

Effect of Using an Artificial Intelligence Prototype to Enhance Human Rights Learning in the National Police of Colombia: A Bibliometric Study

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Abstract. This study aimed to evaluate the impact of using an artificial intelligence (AI) prototype in the teaching and learning of human rights within police training. Based on an empirical-analytical design with an exploratory approach, a bibliometric analysis and a systematic review were conducted following the PRISMA methodology. This revealed significant gaps in the integration of emerging technologies as a central axis of the learning experience. The results show that AI enables the development of more personalized training processes aligned with the current demands of police service in relation to society. Furthermore, its potential is recognized in strengthening the understanding and application of human rights principles, in accordance with regulatory frameworks and contemporary ethical-social challenges. In response to these findings, an educational model is proposed that incorporates AI as an alternative to traditional teaching methods, focusing on personalized and adaptive training. The study concludes that AI is a key tool in transforming police training, fostering an educational praxis oriented toward institutional excellence and strengthening the ethical and legal commitments of its members.

1. INTRODUCTION

The 21st century is characterized by profound transformations in the scientific, technological, and cultural domains. These changes have significantly redefined social and educational dynamics. In this context, a disruptive pedagogical paradigm has emerged, enabling the educational field to address the challenges related to technological integration, especially within the framework of current societal demands (Jiménez et al., 2023). Advances in technologies, such as AI, offer significant potential to address the challenges that, from a pedagogical perspective, extend beyond the development of technical skills, enhancing the ability to experience and reflect on complex ethical situations that contribute to decision-making.

Research on the use of AI prototypes in human rights teaching within the Colombian National Police represents a valuable opportunity for innovation in education. This approach also explores how advanced technologies enhance human capabilities in vocational training settings, from both ethical and pedagogical perspectives. In this regard, Jiménez (2022) suggests that cultural changes driven by technology must be understood within their social context. Therefore, the adoption of AI emerges as a possibility to transform educational practices in police training, through more personalized and adaptive learning, aligned with essential ethical and regulatory principles.

From an educational perspective, the impact of AI on police training allows for a deeper understanding of the ethical, legal, and social principles that underpin professional practice. Thus, it is expected that, by this technology, officers will internalize essential values and adopt practices aligned with international human rights standards (Megias, 2022). Furthermore, the implementation of technological prototypes in teaching strengthens learners' ability to adapt to the demands of a constantly evolving socio-technological environment.

Consequently, the integration of AI technologies into human rights training transcends the boundaries of educational innovation, positioning itself as a key strategy for strengthening professional ethics in law enforcement. Ultimately, this approach not only contributes to addressing the gaps in traditional teaching methods but also lays the groundwork for future research exploring the intersection between technology, pedagogy, and human rights in security agencies and/or police forces. In this way, it contributes to the construction of more inclusive and effective educational systems, capable of responding to the demands of a constantly innovating society.

Therefore, this study focused on the question: What is the effect of using an AI prototype to reinforce human rights learning in the Colombian National Police? From there, a systematic and rigorous procedure was carried out, based on the PRISMA methodology, using structured Boolean algorithms that allowed us to identify trends and gaps in academic production related to prototypes, artificial intelligence, education, and law enforcement. Based on these premises, the need to overcome the limitations of traditional teaching methods became evident; Thus, the effective integration of emerging technologies is proposed as an alternative and a necessary strategy to address the inherent complexity of human rights training within the police force.

2. THEORETICAL FRAMEWORK

AI has emerged as a transformative technology in sectors such as education and human rights. In the context of police training, AI is recognized as a tool that enables personalized learning, optimizes, and streamlines processes, and reinforces ethical principles. Based on this approach, this study aimed to evaluate the impact of AI on human rights teaching processes in police contexts, considering the various theoretical perspectives that highlight both its benefits and the ethical challenges it entails

at the social and educational levels (Holmes et al., 2023; Salom, 2020; Stracke et al., 2024).

To this end, three conceptual dimensions were explored to understand the scope, challenges, and benefits of AI for the ethical and political training of the police force. In principle, AI is a technology designated to simulate human cognitive processes enabling the resolution of complex problems (Salom, 2020). Second, police education, understood as training aimed at developing ethical and operational competencies in police force personnel (Stracke et al., 2024). Finally, the concept of human rights, conceived as a set of universal principles that guarantee respect for human dignity and justice (Holmes et al., 2023).

Within the link between AI and human rights, Salom (2020) points out that their use in educational and legal systems has generated various opportunities and challenges. In this context, she discusses how the VioGén System in Spain has facilitated informed decision-making in cases of gender-based violence, although she also warns that these systems may risk perpetuating biases that undermine equity. For their part, Holmes et al. (2023) highlight the potential of AI to strengthen human rights through personalized solutions, underscoring the need to adhere to ethical principles that prioritize equity and diversity.

Regarding the ethical principles that should guide AI-mediated education, Stracke et al. (2024) establish several principles to ensure that teaching, in the context of these technological advances, remains within solid ethical frameworks. These principles include non-discrimination, ensuring that algorithms do not perpetuate existing inequalities. In addition, transparency allows for the design of understandable and auditable tools. Data quality is also important to guarantee the integrity of sources. Finally, human oversight ensures that users always retain decision-making capacity.

