Normative framework for ethical and trustworthy AI in higher education: state of the art

Marcos normativos para una IA ética y confiable en la educación superior: estado de la cuestión

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Abstract

The use of artificial intelligence (AI) in higher education represents an emerging and continuously evolving field. Current research highlights the critical synergy required between ethics and appropriate use in the academic application of AI. Therefore, a documentary study is presented to investigate the regulatory and ethical frameworks of the use of AI in higher education institutions. A systematic literature review was conducted following the guidelines and procedures of the PRISMA model. The information search was carried out in the databases of Scielo, Scopus, Redalyc, among others, which were subsequently exported to *Mendeley* and *Rayyan* platforms for analysis and categorization. In the screening process, 28 articles were selected, classified into four categories: ethical challenges and risks, regulatory frameworks, ethical training and didactical models, utilizing the *MAXQDA* software. Additionally, a bibliometric analysis (*VOSviewer*) was performed to identify major research trends in this domain. In general, the results show, on the one hand, the importance of generating specific policies and regulations that allow the appropriate use of AI in university contexts. On the other hand, the need for training of the entire educational community involves incorporating its responsible use. The academic debate on how to balance technological innovation with ethics, inclusion, and sustainability remains an open and pressing challenge.

Keywords: artificial intelligence, higher education, ethics, legislations.

Resumen

La investigación sobre el uso de la inteligencia artificial (IA) en instituciones educativas es un área emergente y en evolución. En la actualidad se ve la necesidad de analizar la sinergia entre la ética y el adecuado uso de la IA en el contexto académico. Por ende, se presenta un estudio documental para indagar sobre los marcos normativos y éticos del uso de la IA en las instituciones de educación

superior. Se realizó una revisión sistemática de literatura bajo las directrices y procedimientos del modelo PRISMA. La búsqueda de la información se realizó en las bases de datos de Scielo, Scopus, Redalyc, entre otras, que posteriormente fueron exportados a Mendeley y procesados en Rayyan con la intención de analizarlos y categorizarlos. En el proceso de cribación se seleccionaron 28 artículos clasificados en cuatro categorías: desafíos y riesgos éticos, marcos normativos, formación ética y modelos didácticos. Se utilizó el software de MAXQDA para su procesamiento. Además, se realizó un análisis bibliométrico (*VOSviewer*) que permitió conocer las principales tendencias en torno a la temática. En general, los resultados manifiestan, por un lado, la importancia de generación de políticas y regulaciones específicas que permitan el uso adecuado de la IA en contextos universitarios. Por otro, la necesidad de formación de toda la comunidad educativa involucrada, incorporando su uso responsable. El debate académico sobre cómo afrontar el desafío de equilibrar la innovación tecnológica con la ética, la inclusión y la sostenibilidad continúa abierto.

Palabras clave: inteligencia artificial, educación superior, ética, normativa.

INTRODUCTION

Recent academic literature highlights the key role that technologies play in the field of higher education (García-Fuentes et al., 2024; Villegas & Delgado, 2024), as well as their use by both educators (Sánchez, 2023) and university students (Baldrich & Domínguez, 2024). Specifically, it focuses on emerging technologies and reports on the impact of AI in the educational field; from the perspective of the Sustainable Development Goals (SDGs) of UNESCO's 2030 Agenda, it explores the opportunities AI offers for both students and faculty. Specifically, "SDG 4 highlights the use of AI technologies to ensure equitable and inclusive access to education" (Flores & García, 2023, p. 38).

However, it is worth Questioning whether educational processes in the academic sphere have fully harnessed the potential offered by technologies. If not, what has hindered this progress? Infrastructure, lack of technological resources, teacher training, student aptitude...? In the current university context, where AI tools have gained significant traction (García Peñalvo et al., 2024; López-Regalado et al., 2024), institutions cannot remain indifferent- they must take a stance and implement measures. The intersection of university education and AI technology demands it.

This study aligns with this line of research. It is part of a broader study conducted by Ibero-American scholars, which aims to analyze the use of AI in university practical training, across various degree programs in Social Sciences, Engineering, and Administrative Sciences, from a critical, ethical, and responsible perspective. The research is titled Practicum AI: Experiences of the Practicum Integrating AI (2023-2025) and is being developed within the framework of a professional knowledge community, RedTICPraxis. One of its initial objectives involves the documentary analysis of normative and ethical frameworks for the use of AI in higher education (HE).

Ethics, Artificial Intelligence and Higher Education

AI in HE is a novel and constantly evolving issue. Research emphasizes the synergy between ethics and responsibility, as well as privacy and security, when using AI in academic contexts (Mora Naranjo et al., 2023). In this context, the need arises to generate specific policies and regulations at the corresponding institutional levels (Rodríguez-Argueta, 2020), as well as updates that integrate digital competencies and ethical awareness in study plans and programs (Vélez-Rivera et al., 2024).

The responses and reactions this technology has provoked among faculty members, specifically in their perceptions, evaluations, and positions, have been addressed in various studies. Specifically, the works by Humble and Mozelius (2022), McGrath et al. (2023), and Svaricek (2024) depict university professors who express skepticism about the benefits of AI for teaching, with concerns rooted in uncertainties about its impact on the educational context. The lack of knowledge about AI, particularly its practical applications and potential as a didactic resource (Sánchez, 2023), is contributing to faculty members feeling insecure and adopting a cautious stance, which has slowed its integration in specific areas of teaching, research, and/or university management.

On the other hand, University students are also reluctant to use AI tools due to social stigmatization and being accused of academic dishonesty. The academic environment has traditionally valued individual effort and achievement, and some students worry that using AI may be perceived as a lack of interest, convenience, lack of commitment, effort, or the authenticity of their work. Against this backdrop, experiences of integrating AI into HE curricula have begun to emerge (Gairín & Alguacil, 2024). The guidelines suggested by González Alcaide (2024) offer insights into its integration into teaching practices. The key seems to lie in knowledge and training for the effective, ethical, and responsible use of these tools (Mora Naranjo et al., 2023), building trust and encouraging their open use in the university environment, prioritizing ethical considerations when

adopting AI technologies (Vélez-Rivera et al., 2024) to ensure equity, transparency, and data privacy, the goal of contributing to a more just and inclusive society.

From the second perspective, the existence of normative frameworks for AI use, research warns that in the current academic context, some HE institutions may still lack clear guidelines for the use of AI in academic work, aimed at both students and faculty members. The study by Seldon et al. (2020) highlights the impact of unregulated AI use on the academic community. Although the literature remains limited, the need for and importance of generating specific policies, regulations, and ethical norms for the responsible use of AI in educational curricula and programs are emphasized (Nguyen et al., 2023; Rodríguez-Argueta, 2020; Vélez et al., 2024), with the aim of leveraging the advantages that this tool can bring to academic and educational trajectories.

To tackle this challenge, The work of Chan (2023) can be used as a reference, which presents a political framework for ecological education in AI under three dimensions: pedagogical, governance, and operational. The author suggests exploring the integration of AI in university teaching through this ethical framework to enhance the understanding of its implications. In a similar vein, the study by Flores and García (2023, p. 45) advocates for the development of consensus-based public policy frameworks to regulate and raise awareness of the ethical use of AI in education. According to both authors:

> This must involve the design and implementation of a Digital and AI Literacy Plan, considering that the main obstacle to the widespread adoption of AI tools is the lack of solid evidence of their effectiveness and impact on students' academic achievements. Therefore, it is necessary to improve governance, accessibility, and the reliability of AI.

