The Impact of Artificial Intelligence on Education

Isa Erbas[1], Eduina Maksuti[2]
[1]University College "Beder", Albania
[2]University "Aleksandër Moisiu", Albania

ABSTRACT: Artificial Intelligence (AI) is an increasingly progressive field that aims to develop computer systems capable of producing inventive and creative content, including text, images, music, video, and audio, that closely resemble human-generated material. AI has significantly impacted education, with both positive and negative implications. While it has gained widespread popularity, it has also raised concerns about bias, misinformation, misuse, and risk, emphasising the need for the responsible implementation and development of generative AI in education. There have been discussions about whether it should be prohibited or whether teachers and students should receive adequate training to use it effectively and ethically. The purpose of AI in education should be to embrace the opportunities it presents while maintaining high academic standards. Renowned universities have developed guidelines and manuals for the responsible use of generative AI tools. This study examines the impact of generative AI on education, analysing its advantages and disadvantages in schools, its outcomes, and how teachers and students can use it for educational purposes. The study also emphasizes the effective use of AI in education, employing qualitative and quantitative methods to evaluate its usage. The results highlight the benefits and drawbacks of generative AI in education, concluding with recommendations and future applications of generative AI in education.

KEYWORDS: Artificial Intelligence, its impact on education, evolution, concerns, ethics, Chat GPT.

1. INTRODUCTION

"If AI is going to change the world in the near future, we need to prepare students for that world" (Miller, 2023, p. 7)

The impact of AI is far-reaching and extends into various industries, presenting both tremendous possibilities and notable obstacles. In the realm of education, AI can transform teaching approaches, enrich learning encounters, and fundamentally alter the dynamic between technology and people. With intelligent tutoring systems and automated assessment resources, AI is redefining how educators connect with students and how students engage with educational material.

The potential of AI in education is exemplified by emerging technologies like Chat GPT. Chat GPT is a technology that is Generative Pre-Trained Transformer technology, and it offers a variety of capabilities that benefit both educators and students. With Chat GPT, educators can create lesson plans and generate learning materials with ease. This technology streamlines educational workflows, providing valuable assistance to teachers and improving learning outcomes for students.

As AI becomes more integrated into education, it's important to consider the ethical implications. It's crucial to ensure that AI is used responsibly, that everyone has equal access to it, and that both educators and students are knowledgeable about it. To integrate AI ethically, we need clear systems of accountability, collaborative approaches, and comprehensive educational initiatives that cover AI.

This study offers an overview of the field of artificial intelligence (AI), including its evolution and the opportunities and considerations associated with embracing AI in education. Additionally, it examines the ethical integration of AI in education and the impact of Chat GPT in educational settings. The study is supported by relevant findings and research.

2. LITERATURE REVIEW

In the rapidly evolving landscape of modern society, digital systems and artificial intelligence (AI) have emerged as pivotal forces, profoundly shaping human life and civilisation. Their influence extends across various domains, with significant implications for social dynamics, educational paradigms, and economic structures. As AI advances, its integration into everyday life becomes increasingly dominant, driving transformations in the education and healthcare sectors.

This study delves into AI's multifaceted impact, exploring its potential to revolutionise teaching methods, enhance learning experiences, and fundamentally redefine the relationship between technology and humanity. As we confront AI's profound opportunities and challenges, it becomes imperative to navigate its trajectory critically, ensuring that technological innovation aligns with the broader pursuit of human flourishing and ethical responsibility.

The Impact of Artificial Intelligence on Education

Digital systems and artificial intelligence (AI) have become crucial aspects of modern society, profoundly impacting human life and significantly changing civilisation. With their immense power, particularly in systems that make decisions independently, it's essential to consider the potential social effects and the opportunities and challenges AI presents (Henrique Sousa Antunes, 2024, p. 107). As technology advances, we are witnessing an increase in the utilisation of AI systems. These systems rely on neural network machine learning methods to perform a variety of classifications (Herman Cappelen, 2021, p. 13). AI has rapidly become one of the most widely utilised technologies in modern history, integrated into billions of smartphones for various services, such as speech recognition agents like Siri and Alexa, and recommendation services for music, movies, books, retail purchases, and driving route mapping. The potential impact of AI and its associated technologies on the future of learning, teaching, and educational systems is immense (Hannele Niemi, 2023, p. 332). For example, teachers can utilize Chat GPT, which is powered by AI, to evaluate written assignments automatically (Stan Skrabut, 2023, p. 31).

The classroom is vital for teaching and learning, offering a dynamic and intricate real-world experience, and classroom instruction is a crucial factor in achieving top-notch education. Yet, traditional methods of analysing classroom teaching based on coding and tallying teacher-student interactions have lacked substance and efficacy. Fortunately, with the rapid advancements of AI technology, AI integration offers exciting new possibilities for teaching analysis. AI-powered tools promise to revolutionise classroom teaching analysis, providing innovative new approaches to the field. Time coding has been utilised since the 1970s in classroom teaching, and quantitative analysis is used to observe live classrooms or record on videotape. Researchers catalogue various behaviours, interactions, or verbal communications between teachers and students during the lesson every 3 s or 15 s. The numbers or frequency of each code are tallied to determine the teaching styles or qualities. (Hannele Niemi, 2023, pp. 105-106).

