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Review Article

Artificial Intelligence in Higher Education: Perspectives, Opportunities, and Ethical Challenges in Learning Environments

Hossein Moradimokhles*, Zahra Norouzi, Amir Hossein Amooeirazani

1. Department of Educational Sciences, Faculty of Humanities, Bu-Ali Sina University, Hamedan, Iran.
2. M.A. Student of Educational Technology, Faculty of Humanities, Bu-Ali Sina University, Hamedan, Iran.
3. M.A. of Educational Technology, Faculty of Humanities, Bu-Ali Sina University, Hamedan, Iran.

Corresponding Author: Hossein Moradimokhles, Department of Educational Sciences, Faculty of Humanities, Bu-Ali Sina University, Hamedan, Iran. E-mail: moradimokhles@basu.ac.ir

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Abstract

Introduction: The emergence of new technologies, like artificial intelligence (AI), has led to noticeable modifications. AI can be an effective tool in higher education; however, numerous ethical challenges also emerge. The present study investigates AI's ethical prospects, opportunities, and Weaknesses in higher education.

Materials and Methods: This study is applied research regarding its purpose and qualitative regarding the nature of its data. The research is a systematic review using the PRISMA strategy. We searched four Latin databases: Google Scholar, Scopus, Web of Science, and JSTOR and four Persian databases: Noormags, Magiran, CID, and Civilica. A systematic search was conducted based on keywords and article selection strategies; out of 253 articles, 37 were selected for concrete evaluation, and POP scientometrics software was used for analysis. We also used VOSVIEWER software to illustrate the relationship between the interconnected subjects.

Results: This study revealed that individuals in higher education understand the ethical applications of using AI. Strengths include personalized learning, fair assessment, and individualized feedback. Opportunities include educational equity and bridging the digital divide. Weaknesses include privacy concerns and fraud in the assessment process. Challenges include lack of transparency and dissemination of misinformation.

Conclusion: Following ethical values when using artificial intelligence can maintain the quality of learning environments and construct an inclusive setting for every student. The combination of these approaches creates a safe environment for education activists.

Keywords: *Artificial intelligence, Ethics, Learning Environment, Higher Education, SWOT Analysis.*

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INTRODUCTION

The outstanding pace of advancement in information and communication technology in recent decades has led to enormous changes in many aspects of human life. Among these innovations, artificial intelligence is recognized as a meta-paradigm force that significantly redefines human cognition, decision-making, and educational methods [1]. Artificial Intelligence (AI) has been supported by scientific and technological progress across different fields, particularly in computer hardware, resulting in the world's fastest computer surpassing the processing power of the human brain [2]. Artificial intelligence and machine learning

advances help people go beyond classical computers and simulate and even surpass human intelligence. However, as AI becomes more pervasive in human life, concerns about the prospects, opportunities, and ethical challenges of developing these technologies are becoming increasingly controversial [3].

Higher education, as a cornerstone of intellectual and moral development, can be vulnerable to innovation and its ethical implications [4]. On the one hand, artificial intelligence can help improve the learning experience and increase efficiency and access to education in learning environments. However, it also brings ethical challenges and concerns about academic integrity and existing discrimination [5]. The current discourse lacks robust frameworks for reconciling the transformative potential of artificial intelligence with its ethical implications, exposing institutions to risks in education [6].

In this regard, some reviews have been conducted. Morley et al. [7] provide a review of the ethics of AI. The aim is to gather existing discussions and demonstrate problems that remain for the following studies. To answer the question: How can the main ethical issues provided by artificial intelligence be classified? Five databases were searched. After screening, 156 articles were included. Findings suggest that ethical issues are epistemic (concerning false, inconclusive, or unverifiable evidence), normative (concerning unjust outcomes and transformative impacts), or traceability-related. These problems grow at six levels of abstraction: individual, interpersonal, group, institutional, societal, or sectoral. The study argues that failing to address these concerns could lead to a loss of public confidence in AI's benefits for healthcare. Similarly, Honkenschroer and Luetge [8] systematically analyze ethical considerations surrounding the usage of AI. Through a comprehensive review of 51 relevant studies, the authors identify and categorize ethical opportunities, problems, and ambiguities associated with AI applications. Findings highlight potential biases in AI algorithms, transparency issues, and individual privacy influences [9]. The article helps clarify ethical matters related to the application of ethical AI and draws the following investigations into this developing area.