From a practical perspective, AI offers innovative tools that can enrich the teaching of human rights in police training. These include simulations, which allow for the recreation of ethical scenarios to strengthen decision-making (Holmes et al., 2023), and data analysis, which is useful for identifying areas for improvement and providing real-time feedback. Nevertheless, risks are also evident. As Salom (2020) argues, the lack of oversight in algorithms can reinforce pre-existing biases, underscoring the importance of implementing control and transparency mechanisms. In contrast, Holmes et al. (2023) emphasize that, when implemented properly, AI can personalize teaching and adapt it to students' individual needs.

3. METHODOLOGY

This study was based on an empirical-analytical design with an exploratory approach, grounded in the PRISMA methodology, which facilitates systematic review and meta-analysis (Jiménez, 2024; Page et al., 2021). This model ensured a comprehensive search, selection, and analysis of the scientific literature related to the impact of an AI prototype on human rights learning within police training. As a result, it was possible to identify gaps in the literature and define critical categories relevant to research in this field.

As a search strategy, the Scopus and Web of Science databases were selected for their relevance in indexing peer-reviewed scientific articles. Likewise, a Boolean algorithm was developed to capture publications on a) Artificial Intelligence (AI), b) machine learning, c) human rights and education in police contexts, d) comparison between traditional methods and advanced learning within law enforcement environments. As an observation window, the verification of articles published between 2021 and 2024 was proposed. Figure 1 illustrates the application of the PRISMA method for the selection of articles within the framework of the development of the research proposal.

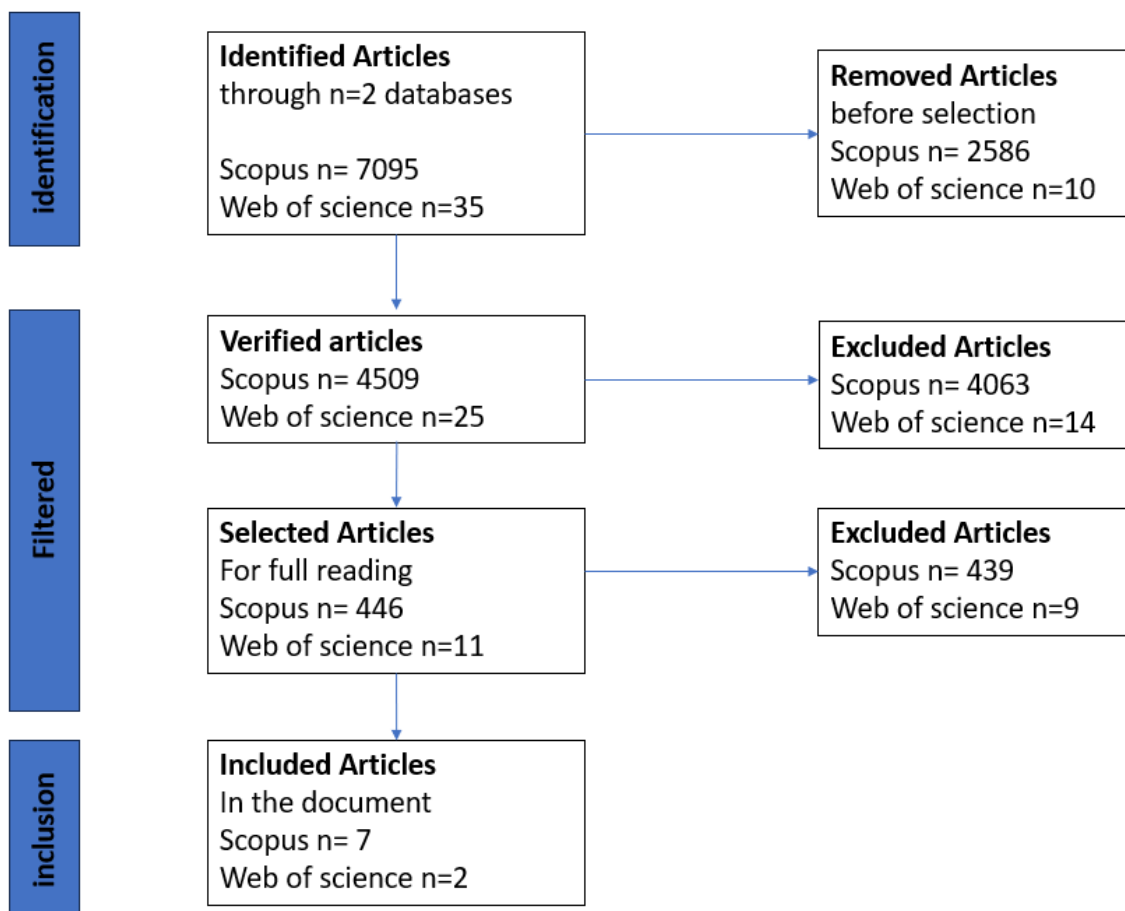


Figure 1: Selection of articles from the systematic review.

