TURKISH ACADEMIC RESEARCH REVIEW

The Philosophical Construction of Educational Science in Relation to Posthumanism and Transhumanism in Artificial Intelligence

Yapay Zekada Posthümanizm ve Transhümanizm ile İlişkili Olarak Eğitim Biliminin Felsefi İnşası

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Öz
Yapay Zeka (YZ), modern çağın en dönüştürücü teknolojik gelişmelerinden biri olarak ortaya çıkmıştır ve eğitim de dahil olmak üzere çeşitli sektörler üzerinde derin bir etki sunmaktadır. YZ'nin eğitime entegrasyonu, kapsamlı bir araştırma gerektiren karmaşık bir fırsatlar, zorluklar ve riskler etkileşimi sunmaktadır. Bu çalışma, YZ'nin eğitim bağlamındaki rolünü incelemek için bibliyometrik, kavramsal ve hermeneutik analizleri kullanan karma bir yöntem yaklaşımı benimsemektedir. Bibliyometrik analiz, Scopus veri tabanından "Yapay Zeka" VEYA "YZ" VE "Eğitim" anahtar kelimeleri kullanılarak alınan 8.288 belgeyi analiz etmek için araçlar kullanarak araştırma eğilimlerini niceliksel ve görsel olarak haritalandırmaktadır. Son yirmi yılda bu alan, dünya çapında 28.740 yazarın katkılarıyla katlanarak büyümüştür. Haritalama, ChatGPT, sanal gerçeklik, büyük veri ve veri madenciliği gibi teknolojilerin yanı sıra makine öğrenimi, derin öğrenme, eğitim mühendisliği ve bilgisayar destekli öğretim gibi yapay zeka uygulamalarının temel alanlarını vurgulamaktadır. Kavramsal analiz, posthümanizm, transhümanizm gibi kritik fikirleri ve bunların eğitimde YZ ile kesişimini incelemektedir. Bu paradigmalar, insani gelişim ve toplumsal ilerleme için bir araç olarak geleneksel rollerine meydan okuyarak eğitimi yeniden şekillendirmektedir. YZ'nin kişiselleştirilmiş öğrenme deneyimlerini kolaylaştırmadaki rolü, verimliliği ve uyarlanabilirliği artırma potansiyelinin altını çizmektedir. Bununla birlikte, daha geniş eğitim hedefleriyle uyumu konusunda acil soruları da gündeme getirmektedir. Bilgi aktarımının ötesinde, eğitim karakter gelişimini, eleştirel düşünmeyi ve sosyal beceri alanlarını teşvik eder ve yapay zeka teknolojilerine aşırı güven nedeniyle potansiyel olarak zayıflar. Hermeneutik yöntem, felsefi metinlerin ve literatürün daha derinlemesine yorumlanmasını sağlayarak YZ'nin eğitime entegre edilmesinin etik ve toplumsal sonuçlarını vurgulamaktadır. İnsan yeteneklerinin teknolojik ilerlemelerle birleştirilmesini savunan posthümanizm ve transhümanizm, eğitimin temel değerlerine varoluşsal zorluklar getirmektedir. ChatGPT gibi araçlar güçlü olmakla birlikte, akademik bütünlüğü ve kritik beceri gelişimini aşındırma riski taşıyor. Örneğin, sınav problemlerini çözmek veya karmaşık sorguları yanıtlamak için yapay zekaya güvenmek, eğitimin temel bileşenleri olan çaba ve entelektüel gelişim ilkelerini zayıflatır. Araştırma, eğitimde YZ'nin iki uçlu doğasının altını çiziyor. Bir yandan, uyarlanabilir ve verimli öğrenme sistemlerini mümkün kılıyor. Öte yandan, geleneksel eğitim uygulamalarını bozarak etik ikilemleri ve insan merkezli öğrenmenin geleceği hakkında soruları gündeme getiriyor. Felsefi bakış açıları, teknolojik entegrasyonu temel akademik değerlerin korunmasıyla dengeleyen bir eğitim sistemini savunarak bu aksaklıkların üstesinden gelmek için çok önemlidir. Bu, yapay zeka uygulamalarını çevreleyen etik hususların, özellikle de posthümanist ve transhümanist ideolojilerin yan ürünleri olan ChatGPT gibi araçların potansiyel kötüye kullanımının ele alınmasını içerir. Dönüştürücü bir süreç olarak eğitim, YZ'yi sorumlu bir şekilde entegre edecek şekilde evrim geçirmeli ve insanın entelektüel çabalarının yerini almak yerine onları tamamlamasını sağlamalıdır. Bu, YZ teknolojilerinin istenmeyen sonuçlarını hafifletmek için eğitim sistemlerinin yeniden yapılandırılmasını gerektirir. Eğitimin amacına yönelik felsefi sorgulama, hızla gelişen dijital bir ortamda bilginin nasıl edinildiğini ve becerilerin nasıl geliştirildiğini vurgulayarak hedeflerinin yeniden düzenlenmesine rehberlik etmelidir. Eğitim kurumları, YZ'nin etik ve pratik sonuçları konusunda farkındalık yaratarak, eleştirel düşünce ve etik karar verme yeteneğine sahip çok yönlü bireylerin yetiştirilmesindeki rollerini geri kazanabilirler. Sonuç olarak, bu çalışma, YZ'yi eğitime entegre etmek için dengeli bir yaklaşıma duyulan ihtiyacı vurgulamaktadır. Teknolojik gelişmeler inovasyon için benzeri görülmemiş fırsatlar sunarken, eğitimin özündeki insani değerleri gölgede bırakmamalıdır. Eğitim sektörü, posthümanizm ve transhümanizmin ortaya çıkardığı zorlukları ele alarak, 21. yüzyıl için sorumlu, etik ve yetenekli bireyler geliştirme misyonunu korurken YZ'nin potansiyelinden yararlanabilir.