Incorporating artificial intelligence into higher education offers significant possibilities and difficulties that require comprehensive investigation and ethical considerations. Examining these factors is crucial for creating frameworks that facilitate AI's responsible and efficient application in educational contexts. Additionally, these kinds of research are essential for providing the necessary abilities of students and educators to apply and handle these developing technologies successfully. Interdisciplinary studies are critical to determining AI's ethical boundaries in Higher Education. Concerns about their influence on students are increasing with AI technology development. AI systems offer potential improvements in educational processes, such as personalized learning experiences and measures of student performance improvement. However, addressing ethical concerns, including algorithmic bias, data privacy, and potential abuse, is essential. The usage of AI in learning environments can significantly enhance the efficiency of education. However, a thorough examination of ethical considerations is crucial to mitigate potential risks and ensure that the integration of AI is based on the core values of higher education. Reviewing the research background in ethics and AI in higher education demonstrated a notable research gap. Thus, contracting guidelines that control the usage of AI in educational environments depend on closing this gap. Therefore, this research aimed to explain the position of professional ethics in higher education with an emphasis on the

artificial intelligence-based educational environment, using a systematic review method to answer the following questions:

1 .What evidence exists to investigate the ethical perspectives of using AI in higher education learning environments ?

2 .What are the methodological approaches to research investigating the ethical dimensions of using AI in higher education learning environments ?

3 .What ethical opportunities and challenges does the integration of AI present in higher education learning environments?

MATERIAL AND METHODS

This study is applied research regarding its purpose and qualitative regarding the nature of its data. A systematic review method was employed to investigate AI's ethical perspectives, Opportunities, and Challenges in the higher education learning environment. This review is based on identifying, evaluating, and analyzing scientific reports and studies. Also, this study emphasizes using an objective, evident, and repeatable process throughout the research process to minimize biases regarding research topics by following a consistent process [10].

1. Search strategy: This study employed a systematic review method and the PRISMA strategy. The Latin databases Web of Science, Scopus, Jstor, and Google Scholar, as well as the Internal databases Noormags, Magiran, CID, and Civilica, were used to select articles. The systematic search was conducted in April 2024 and was updated in August 2024. Keywords related to artificial intelligence, higher education, and ethics were used in Table 1 for the strategic search in databases.

One-line search strategy:

("artificial intelligence" OR "AI" OR "robotic" OR "development of thinking computer systems" OR "intelligent tutoring system" OR "intelligent classroom") AND ("higher education" OR "university" OR "undergraduate" OR "college") AND ("ethic*" OR "moral*")

Table 1: Keywords in the systematic search of databases.

OR	AND	OR	AND	OR
Artificial Intelligence		Ethics		Higher Education
Ai		Moral		University
Robotic				Undergraduate
Development Of Thinking Computer Systems				College
Intelligent Tutoring System				
Intelligent Classroom				

2 .Criteria for selecting articles: We apply two restrictions - the year of publication and the type of participants - in the research to collect relevant articles. Limiting the year of publication to the last five years allows for up-to-date data related to the current state of the research field because science is advancing rapidly, and old research may not meet current needs. Also, selecting a specific type of participant can help ensure the accuracy and validity of the research findings; a better understanding of the target group and its characteristics can lead to more reliable results. For this purpose, all peer-reviewed scientific journals and reputable scientific conference papers were included, but book chapters, general journals, articles, newspapers, and reports were excluded from the search process. Table 2 shows

the exclusion and inclusion criteria for articles at all stages of the review.

Table 2: Criteria for inclusion or exclusion from the article review process.

Inclusion Criteria	Exclusion Criteria
Related to AI in education	Unrelated to AI in Education
Related to Ethics in AI	Unrelated to Ethics in AI
Related to Higher Education	Unrelated to Higher Education
Year of publication from 2020 onwards	Year of publication before 2020
Peer-reviewed articles in scientific journals	Chapters
Authentic scientific conference articles	Newspaper articles
	General magazine articles
	Reports

3 .Systematic search: According to Table 1, which includes the keywords, articles were searched. Then, based on Table 3, which shows the criteria for selecting articles, articles were selected for systematic review. By examining the title and abstract of all identified articles, 253 articles were reviewed, of which 89 were excluded due to non-compliance with the inclusion criteria. The full text of 164 studies was studied and analyzed. Finally, 44 articles were excluded from the article review process due to their lack of relevance to artificial intelligence, 68 articles due to their lack of relevance to the field of ethics, and 15 articles due to their lack of relevance to higher education. Finally, according to the exclusion and inclusion criteria, 37 articles were identified as eligible for analysis and entered the analysis process. The process of entering articles into the research is depicted in Figure 1.