From the third perspective -training in digital ethics-, several considerations should be taken into account. While research highlights the critical importance of ethics and responsibility in the application of AI (Mora Naranjo et al., 2023), are students and faculty truly trained in this regard? How do they use AI? Is it critical, ethical, and responsible use? In short, are they competent in digital ethics? The reviewed studies emphasize the need to strengthen faculty training plans in digital ethics (Marín & Tur, 2024), and even assess the impact that such plans are having on students (Mora Naranjo et al., 2023); are they genuinely fostering the responsible use of AI tools? At this point, the work of Vélez-Rivera et al. (2024) underscores the need to work with the academic community, faculty, and students, in the use of these tools, in alignment with safe, ethical, and responsible academic environments.

In the face of this challenge, research highlights the Importance of digital ethics training for university faculty members. González Alcaide (2024) presents a model of digital literacy for teachers, while Flores and García (2023, p. 45) speak of an "AI Literacy Plan which not only trains teachers in technical skills but also in ethical and philosophical debates". On the other hand, research emphasizes the need to prepare students to face the ethical challenges associated with AI. For example, Lopezosa et al. (2023) propose a core AI training model tailored to the educational field. It includes competencies, objectives, and essential study topics on AI, and is structured to fit into a broader curriculum, for undergraduate/graduate studies or specialized seminars. In a similar vein, González Alcaide (2024) develops a didactic unit aimed at students to promote appropriate use of AI as well as optimal performance of these tools. The proposal by Aler et al. (2024) also follows a similar direction. In brief, it focuses on educational strategies, ethical competencies, and resources necessary for the trustworthy implementation of AI across various disciplines of HE. Its goal is that the next generation of young people can contribute to the use of ethical, safe, and innovative AI. Is it possible to establish fair, ethical, and sustainable educational practices in the age of AI within the academic context? Under what regulations? The AI-ethics-HE triad, through these lenses, presents an encouraging yet still underexplored landscape for study and analysis.

Aim of the study

This study aims to analyze recent research on normative and ethical frameworks governing the use of AI in HE institutions.

METHODOLOGY

In alignment with the stated objective, a systematic literature review was conducted through a systematic method to identify, evaluate, and interpret scientific papers (Mendoza, 2021). Systematic reviews aim to answer a well-defined research question based on the analysis and discussion of the most relevant information from the reviewed publications (Torres-Fonseca & López-Hernández, 2014). For this review, the guidelines and procedures of the PRISMA statement (*Preferred Reporting Items for Systematic reviews and Meta-Analyses*) updated in 2020 (Page et al., 2021) were used. As a first step, and in accordance with the study's objective, the following research questions were defined:

RQ1. What are the ethical challenges and risks that have been identified in universities?
RQ2. What are the normative and ethical measures that universities have implemented or proposed regarding AI?
RQ3. How is the ethical use of AI interpreted in educational processes?
RQ4. What are the didactic approaches or models that have been implemented in universities to ensure the reliable use of AI?

Search Strategy

The literature search was conducted in the databases of Scielo, Redalyc, Scopus, Dialnet, and Web of Science. Additionally, AI tools such as Consensus were used to identify references. The search equations used to obtain significant results were: ("challenges" AND "promises of AI"); ("ethics" AND "AI" AND "higher education"); ("ethical considerations" AND "AI"); ("practicum" AND "AI").

Inclusion and exclusion criteria for studies

The main inclusion criteria for the documents were: articles published from 2020 to the end of May 2024; in Spanish, English, or Portuguese; Studies that include empirical research at the HE level. The exclusion criteria were articles without full-text access and/or that do not narrate experiences from the ethical field applied to education.

Process Description

The initial search identified 256 records, of which 65 were selected. Among these, 14 were duplicates and 3 were not open access, leading to their removal. The remaining documents were processed using Mendeley and Rayyan for analysis and categorization. Figure 1 illustrates the methodological model based on the PRISMA statement.

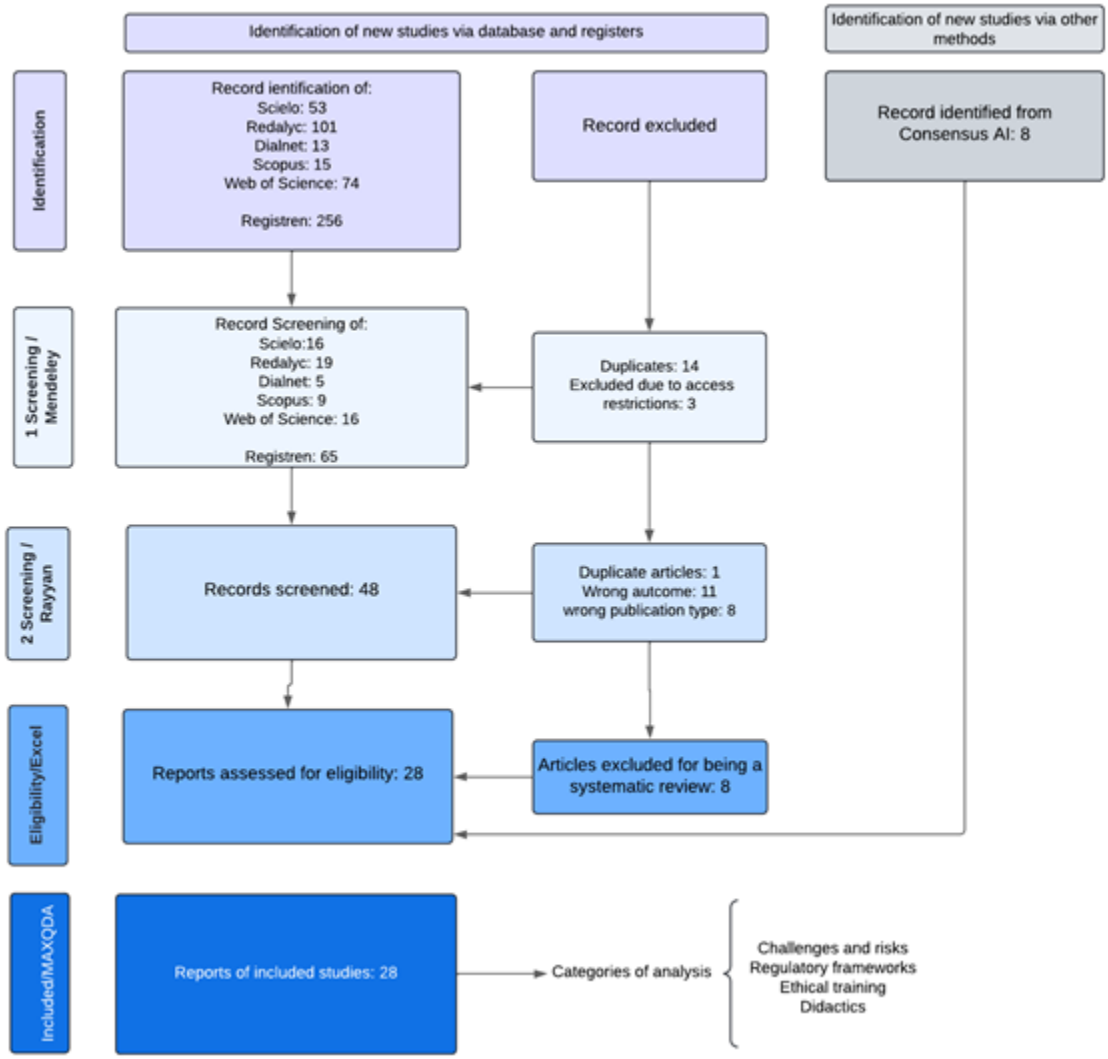

Figure 1
Flow diagram of the PRISMA model

In the Rayyan platform, 48 records were exported for a second stage of screening and classification of the articles. Of the total, one was a duplicate, eleven were excluded, and eight passed to a second review; the rest were retained. Additionally, eight papers from other sources of information were included, while another eight were discarded for not being in the educational field. The labels used for the classification of the articles in the Rayyan platform were ethical use, didactic models, ethical challenges and risks, academic integrity, and regulatory frameworks.