Intelligent textbooks are a revolutionary new way to enhance students' learning experiences. Intelligent tutoring technologies are integrated within digital textbooks to provide interactive reading support that goes beyond the basic features of traditional digital textbooks, such as highlighting, underlining, and note-taking. They also analyse how students interact with the material and build customised scaffolding to enhance their learning. With the rapid development of AI, intelligent textbooks now offer even more sophisticated learning services, including automatic resource matching, question answering, personalised evaluations, and planning. By combining AI with electronic textbooks, intelligent textbooks collect data on student performance and analyse it to improve the learning process (Hannele Niemi, 2023, pp. 247-249). Over the last decade, researchers have conducted numerous empirical studies in schools, showcasing the effectiveness of intelligent textbooks. These studies have revealed that intelligent textbooks greatly enhance students' reading and learning abilities. Furthermore, based on user feedback, intelligent textbooks show great potential as a new form of digital learning material. The increasing evidence of the positive impact of intelligent textbooks has garnered significant attention in recent years (Hannele Niemi, 2023, pp. 255-256).

There has been a growing interest in AI among the general public, not just because of the ongoing conversation around the various possibilities and outcomes in the future but also because of technology's tangible effects. Algorithms are increasingly embedded in crucial services like education, healthcare, and benefit payments. Additionally, AI is transforming numerous professions, necessitating people to learn new skills (Haroon Sheikh, 2023, p. 5)**.** Our lives are greatly influenced by technology in today's world. It is a crucial factor that plays a significant role in shaping our everyday experiences. It is no longer solely about gadgets and gizmos but an integral part of our health, education, relationships, work, and entertainment. We often overlook its significance because we have grown accustomed to its presence. However, the impact of technology is determined by its application and design. While it has revolutionised medical treatments, agriculture, and transportation safety, it has also contributed to mental health issues and societal divides and raised concerns about privacy and surveillance (Hannes Werthner, 2024, p. 267). AI has the potential to impact various aspects of society in Africa. These aspects include politics, poverty, environmental sustainability, transportation, agriculture, healthcare, education, financial transactions, and religious and traditional beliefs. These changes are expected to be profound and could lead to significant socio-cultural transformations throughout the continent (Damian Okaibedi Eke, 2023, p. 4).

AI will become ubiquitous in numerous industries in the coming years, from automobiles, finance, consumer goods, and retail to healthcare, education, manufacturing, communications, energy, tourism, culture and entertainment, transportation, logistics, real estate, and environmental protection. This will be facilitated by advanced infrastructure incorporating smart sensors and chips, enhancing computing power for the AI industry and ensuring its continued growth. AI technological services will primarily involve building AI platforms and offering solutions and services to external users. The manufacturers of these AI technologies will play a crucial role in the AI industry chain by providing essential technological platforms, solutions, and services to all AI applications via their robust infrastructure and vast data (Huawei Technologies Co., 2023, pp. 20-21).

In December 2018, the European Commission and Member States released a comprehensive AI strategy plan to enhance Europe's public interest areas, including healthcare, transport, security, education, and energy. This coordinated plan builds upon and expands the existing AI strategy, reflecting a concerted effort to bolster Europe's endeavours in crucial areas that benefit society (Ulnicane, 2022, p. 260). At the educational level, cultivating digital awareness early on is crucial. This includes recognising how digital tools impact social relationships and training university designers sensitive to these aspects and can effectively communicate with experts in fields such as sociology, social psychology, and philosophy (Hannes Werthner, 2024, p. 104). According to

The Impact of Artificial Intelligence on Education

Verdegem, an AI-powered system can be particularly beneficial for those in the community who are unable to afford to pay their parking ticket and may not possess the necessary level of education, literacy, knowledge, or experience required to understand and negotiate written legal documents (Verdegem, 2021, p. 2). AI has proven a valuable tool in various educational settings, such as assessing student work with great precision and providing teachers with insights into their students' learning processes. With interactive tools facilitating knowledge sharing and construction, educators can enhance and tailor their instruction to individual students' needs. Additionally, AI-powered tutoring can provide personalised learning experiences for students (Hannele Niemi, 2023, pp. 4-5). The practical potential of AI has gained recognition, and as a result, research centres and consultancies primarily concerned with non-technological fields are paying attention. Previously, AI was considered a part of the general issue of digitalisation. Still, organisations that operate in fields such as education, healthcare, security, infrastructure, and law have recently shifted their focus to how AI impacts their respective disciplines (Haroon Sheikh, 2023, p. 66).