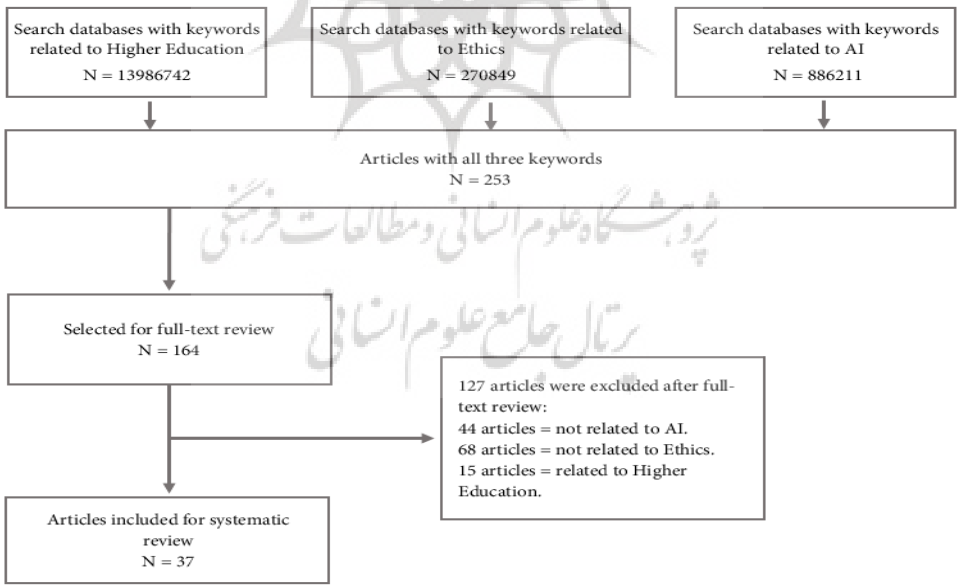

Figure 1. Article selection process chart

4. Data extraction: Table 4 lists information on the final articles included in the study. This information contains the study title, the author/author's name, the year of publication, the country of the study, and the research method.

5. Qualitative assessment of studies: The quality control checklist prepared by Beton et al. (2014) was used to assess the quality of the articles. This checklist includes 43 questions, 32 of which are dedicated to evaluating quantitative studies, and studies conducted with mixed methods are evaluated based on all 43 questions. The quality rating criterion for systematic review studies was evaluated using three answers: "yes" (2 points), "somewhat" (1 point), and "no / not reported" (0 points). Also, to improve the accuracy of the evaluation of the selected articles, two reviewers independently reviewed the selected articles, and differences of opinion between the two reviewers were discussed and reviewed until a final opinion was reached regarding the score of an article. In addition, in the studies in dispute, the main criterion for awarding points was the Publish or Perish scientometrics software, which analyzed the studies in dispute between the two reviewers using the h_index, m_index, g_index, and i10_index indices, and the mentioned criteria were provided to the two reviewers for the final decision. In the following, the scores of each study are expressed as a percentage to allow for comparison. The qualitative evaluation of the articles can be seen in Table 3.

RESULTS

Table 4 provides a good overview of the research selected in this article regarding the ethical perspectives of AI in higher education and examining its opportunities and challenges.

Table 3: Characteristics of articles included in the systematic review

No.	Author(s)	Year	Title	Country	Research Method	Qualitative Evaluation
[11]	Aler Tubella et al.	2024	How to teach responsible AI in Higher Education: challenges and opportunities	5 country	Qualitative/ Interview	82%
[12]	Alrayes et al.	2024	ChatGPT in Education–Understanding the Bahraini Academics Perspective	Bahrain	Qualitative	78%
[13]	Awal	2024	Curse or blessing? Students' experience from ChatGPT with an application of Colaizzi's phenomenological descriptive method of enquiry and content analysis	Bangladesh	Qualitative/ Phenomenology	79%
[14]	Bond et al.	2024	A meta systematic review of artificial intelligence in higher education: A call for increased ethics, collaboration, and rigour	NA	Qualitative	71%
[15]	Bozkurt et al.	2021	Artificial intelligence and reflections from educational landscape: A review of AI studies in half a century	NA	Qualitative	70%
[16]	Cisneros et al.	2023	Adjustment of Peruvian university students to artificial intelligence	Peru	Mixed Methods	78%
[17]	Črček and Patekar	2023	Writing with AI: University students' use of ChatGPT.]Journal of Language and Education	Croatia	Quantitative	74%
[18]	Dakakni and Safa	2023	Artificial intelligence in the L2 classroom: Implications and challenges on ethics and equity in higher education: A 21st century Pandora's box	Lebanon	Quantitative	70%
[19]	Duah and McGivern	2024	How generative artificial intelligence has blurred notions of authorial identity and academic norms in higher education, necessitating clear university usage policies	NA	Qualitative	76%
[20]	Essien et al.	2024	The influence of AI text generators on critical thinking skills in UK business schools	England	Mixed Methods	75%
[21]	Chauke et al.	2024	Postgraduate students' perceptions on the benefits associated with artificial intelligence	South Africa	Qualitative/ Interview	83%