Anahtar Kelimeler: Felsefe, Eğitim, Posthümanizm, Transhümanizm, Yapay Zeka

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Abstract
Artificial Intelligence (AI) has emerged as one of the most transformative technological developments of the modern era, offering a profound impact on various sectors, including education. The integration of AI into education presents a complex interplay of opportunities, challenges, and risks that require comprehensive exploration. This study adopts a mixed-methods approach, utilizing bibliometric, conceptual, and hermeneutic analyses to examine the role of AI in educational contexts. Bibliometric analysis quantitatively and visually maps research trends, employing tools to analyze 8,288 documents retrieved from the Scopus database using the keywords "Artificial Intelligence" OR "AI" AND "Education." Over the past two decades, the field has seen exponential growth, with contributions from 28,740 authors worldwide. The mapping highlights key areas of AI application, such as machine learning, deep learning, educational engineering, and computer-aided instruction, alongside technologies like ChatGPT, virtual reality, big data, and data mining. Conceptual analysis dissects critical ideas such as posthumanism, transhumanism, and their intersection with AI in education. These paradigms are reshaping education by challenging its traditional roles as a vehicle for human development and societal progress. AI's role in facilitating personalized learning experiences underscores its potential for enhancing efficiency and adaptability. However, it also raises pressing questions about its alignment with broader educational objectives. Beyond knowledge transfer, education fosters character development, critical thinking, and social skills areas potentially undermined by overreliance on AI technologies. The hermeneutic method provides a deeper interpretation of philosophical texts and literature, emphasizing the ethical and societal implications of integrating AI into education. Posthumanism and transhumanism, which advocate for merging human capabilities with technological advancements, pose existential challenges to education's foundational values. Tools like ChatGPT, while powerful, risk eroding academic integrity and critical skill development. For instance, reliance on AI for solving exam problems or answering complex queries undermines the principles of effort and intellectual growth, essential components of education. The research underscores the dual-edged nature of AI in education. On one hand, it enables adaptive and efficient learning systems. On the other hand, it disrupts traditional educational practices, raising ethical dilemmas and questions about the future of human-centric learning. Philosophical perspectives are crucial in navigating these disruptions, advocating for an education system that balances technological integration with the preservation of core academic values. This involves addressing the ethical considerations surrounding AI applications, particularly the potential misuse of tools like ChatGPT, which are byproducts of posthumanist and transhumanist ideologies. Education, as a transformative process, must evolve to integrate AI responsibly, ensuring that it complements rather than replaces human intellectual efforts. This requires reconstructing educational systems to mitigate the unintended consequences of AI technologies. Philosophical inquiry into the purpose of education must guide the realignment of its goals, emphasizing how knowledge is acquired and skills are nurtured in a rapidly evolving digital landscape. By fostering awareness of the ethical and practical implications of AI, educational institutions can reclaim their role in cultivating well-rounded individuals capable of critical thought and ethical decision-making. In conclusion, this study highlights the need for a balanced approach to integrating AI into education. While technological advancements offer unprecedented opportunities for innovation, they must not overshadow the humanistic values at the core of education. By addressing the challenges posed by posthumanism and transhumanism, the educational sector can harness AI's potential while safeguarding its mission to develop responsible, ethical, and capable individuals for the 21st century.