Finally, 28 articles were selected, which were processed and categorized in Excel and then analyzed based on the categories: ethical challenges and risks, normative-regulatory frameworks, ethical training, and didactic models; these same categories were considered in the qualitative analysis software MAXQDA.

RESULTS

First, some characteristics are provided to help contextualize the set of analyzed papers. These articles are examined based on the defined categories of interest, to address the ethical aspects related to the use of AI in HE.

Characterization of the Analyzed Articles

The synthesis of the main results is presented in Table 1 (see Annex), organized alphabetically. This table provides a summary of each study's contextual information, including reference, methodology, study location, keywords and labels.

Figure 2 illustrates the evolution of scientific production on this topic between 2020 and May 2024. The year 2023 stands out, with a notable increase in research publications, totaling 17 works, coinciding with the impact of ChatGPT's launch on November 30, 2022. In 2021 and 2024, four publications were recorded each year, while in 2022, only two works were documented, and in 2020, just one study was published.

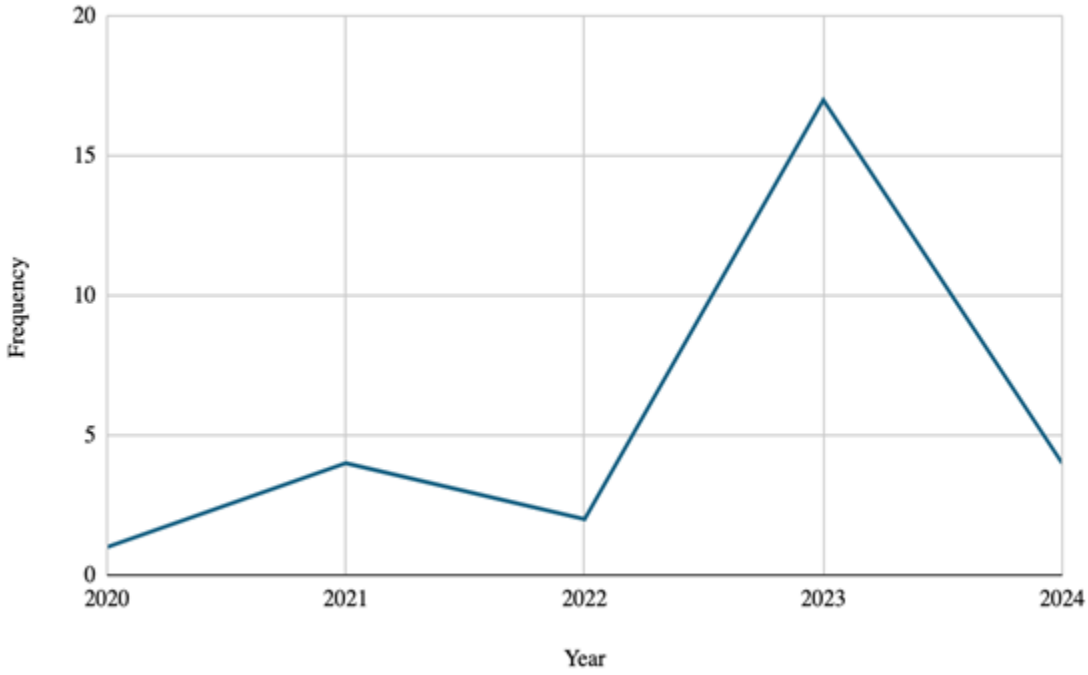

Figure 2
Temporal distribution of articles

Geographical Distribution by Study Location

Scientific production is mainly concentrated in Spain and Ireland, which lead as the countries with the highest frequency of studies on the phenomenon, with a total of four publications each. They are followed by the Netherlands and Sweden, with two publications each. Other countries with one publication each include: Bangladesh, Canada, Chile, Croatia, China, Costa Rica, South Korea, Ecuador, Italy, Nigeria, Peru, the United Kingdom, and Switzerland. Additionally, 12 studies were identified where the geographical context was not specified

Methodological Design

The analysis of the methodological approach provides insight into how research on this topic is currently being conducted. According to the data presented in the Annex, bibliographic analysis studies are the most prevalent, surpassing those with quantitative, qualitative, or mixed approaches. Specifically, 17 articles (58.6%) correspond to literature reviews, whether systematic or unsystematic. The remaining 42% is distributed among mixed studies (description of an experience based on a model), with each representing 3.4%.

Approach to Categories

Through gradual immersion in the material, using the content analysis technique (Ruiz Bueno, 2021), it has been possible to identify four central issues where attention is focused in ethical and normative terms: ethical challenges and risks, normative-regulatory frameworks, ethical training, and didactic models.

RQ1. What are the ethical challenges and risks that have been detected in universities? (references on this point are shown in Figure 3).

The use of AI in teaching, learning, and assessment processes presents challenges that have been recognized in recent studies worldwide, both from the perspective of teachers and students. Its impact on HE is considerable, generating both opportunities and risks (Chan & Hu, 2023). For example, cases are presented on how university students are adapting to the use of AI in their learning (Cisneros et al., 2023). Specifically, they warn that while AI facilitates access to information and resources, it can also result in an overwhelming amount of information when there is a lack of critical skills to assess it. Even with the prevalence of AI tools that are constantly growing, students sometimes engage in academic plagiarism (Comas Forgas et al., 2023). The ease of generating content leads to this tendency and raises questions about academic integrity, as well as the originality of student productions.