			tools on academic success: In case of ChatGPT AI tool			
[22]	Kamoun et al.	2024	Exploring students' and faculty's knowledge, attitudes, and perceptions towards ChatGPT: a cross-sectional empirical study	France	Quantitative/ Survey	77%
[23]	Grájeda et al.	2024	Embracing artificial intelligence in the arts classroom: understanding student perceptions and emotional reactions to AI tools	Latin America	Mixed Methods	78%
[24]	Holmes et al.	2023	Stakeholder perspectives on the ethics of AI in distance-based higher education	NA	Qualitative	73%
[25]	Huallpa et al.	2023	Exploring the ethical considerations of using Chat GPT in university education	Latin America	Qualitative	82%
[26]	Isiaku et al.	2024	Academic evolution in the age of ChatGPT: An in-depth qualitative exploration of its influence on research, learning, and ethics in higher education	Cyprus	Qualitative/ Interview	80%
[27]	Javed et al.	2022	Get out of the BAG! Silos in AI ethics education: Unsupervised topic modeling analysis of global AI curricula	NA	Qualitative	70%
[28]	Komba and Mercy Mlay	2024	The influence of ChatGPT on digital learning: experience among university students	Tanzania	Qualitative/ Interview and Content Analysis	72%
[29]	Liu	2024	Navigating uncharted waters: Teachers' perceptions of and reactions to AI-induced challenges to assessment	China	Qualitative/ Interview	76%
[30]	Liu et al.	2024	Using generative artificial intelligence/ChatGPT for academic communication: Students' perspectives	China	Mixed Methods	73%
[31]	Li et al.	2023	Ethical implications of ChatGPT in higher education: A scoping review	NA	Qualitative	72%
[32]	Nam and Bai	2023	ChatGPT and its ethical implications for STEM research and higher education: a media discourse analysis	China	Qualitative	70%
[33]	Pacheco-Velazquez et al.	2024	Exploring educational simulation platform features for addressing complexity in Industry 4.0: a qualitative analysis of insights from logistics experts	NA	Qualitative/ Interview	82%
[34]	Peláez-Sánchez et al.	2024	The impact of large language models on higher education: exploring the connection between AI and Education	NA	Qualitative	79%
[35]	Pierrès et al.	2024	Could the use of AI in higher education hinder students with disabilities? A scoping review	Switzerland	Qualitative	72%
[36]	Rawas and Soha	2024	ChatGPT: Empowering lifelong learning in the digital age of higher education	NA	Qualitative	78%
[37]	Šedlbauer et al.	2024	Students' reflections on their experience with ChatGPT	NA	Qualitative	81%
[38]	Sembey et al.	2024	Emerging technologies in higher education assessment and feedback practices: A systematic literature review	NA	Qualitative	79%
[39]	Soodan et al.	2024	AI Chatbot Adoption in Academia: Task Fit, Usefulness, and Collegial Ties. Journal of Information Technology Education	India	Mixed Methods	75%
[40]	Spivakovsky et al.	2023	Institutional policies on artificial intelligence in university learning, teaching, and research	NA	Qualitative	73%
[41]	Sweeney	2023	Who wrote this? Essay mills and assessment–Considerations regarding contract cheating and AI in higher education	England	Qualitative	70%

[42]	Vargas-Murillo et al.	2023	Challenges and opportunities of AI-assisted learning: A systematic literature review on the impact of ChatGPT usage in higher education	NA	Qualitative	77%
[43]	Wood and Moss	2024	Evaluating the impact of students' generative AI use in educational contexts	NA	Mixed Methods	74%
[44]	Yang and Wen	2023	AI-powered personalized learning journeys: revolutionizing information management for college students in online platforms	NA	Mixed Methods	78%
[45]	Zeb et al.	2024	Exploring the role of ChatGPT in higher education: opportunities, challenges, and ethical considerations	NA	Qualitative	75%
[46]	Zhang et al.	2023	From ChatGPT to China'sci-tech: Implications for Chinese Higher Education	China	Qualitative	70%
[47]	Zhu	2022	AI ethics with Chinese characteristics? Concerns and preferred solutions in Chinese academia	China	Qualitative	72%