Six technologies are potential candidates for the next innovation wave: The Internet of Things, new materials, blockchain, robotics, autonomous devices, and AI. Out of these, it is possible that AI could be the most significant one (Atkinson, 2019, p. 13). During the formative years of school education, it is imperative to give utmost importance to the principles that have been enumerated in the Digital Humanism manifesto. This will ensure that young students develop a deep understanding of these aspects while simultaneously gaining proficiency in the discipline's technical components (Hannes Werthner, 2024, p. 108).

Technology should not be immediately demonised as it has been fundamental for human survival and quality of life. Personal benefits often attract people to new technologies, but negative social impacts may only become evident later. Therefore, it's essential to critically analyse technological creations and their mass applications to prevent crises. The second assumption is that technological advancements (such as scientific development) are inevitable, unstoppable, or deterministic and, therefore, cannot be suppressed, only redirected. Thirdly, technological innovation is not exempt from ethical scrutiny. The signature of the creator is present in every creation, and the adoption of novel technologies leads to their utilization. Technological development is the result of human desires that are difficult to control. The fourth principle emphasises that technology should not be pursued for its own sake but rather as a means to the ultimate end of human flourishing. All human endeavours aim to create new and diverse ways to promote and achieve this goal, and technology must always be subordinated to humanity to achieve it. The critical question is whether technology should serve humanity as a tool (e.g., to advance human health) or adapt to the demands of technology (Henrique Sousa Antunes, 2024, pp. 108-109).

As AI becomes more prevalent in society, it is crucial to prepare students for this evolving landscape. This preparation should align with ethical responsibility and promote human flourishing.

Artificial Intelligence

AI is one of the most transformative and complex fields of study in contemporary science and technology. It is defined as "Artificial intelligence is the human-made *imitation* of natural intelligence" (Bathgate, 2023, p. 11). "AI is a constellation of many different technologies working together to enable machines to sense, comprehend, act, and learn with human-like levels of intelligence" (Hannele Niemi, 2023, p. 332). However, pinning down a precise definition of AI proves challenging due to its multifaceted nature and ongoing evolution. As Howard Gardner posits, "Intelligence is the ability to solve problems or to create products valued within one or more cultural settings" (Gardner, 1993, p. X). In this context, AI emerges not only as a technological endeavour but also as a reflection of human ingenuity and societal values. "AI and human intelligence are different in nature, and both have their strengths and limitations" (Bathgate, 2023, p. 18).

AI can certainly do things that look like the intelligent things we do, but it does them very differently. Considering the various definitions discussed, we have agreed on an open definition of AI. There are two critical factors to consider. Firstly, it would not be wise to restrict the definition of AI to only a specific part of the technology. For instance, if we were to limit ourselves to "deep learning", we would overlook that many current issues are also present in other domains of AI, such as logical systems. Furthermore, most of the AI applications governments use do not rely on advanced techniques like DL, but there are still several significant issues. A narrow definition would exclude such applications from the scope of this study. Although DL has resulted in substantial progress. Other fields may bring forth future advances in AI. Therefore, it is crucial to have an open definition of AI that allows for this possibility. The second point to note is that the character of this scientific field implies that our understanding of AI will inevitably evolve with time (Haroon Sheikh, 2023, pp. 18-19). For the reasons mentioned, it isn't easy to give definitions to AI.

The Evolution of Artificial Intelligence

The genesis of AI traces back to the mid-20th century, a pivotal era when the concept of machines emulating human cognitive functions took root in scientific discourse. In 1936, Alan Turing, also known as the father of AI, authored a paper called "On Computable Numbers" in which he introduced the idea of a "Turing Machine", a computer-like device. The Turing Test is a demonstration of a machine's ability to process vast amounts of data, understand spoken language, and engage in conversation with humans. (Taulli, 2019, pp. 2-3). In the 1950s, pioneers in science and engineering proposed that machines could engage in formal logic akin to human thought processes, marking a foundational moment in the study of AI (Zylinska, 2020, p. 23). However, AI did not materialise overnight; its evolution was gradual, shaped by technological advancements and theoretical frameworks. The seminal

event often cited as the birth of AI occurred in 1956 during a summer school hosted at Dartmouth College, where luminaries such as Marvin Minsky and John McCarthy introduced the term "Artificial Intelligence" (Henrique Sousa Antunes, 2024, p. 111). According to Haroon Sheikh, the birth of specific fields can be accurately pinpointed, with AI being one such discipline. Its inception in the laboratory is commonly traced back to 1956, when a summer school was held at Dartmouth College in New Hampshire, USA. However, AI did not simply emerge out of nowhere. The technology existed for some time before it was seriously considered a scientific field (Haroon Sheikh, 2023, pp. 20-21). Between 1956 and 1974, the field of AI was one of the hottest areas of technology. During the 1970s, interest in AI decreased, leading to the "AI Winter" lasting until the 1980s (Taulli, 2019, pp. 8-11). The landmark conference heralded the inception of the AI Project, laying the groundwork for establishing renowned institutions like the MIT Computer Science and Artificial Intelligence Laboratory. As AI continued to develop, pivotal moments in its history captured global attention, highlighting its potential and challenging human capabilities. Notably, in 1997, the iconic match between the chess computer Deep Blue, developed by IBM, and world champion Garry Kasparov captivated audiences worldwide, showcasing AI's prowess in strategic thinking and problem-solving (Peter Klimczak, 2023, p. 122). AI has been rapidly developing and will continue to transform society. These historical milestones underscore the dynamic interplay between human ingenuity and artificial intelligence, shaping the trajectory of technological innovation and the quest for machine intelligence.