Keywords: Philosophy, Education, Posthumanism, Transhumanism, Artificial Intelligence

Introduction

The rapid advancement of technology in the digital era has significantly influenced various aspects of human life. One of the most dominant technological developments today is Artificial Intelligence (AI) (Coombs et al., 2021). AI is becoming more widespread and continually evolving, but its reliability continues to be a topic of debate (Firdaus et al., 2024). The profound growth and application of AI appear to challenge human cognitive capacity, creating new opportunities while simultaneously presenting risks and challenges to human existence (Neubauer, 2021). This is because AI has the potential to shift paradigms and reshape cultural norms across multiple sectors, including education.

The implementation of AI in the education sector is both an opportunity and a dual-edged challenge. AI offers promising advantages in areas such as learning processes, evaluation, educational management systems, and policymaking. However, it also raises pedagogical concerns, challenges the educational framework, and poses risks to literacy, character education, and ethics, particularly with regard to data privacy (Saputra et al., 2023). While the potential benefits of AI are considerable, its long-term implications, especially in the context of posthumanism and transhumanism, remain a source of concern (Neubauer, 2021).

Posthumanism and transhumanism are two philosophical paradigms that emerged as responses to the modern Western Enlightenment's humanist ideals (Cole-Turner, 2022). Posthumanism primarily deconstructs the notion of humans as the central axis of all existence, proposing that humanity is neither fixed nor inherently exceptional in the broader context of the world (Nath & Manna, 2023). In contrast, transhumanism advocates the use of technology to enhance human cognitive and physical capacities (Guerreiro et al., 2022).

The rapid evolution of AI often raises philosophical and ethical questions about its impact on humanity, particularly in the field of education (Ghio, 2024). Posthumanism challenges traditional perspectives on human existence, suggesting that technology has the potential to alter human identity and subjectivity. Transhumanism, on the other hand, supports leveraging AI and advanced technologies to augment human abilities (Merzlyakov, 2022).

AI's impact on human systems is profound, improving efficiency and productivity (Kooli, 2023). However, it also disrupts human self-awareness and understanding of the environment. The lines between human and machine identities and subjectivities are becoming increasingly blurred. AI's ability to respond to complex inquiries and execute commands akin to human actions has created a scenario where human identity in the age of technological advancement is difficult to define. Furthermore, the essence of humanity is gradually eroded as machines replace physical and cognitive human skills.

Ethical dilemmas also emerge from the development of AI. It fundamentally alters human conditions, replacing human roles with technology. The superior capabilities of AI make it challenging for humans to enhance their own skills, thereby widening the gap between humans and machines. While AI provides unprecedented convenience, it does not align with the essential development of human skills that should accompany such technological growth.

The philosophy of educational science, as a branch of philosophy, explores the objectives, processes, and values within education (Buchanan et al., 2021). The integration of AI into education introduces new challenges in structuring learning processes dominated by AI. Moreover, it transforms the roles of teachers and students, as AI influences how students acquire information, often leading to the erosion of their identity and ethical grounding (Crawford et al., 2023).

The philosophy of educational science is crucial in analyzing the ethical, epistemological, and ontological implications of posthumanism and transhumanism concerning AI. It not only seeks to understand the development of AI but also aims to construct a framework for navigating the social and cultural changes induced by technological advancements.

The complexity and multidimensional nature of AI require critical analysis and profound reflection on its impact on human behavior and societal patterns. The perspectives of posthumanism and transhumanism, as interpreted through the lens of educational philosophy, can provide deeper insights into AI's influence on humanity and the environment. Consequently, the construction of educational philosophy is expected to prepare society to address the opportunities and challenges posed by AI, ensuring its development maximizes benefits while implementing preventive measures against potential risks and adverse effects.

Research Questions

1. What are the trends and developments in AI research within the field of education on an international scale?
2. How does philosophy construct the utilization of AI in education?
3. How do posthumanism and transhumanism provide new paradigms in the context of education?
4. What are the ethical implications of integrating AI into educational systems, particularly regarding students' identity, consciousness, and boundaries?