Based on the above, the application of the PRIMSA method began with the identification of a total of 7,130 articles (7,095 in Scopus and 35 in Web of Science). This was followed by a screening process that involved review and selection by title, abstract, and keyword, considering only studies that met the following inclusion criteria: a) studies evaluating the use of prototypes, AI, education, human rights, and policing; b) studies on AI in education, ethics, and human rights; c) research focused on personalized learning with AI; d) publications exploring ethical challenges in the fields of education and security; e) peer-reviewed articles in Scopus and Web of Science; and f) studies published between 2021 and 2024.

Regarding the exclusion criteria, the following were discarded: a) studies that did not involve prototypes, AI, education, human rights, and policing; b) studies with no direct connection between AI, human rights, and security education; c) articles with an exclusively technical focus on AI, without an educational or ethical perspective; d) research without peer review or with outdated information; and e) studies outside the established time frame.

During the eligibility phase, a full review of the selected texts was conducted, again based on the inclusion and exclusion criteria, which allowed us to focus on 12 relevant articles (10 from Scopus and 2 from Web of Science). These studies address the impact of AI on adaptive learning and its applicability to teaching human rights in police contexts. Overall, 10 studies were found within Scopus, classified as follows: 2 in Prototype, 3 in Artificial Intelligence, 2 in Education, 2 in Human Rights, and 1 in Police: 1. In the case of Web of Science, there were 2 studies: Artificial Intelligence with 1 and Education with 1. Furthermore, to manage the screening filter process, the researchers used an analysis matrix developed in Microsoft Excel to eliminate duplicates and conduct a keyword analysis using pivot tables, enabling verification of compliance with the predefined inclusion criteria.

Moreover, complementary readings were conducted to enrich the dataset with metadata such as authors, titles, years, and journal sources. For this purpose, the methodology proposed by Jiménez (2024) was applied, allowing for the integration of key research variables, including common research problems, types of questions posed, epistemological paradigms, predominant methodological approaches, relevant research designs, scopes, or main findings. The conceptualizations of AI and human rights across the selected studies were also systematically analysed.

Finally, to broaden the scope and enhance the accuracy of data processing, Natural Language Processing (NLP) techniques were applied using open-source tools such as *Hugging Face Transformers* (HFT) and the *Natural Language Toolkit* (NLTK), both licensed under MIT and Apache 2.0. These platforms enabled lexical, syntactic, and semantic analyses to help mitigate bias in the selection process and ensure the reliability of the information retrieved from the databases.

4. RESULTS

Within the framework of the bibliometric study conducted on 7,130 scientific articles, searched in the Scopus and Web of Science, and after following a rigorous methodological analysis process, nine documents were selected that align with the research objective. In this regard, the analysis is presented on the primary selection criteria, as author, title, year, and source of publication, as well as analytical criteria derived from Jiménez's (2024) methodological proposal. A comparative and systematic review of the selected documents facilitated the identification of major trends, gaps, and contributions in the field of study (Table 1).

Table 1: Results of the Scopus systematic review (based on Jiménez, 2024).

Authors	Rani (2024)	Hernández et al. (2024)	Nagy (2024)
Qualification	<i>Impacts and ethics of using Artificial Intelligence (AI) by the Indian Police</i>	<i>Perceptions of Latin American students on the use of artificial intelligence in higher education</i>	<i>"Humanity's new frontier": Human rights implications of artificial intelligence and new technologies</i>
Year of publication	2024	2024	2024
Fountain	Public administration and policy	Austral communication	Hungarian Journal of Legal Studies
Common study problems	Analysis	Assessment	Analysis
Question type	What are the ethical challenges associated with implementing AI in surveillance?	How does AI contribute to personalizing the teaching-learning process based on students' perceptions?	How do AI systems affect the protection of human rights in different social and political contexts?
Types of paradigms	Socio-critical	Quantitative	Socio-critical
Highlighted approaches	Qualitative	Quantitative	Qualitative
Relevant designs	Case studies	Descriptive Trans-sectional	Case studies
Scope-Result	Interpretative	Descriptive	Interpretative
How do you define the concept of AI and human rights?	AI automates surveillance and analysis, identifying suspicious patterns. The study raises concerns about privacy and human rights, particularly due to potential biases in training data.	AI enables automated systems to perform cognitive tasks, personalizing learning and improving educational efficiency. In higher education, ethical implementation is crucial to ensure equity and avoid bias.	AI automates complex processes with big data, but it can violate human rights. In this sense, regulation is needed to protect the vulnerable.

Taking into consideration the table 1, one of the common and significant aspects among the studies by Rani (2024), Hernández et al. (2024), and Nagy (2024) is their shared focus on the central theme of Artificial Intelligence (AI) and its diverse implications for society. While this field is approached from specific contexts such as Police in India, higher education in Latin America, and human rights more broadly, all three studies emphasize a concern for the ethical dimensions and potential impacts of AI implementation on human rights. Methodologically, two of the three studies show a bias toward qualitative analysis and the socio-critical paradigm, revealing an interest in deeply understanding and critiquing the power structures linked to AI. However, important gaps persist related to the diversity of geographical contexts and application sectors explored, as well as the depth with

which human rights are defined and concrete solutions proposed.