Embracing AI in Education: Opportunities and Considerations

As we move towards a technology-driven world, embracing AI in education is no longer an option but a necessity. AI offers numerous opportunities to revolutionize the education sector by personalizing learning, automating administrative tasks, and improving student outcomes. However, as we embrace AI, we must also consider the ethical and privacy implications of its implementation. Thus, before we fully integrate AI into the education sector, we must carefully reflect on the opportunities and considerations that come with it.

Multimodal learning is essential for communities focusing on practical education, such as hands-on, project-based, maker space, and embodied cognition education. Previous studies have often linked the development of twenty-first-century skills to collaborative learning settings that utilise computational tools and interfaces. These environments prioritise acquiring real-world problem-solving abilities through teamwork, which is challenging in a traditional, solitary learning environment (Hannele Niemi, 2023, p. 21).

In today's capitalist society, AI is a technology encompassing many machines, automation, simulations, and speculations. Current technology includes intelligent assistants, robots, self-driving cars, machine learning, and other advanced systems that use pattern recognition, natural language processing, semantic networks, and even the possibility of automated existential threats are all part of the current technological landscape (Preston, 2022, p. 1). AI is an interdisciplinary field that draws upon several branches of knowledge, beyond just computer science and mathematics. Other fields, such as economics, neuroscience, psychology, linguistics, electrical engineering, and philosophy, have all made significant contributions to the development and progress of AI (Taulli, 2019, p. 17).

"AI and Machine Learning are really important today because they help us do things better and faster" (Okunola, 2023, p. 3). AI has the potential to provide personalised learning experiences and support for lecturers, researchers, and students through the use of pedagogical agents that deliver tailored content and feedback. However, as AI is still in its infancy in education, there is a pressing need to establish ethical and legal frameworks that promote the use of technology for the greater good and ensure accountability at all levels of academia. University leaders, policymakers, and the academic community must remain engaged with AI ethics to empower present and future generations of students and researchers (Caitlin C. Corrigan, 2023, p. 65). Businesses and governments are collaborating with research institutes to establish specialised 'AI labs' that can bridge the gap between basic science and practical needs. Various economic sectors worldwide have established labs, such as agriculture, mobility, retail, manufacturing, healthcare, education, and public administration. These labs serve their respective sectors (Haroon Sheikh, 2023, p. 62). The government-funded AI and defence research to expand its research agendas. This resulted in high-tech concepts being applied to everyday tasks. The research agendas were expanded to include educational, entertainment, biotechnologies, and other commercial applications (Jansen, 2022, p. 33). For example, Minecraft is a platform that enables users to learn and practice creativity, problem-solving, spatial reasoning, and computational thinking. It offers a virtual world where young people can engage with a range of phenomena that connect to various disciplines. In the same virtual world, participants can collaborate on mining, crafting, and building. Hundreds of free lessons, including design challenges, virtual field trips, and STEM content, have been developed by educators. (Hannele Niemi, 2023, pp. 25-26). Furthermore, the government-funded AI and defence research to expand its research agendas. This resulted in high-tech concepts being applied to everyday tasks. The research agendas were expanded to include educational, entertainment, biotechnologies, and other commercial applications (Jansen, 2022, p. 33). Moreover, we could incorporate many educational and interactive applications into our doll to captivate children's attention and foster learning and conversation. These applications offer an enjoyable and stimulating approach for children to acquire new skills and knowledge while promoting positive social and ethical values. Among the many educational apps for children are those designed to enhance language proficiency through speech recognition technology, interactive storytelling apps that utilise natural language processing

to encourage creative thinking and respond to children's input, and chatbot apps that enable children to engage in conversations with virtual assistants (Hannes Werthner, 2024, p. 352).

In light of these developments, enhancing the educational curriculum by incorporating AI skills instruction at the secondary level is essential. Enhancing individuals' learning capabilities in mathematics and computer programming will aid in attaining the requisite AI skills. As AI systems are becoming ubiquitous in all domains of life, knowledge of AI is crucial for all. Additionally, incorporating introductory programming and computer fundamentals courses in all disciplines may serve as a helpful tool in obtaining AI skills (Damian Okaibedi Eke, 2023, pp. 109-110).

As a result, the integration of AI and multimodal learning within a dynamic ecosystem of research collaboration, innovative platforms, and educational reform strives to harness technology for the betterment of society.