DISCUSSION

Next, to examine the relationship between the research keywords, VOSviewer software was used, the results of which are depicted in Figure 2. This map shows the relationship between keywords related to ethics in the educational environment based on AI in higher education. This map consists of a set of nodes, lines, and colors, each node representing a keyword and its size depicting the frequency of each keyword. The existing lines connecting each node to another show the relationship between two keywords, and different colors in the map represent different conceptual clusters .

In this map, four main clusters (4 colors) can be identified, each covering a specific topic in AI:

1 .Red Cluster: AI Ethics

This cluster is formed around ethics in AI and includes concepts such as trust, privacy, bias, responsibility, governance, ethical principles, and many others. The red cluster shows that one of the important issues in AI is its impact on moral and social values. Researchers have mainly focused on issues such as algorithm neutrality, the influence on user privacy, and regulatory frameworks.

2 .Green Cluster: Machine Learning and Deep Learning

This cluster is dedicated to the more technical aspects of AI, such as machine learning and deep learning. It includes concepts such as algorithms, neural networks, diagnosis and classification, big data, and many others. In addition, some applications of AI in medicine and cancer treatment are also in this cluster. This cluster represents one of the main underlying technologies of artificial intelligence, along with its many users in various fields, including medical sciences and big data analysis.

3 .Blue Cluster: Education and ChatGPT

We can see the applications of AI in electronic and digital education and learning in this cluster. Concepts include ChatGPT, generative artificial intelligence, academic integrity, critical thinking, educational technology, and many others. Are in this cluster. The connection of this cluster with the issue of plagiarism and admission shows that chatbots in educational environments and their impact on learner learning are of interest to researchers. Also, discussions in this cluster focus on using large language models in academic fraud and its capabilities to improve critical thinking and personalized education.

4 .Yellow Cluster: Artificial Intelligence in Health and Social Challenges

The yellow cluster focuses on the application of AI in health and medicine and includes concepts such as health, radiology, and COVID-19 .

In the present study, it was observed that the keywords artificial intelligence, education, and ethics were the most frequently repeated in articles related to the ethical challenges of

artificial intelligence in higher education. This matter indicates researchers' increasing attention to the role of artificial intelligence in educational systems. Artificial intelligence has been able to change teaching and learning methods significantly, and these changes have raised serious questions about ethical issues and the responsibilities of its application in education. In addition, the frequent usage of the keyword "ethics" in these articles indicates that researchers are aware of the need to create appropriate ethical frameworks for using these technologies in education and are trying to strengthen their strengths and overcome their negative points and challenges

The results of this study demonstrate the need to review educational policies and strategies based on AI. Observing professional ethics in education, especially in learning environments based on AI, is a point for those concerned about this field. Given that the usage of AI in all sectors has brought opportunities and challenges, education and training are no exception. In the following, we intend to answer the three basic questions in the introduction based on the present study.

To answer the first question and based on the results of present study, the perspectives of ethics in the usage of AI in the higher education learning environment are explained as follows: According to the studies conducted, we reached 37 articles related to maintaining ethical principles in the artificial intelligence-based learning environment with an emphasis on the higher education course. Based on the documents in Table 4, given that the frequency of articles and research conducted in 2024 has increased compared to 2021, it can be concluded that Although maintaining ethical principles in an artificial intelligence-based learning environment was one of the main concerns of experts in this field in 2021, in recent years, attention to this issue has increased in educational environments, significantly higher education so that most of the articles that address the purpose of this research are from 2023 and 2024.