Consequently, the analysis of these perspectives opens several promising avenues for the present study. Therefore, the need for cross-cultural comparative research, public policy analysis, user-centred studies, and interdisciplinary approaches is evident. Furthermore, the importance of delving deeper into the impact of algorithmic biases, as well as the role of transparency and explainability, is highlighted. The implications of AI for specific human rights are also a field of relevance. In this regard, longitudinal studies and participatory action research could offer a more dynamic and contextualized understanding of the challenges and opportunities posed by AI in contemporary society. The Table 2 addresses the main aspects of the documents tracked in the Scopus database according to the classification proposal.

Table 2: Results of the Scopus systematic review (based on Jiménez, 2024).

Authors	Ali et al. (2024)	Stracke et al. (2024)	Cerutti et al. (2023)	Holmes et al. (2023)
Qualification	<i>The effects of artificial intelligence applications in educational settings: Challenges and strategies</i>	<i>Ethical AI and education: the need for international regulation to foster human rights, democracy, and the rule of law</i>	<i>A case-based reasoning tool to recommend drinking water source protection actions</i>	<i>AI and education. A view through the lens of human rights, democracy, and the rule of law. Legal and organizational requirements</i>
Year of publication	2024	2024	2023	2023
Fountain	Technological Forecasting and Social Change	Communications in Computer and Information Science	Journal of Environmental Management	Communications in Computer and Information Science
Common problems	Assessment	Assessment	Challenges	Assessment
Question type	What are the main challenges in adopting generative AI models like ChatGPT in education?	What regulations are needed to ensure the ethical use of AI in education without compromising human rights?	How can AI technologies support decision-making for the protection of drinking water sources?	What regulations are needed to ensure responsible and ethical use of AI in education, protecting human rights and promoting democracy?
Types of paradigms highlighted	Socio-critical	Socio-critical	Design Science	Socio-critical
approaches	Qualitative	Qualitative	Qualitative	Qualitative
Relevant designs	Systematic review	Case study	Case-Based Reasoning (CBR)	Case study
Scope result	Interpretative	Interpretative	Interpretative	Interpretative
How do you define the concept of AI and human rights?	AI enables systems to perform human tasks, such as natural language processing. In education, it can personalize learning, but raises concerns about privacy and equity. Regulatory frameworks are needed to protect students' rights and, thus, ensure responsible use.	AI is a powerful tool that can improve learning and personalization in education. However, without adequate regulation, it can threaten privacy and equity. Legal frameworks for fair and responsible use are needed, protecting the rights of students and educators.	AI manages data and generates recommendations based on past experiences to protect water resources. It is crucial that its use adhere to ethical principles and regulations to ensure equity and sustainability in water management.	AI can improve teaching and learning, but it requires regulations that protect human rights, ensure digital equity, and strengthen democracy. Transparent and responsible use of AI in education is important, with the involvement of all relevant stakeholders to ensure its acceptance and trust.

Based on the table 2, there is a marked recent interest in the intersection between artificial intelligence (AI) and various fields, especially education. Three of the four studies presented were published in 2023 and 2024, which underscores the topic's current relevance. Furthermore, there is a common concern regarding the evaluation of the challenges involved in implementing AI, particularly in educational contexts. The works by Ali et al. (2024), Stracke et al. (2024), and Holmes et al. (2023) agree on the need to analyse the effects of AI in education, identify the challenges of its adoption, and propose strategies or regulatory frameworks that ensure its ethical and responsible use in the classroom.

Regarding methodological approaches, the socio-critical paradigm and the qualitative approach predominate, based on an interest in understanding the social, ethical, and legal implications of AI. Research designs vary between systematic reviews and case studies, reflecting a multifaceted approach to the phenomenon. A notable aspect is the repeated concern for human rights, democracy, and the rule of law in the context of the application of AI in education (Stracke et al., 2024; Holmes et al., 2023). Additionally, the study by Cerutti et al. (2023) broadens the thematic spectrum by exploring the use of AI in environmental management, specifically in the protection of drinking water sources. Undoubtedly, this illustrates the versatility of this technology, from the ethical and regulatory considerations of its use in different fields.

However, while this research offers valuable insight into the ethical, regulatory, and applied challenges of AI in diverse contexts, especially in education, significant gaps remain. For the most part, studies focus on theoretical analyses and the identification of general problems, without advancing toward an empirical evaluation of concrete solutions or the real impact of AI implementation in specific scenarios. In this regard, we propose to investigate the effect of using an AI prototype specifically designed to strengthen human rights learning within the Colombian National Police. This is one of the aspects that, within the framework of this research, will allow us to move from a general discussion to the evaluation of a specific AI tool in a practical and sensitive context. From there, it will be possible to quantify and qualify the changes in knowledge, attitudes, and even behaviour of police officers concerning human rights.

Finally, Table 3 presents the results obtained from the Web of Information database Science product of the proposed systematic review.