Method

This study employs a mixed-method approach involving both quantitative and qualitative analyses to examine the literature on posthumanism, transhumanism, and Artificial Intelligence (AI). The quantitative approach in this study utilizes bibliometric analysis. Bibliometric analysis is a research method that employs statistical techniques to describe publication trends and analyze relationships between articles (Ninkov et al., 2022). Meanwhile, the qualitative approach employs conceptual and hermeneutic analysis. Conceptual analysis is a technique used to provide a clear understanding of phenomena such as categorization, changes in meaning, communication, and linguistic comprehension (Laurence & Margolis, 2003). Hermeneutic analysis, on the other hand, aims to reveal the complex layers of meaning to understand what is said or done by humans and seeks to clarify the meaning of an object of study (Myers, 2004).

Bibliometric Analysis

The purpose of using bibliometric analysis in this study is to quantitatively and visually explore AI research in the educational system using bibliometric tools. This study utilizes the VOSviewer (Visualization of Similarities) software for bibliometric analysis. VOSviewer aims to identify groups and patterns within data to provide insights into their impact and influence on a research field or publication (Kirby, 2023). VOSviewer is highly supportive of bibliometric analysis in visualizing and identifying clusters, patterns, and research trends.

The bibliometric analysis in this study uses articles sourced from the Scopus database over the last 20 years, from 2004 to 2023. The sample search includes article titles, abstracts, and keywords using the terms "Artificial Intelligence" OR "AI" AND "Education." This study is limited to samples from journal articles, eliminating document types such as conference papers, reviews, notes, editorials, book chapters, short surveys, letters, conference reviews, books, and errata. The research query used is: TITLE-ABS-KEY (“Artificial Intelligence” OR “AI” AND “Education”) AND PUBYEAR > 2003 AND PUBYEAR < 2024 AND (LIMIT-TO (DOCTYPE, “ar”)).

The selection and exclusion of articles in this study are based on specific criteria to ensure relevance, quality, and depth of analysis that aligns with the research focus. The chosen articles are publications from peer-reviewed journals, as this type of publication guarantees higher research quality and validity through a rigorous peer-review process. While often presenting useful information, conference papers and book chapters are excluded for several reasons. Conference papers typically have a more limited scope and less in-depth discussion than journal articles, making them less likely to provide comprehensive analysis. Similarly, although academically valuable, book chapters are often more general and may not adhere to the same rigorous methodology standards as journal articles. The exclusion of these publication types ensures that the literature analyzed is the most relevant and reliable for supporting the research questions and methodologies employed.

Conceptual Analysis

Conceptual analysis is a method that involves breaking down complex ideas and examining their constituent parts. This approach focuses on analyzing concepts related to a specific topic or research domain. The method aims to understand key concepts such as posthumanism, transhumanism, and artificial intelligence (AI) in education. Furthermore, this method seeks to identify how these concepts are integrated and applied in educational theory and practice.

Hermeneutic Analysis

The hermeneutic method is used to interpret the meaning of philosophical texts and literature related to posthumanism, transhumanism, and AI in the context of education. The researcher attempts to create a hermeneutic circle to understand the meaning of the text as fully as possible by using both holistic and partial understandings. The holistic understanding determines the meaning of individual parts, and this understanding forms the circle as a whole. The functional meaning of each word in the overall sentence and the meaning of each word in the sentence determine the meaning of each sentence (Retnowati, 2013).

The three methods employed in this research, bibliometric analysis, conceptual analysis, and hermeneutic analysis, function in a complementary manner to provide a comprehensive understanding of the topic under discussion. Bibliometric analysis offers a quantitative depiction of the existing research trends and patterns, forming the foundation for conceptual analysis to identify and delineate the fundamental components of relevant concepts. In turn, hermeneutic analysis offers a deeper understanding of the philosophical meanings embedded within the texts and concepts, allowing for a more profound and contextual interpretation. These three methods work synergistically to present a more holistic and in-depth view of the research topic, bridging quantitative perspectives with more philosophically grounded qualitative insights.

Results And Discussion

Trends and Research on AI in the Field of Education

The research findings identified a total of 8,288 documents related to artificial intelligence in education from the Scopus database over the past 20 years. The growth of research in this field, spanning from 2004 to 2023, shows a significant increase in the number of articles published in Scopus. The progression in the volume of published articles is illustrated in Figure 1.