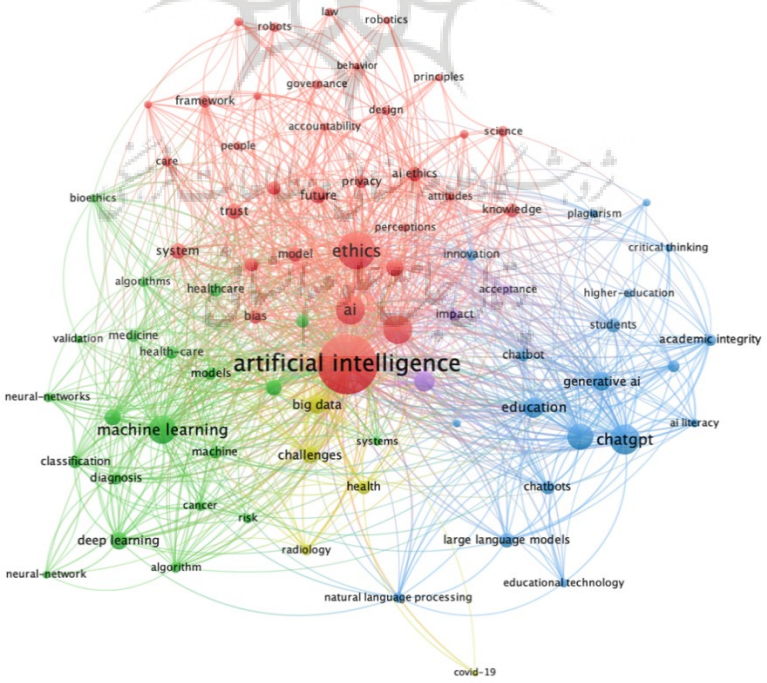

Figure 2: Network of related keywords in Ethics and Artificial Intelligence in Higher Education

One of the important factors that has led to the attention paid to maintaining ethical principles in innovative learning environments in recent years has been the expansion of the usage and application of AI in educational environments. Noting that artificial intelligence educational tools such as chatbots provide significant assistance in carrying out educational activities, it can be acknowledged that it is evident that in the years leading up to the widespread adoption of AI, there has been an increasing amount of research in this field, and that experts and those concerned about education and educational technology consider maintaining ethical principles in innovative learning environments to be one of their main concerns [48].

In addition, research shows that stakeholders in higher education recognize the ethical perspectives of implementing artificial intelligence [49]. There is strong agreement on ethical guidelines, respecting student freedom, avoiding social inequalities, maintaining human collaboration, managing biases, prioritizing data ethics, ensuring clarity and responsibility, and managing privacy and safety considerations using AI [50]. These results indicate the critical need for future research and the advancement of ethical frameworks to guide the integration of AI into higher education. Such measures are essential to safeguard academic integrity, protect individual rights, and ensure that AI technologies enhance the educational experience without compromising ethical standards.

Researchers concluded that it is important to pay attention to the hidden ethical matters associated with the combination of AI to eliminate the possible adverse effects [51]. Another researcher concluded in a study that managers cannot afford to ignore the ethical aspects of the issues. Discourse ethics is a suitable theory for explaining the ethical aspects of matters [52]. Another study also found that integrating AI into assessment practices holds great promise and offers opportunities for personalized learning, efficient assessment processes, and data-driven insights. However, this potential comes with ethical challenges requiring careful consideration and proactive mitigation [53]. Another study found that the successful usage of AI requires careful ethical considerations and effective integration into existing educational systems for optimal outcomes. Finally, the study provides recommendations for further exploration in this area, emphasizing the need for ongoing consideration of the threats and strengths of using AI in education [54].

Furthermore, researchers concluded in their study that the usage of technology in university and education-related processes has the potential to improve practices but that a review of the ethics of technology use is also of considerable importance [55]. Another study concluded that ethical matters surrounding the adoption of artificial intelligence (AI) in African higher education are among the critical discoveries of recent studies. These matters include clarity in AI algorithms, data privacy, and ethical implications in decision-making processes. Universities implementing AI technologies must address challenges such as ensuring ethical data management and maintaining transparency in AI systems [56].

To answer the second research question, the methodological approaches to investigating the ethical component of using artificial intelligence in higher education learning environments showed that according to the studies conducted and based on Figure 3, the studies listed in Table 4 indicate that all three quantitative, qualitative, and mixed methods have been used for research in this area. Qualitative methods are the most widely used, with 25 articles, and include techniques such as in-depth interviews and systematic reviews that help to gain more

comprehensive understanding of individuals' experiences and perspectives. On average, Mixed methods are used with eight articles and combine quantitative and qualitative research methods. This approach allows researchers to benefit from the advantages of both methods and obtain more comprehensive results. Among them, quantitative methods are the least used with four articles and include techniques such as questionnaires and statistical analyses that help researchers obtain measurable and generalizable data.