As a result of the search process in the specialized databases Scopus and Web of Science, the relevance of the object of study is highlighted. After verifying the retrieved information, a notable lack of research was identified that specifically and articulately addresses the topics of AI, education, human rights, and police training. Therefore, the systematic review represents a significant opportunity to contribute to the academic field, highlighting a gap in knowledge about the impact of the dimensions on police human rights training.

In addition, the analysis of keyword occurrences derived from the implemented Boolean search algorithm revealed a greater presence of terms such as: "AI, machine learning, human, COVID-19, and education." However, it is evident that in a concurrence of more than 1,000 keywords, there are no direct relationships between AI, human rights, and police forces, which reinforces the premise of the previously identified research gap (Figure 2).

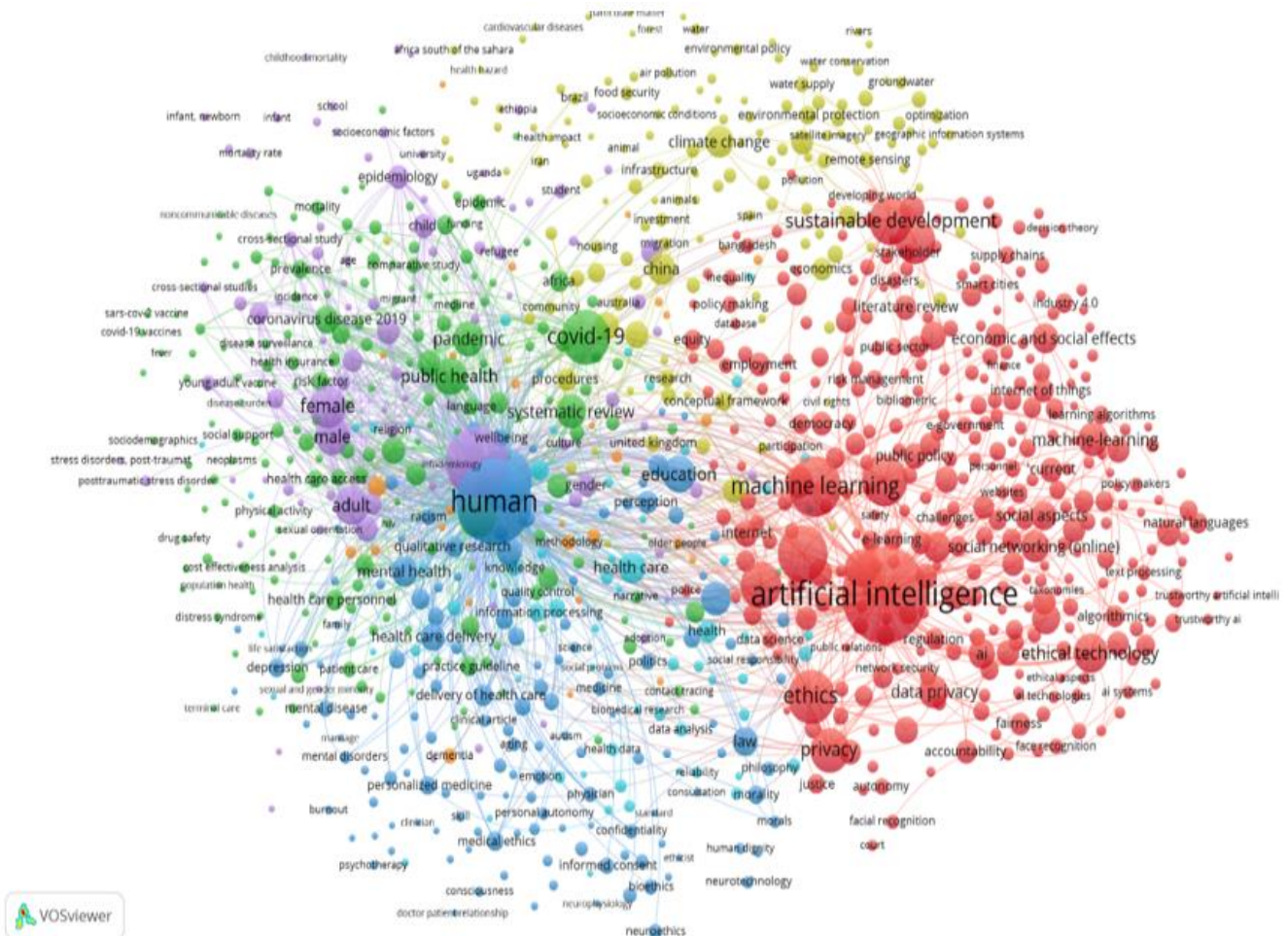


Figure 2: Selection of articles within the framework of the systematic review.

Source: own elaboration in VOSviewer.