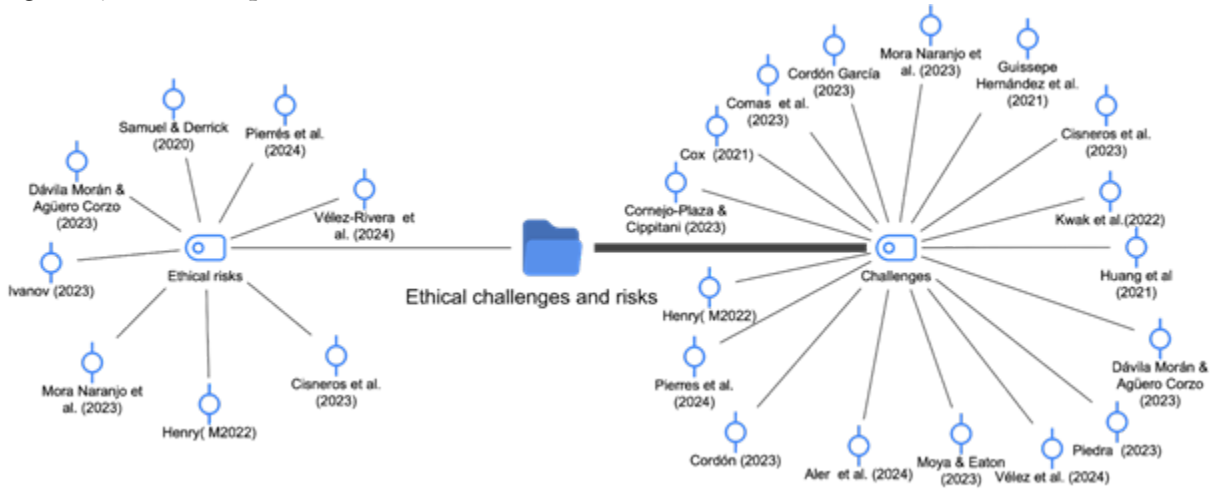

Figure 3
References associated with ethical challenges and risks

Without overlooking the opportunities offered by AI, such as the personalization of learning (Cordón García, 2023), potential risks for individuals and societies are identified. Indeed, there is talk of the "dehumanization" of education, coupled with a dependence on technology. Hence the importance of incorporating ethics into training that contemplates the use of AI in a fundamental way (Guissepe Hernández et al., 2021; Huang et al., 2021). We also find reports showing that sometimes anxiety and lack of self-efficacy in the use of AI by students (Kwak et al., 2022) can limit its adoption and effective application in specific environments. In these terms, an ethical awareness of AI is conceived, influencing the behavioral intentions of those who use it.

In summary, it is possible to emphasize that, although AI offers significant opportunities to improve teaching, learning, and assessment, it is essential to address ethical challenges, academic integrity, and the adequate preparation of students to mitigate the risks associated with its use. This also involves teachers and implies a proactive approach to training and regulating AI in educational contexts. Indeed, research reports on the topic (Ivanov, 2023; Vélez-Rivera et al., 2024) warn of the growing relevance that the AI-ethics binomial is gaining in universities, both at the general institutional level and in specific careers/areas.

RQ2. What are the normative and ethical measures that universities have applied or suggested regarding AI?

A significant number of documents review the *need for normative frameworks and/or regulations* on the use of AI in HE (Figure 4). It has been possible to recognize numerous initiatives around normative and ethical measures that have been proposed or applied by universities around the world in recent years. The European Parliament agrees that the implementation of an Academic Ethics Code provides a normative framework that establishes principles and values with the premise of guiding conduct in relation to the use of AI, both by students and teachers (Cornejo-Plaza & Cippitani, 2023). In this sense, universities have defined acts such as plagiarism and data falsification, among other dishonest practices, as violations of this code, with established consequences for such infractions.

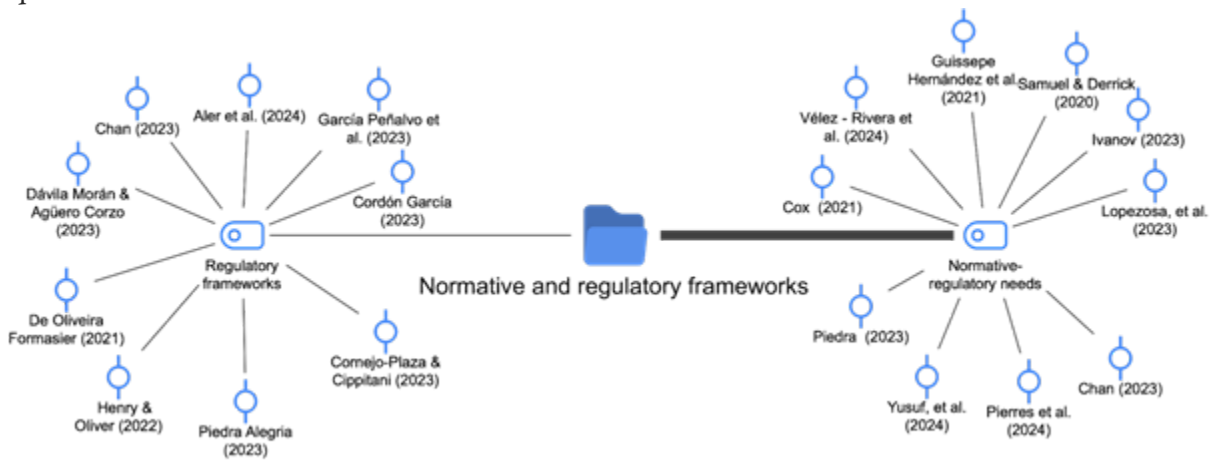

Figure 4

References associated with regulatory and normative measures

Policies have been proposed to guide the ethical and responsible use of AI in academic environments (Aler et al., 2024). These policies address the need to ensure that AI technologies are used in a way that respects privacy, equity, and transparency. Therefore, it is expected that universities establish clear rules on the use of these tools, while providing guidelines for their integration into the educational process.

Hence, the relevance of advancing in AI training, with the implementation of workshops and courses that address the importance of academic integrity, plagiarism, citation, and good research practices (Cordón García, 2023). Aware of this, several Spanish institutions have developed mandatory modules in the curriculum, for first-year students to train them in digital ethics.

Regulatory proposals at the university level are not restricted to the teaching field, as the European Union has also established Research Ethics Committees (Piedra Alegría, 2023). The proposal is to review and approve research projects before execution to ensure ethics in data handling and the protection of participants. Yusuf et al. (2024) suggest the implementation of ethical impact assessments in projects involving AI, reviewing the social and ethical implications, which gives relevance to normative frameworks at this point.

In addition to the previous proposals, it is intended that there be regulations to generate inclusive environments based on AI, which encourage the participation of marginalized groups (Cox, 2021) through actions such as regulations for admission and scholarships to ensure equality and accessibility. Another aspect analyzed is university social responsibility and AI, so the principles of FATE (*Fairness, Accountability, Transparency and Ethics*) are examples of initiatives linked to academic and research activities for the well-being of the community (Henry & Oliver, 2022). All this achieved through extension and student and community collaboration projects, which encourage universities to be transparent in the use of AI algorithms and the resulting decision-making.

Data protection and privacy are another aspect to be guaranteed by institutions when incorporating AI, so regulations are aimed at ensuring that universities comply with these measures (García Peñalvo et al., 2024) through adequate management and safeguarding of information. In this regard, the evaluation of policies

around the use of AI (Moya & Eaton, 2023) becomes relevant, so universities are invited to periodically review and update their regulations to support their effectiveness in the face of new challenges.

Along with the above, universities are encouraged to investigate the social, economic, environmental, and cultural repercussions of AI technologies to understand their impact on society (Chan, 2023). This synergy between research, teaching and community engagement can help institutions anticipate problems and adjust their policies based on findings.

RQ3. How is the ethical use of AI interpreted in educational processes? (Figure 5)

The findings obtained have allowed us to thoroughly understand the "ethical" implications of the use of AI in HE; this has triggered the need for a regulatory framework. Specifically, this question examines the current landscape of university policies regarding the use of AI. Of particular interest are Asian universities, which present a unique context for observing the institutional response to AI (Dai et al., 2024). It is expected that the findings will provide useful information on future directions for policy development in such universities as well as globally.