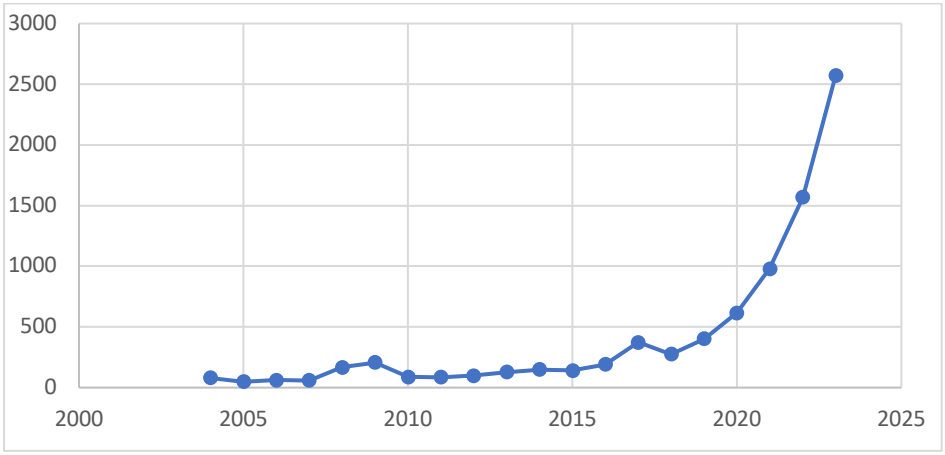

Figure 1. Publication trends over the past two decades

Research trends in AI within the field of education have experienced rapid growth and have become a focal point of global academic inquiry. A particularly significant surge occurred after 2020. During this period, research was largely driven by the COVID-19 pandemic, which necessitated a paradigm shift in educational methodologies, including the integration of AI. However, the current advancements in AI extend beyond teaching methods and have evolved into sophisticated search engines surpassing human cognitive capabilities. Consequently, AI research in education has emerged as a global trend and remains an actively explored topic of interest among international researchers, as illustrated in Figure 2.

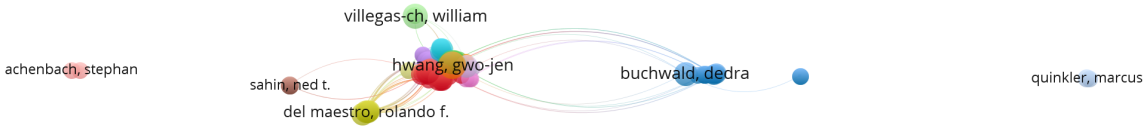

Figure 2. Researcher Maps

Between 2004 and 2023, a total of 28,740 authors conducted research and published findings on AI in education. Some authors published their research multiple times rather than just once. When the dataset was filtered to include only authors with a minimum of five published documents, 107 entries met the threshold. Based on the analysis, the top 10 authors with the highest number of publications are presented in Table 1.

Table 1. Top 10 Authors Published Document

Author	Document	Citation
Hwang, gwo-jen	13	529
Villegas-ch, William	11	211
Chiu, Thomas k.f	10	280
Zhang, wei	10	137
Buchwald, dedra	10	120
Winkler-schwartz, alexander	9	500
Del maestro, Rolando f	9	443
Gasevic, dragan	9	318
Ogata, Hiroaki	9	226
Ledwos, nicole	8	497

Based on the threshold analysis, when compared to the total number of documents retrieved, it indicates that research on this topic is not limited to a small group of individuals. Instead, it has been widely studied by numerous researchers, demonstrating significant interest in AI research within the field of education. This widespread interest contributes to the continuous growth of research trends, making it a prominent topic of discussion today. These researchers come from various countries around the world. A map illustrating the global contributions by country, filtered to include those with a minimum of 10 published documents and yielding 79 thresholds, is presented in the figure 3.

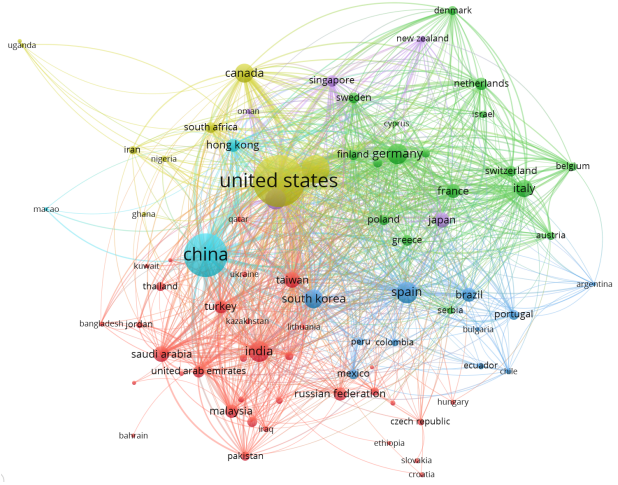

Figure 3. Mapping Contribution of Countries

The results of the country contribution map indicate that the larger the representation, the greater the number of publications produced. The top five countries, ranked based on the number of published documents and citations received, are presented in Table 2.

