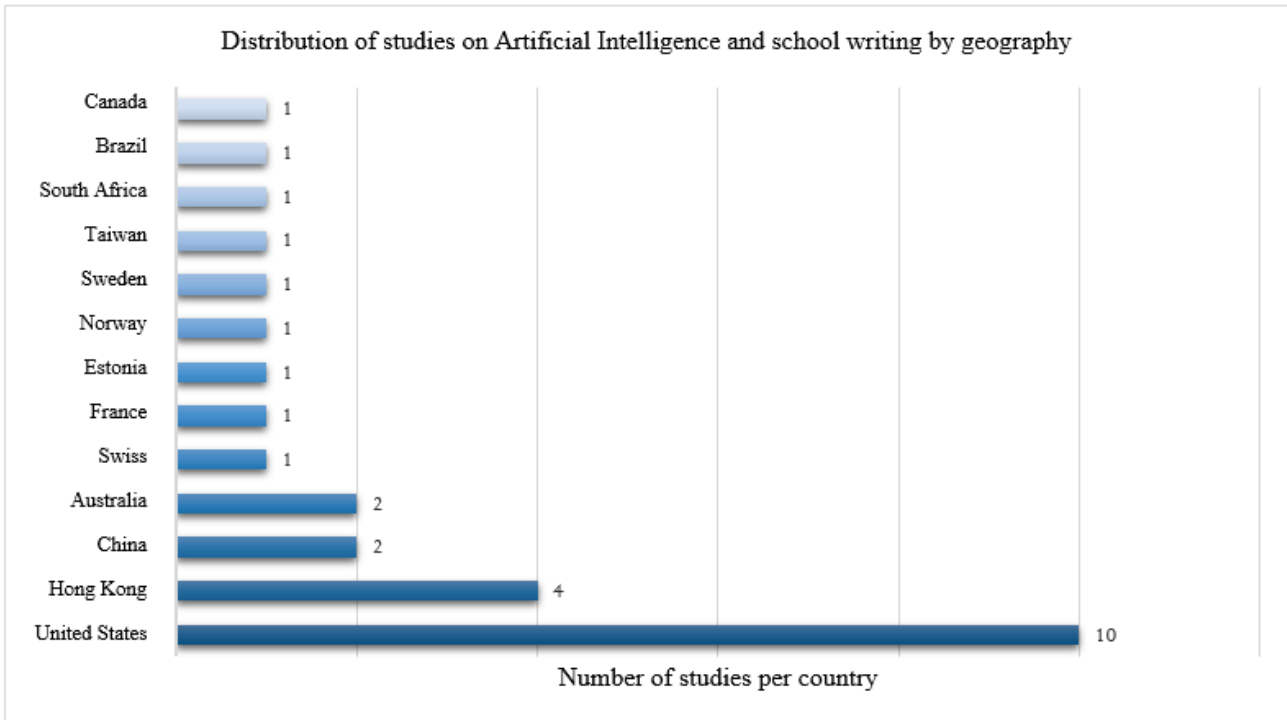


Figure 2. Trend graph of the research topic according to geography. Source: Prepared by the authors

In the 26 research studies analyzed on Artificial Intelligence and school writing, the qualitative research approach predominates; of that total, 13 studies are positioned exclusively from this research methodology. Two research designs predominate in this group of studies: the case study and non-empirical documented research. Ten research studies are based on a quantitative research approach, where survey analysis and the application of quasi-experimental research predominate. And three research studies fall into the category of mixed studies. The use of Artificial Intelligence in school writing is an underexplored area and from the methodological scenario, it presents a limited number of research studies, of which an important part is non-empirical. These studies are essential for raising research questions and shaping a more complete map on the use of AI in school writing.

2. Research trends and key findings

The search and review process of the articles published on Artificial Intelligence and writing allowed the research to be grouped into four trends. Next, we will describe these trends and how they have been addressed in the different publications.

Trend # 1: Use of AI as an evaluation and feedback tool in school writing

There are 10 articles that are part of this trend: [35, 14, 7, 26, 16, 30, 34, 4, 17, 21]. The authors of each of the studies

grouped in this trend observe in AI a significant potential to reduce the cost of time and work in reviewing students' written products.