Qualitative methods, such as literature reviews and in-depth interviews, are mainly used to fully understand stakeholders' experiences and perceptions of AI ethics in educational contexts. For example, a study examining university educators' perspectives on AI ethics used qualitative methods to explore the complexities of ethical decision-making in learning environments.

Quantitative approaches, including surveys and statistical analyses, are also common and provide measurable and generalizable data on ethical considerations in the usage of AI. A study examining the influence of AI on higher education of Saudi Arabia used a quantitative method through an online survey questionnaire and found positive attitudes toward implementing AI among stakeholders.

Therefore, each of mentioned approaches can play a key role in examining AI's ethical weaknesses and opportunities in higher education. The qualitative approach focuses on in-depth understanding, while the quantitative approach focuses on numerical analysis. Combining these approaches can provide a more comprehensive perspective of the current situation and provide better solutions to ethical issues, the results of which can be studied and cited in mixed-method research.

Figure 3: Characteristics of the methodological approach of the articles included in the research.

To answer the third question, we use an analysis and examination of the opportunities and challenges of ethics in AI-based innovative education environments conducted based on the SWOT matrix. SWOT is derived from the terminology of strengths, weaknesses, opportunities, and threats and is analyzed as a process by which internal and external factors that affect AI-based education can be identified. In addition, this strategy allows the researcher to take a more comprehensive look at internal and external factors and existing positive and negative factors to plan and predict more accurately and successfully for the future of AI-based education. The first element of this matrix is the examination and expression of Strengths. Strengths in this matrix refer to internal capabilities and positive factors of applying artificial intelligence in

artificial intelligence-based learning environments that do not exist in other environments. The second item in the internal capabilities section of this matrix is Weaknesses. Weaknesses are the same internal factors and limitations that disrupt the performance of education and prevent its progress, so strengths and weaknesses are internal factors of this matrix. Opportunities are factors or capabilities that can facilitate the connection and communication of the educational environment with the outside world. Accordingly, education can bring significant benefits and help achieve the outlined goals. The last element in this matrix is the Threats element, which refers to external and negative factors of the educational environment. These factors can prevent or delay achieving professional ethics goals in a learning environment based on AI. Accordingly, opportunities and threats are considered external and environmental factors of this matrix [57]. Next, we will examine the elements of the SWOT matrix based on the articles reviewed in this study.

Strengths

After the studies conducted in this study and a detailed analysis of the articles found, based on the articles in the field of explaining the position of professional ethics in the AI-based higher education environment, it can be concluded that the level of attention paid to the position of ethics in AI-based learning environments in recent years, given the increasing growth of AI and the expansion of attention to this issue in education, as well as the direction of education around the world towards e-learning following the Covid-19 pandemic, has become an advantage among higher education institutions. In addition, AI can personalize the learning environment for learners and provide them with a good experience according to their needs and learning styles [58]. Using AI in coursework and assessment processes in higher education can also create new ethical opportunities, such as providing individualized feedback to learners and educational content tailored to each student's knowledge and learning style. In addition, AI in the assessment process will increasingly ensure fairness and be free from emotional biases. However, it is still significant to pay attention to accuracy and transparency in using student data to prevent abuse and discrimination [59].

Weaknesses

According to the results found based on the research conducted, one of the significant weaknesses that artificial intelligence and its use in education will entail is the lack of respect for the privacy of individuals, especially students. The collection and analysis of data carried out by artificial intelligence requires access to much information from individuals' lives, which will violate students' privacy [60]. An organization violates the privacy of individuals to the same extent that it is equipped with artificial intelligence and has valuable and rich sources of information [61]. Another weakness that artificial intelligence entails in higher education is that students may cheat in the assessment process using artificial intelligence tools [62].

Opportunities

Studies have shown that AI in education can contribute to educational equity and justice by making educational resources more personalized and accessible to all students [63]. This emerging technology can also prevent digital divides and provide learning opportunities for different segments of society [58].

Threats

According to the results found in this study, one of the important challenges in AI application in education is the need for clarity in the way data is collected and used, which requires clear information to be provided in this regard. On the

one hand, a lack of clarity may lead to privacy violations; on the other hand, excessive clarity can lead to biases and unfair discrimination in assessments and decision-making [60]. Also, disseminating incorrect information using AI can lead to serious social and moral harm. These challenges affect public trust and may have legislative and information security implications [62].