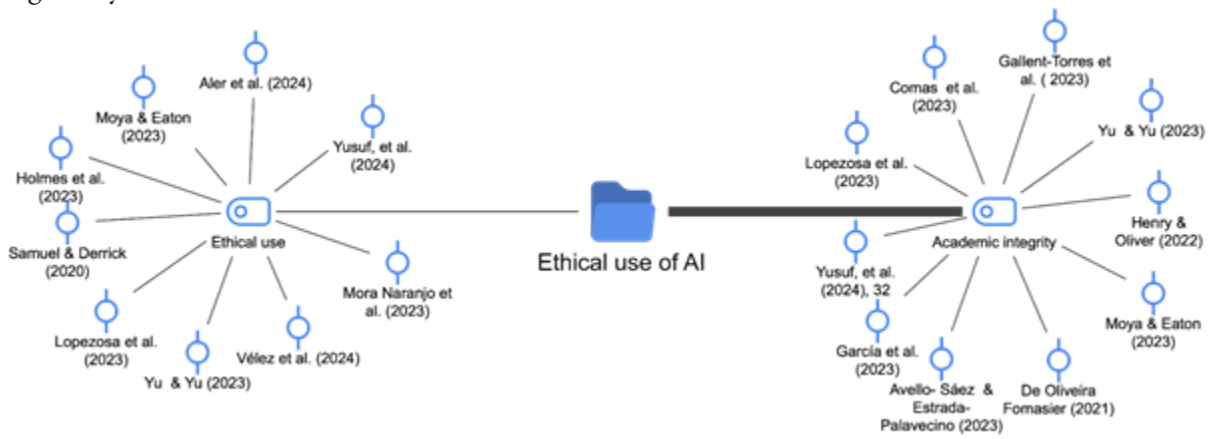

Figure 5

References associated with the ethical use of AI in educational processes

Academic integrity forms an essential pillar in education, in general, and in the training of professionals, in particular, especially in a world where AI plays an increasingly significant role. Multiple tools, including the well-known ChatGPT, are present in the training of occupational therapists (Avello-Sáez & Estrada-Palavecino, 2023). In this scenario, it is worth paying attention to academic integrity to avoid undue dependencies and promote authentic learning that will be required in professional performance; among them, the ability to interpret AI decisions in line with ethical criteria (Yu & Yu, 2023). This must be worked on from the beginning of university training, with strategies that reinforce academic ethics; as warned in Social Work and Social Education degrees (Comas Forgas et al., 2023), academic plagiarism can prevail among students.

Undoubtedly, there is an inescapable responsibility in the implementation of AI at all levels of the educational system, particularly in HE (Mora Naranjo et al., 2023), where an ethical foundation, along with academic integrity is essential for its genuine acceptance and sustainability.

RQ4. What are the didactic approaches or models that have been implemented in universities for the reliable use of AI? (Figure 6)

The growing integration of AI in HE has sparked debates around didactic models and the ethical use of these technologies. The educational models that are encouraged refer to an effective integration of AI into educational practices (Chan, 2023) through specific strategies for their use in various educational contexts. This is within the framework of academic integrity standards to be defined with comprehensive policies and

guidelines that are as clear as possible. Benefits for learning are recognized, while concerns revolve around the balance of autonomy/dependence, as well as originality/plagiarism.

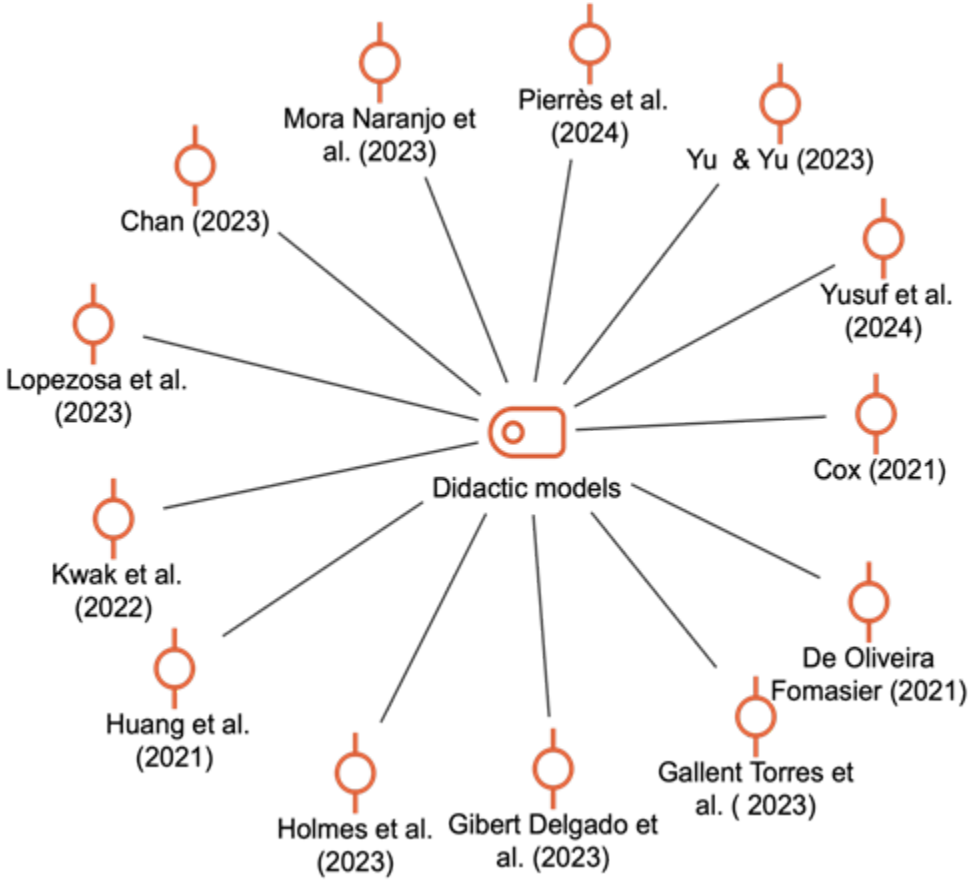

Figure 6

References associated with didactic models implemented in universities

One of the tools that has gained the most popularity in various fields, including HE and professional development of graduates, is ChatGPT. Given the importance of educating students and professionals in the proper use of these tools, guidelines are offered to promote the ethical use of this conversational AI to complement, and not replace, human competencies. This is in line with initiatives to foster a culture of academic integrity and ethical responsibility (Gallent Torres et al., 2023), particularly in the use of advanced technologies.

The concept of Education 4.0 (Gibert Delgado et al., 2023) has also been coined, referring to an approach that innovatively incorporates AI with the purpose of promoting the development of digital competencies and critical thinking in future professionals, in line with the challenges of an increasingly digitized world. Even ethics must constitute a core part of educational programs that incorporate AI, so that professionals are prepared to handle the ethical dilemmas that may arise in their work environments (Huang et al., 2021). In this context, it is expected that systems maintain high ethical standards (Aler et al., 2024), through transparent and fair evaluations, aware of the potential biases that may arise when including AI.

To summarize the relationships between the categories analyzed in this study, a co-occurrence map of codes is shown (Figure 7), which represents the ethical use of AI and its intrinsic relationship with solid normative requirements for the responsible, reliable, and transparent use of technology. The need for adequate regulations to mitigate risks is evident, through didactic models that promote a balance between technological innovation and the ethical principles that govern its use in HE.