Table 2. Rank of Countries by Documents and Citations

Rank	Country by Document	Document	Rank	Country by Citation	Citation
1	United States	2158	1	United States	69565
2	China	1555	2	China	23268
3	United Kingdom	657	3	United Kingdom	20480
4	Spain	370	4	Germany	11510
5	India	357	5	Australia	10634

The result is essential to analyze researchers' focus on AI in the field of education. Examining research topics provides valuable insights into current trending areas of study. From the 8,288 articles published in Scopus, a total of 38,850 keywords were identified. These keywords are analyzed based on their occurrence frequency within the research. A keyword occurrence map, filtered to include a minimum of 50 occurrences across documents and resulting in 284 thresholds, is presented in Figure 4.

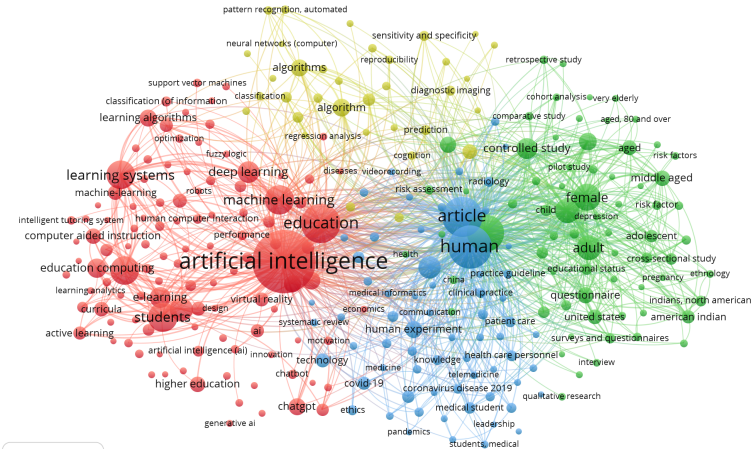

Figure 4. Mapping Occurrence of All Keywords

The research mapping results indicate that the integration of AI in education is primarily concentrated on areas such as machine learning, learning systems, engineering education, and deep learning. Meanwhile, the application of AI is focused on aspects like learning algorithms, ChatGPT, computer-aided instruction, big data, virtual reality, and data mining, all of which demonstrate high levels of occurrence. These research topics necessitate a comprehensive analysis of their potential impacts on both teachers and students. The role of educational philosophy is essential in shaping the application of AI to ensure that educational systems and learning processes do not adversely affect future generations.

Philosophical Construction of AI Utilization in Education

AI is defined as a technology capable of performing tasks in a manner similar to how humans utilize their cognitive abilities (Pedro et al., 2019). This positions AI as having significant potential to transform how learning is delivered and received. AI consists of several core components, including machine learning, adaptive algorithms, and recommendation systems (Essa & Human-Hendricks, 2023). However, it is

essential to recognize that education is not solely about transferring knowledge but also involves character development, social skills, and critical thinking.

The presence of AI in education supports personalized learning, but this should align with educational goals, which include developing knowledge, skills, and values (Kooli, 2023). The primary focus of AI in education is on leveraging technology to enhance efficiency and personalization (Chien & Hwang, 2023; Zhang & Aslan, 2021). However, this raises concerns about the potential for dehumanization in educational processes and diminished social interaction. Therefore, a philosophical construction of AI in education is needed, analyzed from ontological, epistemological, and axiological perspectives.

Ontology, as a branch of philosophy, discusses the nature of existence and reality (Munn, 2008). AI in education represents a digital entity capable of interacting with humans by providing feedback tailored to user needs (Kuhail et al., 2022). In the field of education, AI creates an interdependent relationship between humans, including teachers and students, and machines. This enables AI to make learning more personal and adaptive; however, over time, the role of humans risks being diminished by the presence of AI.

Epistemology explores the nature and scope of knowledge. From an epistemological perspective, AI is used to collect, analyze, and disseminate knowledge. In the global education system, AI can process student data to identify learning patterns, strengths, and weaknesses (Murtaza et al., 2022). However, within the scope of epistemology, questions arise about whether the knowledge provided by AI is equivalent to that gained through human experience and interaction. Consequently, the validity and accuracy of AI are still under question.