This network of terms highlights the breadth of topics addressed by the systematic review, organizing knowledge into well-defined clusters that revolve around artificial intelligence and its ethical implications, sustainable development and environmental

challenges, health and healthcare, the COVID-19 pandemic, as well as approaches centred on the human experience. The red cluster, with prominent nodes such as *artificial intelligence*, *machine learning*, and *ethics*, reveals a clear concern about the moral and technological dilemmas raised by AI. The green and blue clusters, articulated around *sustainable development* and *health*, reflect an integration of AI into structural sectors of social life, while the yellow cluster, focused on *coronavirus disease 2019*, reflects the research interest sparked by the pandemic. Finally, the purple cluster, clustered around *human*, suggests a cross-cutting approach to the implications of these advances on human experience.

However, when analysing this visualization from the perspective of the research problem—the effect of an artificial intelligence prototype on reinforcing human rights learning in the Colombian National Police—significant gaps become evident. It is observed that, although AI is the subject of extensive academic exploration, there is no clear approach to its formative potential in institutional settings associated with the coercive power of the State. The absence of nodes such as *human rights education*, *law enforcement training*, *security forces*, or related, points out that the connection between AI, human rights, and police training has not been sufficiently addressed in the literature reviewed. This reveals an underlying tension: developments in AI appear to be advancing in parallel with the ethical and pedagogical challenges faced in training those who must protect fundamental rights.

Thus, the proposed research does not simply fill an academic gap, but rather takes a critical stance on the disconnect between technological advances and the needs for ethical training in security contexts. By designing and evaluating an AI prototype aimed at strengthening human rights learning in the National Police, the study introduces a shift in the dominant approach: it shifts the focus from technical efficiency to the pedagogical and ethical function of AI. Thus, it contributes not only empirical evidence but also a proposal for reconfiguring the role of technology in key institutions for guaranteeing rights in democratic societies.

On the other hand, a new configuration was made through the VOSviewer tool, adjusting the search parameters based on 80 keywords extracted from the results obtained from the defined Boolean algorithm. This process focused on the following inclusion criteria: *Prototype*, *AI*, *Education*, *Human Rights* and *Police*. In this way, it was possible to demonstrate that the term AI represents a high relevance within the analysed corpus, from significant relationships such as *big data*, technology, Education, risk assessment, *machine learning*, privacy, social aspects, and human rights.

Along these same lines, the analysis revealed that the term "human rights" is predominantly associated with concepts such as ethics, sustainability, sustainable development, social aspects, risk assessment, and artificial intelligence and education. These findings lead us to conclude that, while there is a thematic convergence between AI and human rights, the specific articulation between the terms prototype, artificial intelligence, reinforcement learning, human rights, and policing is poorly represented in the current scientific literature (Figure 3).