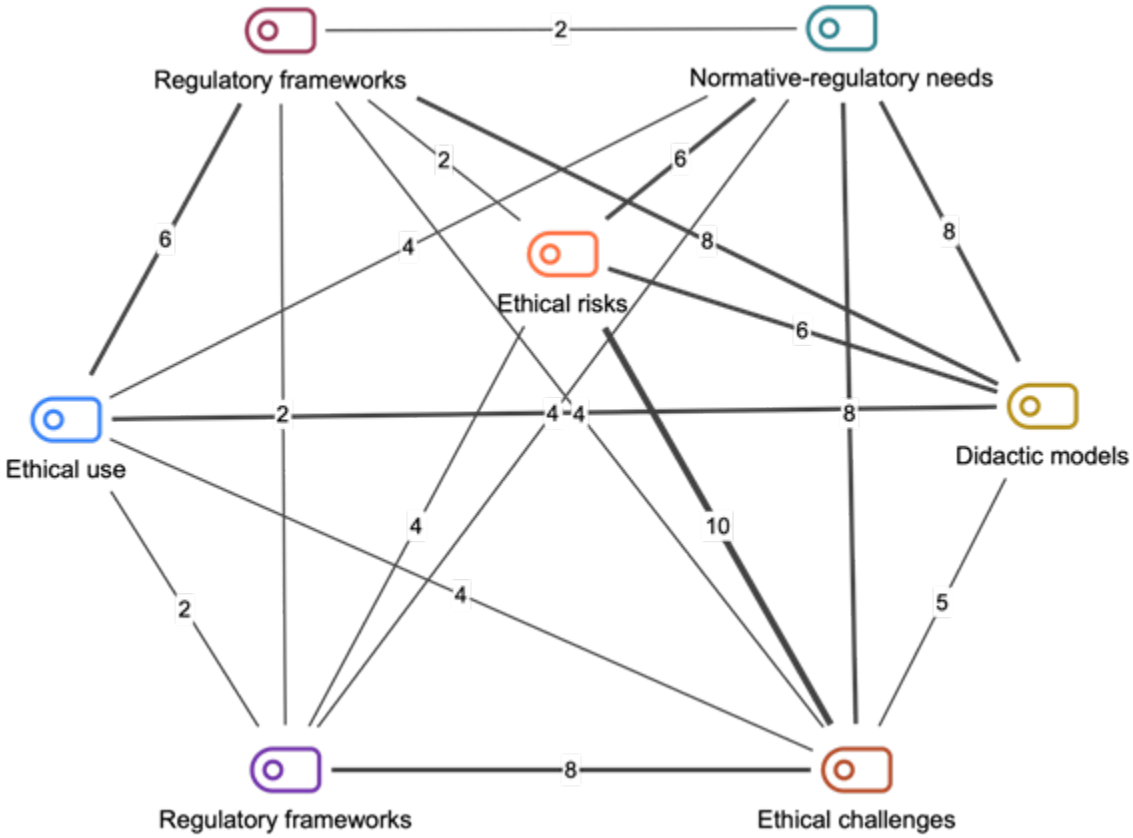

Figure 7
Co-occurrence of codes in the documents

Bibliometric Analysis

After conducting a descriptive analysis of the impact of the selected articles and with the aim of identifying possible trends in scientific production over the past five years (2020 - May 2024), a study of the relationships between their keywords was carried out. For this, the network analysis technique (Knoke & Yang, 2008) was applied, employing the VOSviewer program. From the 28 studies in the sample, 90 keywords were extracted, each with a co-occurrence index of at least two times. In the labeled relationship map (Figure 8), the nine clusters or keywords nodes are linked based on their degree of similarity, showing how they interrelate with each other.

The red cluster focuses mainly on research approaches that address the relationship between ethics and technology, especially in the fields of research involving human beings, such as education and medicine. Interest in using these technologies in educational environments is increasing, highlighting the role of digital platforms both in communicating findings and in integrating the educational community.

The green cluster focuses on the use of technology in HE to help promote inclusion at this level, especially for individuals with disabilities. It emphasizes the development of assistive technologies to improve inclusive education, facing ethical challenges in their design and accessibility to avoid inequalities.

The blue cluster highlights the challenges posed by digital transformation in the research and education sectors, underlining the role of AI as a driver of change. It emphasizes the need to ensure autonomy and academic integrity, adopting a human-centered approach.

The yellow cluster addresses the transformation that AI and big data analysis are causing in the educational sector, particularly in optimizing teaching and learning processes. These technologies allow for content

personalization, adjusting to the specific needs of each student, with a particular emphasis on the use of social robots to enhance educational experience.

The purple cluster encompasses the challenges and opportunities that AI models offer in the educational sector, with a focus on academic integrity and learning assessment. The implementation of this technology has increased concerns related to plagiarism, requiring the creation of innovative assessment methods that discourage this behavior and encourage responsible use.

The turquoise cluster covers the legal field, emphasizing the role of AI in creating digitalization and automation tools that, in the educational field, offer multiple opportunities to improve accessibility and adapt teaching to individual needs. However, it also highlights the importance of assuming responsibility in the implementation of these technologies to reduce biases that could unfavorably condition learning outcomes.

The orange cluster analyzes the relationship between the use of algorithms, online supervision, and computer systems in HE laboratories, focusing on the difficulty of developing and using these technologies in an ethical manner.

The brown cluster refers to data and algorithm-based decision-making, also considering possible adverse effects, such as ethical implications and biases that may arise.

Finally, the pink cluster examines the impact of AI on access to and use of academic resources, while addressing the adaptation and privacy challenges that come with its implementation.

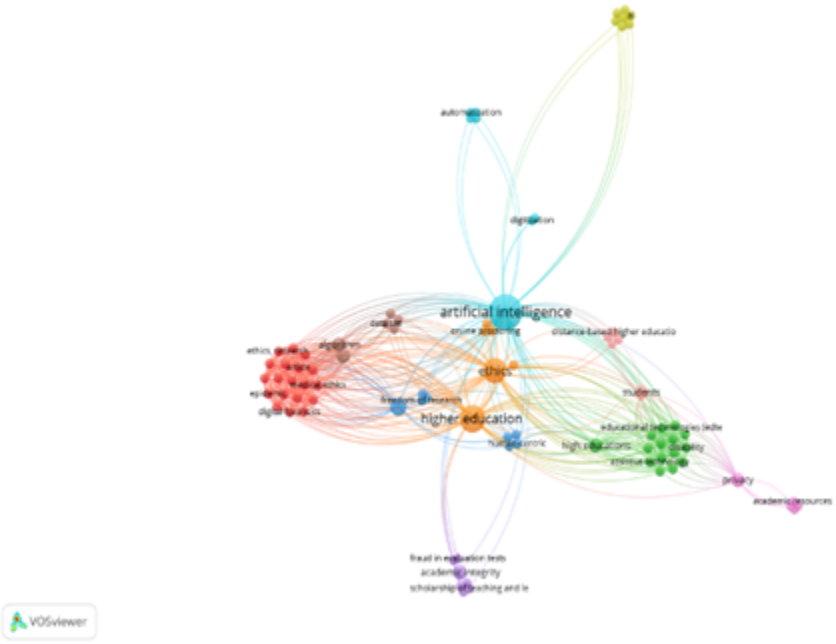

Figure 8
Labeled relationship map

Considering the size of the keyword labels and the color of the different approximation zones, the relevance of the studies is observed through the density visualization map in Figure 9.