All the articles that evaluate AI as a feedback tool in the classroom agree that it is an efficient instrument that optimizes teachers' time and provides feedback to students quickly and meaningfully. Research indicates that although the feedback from Artificial Intelligence is not superior to that provided by expert teachers in the subject, its economy in fundamental aspects makes it a tool well evaluated by researchers. Even if ChatGPT feedback is not perfect, it can still facilitate writing feedback by engaging and motivating students, and helping teachers manage large classes, thus giving them more time for individual feedback or differentiated writing instruction [16].

Zhai, He and Krajcik [35] conduct a study in which they test the potential of AI to evaluate students' scientific texts. In their research, they revealed that when comparing the evaluation of schoolwork by teachers and AI, similar results were obtained when developing machine learning algorithms. In their research, they point out that students consider Artificial Intelligence raters as competent, attentive and trustworthy, especially when the feedback included more signs of immediacy, an aspect in which AI is more efficient than feedback from teachers.

Motivation, immediacy and relevance are common and significant aspects when analyzing the ways of evaluating and providing feedback by Artificial Intelligence. The research that falls within this subtheme evaluates different applications and platforms of Artificial Intelligence, which specialize in evaluating works, providing the user with a well-founded opinion regarding the positive aspects and improvements of their writing. A fundamental area that stands out in the research works is the potential of AI to generate more autonomous work by students, without disregarding the role of teachers. Publications indicate that school-age students are developing this skill, and longitudinal studies could be more precise regarding whether greater autonomy is achieved.

Krange, Segaran and Engeness [14] in their research indicate that students positively receive the feedback delivered by AI, however, school-age students seemed to have limited abilities to make further interpretations of this feedback, unless the teacher participates in the reflection process around it. In this sense, the research study points to a role of AI that supports the teaching work and does not supplant it or limit its actions. In the school context, students require greater scaffolding and studies point to an AI that can strengthen this scaffolding. In this sense, Artificial Intelligence, instead of limiting teaching work and reducing questions in the classroom, expands the responsibility of teachers with those less autonomous students and expands reflection in the school room.

Trend # 2: Use of AI as a strategy in school writing and evaluation of its application

Nine articles were registered in this category: [29, 20, 3, 2, 28, 31, 13, 24, 25]. These studies, from an analytical perspective and a transversal perspective, explore the potential of AI to enrich and contribute to the development of writing skills. The articles in this category tend to provide a positive vision of Artificial Intelligence as a tool in the classroom, with an important preponderance of qualitative aspects over quantitative ones, and the rhetorical over the experimental.

Of the nine research studies included in this trend, two are positioned from a quantitative-experimental approach [29, 20]. Although the first investigation observes the teachers and the second evaluates the students, both use a methodology of inserting AI tools in the school room to analyze their impact at a certain moment in which the experiment is developed, contrasting experimental and control group. The research by Kasepalu, Chejara and Ley [29] presents the results of a quasi-experiment where they provide teachers with an AI control panel that alerts schoolteachers about problems and provides suggestions for interventions to be made to their teachers. Students in the development of collaborative writing. The results revealed

that teachers' interventions increased when receiving the integrated guide of Artificial Intelligence and expressed less workload. However, although teachers evaluated the information provided by AI as useful, they are not sure about using a tool like the smart panel daily in their professional practice. The researchers suggest conducting a longitudinal study that allows studying the interaction of teachers and AI in the long term.

The article by Wilson, Palermo and Wibowo [20] examines primary school students and their way of interacting with automated assessment AI systems. By dividing the study group into three levels in relation to the quality of their written expression, it was analyzed how each group interacted with the IAGen and with the feedback it provides. The article indicates that students in all three groups benefited from the automated assessment, however, while AI does not seem to exacerbate the gap that exists between the groups, it did not show any impact on it decreasing either. The authors point out that Artificial Intelligence tools can be valuable in the school context, but they need to be implemented accompanied by specific comments from teachers.

On the other hand, of the 9 articles in this category, 7 are qualitative [3, 2, 28, 31, 13, 24, 25]. Kindenberg [3] analyzes the texts written by eighth grade students, accompanying the writing process for three weeks and then contrasting it with the ChatGPT writings. The application received the same instructions and scaffolding as the students. The texts produced by the students and ChatGPT were evaluated for content and written expression; and revealed that the texts generated by IAGen had levels of historical understanding equal to or higher than the texts produced by the students, however, they had less emotional commitment.