Ethical Integration of AI in Education

When society embraces innovation, questions about its appropriateness inevitably arise. Whether it was the introduction of printed books, the first encyclopedias, or the vast expanse of information made available through the internet, there has always been a debate about the suitability of these new means of disseminating knowledge and information. Today, we see a similar conversation about the impact of Generative AI on education, causing concern among schools, parents, and teachers. However, we can learn from past experiences and creatively incorporate new technologies into our educational models. Instead of simply copying or generating the content, we can use this challenge to instill critical thinking and reflection into every aspect of life. Using AI-generated information can help establish trust, transparency, and security (Henrique Sousa Antunes, 2024, p. 193).

EdTech companies were asked how they could develop ethical sustainability in their AI solutions. The following issues were identified as areas where improvements could be made:

1. Many companies have expressed concerns about the general public's insufficient understanding of AI, including its capabilities and limitations. As a result, there is a growing need for comprehensive education on AI in schools. It's crucial to dispel the misconception that AI is solely related to coding and programming. Instead, all grade levels should incorporate AI and its associated ethical considerations. Additionally, educators themselves require more training on this topic.

2. Ensuring equal opportunities for schools and workplaces to access AI-based teaching materials and methods that are both accessible and comprehensible is crucial. However, personalised versions of such services can prove costly and challenging. Hence, a collaborative approach between the teacher and an AI tutor could be the most effective solution.

3. There is a need for greater clarity and transparency regarding responsibility matters. Specifically, users need to be better informed about the company's responsibilities versus their own. Unfortunately, when AI is utilised in educational settings, it can be difficult to discern whether the responsibility lies with a human or machine.

4. Ensuring the safety and ethical sustainability of their school products was a top priority for the company. Challenges arose in data collection, transfer, storage, and modification. To achieve greater ethical sustainability, prioritising harm prevention is vital, which involves conducting ongoing risk analyses and adhering to ethical checklists.

5. The exchange of knowledge and best practices among universities, companies, and schools is crucial in advancing AI in education.

6. Regular public events should discuss AI's possibilities, risks, and threats to avoid forming false assumptions and negative attitudes towards AI (Hannele Niemi, 2023, p. 288).

In 2021, a qualitative interview was conducted with digital tutors who were school principals and teachers in Finnish schools. The study aimed to explore their perspectives on AI, digital applications, and ethical issues in education. The findings revealed that one of the main challenges related to AI in education is the lack of knowledge among teachers about AI and related applications. The respondents also noted that only a few school teachers are dedicated to acting as digital educators/tutors. Additionally, some school principals mentioned that teachers are not motivated to adopt AI tools unless they prove helpful in teaching. Principals are generally responsible for acquiring and managing digital equipment in smaller schools. The interviewees viewed AI as a valuable tool for routine tasks and providing differentiated instructions but not a guarantee for better teaching or learning outcomes (Hannele Niemi, 2023, p. 289). "To prepare students for the future, they need to learn how to integrate AI into their work ethically and responsibly while using their humanity as an advantage (Miller, 2023, p. 80)".

According to Caitlin C. Corrigan, education, specifically the cultivation of critical thinking skills, is paramount for Africa to integrate AI technology effectively and ethically. This will enable individuals to independently evaluate the ethical implications of AI in Africa, leading to a just and equitable implementation of AI technology that benefits all Africans (Caitlin C. Corrigan, 2023, p. 21). Many organisations are not profit-driven in AI, yet play a crucial role in the AI value chain. Among these are professional bodies, standardisation bodies, and educational institutions. It is essential to include these entities due to their apparent connection to various mitigation strategies, such as implementing professional standards, incorporating ethical considerations into standards, and disseminating awareness and knowledge through education (Kinderlerer, 2021, p. 73). Integrating AI into education gives rise to ethical concerns that require extensive AI education, transparent accountability delineation, and cooperative strategies for the purpose of achieving sustainable implementation.

The Impact of Artificial Intelligence on Education

Chat GPT: Capabilities, Applications, and Impact in Education

As technology advances, AI`s role in our daily lives is becoming more important. With its ability to recognise speech, process language, and interpret visual data, AI is set to revolutionise how we learn. A key area where AI could significantly impact is connecting various modes of learning, interfaces, and analytical tools (Hannele Niemi, 2023, p. 34).

In the field of education, the groundbreaking Chat GPT (Generative Pre-Trained Transformer) technology is being extensively employed to realize its full potential. With its diverse range of capabilities and applications, this advanced technology is transforming the educational domain in unprecedented ways. From primary schools to colleges and universities, both students and educators are harnessing the power of this tool to reap its numerous benefits.

Chat GPT can create a course description, learning goals and objectives (Stan Skrabut, 2023, pp. 6-7). Chat GPT can write a lesson plan and prepare classroom activities (Stan Skrabut, 2023, pp. 12-14).