Thus, in the central zone of the map (yellow color) are, due to their importance and co-occurrence, the keywords belonging to the research line related to AI, HE, and ethics, among which are: AI, high education, ethics, online proctoring, research article, ethics research, disability, among others.

On the other hand, the peripheral zone of the map (color close to green) shows the lower density of co-occurrence of the key terms. More specific expressions are located around which the analyzed research has

been focused. Words such as: academic resources, automation, digitization, privacy, students, distance-based higher education, data set, algorithm are distinguished.

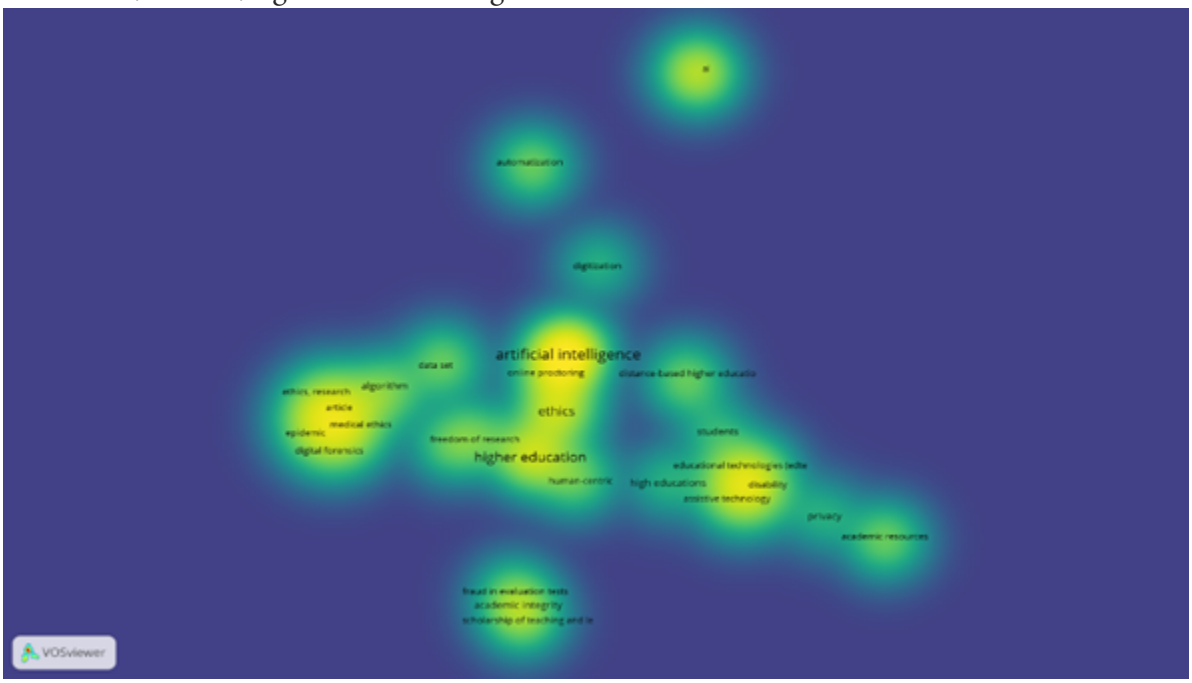

Figure 9
Density Map

DISCUSSION

The purpose of this study has been to synthesize research that echoes the use of AI in the field of HE, in the face of emerging ethical challenges and/or potential risks. The studies generated in this regard shed light on how to face the challenge of balancing technological innovation with ethics, inclusion, and sustainability. Four key factors seem to be the keys: (1) overcoming ethical challenges and/or risks through the (2) design and development of regulations that ensure a (3) civic and responsible use of AI in academic contexts, and promote, in turn, the (4) implementation of ethical educational practices and/or didactic models, that encourage critical thinking both in its use and in its teaching.

However, the results obtained in this work warn of a need, with some advances, around the existing normative and ethical measures on AI, proposed by the universities themselves, among other competent bodies. Although universities have been developing regulations to guide its integration and address the most relevant challenges (Michel-Villarreal et al., 2023) -which has meant new opportunities and possibilities to rethink the training of future professionals (Dai et al., 2024) -, there is still a long way to go. At this point, HE institutions are called upon to develop their respective guidance, administration, and regulation policies for AI (UNESCO, 2023). The existence of these normative frameworks fosters a transparent and supportive academic environment, which educates and guides students to make appropriate and reliable use of AI and promotes their integration into educational processes.

Regarding the design of these normative frameworks, Nguyen et al. (2023) outline in their work seven principles that should be considered in the development of any regulation on AI in education (AIED, as the authors refers to it): 1) governance and administration; 2) transparency and accountability; 3) sustainability and proportionality; 4) privacy; 5) security and protection; 6) inclusion; 7) human-centered AIED.

Recently, in Spain, the National Institute of Educational Technologies and Teacher Training of the Ministry of Education, Vocational Training and Sports has published a guide on the use of AI in the

educational field. Specifically, a decalogue is included to address the main ethical dilemmas found (Instituto Nacional de Tecnologías Educativas y de Formación del Profesorado [INTEF], 2024): Respectful and sustainable integration; Transparency and awareness; Equity and non-discrimination; Robustness and security; Privacy and data protection; Human supervision; Human compatibility; Promotion of social well-being; Collaborative learning; Reflection and anticipation.

CONCLUSIONS

Based on the data obtained, a series of conclusions can be identified, which respond to the research questions that have guided the work.

Regarding **RQ1**, the different studies reflect on the transition of AI adoption in HE institutions and how they face challenges such as academic integrity; it is emphasized that the unregulated use of the tool entails negative consequences such as overload or dependence, increased anxiety, lack of self-efficacy, and promotion of infractions (plagiarism, falsification). In this scenario, the design and implementation of Academic Ethics Codes are suggested, which define norms and penalize actions such as plagiarism and data alteration (Cornejo-Plaza & Cippitani, 2023), as well as the establishment of policies for the responsible use of AI, ensuring its use in environments that respect privacy, equity, and transparency (Aler et al., 2024).

Regarding **RQ2**, a trend was detected in terms of the normative and ethical measures that universities have suggested, which align with international policies such as those of the European Union and UNESCO (Cornejo-Plaza & Cippitani, 2023), to adapt their possible regulations. However, the application of the regulations implies promoting a shared responsibility between teachers and students to encourage critical thinking in decision-making. In this regard, different institutions have implemented courses and workshops to reinforce academic integrity, ethical use of AI, digital competencies, good research practices (Cordón García, 2023), and the creation of Ethics Committees (Piedra Alegría, 2023). At the same time, ethical impact assessments have been implemented in AI projects to foresee their social and cultural implications (Moya & Eaton, 2023; Yusuf et al., 2024) and to ensure diversity and inclusion (Cox, 2021). Specific examples of ethical recommendations are those suggested by the TEC de Monterrey in Mexico (<https://bit.ly/4317udp>), where nine principles have been established for the use of AI by teachers and students. Briefly, these regulations seek to uphold academic standards and foster a culture of ethics and responsibility in universities.