AI can be used to make decisions regarding learning strategies and interventions (Pellitier et al., 2022; Murtaza et al., 2022). However, the current issue lies in determining the extent to which AI can be trusted to make complex and ethical educational decisions. This is due to AI's reliance on algorithmic biases and available data, without considering various external factors that might influence decision-making.

Axiology, the branch of philosophy studying ethics and aesthetics, examines the value AI brings to education. AI provides benefits such as increased efficiency, personalization, and accessibility to support education. However, from an axiological perspective, it is necessary to consider whether these benefits align with the broader educational goals of fostering students' character development. The risks of AI include potential dehumanization and reduced social interaction among students, which require ethical deliberation.

A philosophical approach to constructing AI's role in education is essential for implementing its benefits and addressing its potential impacts on education. While AI holds great potential for enhancing efficiency, significant challenges remain, particularly in addressing social and character development issues. Therefore, the effective consideration of AI must be accompanied by responsibility and a balance between technology and student interaction in the learning process. Education serves as a platform to shape future generations.

While AI can enhance learning efficiency, attention must be given to reducing student social interaction. An effective approach is integrating AI technology within collaborative learning, where students continue interacting with one another, even using AI-based tools. AI can provide tasks that can be solved through group discussions, where AI serves as a source of information or an aid, while social interaction among students remains an integral part of the learning process.

The Paradigms of Posthumanism and Transhumanism in Education

The paradigms of posthumanism and transhumanism offer radical and transformative perspectives on the future of humanity, particularly in the context of education (Baelo-Allue & Calvo-Pascual, 2021). These paradigms dissolve boundaries between humans and technology, fundamentally altering various aspects of human life, including education, which serves as a primary sector for personal development. These perspectives necessitate thorough analysis to determine the trajectory of future education. Therefore, considerations from ontological, epistemological, and axiological perspectives are crucial to shaping education in an era of technological integration.

Posthumanism asserts that humans are neither fixed nor inherently exceptional entities in the world (Nath & Manna, 2023). It emphasizes the interconnectedness between humans, technology, and the environment, challenging classical humanism, which places humanity at the center of all things. Posthumanism promotes a more inclusive and dynamic view of human existence, integrating human identity with technological advancements.

In education, a posthumanist approach advocates for holistic learning, where technology is not merely a tool but an integral component of the learning process (Barik, 2023). Epistemologically, posthumanism has redefined the way knowledge is acquired, viewing it as distributed and diverse rather than exclusively human-derived. In this paradigm, AI and other forms of artificial intelligence are recognized as legitimate sources of knowledge.

Conversely, transhumanism focuses on leveraging technology to enhance human cognitive and physical capacities (Guerreiro et al., 2022). Within the realm of education, transhumanist perspectives prioritize not only knowledge transfer but also the development of human potential through technological means. Epistemologically, transhumanism in education positions technology as a catalyst for accelerating the learning process by improving access to information.

From an axiological perspective, transhumanist education must address the ethical implications of technology use. Ensuring that technology is equitably accessible and not misused is essential. As technological advancements surpass human cognitive capabilities, care must be taken to prevent humanity from being dominated by technology rather than guided by it.

Both posthumanism and transhumanism present unique opportunities and challenges in education. Posthumanism emphasizes the importance of interconnected and diverse learning processes, requiring significant changes in educational structures and methods. Meanwhile, transhumanism offers immense potential to enhance human skills through technology but faces challenges related to ethics and social interactions.

Ethical Implications of AI in Educational Systems

A new era in education has begun with the advent of artificial intelligence (AI), which enables students to access information effortlessly. However, this system also presents challenges and limitations, particularly in ethical concerns (Kooli, 2023). One of the key ethical challenges in education is that AI or chatbots could potentially replace human roles and expertise. Students may rely on AI tools like ChatGPT to substitute teachers for support (Pesonan, 2021).

Advancements in AI and natural language processing (NLP) technologies within education have led to significant transformations in programs such as chatbots, enabling them to handle more complex tasks and interact in ways that mimic human communication (Kooli, 2023). The use of AI, particularly ChatGPT, in the education sector has raised concerns about the accuracy of the content it provides (Grassini, 2023).

The use of ChatGPT in education poses challenges regarding its reliability and accuracy (Sallam, 2023). This is because ChatGPT cannot evaluate the quality or biases of the sources it retrieves to provide relevant information (Pavlik, 2023). Although ChatGPT's sources are often deemed unreliable and require further reasoning, a study conducted by Kooli (2023) found that ChatGPT successfully answered multiple-choice questions from a university assessment with perfection. Consequently, using ChatGPT or similar AI tools to answer questions may constitute a violation of educational principles, conflicting with the goals of education.