In this way, the study contrasts human and artificial writing to provide guidelines for types of texts that can make plagiarism more evident through Artificial Intelligence. From this point, the need to rethink the concept of plagiarism from education and open a negotiation dialogue with emerging technologies and teaching is established.

Stornaiuolo, Higgs, and Martín [2] analyze the role of creativity and fun in the use of AI when writing. For this, they resort to previous research observing the "Character.ai" platform that invites textual production and generates a commitment of young users to the writing task. The researchers observe that experimentation, pleasure and creativity are elements that invite young people in primary and secondary school to explore this type of emerging technologies.

"AI First, the platform provides multiple opportunities for users to shape what narratives emerge. From the design of endlessly customizable characters to the editing and regeneration buttons, the platform encourages users to cocreate alongside AI [...] CAI suggests, the user is an active participant, an agentic author who can simultaneously help

the company and contribute to the future development of AI technologies through their compositional labor” [2, p.99].

The authors analyze the digital context to establish certain guidelines in the educational area regarding opening spaces where children and young people experiment as digital writers, considering aspects such as play and fun.

Three articles carry out a reflection exercise around the possibilities of AI in school writing: [28, 31, 13]. Therefore, they establish non-empirical documented research on discussions that are responded to from the capabilities of Artificial Intelligence to be a relevant tool in education and the development of written expression.

Two articles reflect on writing and, from different positions and arguments, expose the risks of using AI in the written expression of children and young people: [24, 25]. McKnight and Gannon [25] bring together data from two studies to build a manifesto that establishes the need for school writing focused on “real” audiences, to counteract the negative effects of the pandemic and Artificial Intelligence. McKnight and Shipp [24], through a conceptual analysis and a National Survey previously carried out among Australian teachers that investigated the role of AI in writing, establish the risks of entrusting certain concepts to Artificial Intelligence, since it has “colonizing” ideas:

“Above all, we have asked, echoing Lorde (1984), if the master’s tools can be used to dismantle the master’s house. This means asking whether writers can use generative AI writing tools to achieve goals of social justice [...] We hope that English teachers take this urgent question to their classes to debate and discuss with those whose futures will be most affected by the rapid evolution and uptake of generative AI writing tools” [24, p. 33].

Thus, the text establishes the responsibility of school writing teachers to open a debate that raises the risks and questions absolute trust in AI.

Trend # 3: Use of AI as a skill enhancer for writing in a second language

This trend is made up of 6 articles: [32, 19, 10, 11, 12, 18] The studies aim to place the predominant role of AI in helping to write in a second language. Studies of this trend tend to use quantitative-experimental methodologies. The research by Kwon, Shin and Lee [32] carried out a pure experiment, from which they analyzed the effects of Chatbots on the writing performance of Chinese children when learning English. This experiment was carried out for fifteen weeks. The research was aimed at enhancing interaction with Chatbots by receiving comments on their writings and polishing their productions. The use of AI in these terms implies deep preparation of the students and careful guidance from the teacher.

“It can be assumed that practicing L2 writing through a chatbot prevents L2 learners from feeling anxious or stressed about making mistakes or being evaluated by others. Such a

permissive learning environment provides a significant benefit to L2 learners, as they could feel more welcomed and reassured when taking risks while practicing writing. Such language skills confidence was suggested as one of the two major benefits of using a chatbot for language learning” [32, p.14].

Not dealing with the fear produced by being face to face when learning a new language is an aspect that research highlights about the use of AI when writing in a second language. The studies that analyze the use of Artificial Intelligence agree that it is a tool that contributes to improving writing in a non-native language, where the role of the teacher is fundamental, so the promise of completely autonomous learning through AI is not decisive in the school context:

“Equally important, our investigation highlights that even when students have access to AI-NLG tools and their generative text, they may not utilize these to their maximum potential [...] Our finding suggests that the level of AI-word usage varies depending on a student's existing writing ability, with more proficient students relying less on AI-words. Furthermore, a high level of AI-word usage does not guarantee high performance in writing outcomes: we observed instances where students who used AI-words extensively still performed poorly, such as writing significantly shorter essays” [11, p. 201].