Considering **RQ3**, the analyzed data indicates a leading role of universities in promoting, managing, evaluating, and updating relevant and effective frameworks, capable of anticipating problems and proposing standards. This also encompasses the field of "good practices" in research and, in correspondence with this, the integration of training in digital competencies, the creation of ethics committees, and the conduct of ethical impact assessments in AI projects. Indeed, the focus is on mitigating the risks of academic dishonesty and promoting responsible use of these tools. An example of this is found in the latest bulletin published by the National Interuniversity Council of Argentina (<https://www.cin.edu.ar/>), which deems AI to be a valid educational resource in HE.

Finally, regarding **RQ4**, it is concluded that the incorporation of AI in HE not only focuses on regulation but also on promoting appropriate use and critical reflection on its impact on different sectors of society. Thus, didactic models emerge to integrate AI into teaching practice in a way that inspires trust.

The integration of AI in HE requires not only a regulatory approach but also critical reflection on its impact on academic-professional training, knowledge creation, and the development of digital competencies. Universities are called upon to prepare to train professionals who use these technologies responsibly and collaboratively, integrating them into their didactic strategies without compromising fundamental ethical principles. This challenge implies a joint effort by the academic community to ensure that the adoption of AI is done thoughtfully, ethically, and aligned with educational quality objectives.

Through this review, the aim has been to understand the scope and nature of existing policies, as well as to identify promising practices, gaps, and challenges (Pham et al., 2014). However, this study is not without limitations. It is worth mentioning, fundamentally, the one related to the sample; most of the literature reviewed and analyzed comes from European sources, which may reflect specific cultural, regulatory, and educational frameworks, exclusive to that area. Geographical centralization -or geographical bias- can significantly affect the generalization of the findings to a broader global context. Considering this limitation, and its possible implications, it would be possible to improve the applicability of the proposals indicated above, in international contexts by conducting more studies that include diverse geographical and cultural perspectives.

In conclusion, although this study provides rigorous information on the ethical use of AI in the academic context, its limitations regarding the geographical focus of the sample require caution when generalizing the findings. Addressing these limitations, for example, through inclusive research, can help ensure that the proposals are relevant and effective in different international contexts. Nevertheless, the main challenge will be to foster a university environment that prioritizes ethical considerations and, at the same time, incorporates the latest technological advances.

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ANNEX

Table 1
List of references analyzed

Reference	Methodology	Study Location	Keywords	Tags
Aler et al. (2024)	Literature review	Croatia. Ireland. Netherlands. Spain. Sweden. United States	Trustworthy. AI Higher Education. AI ethics. Educational strategies	Ethical use, regulatory-normative frameworks, ethical risks
Avello-Sáez & Estrada-Palavecino (2023)	Literature review	Not specified	IA. Formación profesional. Terapia ocupacional. Ética basada en principios. Competencia profesional. Estudiantes	Academic integrity
Chan (2023)	Mixed	China	AI policy framework. AI. ChatGPT. Ethics. Assessment	Ethical use, regulatory-normative frameworks, ethical risks
Cisneros et al. (2023)	Mixed	Peru	AI. Adaptation. Privacy. Academic Resources. Perú	Ethical challenges, risks
Comas et al. (2023)	Quantitative	Spain	Plagio académico. Integridad académica. Fraude en pruebas de evaluación. Educación superior	Academic integrity, ethical challenges
Cordón García (2023)	Literature review	Not specified	IA. Enseñanza superior. Nuevas tecnologías. Innovación pedagógica. Tecnología de la educación	Regulatory-normative frameworks, challenges
Cornejo-Plaza & Cippitani (2023)	Theoretical reflective	Not specified	Educación. IA. Integridad científica. Libertad de investigación. ChatGPT	Ethical challenges, normative frameworks
Cox (2021)	Narratives	Not specified	AI. Robots. Social robots. Learning analytics. Big data. AIEd. Design fiction	Ethical challenges, regulatory-normative frameworks
Dávila Morán & Agüero Corzo (2023)	Literature review	Not specified	IA. Ética. Responsabilidad. Sesgo. Automatización	Ethical challenges, risks

Fornasier (2021)	Literature review	Not specified	Legal education. Digitization. AI	Didactic models, academic integrity
Gallent Torres et al. (2023)	Literature review	Not specified	Ética. Integridad académica. IAG. Educación superior	Didactic models
García Peñalvo et al. (2024)	Literature review	Not specified	IA. IAG. ChatGPT. Educación	Academic integrity, regulatory-normative frameworks
Gibert Delgado et al. (2023)	Literature review	Not specified	Educación 4.0. IA. Enseñanza personalizada. Investigación científica. Educación superior	Didactic models
Guissepe Hernández et al. (2021)	Literature review	Not specified	IA. Ética. ES. Ambiente Disruptivo	Ethical challenges, regulatory-normative frameworks
Henry & Oliver (2022)	Literature review	Not specified	Care. Ethics. Online proctoring. Higher education. Algorithms. AI	Regulatory-normative frameworks, challenges
Holmes et al. (2023)	Qualitative	Spain	AI. Ethics. Distance-based higher education. Students. Teachers. Institutions. Theoretical framework	Ethical use, didactic models
Huang et al. (2021)	Literature review	Not specified	AI. Critical LIS. Ethics. Higher education	Ethical challenges, didactic models
Ivanov (2023)	Literature review	Not specified	AI. Higher education. Negative impacts. Ethics. Decision-making approaches	Regulatory-normative frameworks, risks
Kwak et al. (2022)	Quantitative	Korea	AI ethics awareness. Attitude toward AI. Anxiety. Self-efficacy. Behavioral intention	Ethical challenges, didactic models
Lopezosa et al. (2023)	Qualitative	Spain	IA. Periodismo. Periodistas. Comunicación. Entrevistas. Formación. Innovación. Planes docentes. Universidad. Estudios universitarios. Competencias. Capacitación. Ética. ChatGPT	Ethical uses, academic integrity, didactic models, regulatory-normative frameworks
Mora Naranjo et al. (2023)	Mixed	Ecuador	IA. Ética. Responsabilidad. Educación superior	Ethical use, risks, didactic models

Moya & Eaton (2023)	Literature review	Canada	IA. IAG. Modelos de lenguaje avanzados. Integridad académica. Scholarship of teaching and learning. Enfoque de sistemas	Academic integrity, ethical challenges
Piedra Alegría (2023)	Literature review	Costa Rica	Ética. Regulación. Autorregulación. IA. Derechos humanos	Regulatory-normative frameworks, ethical challenges
Pierrès et al. (2024)	Literature review	Switzerland	AI. Disabilities. Higher education. Educational technologies. Ethics. Risk assessment	Ethical challenges, risks, didactic models, regulatory-normative frameworks
Samuel & Derrick (2020)	Experience of a model	United Kingdom of Great Britain. Northern Ireland	Investigación sanitaria. ES	Ethical use, regulatory-normative frameworks, risks
Vélez-Rivera et al. (2024)	Literature review	Chile	Educación superior. Tecnologías emergentes. IA. Ética. Integridad académica	Ethical use, regulatory-normative frameworks, ethical risks and challenges
Yu & Yu (2023)	Literature review	Italy	AI. Ethics. Bibliometric analysis. VOSviewer. CitNetExplorer	Ethical use, didactic models, academic integrity
Yusuf et al. (2024)	Mixed	Nigeria. Spain	GenAI. Higher education. Potential. Concerns. Ethical regulations. Cultural dimensions	Regulatory-normative frameworks, academic integrity, ethical use, didactic models

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