Chat GPT provides the opportunities for teachers and students to do the following tasks/assignments:

Chat GPT is a versatile tool that can assist both teachers and students in a wide range of tasks and assignments. Its capabilities include summarizing and outlining articles, generating multiple choice, true/false/fill in the blank questions with answers and explanations, checking grammar mistakes, building vocabulary lists, creating dialogues, defining words, translating languages, preparing survey/interview questions according to the articles/writings, writing codes, drafting book reviews, writing story, and video scripts, preparing lesson plans, syllabuses, course objectives, activities (according to the students' level), writing email messages, preparing reference letters and CVs, and providing reading recommendations. It can analyze data, get writing assistance, and use it as a calculator for math problems. It can also help write songs and poems, create codes, offer advice, compare answers, define words, prepare presentation slides, and convert styles from one to another (such as APA to MLA). Additionally, it can compare your own answers or solutions with the AI's answers and solutions, making it an invaluable tool for learning and academic success.

Qualitative and quantitative methods were used to assess the effect of AI training on educators' knowledge, attitudes, and intentions towards incorporating AI into education. By using both qualitative and quantitative methods, studies can provide valuable insights into the successful integration of AI in education, leading to better learning experiences and outcomes for students worldwide.

3. METHODOLOGY

The study involved a total of 16 teachers who were from Albania, Kosovo, and Bosnia Herzegovina. The teachers had different areas of expertise such as Mathematics, Biology, Physics, Information and Communication Technology (ICT), Chemistry, English, and Albanian. All participants attended a teacher training on AI that was conducted on February 24, 2024. The training aimed to provide the teachers with an understanding of how AI can be integrated into their respective subjects. The age range of the attendees was quite diverse, ranging from 25 to 60 years old. The age range of the majority of the teachers was between 30 and 39 years old. 11 of them were female and 5 were male. All of them taught either in Primary (1-9) or High Schools (10-12). The largest group of teachers have been teaching for 10 to 14 years.

Survey Design:

The survey was conducted to evaluate the teachers' knowledge of AI, their use of AI tools, their opinions on the integration of AI into education, and their plans to employ AI after training. The survey was divided into pre-training and post-training sections, both of which included multiple-choice and open-ended questions.

Data Collection

Prior to the training session, the participants were requested to fill out a survey to determine their initial knowledge and opinions about AI. Following the training, the same participants were asked to complete another survey to assess any changes in their attitudes and intentions towards the integration of AI.

Data Analysis

Quantitative data from surveys were summarized using descriptive statistics, while participants' opinions and concerns about AI in education were identified using thematic analysis to recognize recurring themes and patterns.

Ethical Considerations

Prior informed consent was obtained from all participants to ensure their voluntary and confidential participation. The participants were assured that their responses would remain anonymous and would only be used for research purposes.

Limitations

The study's sample size was relatively small, which restricts the generalizability of the results to a larger population. Furthermore, the survey relied on self-reported data, which could potentially introduce a response bias. Additionally, the study did not evaluate the effects of AI training on teaching practices and student outcomes over an extended period of time.

The Impact of Artificial Intelligence on Education

4. RESULT

The survey was conducted before and after the training to assess their awareness level. The age range of the teachers was quite diverse, with individuals ranging from 25 to 60 years old. However, the majority of teachers fell within the age range of 30-39. 11 were female and 5 were male, with experience ranging from 10 to 14 years. They taught at Primary or High Schools.

The 1st question was if the **teachers think AI can ease teachers' work**. The majority of respondents, 15 out of 16, express a positive attitude, believing that AI can indeed ease teachers' work.

The 2nd question was **how much the teachers were aware of AI**. Out of all the respondents, 3 claimed to have a high level of awareness, while the majority of 9 reported having some awareness of AI. Additionally, 4 respondents admitted to having only a little awareness of AI.

The 3rd question was if the **teachers use it for themselves, for their students, and how they use it**. Out of the total number of teachers surveyed, 8 responded that they use AI. 3 teachers said they use it "sometimes," 1 teacher reported using it "a little," and 2 teachers indicated that they do not use AI at all. Regarding the second part of the question: 6 teachers responded that they use it for their students, 3 teachers stated that they sometimes use it for their students, while 5 teachers reported that they do not use AI for their students. Finally, the teachers mentioned that they use AI for various purposes, such as creating logic for biology, preparing quizzes and exams, searching for materials and ideas, finding real-life examples, locating exercises and worksheets, and using AI for games.

The 4th question related to **whether the teachers think AI can assist them and its advantages**. The majority of responses express positive attitudes toward the use of AI in education. Teachers acknowledge that AI can assist them in various ways, such as finding information easily, providing help, making the educational process more interactive, and improving the overall quality of education. Several responses highlight the efficiency and time-saving aspects of using AI. Teachers appreciate AI for making tasks easier, providing quick access to solutions, and helping students finish their work quickly. Regarding the advantages, they stated that some advantages of the system include easy access to finding things, getting help, and solving problems, which makes the educational process more interactive, practical, and efficient for both teachers and students.

In the 5th question, the teachers were asked **about the disadvantages of AI**. The teachers' responses were as follows: They expressed concerns about the potential dependence on technology during lessons, which could result in them losing their roles as educators. They also worried that this reliance on technology might take away the desire to read school books, hinder critical thinking skills, and make students lazy by giving them everything ready. Some teachers feared that both they and their students could become lazy and take things for granted. In addition, students might misuse technology to complete assignments or write essays, instead of learning the material. Overall, the teachers were worried that this dependence on technology might lead to a decline in creativity, critical thinking, and learning among students.