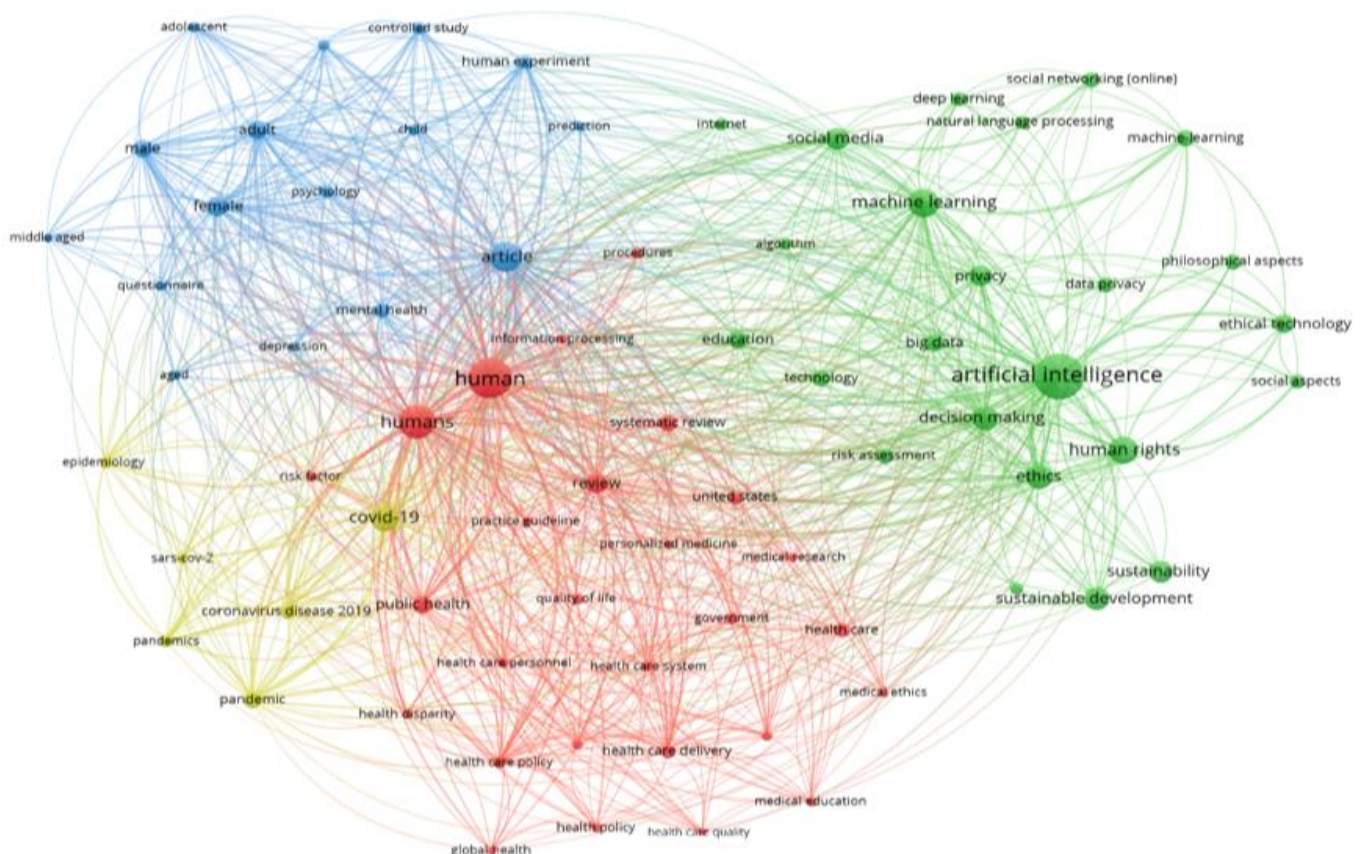


Figure 3: Selection of articles within the framework of the systematic review.

Source: own elaboration.

Figure 3 reveals four large clusters of interconnected terms, represented by colours (blue, red, green, and yellow), that organize the thematic landscape of the reviewed literature. The size of the nodes reflects the frequency of occurrence of each term in the analysed dataset, with terms such as "human" and "humans" standing out, suggesting a cross-disciplinary approach focused on the human experience. The lines connecting the nodes indicate co-occurrence relationships—concepts that appear together in the same documents—and their thickness represents the intensity of these associations.

From this perspective, the visualization reveals a complex structure where certain domains stand out: a green cluster around *artificial intelligence*, linked to terms such as *machine learning*, *deep learning*, and *artificial intelligence. learning*, *natural language*

processing, ethics, and human rights; a red cluster that includes *education* and other terms associated with social processes; and blue and yellow clusters that address health, society, and the COVID-19 pandemic. However, when this map is analysed in relation to the research question, significant gaps become evident.

Although the term *education* appears in the red cluster and *human rights* is linked to the green one, the connection between the two is weak, and there is no visible node or association directly linking *artificial intelligence to police training* or *human rights education* contexts. Terms such as *law* are also not visible. *enforcement, training, security forces* or specific geographical or institutional references, such as *Colombia* or *Police*, indicating a low representation of research addressing this intersection.

This analysis reveals that, while the literature has advanced in the study of artificial intelligence, human rights, and education as separate fields, the convergence between these three elements, and especially their application in institutional security contexts such as the Colombian National Police, remains an underexplored area. Consequently, a relevant thematic gap is identified, which represents a valuable opportunity to contribute to the advancement of knowledge in the field of police training mediated by emerging technologies. This deficiency was confirmed by applying the "gap" category, as proposed by Jiménez (2024), which corroborated the relevance of this type of studies within the contemporary research landscape.

Thus, by designing an AI prototype geared toward human rights learning within a public force, the research not only addresses this gap but also proposes an innovative approach by integrating technology, training, and fundamental rights in an environment that is often absent from discussions about AI. This absence in the literature reviewed is not insignificant: it reveals a mismatch between technological developments and the training needs of institutions that, due to their role, should be at the centre of the debate on the protection and guarantee of human rights.

After analysing the results obtained, most studies addressing topics related to the research object adopt a qualitative approach, using methodological designs primarily focused on case studies. For this reason, the scope of these investigations tends to be interpretive in nature, oriented toward understanding specific phenomena rather than generalizing results.

Another relevant aspect identified in the review is the limited inclusion of technological prototypes aimed at streamlining human rights learning in police forces. This limitation in the existing literature reinforces the relevance of this study, as it highlights the need for innovative proposals that integrate technology into the ethical and legal training processes of police personnel. Additionally, it is observed that most research on AI is oriented toward the development of software tools focused on providing security services, cybersecurity, or entertainment-related solutions, which undoubtedly neglects aspects related to education in police forces.

5. DISCUSSIONS

The results of the systematic review show that AI has a significant impact on enhancing the teaching and learning processes of human rights in police training. Based on the research analysed, it is highlighted that technological prototypes that integrate AI have a remarkable capacity to personalize learning and adapt content to the specific needs of learners. In addition, they facilitate a deeper understanding of the normative and ethical principles that guide professional practice in police institutions (Holmes et al., 2023; Stracke et al., 2024).

In this sense, the reviewed studies emphasize that technological acceptance is a determining factor for the effective implementation of innovative educational tools. According to Nguyen et al. (2022), when individuals perceive these technologies as useful and accessible, they are more willing to incorporate them into their training processes. This finding supports the transformative potential of AI-based prototypes, especially in contexts that require high levels of adaptability and precision, such as human rights teaching in law enforcement institutions.