Relying on ChatGPT, chatbots, or other AI technologies to solve exam problems undermines the foundational principles of learning and academic integrity (Kooli, 2023). Therefore, the ethical use of AI in the era of advanced chatbots has become a significant concern in education. Such AI usage could compromise the quality of student skills and impede the development of essential abilities for the current Education 5.0 era.

The skills targeted in Education 5.0, such as critical thinking, creativity, reasoning, and the application of concepts to real-life situations, risk being undermined by the proliferation of AI chatbots. This is because the academic use of chatbots negatively impacts the reliability of assessments. The reliability of the evaluation process, which should reflect consistency and stability in learning outcomes, is compromised by AI chatbots, resulting in outcomes that fail to represent students' true competencies.

The use of AI chatbots poses significant risks to the reliability and validity of assessments when they are misused during examinations (Kooli, 2023). AI chatbots can provide immediate answers to questions posed by students, fostering academic dishonesty and undermining skill development. Additionally, their use can create inequities between students with access to AI tools and those without, leading to further imbalances in educational opportunities.

Implementing AI in education is crucial for educators to harness this technology responsibly, ensuring that its use focuses on efficiency and the development of students' character. Educators can employ AI to tailor instructional materials to students' individual learning needs while ensuring that students remain engaged in profound social interactions. This approach can mitigate the tendency of AI to replace human roles in education, ensuring that technology complements rather than replaces a more holistic educational process. Educators must ensure that the use of AI in education is not merely about providing quick answers, as this is vital for preserving students' critical thinking skills. Consequently, the presence of AI should not diminish students' motivation to ask questions, analyze, and critically evaluate the information provided by AI. Furthermore, educators need to create opportunities for students to engage in discussions and collaborative group work, which fosters social skills and enhances their ability to collaborate in real-world contexts.

Philosophical Construction of Educational Science in Relation to Posthumanism and Transhumanism in Artificial Intelligence

Posthumanism and transhumanism are complementary perspectives shaping the future of education. Posthumanism encourages interconnectedness, inclusivity, and balance within the educational domain. This is supported by transhumanist views, which advocate for technological transitions in education to surpass human limitations. Thus, a critical evaluation and strategic use of technology in education must be undertaken, ensuring that its potential in the current era, particularly in technology, is harnessed while preserving ethical values and social interactions.

The integration of posthumanist and transhumanist perspectives suggests that education will advance significantly, yet this progress will also amplify the challenges tied to education's core objectives. Ethical considerations and academic values become increasingly difficult to uphold with the presence of ChatGPT, a product of both posthumanist and transhumanist ideologies. ChatGPT provides students with ease in answering questions and interacting as if it were human. As the next generation leans toward simplified access to solutions, ChatGPT will likely remain a preferred alternative for students.

Machines demonstrate superior performance and innovation, often outpacing humans in data analysis and expertise. However, they lack the nuanced understanding and contextual awareness that humans possess. Therefore, while technological advancements driven by posthumanism and transhumanism are indispensable in the current era, it is crucial to remain cautious about their limitations, particularly in ethical contexts.

The philosophical construction of education must address the increasing dependence on AI chatbots like ChatGPT, because the foundation of philosophy can establish ethics and sustainability (Nurziana & Firdaus, 2025). Education must reconstruct systems disrupted by the significant advancements of posthumanism and transhumanism. Philosophical perspectives should realign the purpose of education, emphasizing how knowledge is acquired and skills are developed. Educational values can be reclaimed by fostering awareness of the impacts and potential drawbacks associated with these technologies.

CONCLUSION

Research trends in AI within the educational field have experienced rapid growth, becoming a focal point of global academic attention. The advancements of AI today extend beyond learning methodologies, evolving into search engines that surpass human cognitive capabilities. Philosophical approaches to AI in education are critical for applying its benefits while addressing its broader impacts. While AI holds immense potential to enhance efficiency, it also presents numerous challenges, particularly in addressing social issues and character formation.

Posthumanist and transhumanist perspectives herald significant educational advancements but risk undermining essential skills such as critical thinking, creativity, reasoning, and the application of concepts in real-world scenarios, particularly with the rise of AI chatbots. Education must reconstruct its systems, realign its objectives, and refine how knowledge is acquired. This approach ensures that the values of education are preserved and that its benefits are understood alongside its limitations.

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