In the 6th question, the teachers were asked **if they get help from AI when they prepare their materials, quizzes, questions, etc**. The majority of respondents (9 out of 16) affirmatively state that they do seek help from AI when preparing their teaching materials, on the other hand, 7 respondents indicate that they do not seek help from AI.

The 7th question deals with **whether their students use AI for their assignments, projects, etc.** The majority of respondents (12 out of 16) state that their students do use AI for assignments, projects, etc., 1 teacher responded that her/his students do not use it, while 3 teachers did not answer.

In the final question, the teachers were asked **if they use Chat GPT**. The majority of respondents (10 out of 16) affirmatively state that they use Chat GPT, while 6 teachers state that they do not use Chat GPT.

After the training, the same 16 teachers were asked additional questions to assess their attitude towards AI.

The 1st question was **if they think teachers should be trained to use AI**. All 16 teachers agreed that teachers should be trained to use AI.

The 2nd question was about **if they think students should be trained to use AI**. All 16 teachers agreed that students should be trained in how to use AI.

The 3rd question was asked to the teachers **if they use AI for their lessons after this training**. 10 teachers express a definite intention to use AI for their lessons after the training and 6 teachers indicate a probability of using AI for their lessons after the training.

The 4th survey question was **if the teachers will use Chat GPT for their lessons**. Out of 16 respondents, 14 teachers confirmed that they will use Chat GPT for their lessons after the training. One teacher responded that they may use it, while another teacher stated that she/he will not use it for her/his lessons.

The 5st question was **if they think AI should be implemented in the curriculum**. The majority of teachers, 13 out of 16, have a positive opinion regarding the integration of AI into the curriculum, while the other 3 teachers remained neutral.

In the final survey question, **the teachers were asked to provide their opinions for or against implementing AI in the curriculum**. Some suggested that AI could be used for practicing English through games, but not for writing tasks or finding information. Others believed that it could be used to improve lessons and had many advantages for both teachers and students. Some

remained neutral, suggesting that they should explain to both teachers and students how to use it properly. Overall, they expressed the benefits of AI including saving time, completing tasks efficiently, advancing skills, and improving overall learning.

The surveys conducted before and after the training reveal a positive shift in teachers' attitudes towards integrating AI into education. While initially, varying levels of awareness and usage were observed among educators, the training significantly increased their willingness to incorporate AI tools into their teaching practices. There was unanimous agreement on the necessity of AI training for both teachers and students. Teachers recognized AI's potential to ease their workload and enhance the learning experience, though concerns about overreliance on technology were noted.

The survey was conducted before and after the training to assess teachers' attitudes towards integrating AI into education. Initially, varying levels of awareness and usage were observed among the teachers. However, the training significantly increased their willingness to incorporate AI tools into their teaching practices. There was unanimous agreement on the necessity of providing AI training for both teachers and students. The teachers recognized AI's potential to ease their workload and enhance the learning experience, though some concerns about overreliance on technology were expressed.

5. DISCUSSION AND CONCLUSION

The studies and findings suggest that AI is necessary in education and its use cannot be avoided by educators and students. "We can help students become great prompt engineers by studying what makes effective AI prompts and sharing that with them. We can also help students reflect on prompts they have created to see what was effective, what was not, and whether successful changes they made could help them create better prompts in the future" (Miller, 2023, p. 109)".

Teachers should explore the ways to implant the principles of AI into their practice to assist their students in their learning and, seek opportunities for their students learn and apply new knowledge, skills and values specific to AI. In addition, it can help improve teachers' facilitating skills and interdisciplinary teaching. For example, Chat GPT can write learning objectives (Stan Skrabut, 2023, p. 3). The majority of respondents in the survey express a positive attitude, believing that AI can indeed ease teachers' work.

AI has the potential to assist teachers in a variety of ways, such as through personalized learning, time-saving measures, automated grading, data analysis, virtual assistants for administrative tasks, language translation, creating learning materials, facilitating remote learning, providing personalized feedback, collaboration and communication, support for differentiated instruction, enhanced content creation, global collaboration, efficiency, accuracy, and 24/7 availability.

AI initiatives are in progress in today's rapidly changing world, with many more in development. As tomorrow's workers, students must learn to work with machines, not compete against them. By progressing their knowledge and skill levels about AI, learners can use this technology for social good. For example, in classrooms, teachers are often viewed as subject experts, and students would ask them questions when facing difficulties with the subjects. The teachers are only experts who give the answers in the classroom. However, since ChatGPT is available 7/24, it can provide quicker and more accurate responses to students' questions, as it adopts both learn-it-all and know-it-all approaches to improve the accuracy of the responses.