Likewise, the findings reinforce the need to design technological solutions aligned with sound ethical and operational principles (Holmes et al., 2023; Salom, 2020; Stracke et al., 2024). However, despite the identified benefits, the literature also points to several challenges that must be addressed. These include the need for adequate technological infrastructure and continuous training for teaching staff, which are key elements to ensure the effectiveness and sustainability of these tools (Nguyen et al., 2022). Furthermore, emphasis is placed on the importance of adhering to rigorous regulatory and ethical frameworks that mitigate risks, such as algorithmic biases, and ensure fairness in the application of AI (Salom, 2020).

Finally, the analysis reveals new opportunities for future research, including the integration of AI with emerging technologies, including augmented reality and virtual reality, to enhance the simulation of complex ethical scenarios. Similarly, longitudinal studies are suggested to comprehensively assess the effectiveness of these tools in the professional development of police personnel. This will help promote a more inclusive and ethical educational approach aligned with contemporary public safety demands.

6. CONCLUSIONS

The literature review highlights a growing interest in AI and its implications across multiple fields, including education and human rights. However, despite this widespread interest, there is a notable absence of research specifically exploring the application of AI to enhance human rights education, especially in security forces such as the Colombian National Police. Most of the studies analysed concentrate on theoretical discussions, general ethical frameworks, or applications of AI in other sectors, leaving an empirical gap in understanding the real impact of AI tools designed for human rights training processes within these specific contexts.

The analysed AI prototype demonstrates a significant capacity to offer interactive learning scenarios and simulations that allow police officers to engage in ethical decision-making in complex situations. The immediate feedback and continuous assessment provided by these technologies contribute to strengthening knowledge retention and its appropriate application in professional practice. Additionally, AI facilitates access to up-to-date information on human rights legislation and jurisprudence, which is essential for police action that respects fundamental rights.

Nonetheless, ethical, and legal challenges remain that must be rigorously addressed. Transparency in the design and operation of algorithms, the protection of personal data, and the prevention of discriminatory bias are key concerns in the implementation of these technologies. Therefore, it is essential that AI complement, not replace, face-to-face training or the human judgment necessary for police decision-making.

In addition, one of the most pressing challenges is algorithmic bias, as algorithms can reproduce and amplify the biases present in training data, leading to unfair or discriminatory outcomes. Therefore, it is necessary to develop transparent, auditable, and bias-free systems that guarantee fairness in their application. Similarly, data privacy and protection must be strictly upheld in

accordance with current regulations, preventing unauthorized access and breaches of confidentiality.

Correspondingly, the need to preserve the human context in training processes is highlighted. AI, on its own, has limitations in grasping the complexity of human rights, especially in contexts that require ethical judgment, empathy, and contextual reasoning. In this sense, it is recommended to complement the use of AI with face-to-face training spaces and critical dialogues on ethical dilemmas. Moreover, the digital divide raises a significant concern, as the deployment of such technologies must not exclude individuals lacking access to the necessary technological infrastructure or training resources.

Furthermore, it is also necessary to ensure that AI systems are regularly updated to reflect regulatory changes and evolving interpretations of human rights, thus preventing content obsolescence and the dissemination of outdated information. In conclusion, the use of an AI prototype to enhance human rights training in the Colombian National Police offers potential in terms of improving both instruction and professional conduct. Nevertheless, its implementation requires a comprehensive approach that combines the use of technology with a solid ethical and legal foundation, as well as the development of effective strategies to mitigate the risks associated with these tools in police practice.

From a technosocietal perspective, it is crucial to examine the social and ethical impacts of AI in police training to ensure the responsible and equitable use of these technologies. Furthermore, mitigating algorithmic biases, protecting privacy rights, and technological inclusion must be central pillars of any AI-based training proposal. Hence the need to reflect on the role these technologies can play in fostering a more just and peaceful society, in which human rights are fully respected and promoted.

Therefore, the proposed research on the impact of using an AI prototype to strengthen human rights learning in the Colombian National Police is presented as not only a pertinent but also a necessary initiative. Unlike the prevailing trend in the literature, which remains at a conceptual level or is oriented toward other domains, this study seeks to empirically evaluate a specific tool in a highly sensitive environment, allowing for the analysis of transformations in police officers' knowledge, attitudes, and, potentially, practices regarding human rights.

Absence of established research directly linking artificial intelligence with human rights training within security forces, evident in both studies analysed and in the visualization of semantic networks, underscores the originality and relevance of this proposal. Although AI is addressed in various fields and human rights are the subject of transversal attention, its specific intersection in the field of police training which remains notably underexamined. This absence represents an opportunity to generate new knowledge and empirical evidence that contribute to the design and implementation of more relevant and effective educational technologies for the promotion of fundamental rights in key institutions of the state apparatus.

In sum, this research addresses a critical gap in contemporary literature. In contrast to studies that remain theoretical or explore other applications of AI, this proposal offers an applied, context-specific, and transformative approach. In doing so, it holds the potential to yield original findings that enrich both the field of artificial intelligence applied to human rights education and training practices within security forces. This constitutes a critical contribution in contexts where the safeguarding of human right significantly relies on the ethical preparedness of those entrusted with their defence.

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