In this context, student motivation improves when IAGen is incorporated into the classroom for learning a second language; however, this progress is slight, which is also complemented by a satisfactory experience for students. Furthermore, students declare that using AI to write in a second language following the teachers' instructions meant a strong cognitive load:

“A slight increase in the mean scores for post-workshop motivation suggests that students may have had a more favorable attitude towards learning about ChatGPT after engaging in the workshop activities. The widespread appeal of ChatGPT sparked considerable interest among students, motivating their voluntary participation in the workshop and explaining their initially high levels of motivation [...] Notably, this study has found students experienced heavy cognitive load when writing with ChatGPT. However, educators should carefully scaffold instruction, especially in teaching prompt engineering skills, to manage students' cognitive load. Educators can consider an iterative design process of activities and instructional materials. Careful design ensures that ChatGPT use supports writing without overwhelming students” [10, p. 52].

Chi and Chang [19] carry out a case study where they implement an eighteen-week course in reading and writing with AI in a high school in Taiwan with the purpose of developing autonomous learners of English as a foreign language. The results show that language proficiency is a predictor of the results obtained, and students with greater

difficulties and less proficiency in the second language require greater scaffolding. In the research by Chi and Chang [19], students with lower performance needed constant support to complete the tasks and pass the course, so AI participates as a facilitator, but it is not a decisive tool in the results.

Trend # 4: Perception of educational actors regarding AI in school writing

Although, in the school area, a research article was found in this area, it was decided to register it as a particular trend, given that, among the 26 articles, although it is not the main focus of this study, there is an interest in studying to the perception of teachers and students regarding this topic, so it is presented as a trend of interests. Furthermore, in the university field this category has a significant presence. Mah, Walker, and Pitman [9] conduct research where they stress the opinions and conceptions of teachers of writing regarding AI in the writing process and students' ideas. The authors indicate in their study that the big difference between both groups is how “the trap” is conceived, with ethics being the point of greatest tension between students and teachers when writing with Artificial Intelligence. The generator of ideas and the scaffolding in textual production are aspects that the study places as challenging in terms of the perception of school actors.

Synthesis of the four trends on AI and school writing

The 26 investigations on Artificial Intelligence and school writing studied, speak of an incipient field, where the approach of didactic topics has been privileged. The use of AI has been the main topic of interest in the publications analyzed, taking responsibility for the uncertainty in the school world. However, the research studies agree on its temporal limitations, the problems of access to technology and novelty as an aspect that can influence the results, so longitudinal studies would provide a broader perspective in this area.

Likewise, trend #3, “Use of AI as a skill enhancer for writing in a second language”, stands out for its more homogeneous composition towards the quantitative and with a significant presence of studies that come from Asia, investigating English as a second language. Likewise, the research studies framed in trend 1 and 2, “Use of AI as an evaluation and feedback tool in school writing” and “Use of AI as a strategy in school writing and evaluation of its application”, tend to emphasize qualitative approaches and with greater influence of studies in North America.

CONCLUSION

This literature review addressed the topic of Artificial Intelligence and school writing, establishing as a fundamental question: what are the main trends in the different research studies on the use of AI in school writing? After rigorously selecting the studies in the Web of Science and Scopus databases, and after applying the exclusion criteria, 26 articles were selected.

The 26 investigations were analyzed from the perspectives of study methodology and main results. This division allowed us to propose the research scenario on AI and school writing and its main trends. In this way, it is possible to observe that students are the main object of study; North American school education is the most studied context; and ChatGPT is the tool that has been investigated most frequently in research, which is related to the years of publication of the articles, since most of the studies are between the years 2023 and 2024.

The results demonstrated three main trends in research aimed at Artificial Intelligence applied to school writing. The first corresponds to the use of AI as a feedback and automatic evaluation tool in the school context. The second trend refers to the use of AI as a strategy in school writing and analyzing the results of its application. The third research trend is to analyze the use of AI as a skill enhancer for writing in a second language. A fourth trend is added that, although it is not classified as main, presents a highlighted research interest in the development of the study, which corresponds to studying the perception of educational actors regarding the use of AI in school writing.

Recent research on the use of this emerging technology is outlining a scenario where it is invited to delve deeper into the didactic potential of AI in writing. An area that requires research and problematization, due to the changes that the emergence of AI in education has generated.