One of the article's limitations was that the articles were reviewed only in higher education; therefore, caution should be exercised in generalizing the findings to the entire educational community. Also, in this study, research related to the years 2020 onwards was analyzed; therefore, to compare the characteristics of ethics in an AI-based environment in the field of education between recent and past years, we need more research with a broader year restriction. It is suggested that, given the increasing advancement of technology and the pervasiveness of artificial intelligence in all fields, including education, efforts should be made to examine the weaknesses and opportunities of this technology in the field of ethics in education and to try to overcome the challenges and make optimal use of the opportunities. It is also worth noting that the correct culture of using artificial intelligence in this field can create a brighter future for future generations. Finally, it should be noted that due to technological advancement, the design of learning environments has undergone many changes from the past to the present, and given the upward trend of technological advancement, these changes will continue, so similar research is recommended for those concerned about this field.

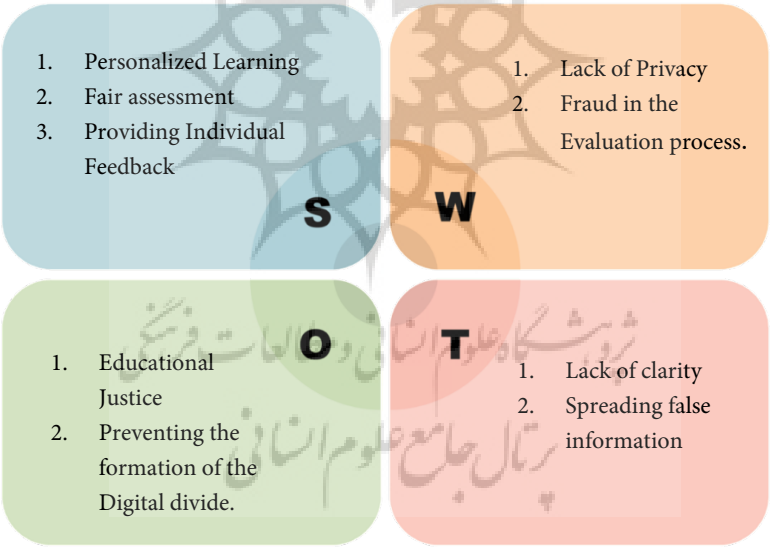

Figure 4: SWOT matrix for investigating the ethical perspectives of AI in Higher Education

CONCLUSION

The present study aimed to investigate the ethical perspectives, opportunities, and weaknesses of AI in higher education. The study's findings show that, based on the studies conducted, attention to maintaining ethical principles in artificial intelligence-based learning environments has increased in recent years. The research data shows that from 2021 to 2024, the number of articles related to this subject has increased significantly, and this upward trend has been significant in recent years. The main factor behind this increased attention to ethical principles in learning environments has been.

This trend reflects the scientific community's concerns and highlights the need to address ethical principles in innovative education. Paying attention to ethics in innovative learning is one of the fundamental and essential challenges in the future of higher education. Also, employing qualitative, mixed, and quantitative methodologies to investigate AI's ethical prospects in higher education allows experts to approach the topic from various perspectives. Qualitative methods contribute to a more thorough understanding of the problem by focusing on individuals' experiences and in-depth perspectives. At the same time, mixed methods, which combine the benefits of both approaches, produce more reliable findings. Although quantitative methods have been used less, they can help with numerical analysis and measurable data. With the speedy advancements of AI technologies and the increasing attention to professional ethics in the educational space, especially after the COVID-19 pandemic, this technology has become an effective tool for personalizing learning and improving the quality of learning environments. Artificial intelligence can help students have better learning experiences by providing possibilities for educational justice and simplifying the evaluation process. However, these possibilities come with challenges, including privacy violations and the possibility of fraud in educational processes; in addition, clarity in the collection and use of data is essential to prevent discrimination and unfair bias. Finally, to optimally exploit the benefits of AI in education, special attention is required to ethical and social issues to maintain public trust and reduce legal and social risks. Paying attention to these challenges and creating appropriate ethical frameworks is necessary to exploit the opportunities of AI while preventing potential harm effectively. Following ethical values when using artificial intelligence can maintain the quality of education and construct an inclusive environment for every student. The key to success in this direction is to balance the strengths of technology with the preservation of human values . Ultimately, combining these approaches will lead to more effective solutions to ethical issues and create a safe environment for education activists.

ETHICAL CONSIDERATIONS

Ethical issues (such as plagiarism, conscious satisfaction, misleading, making and or forging data, publishing or sending to two places, redundancy and etc.) have been fully considered by the writers.

CONFLICT OF INTEREST

The authors declare that there is no conflict of interests.

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