While AI offers numerous benefits for teachers and students, there are also some potential disadvantages such as, dependence on technology, privacy and security concerns, lack of human connection, bias and fairness issues, technological barriers, loss of control, maintenance and support challenges, job displacement concerns, cost and accessibility, overreliance on technology, learning curve, loss of creativity. The AI knowledge base should be transparent and comprehensible to ensure its validity and dependability. This necessitates educational initiatives spanning from early childhood education through advanced academic programs. As a result, a thorough examination of national and disciplinary curricula, establishing educational resources, and cultivating proficient educators are essential (Kinderlerer, 2021, p. 108). Undoubtedly, the sixth wave of technological advancement will impact many industries, processes, and occupations. However, specific sectors such as healthcare, sports, education, and law-making will likely remain less affected by automation (Atkinson, 2019, p. 19).

Teachers and students must contribute to the development of AI in education (Haroon Sheikh, 2023, p. 228). Teachers know they must be equipped to manage educational programs on digital awareness for their students. As a result, training courses and webinars must concentrate on using digital technologies and social media appropriately, focusing on cybersecurity issues (Hannes Werthner, 2024, p. 110). University teachers (scholars) face a triple responsibility. Firstly, they need to strengthen the development of competencies that are truly impactful for future generations, such as knowledge, skills, action and competence. Secondly, it is essential to maintain a clear view of the prerequisites for the successful use of AI and not over-interpret its current application areas to prevent any potential limitations. Finally, the analysis of the dependency on the training data set and the rules pre-determined by humans (in reinforcement learning) is crucial and should be examined in detail (Peter Klimczak, 2023, p. 38). After the survey, all teachers agreed that both teachers and students should be trained on how to use AI. Following the training, teachers will incorporate AI in their lessons.

Through educational campaigns, the government can promote a fundamental understanding of AI and increase its familiarity with the public. Additionally, these campaigns can make people cognizant of their potential drawbacks (Haroon Sheikh, 2023, p. 346). It's important to bear in mind that AI provides suggestions and guidance rooted in astute data analysis. However, it's

significant to recognize that these are merely suggestions. Since education is a collaborative experience, we should use AI prudently and thoughtfully. If teachers collaborate with artificial intelligence, they do not need to worry about becoming obsolete. Schools, institutions, administrators, and officials should provide digital skills training for teachers, administrators, and students. According to the survey, most teachers believe AI should be part of school curriculums.

The findings emphasize the significance of continuous professional development in AI literacy for educators, as well as the potential advantages and challenges related to AI adoption in teaching and learning contexts.

REFERENCES

1) Atkinson, R. (2019). Do not fear AI. European Investment Bank.
2) Bathgate, A. (2023). The Artificial Intelligence Revolution. Great Britain: Amazon.
3) Caitlin C. Corrigan, S. A. (2023). AI Ethics in Higher: Insights from Africa and Beyond. Cham, Switzerland: Springer.
4) Damian Okaibedi Eke, K. W. (2023). Responsible AI in Africa. Cham: Palgrame Macmillan.
5) Gardner, H. (1993). Frame of Mind: The Theory of Multiple Intelligences. New York: A Member of The Perseus Books Group.
6) Hannele Niemi, R. D. (2023). AI in Learning: Designing the Future. Switzerland: Springer.
7) Hannes Werthner, C. G.-R. (2024). Introduction to Digital Humanism. Cham: Springer.
8) Haroon Sheikh, C. P. (2023). Mission AI. Cham: Springer.
9) Henrique Sousa Antunes, P. M. (2024). Multidisciplinary Perspectives on Artificial Intelligence and the Law. Springer.
10) Herman Cappelen, J. D. (2021). Making AI Intelligible. Oxford: Oxford University Pres.
11) Huawei Technologies Co., L. (2023). Artificial Intelligence Technology. Hangzhou: Springer.
12) Jansen, S. C. (2022). What Was Artificial Intelligence. Bethlehem: Mediastudies press.
13) Kinderlerer, J. (2021). Artificial Intelligence for a Better Future: An Ecosystem Perspective on the Ethics of AI and Emerging Digital Technologies. Leicester: Springer.
14) Miller, M. (2023). AI for Educators. Ditch That Textbook.
15) Okunola, E. K. (2023). Artificial Intelligence for Everyone. Great Britain: Amazon.
16) Peter Klimczak, C. P. (2023). AI – Limits and Prospects of Artificial Intelligence: KI-Kritik / AI Critique Volume 4. By transcript Verlag, Bielefeld.
17) Preston, J. (2022). Artificial Intelligence in the Capitalist University. New York: Routledge.
18) Stan Skrabut, E. D. (2023). 80 Ways to use ChatGPT in the Classroom. Great Britain: Amazon.
19) Taulli, T. (2019). Artificial Intelligence Basics. Monravia: Apress.
20) Ulnicane, I. (2022). Artificial intelligence in the European Union. London & New York: Routledge.
21) Verdegem, P. (2021). AI for Everyone? Critical Perspectives. London: University of Westminster Press.
22) Zylinska, J. (2020). AI Art: Machine Visions and Warped Dreams. London: Open Humanities Press.