DISCUSSION

Artificial Intelligence is an emerging technology that reemerged due to the emergence of ChatGPT [3]. This application opened the door to IAGen, which emerged and expanded rapidly, and a series of assumptions and questions were established [3]. Likewise, in a part of the public sphere a discourse has been established that demonizes Artificial Intelligence and the future of society through it. However, the research analyzed approaches IAGen as a tool that is part of our reality and that can be of great importance in and for education [29, 28]. The future is in the hands of educational systems and those who make them up. Therefore, it is essential to reflect on what AI is, how it is perceived by educational actors, and how to use it and not use it in education [3].

There is an unavoidable discussion that we must raise: how the potential of AI in education can be harnessed,

maximizing its benefits and minimizing the negative consequences. It is essential to understand how AI works, as well as its capabilities and limitations. Only in this way can the responsible and effective use of AI in education be promoted with a view to navigating a constantly changing technological environment [16]. Guiding and establishing this questioning is a key piece for future work.

The analysis carried out has allowed us to visualize a present where reflection is being made regarding the recognized presence of AI. The educational sphere requires literacy for its implementation [19, 29, 20]. Teachers have heard of Artificial Intelligence, they recognize the use that students may be making of it, but in the absence of guidelines, evidence and concrete opportunities for the educational uses of AI in learning writing at school level, they tend to move forward without further reflections and modifications.

The development and impact of technology is rapid, and its continuous advance generates a dissonance between what society needs and what school does. This is having an impact on the school system. Today educational institutions can contribute to the development of social skills of learners. However, its role in developing and promoting learning is diffuse and questioned, which is observed in the low results in fundamental skills such as reading comprehension and written expression [33].

It is very likely that Artificial Intelligence will propose to education a change in the way of teaching, a demand that the Internet has already made before. Technology continually challenges education, urging it to update itself with the purpose of being relevant to the context in which the new generations live. However, although education has been called upon to innovate, there has not been a real impact in the classroom [8]. Research is advancing so that change and innovation are also an important part of what happens in the classroom.

This article raises a fundamental problem concerning AI: How can we develop writing skills in students when there is an AI tool that writes for them? Writing is an essential skill for learning. It not only communicates concepts but also helps the writer clarify their thoughts and deepen their understanding of the subject [5].

The articles analyzed in the article advocate for integrating AI tools into the school classroom and thus incorporating them into some stages of the writing process. However, sporadically incorporating technology without modifying teaching practices has been shown not to produce the expected transformations [8]. Education has not kept pace with change. Pedagogical literature mentions technology, educational policies address technology, and educational theory encourages technology use. Yet, in the real daily classroom, thinking and innovation with technology occurs faintly or is simply not truly happening.

By recognizing writing not only as a communication tool but as a central skill in the learning process, we can establish the

urgent need to update the strategies used to develop writing in schools, such as the integration of AI tools, ensuring that children and young people can effectively practice and improve their writing.

Aljuaid suggests that AI writing tools present an opportunity to improve and personalize writing instruction. However, these tools will not replace teachers' roles in writing instruction. The future of writing with AI lies in a balanced approach that leverages the strengths of both Artificial Intelligence and teacher instruction [1].

It is crucial to recognize that using tomorrow's technology to carry out yesterday's tasks is neither efficient nor transformative [8]. Teaching practices must evolve to shape writing instruction that aligns with the present. Writing assignments should be challenging, not superficial tasks that fail to reflect the real-world challenges students will face.

The research studies analyzed in this article highlight several important variables: the cognitive load on students and the need for scaffolding, demonstrating that AI cannot replace the teacher; the potential of AI to enhance creativity and motivation, considering that technology is part of students' daily lives; the reduction of students' anxieties when using a tool that does not judge their learning levels; and AI's real potential to close learning gaps. These issues, recently addressed in the literature, open interesting areas for further exploration.

This literature review has studied the use of AI in school writing analyzing two databases of recognized prestige, Web of Science and Scopus, but perhaps a greater breadth and a broader overview of the topic addressed could be attained by incorporating other academic research databases generating new findings in the theme. AI is a topic that has aroused great interest in education, the reason why new research will emerge and continually develop.

From this literature review, new studies can be planned that study the integration of AI into curriculum and other unexplored areas, as well as expand and deepen quantitative studies. The perception of students, teachers and parents, the specific use of AI by teachers, the impact on the learning of children and young people when using AI, and the education of future teachers, are areas of interest that have not been explored and need greater and broader research.

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