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the Foundations of Integrating Artificial Intelligence in Education

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ABSTRACT

The use of artificial intelligence in education has already begun to enhance teaching and learning. As technology advances, it will have an even larger role in education systems everywhere. In addition, using artificial intelligence in primary and secondary schools has a revolutionary potential to enhance education by individualising learning, improving the effectiveness of administration, and making education inclusive. This paper describes the best methods of using artificial intelligence and the ability to improve education, highlighting its potential advantages, challenges, and future consequences. It discusses how artificial intelligence can improve learning, administrative processes, teacher-student relations, and lifelong learning. Furthermore, it also addresses the ethical implications, issues of equity, and the necessity of future research and policy-making. Moreover, adaptive learning platforms, automated assessment, AI-driven chatbots for student support, and teacher development platforms are some of the key applications of AI in schools. AI can also ensure inclusivity through assistance for disabled students and real-time feedback to improve participation and performance. Data privacy, teacher training, and the digital divide are some of the obstacles that must be addressed by policymakers to ensure the effective integration of AI in schools. However, a systematic and planned approach to implementation, which starts with basic programmes and encouraging ethical use, is the correct method to use artificial intelligence and maximum effectiveness in education. Finally, artificial intelligence in education should be utilised to improve human interaction, empower teachers, and enhance the learning experience for all students.

Keywords: **artificial intelligence, education, education in the future.**

أسس دمج الذكاء الاصطناعي في التعليم

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الملخص:

لقد بدأ استخدام الذكاء الاصطناعي في التعليم يُحسّن عمليتَي التعليم والتعلم. ومع تقدّم التكنولوجيا، سيزداد دوره في أنظمة التعليم في جميع أنحاء العالم .علاوةً على ذلك، يُتيح استخدام الذكاء الاصطناعي في التعلم إمكاناتٍ مهمة لتعزيز التعليم من خلال تخصيصه، وتحسين فعالية الإدارة، وجعل التعليم شاملاً. تصف هذه الورقة البحثية أفضل أساليب استخدام الذكاء الاصطناعي وقدرته على تحسين التعليم، مُسلّطةً الضوء على مزاياه المُحتملة وتحدياته ونتائجه المُستقبلية .لذلك، تُركّز الطريقة المُستخدمة في الورقة البحثية على مراجعة قواعد البيانات الأكاديمية مثل Google Scholar وScopus وWeb of Science وIEEE للعثور على أبحاث ذات صلة تُناقش كيف يُمكن للذكاء الاصطناعي تحسين التعلم، وتحسين العمليات الإدارية، وتحسين العلاقة بين المُعلّم والطالب، وتعزيز التعلّم مدى الحياة. علاوةً على ذلك، تتناول الورقة أيضًا الآثار الأخلاقية، وقضايا العدالة، وضرورة إجراء أبحاث وسياسات مُستقبلية. يُعدّ التعلّم التكيفي، والتقييم الآلي، وروبوتات الدردشة المُدارة بالذكاء الاصطناعي لدعم الطلاب، ومنصات تطوير المُعلّمين من التطبيقات الرئيسية للذكاء الاصطناعي في التعليم. ومع ذلك، يُمكن للذكاء الاصطناعي أيضًا ضمان الشمولية من خلال مساعدة الطلاب ذوي الإعاقة وتقديم التغذية الراجعة الفورية لتحسين المشاركة والأداء. تُعد خصوصية البيانات، وتدريب المعلمين، والفجوة الرقمية من بين العوائق التي يجب معالجتها لضمان تكامل فعال للذكاء الاصطناعي في التعليم بشكل عام. لذلك، ووفقًا لنتائج هذه الورقة، فإن اتباع نهج منهجي ومخطط للتنفيذ، يبدأ ببرامج أساسية ويشجع الاستخدام الأخلاقي، هو الطريقة الصحيحة لاستخدام الذكاء الاصطناعي وتحقيق أقصى قدر من الفعالية في التعليم .وأخيرًا، ينبغي استخدام الذكاء الاصطناعي في التعليم لتحسين التفاعل البشري، وتمكين المعلمين، وتعزيز تجربة التعلم لجميع الطلاب.

الكلمات المفتاحية: الذكاء الاصطناعي، التعليم، التعليم في المستقبل.

1. Introduction

Artificial intelligence is a subject of study and the consequent developments that have led to computers, machines, and other objects having human-like intelligence in terms of cognitive abilities such as learning, adaptability, or decision-making(Chen et al., 2020)(A. B. S. Salamh & Akyüz, 2022). The fundamentals of AI differ from the application of other techniques, which rely on the concept of traditional image processing(Ahmed B Salem Salamh, 2017). Across various industries, including healthcare, face recognition and transportation, Artificial Intelligence (AI) is making rapid progress(Salem Salamh et al., 2021)(Ahmed B Salem

Salamh & Akyüz, 2022)(سلامة et al., 2024). The transformational potential of AI can be found in education, which remains a promising sector(Demartini et al., 2024). The use of AI can greatly enhance personalized learning, streamline administrative functions, and create new opportunities for both students and educators. Education systems are expected to see AI become a key factor in revolutionizing teaching, learning, and information interaction(European Commission., 2022). Throughout history, education has considered an essential part in society's development, shaping the future of both individuals and communities(Roll & Wylie, 2016). The methods, tools, and technologies employed in teaching/learning have undergone significant changes over time. Each new advancement, from oral tradition to written documents to printing presses and digital technology, has completely changed the way education is delivered. Another transformative shift is imminent with the swift advancement of Artificial Intelligence (AI). Although AI was once a science fiction concept, it is now being utilized in various fields, including education. Artificial Intelligence refers to the simulation of human intelligence in machines that are capable of performing tasks that typically require human cognition, such as learning, problem-solving, decision-making, and even natural language processing(Kokina et al., 2025). In the context of education, AI holds the potential to revolutionize how students learn, how teachers instruct, and how educational institutions operate(Yadav, 2025). The integration of AI into education is not simply a passing trend; it represents a paradigm shift that could fundamentally reshape the entire educational landscape in the coming decades(Khadka & Paudel, 2023).

The use of AI in education is extensive and diverse and gets attention for the future(Holmes & Tuomi, 2022). AI is expected to have a significant impact on the development of personalized learning(Feigerlova et al., 2025)(A. Salamh & Dowa, 2025). Unlike the traditional educational model, which is often one-dimensional and limited to multiple students, AI can tailor courses to meet unique student needs. Through the analysis of a student's strengths, weaknesses, learning style, and progress, AI systems can create personalized learning experiences that are both effective and enjoyable(Endris et al., 2025). This is especially important in today's diverse classroom, where students have different abilities, interests and preferences for learning. Moreover, it also has great potential to reduce the administrative burden for teachers, freeing them to focus on their teaching and less on dealing with everyday work. AI can automate various administrative tasks, including grading, student records management, scheduling and parent communication, which consume a significant amount of teachers' time. By automating these processes, AI can produce effective educational settings

that enable teachers to concentrate on enhancing student learning and participation. AI can enhance both individual and group learning, as well as promoting increased level of engagement and collaboration among learners. chatbot technology has completely transformed the way people interact with computers and other AI systems(Suriano et al., 2025). Moreover, with AI-powered tools like chatbots, virtual assistants and AI–driven simulations (which simulate real-world scenarios); students can access learning resources and interact with them outside of the classroom. While the potential benefits of AI in education are exciting, it is also a challenge that comes with its own set of challenges. Therefore, now that AI is being use in education, the questions about data privacy and the role of teachers as teachers or equity of access and bias in AI algorithms. Additionally, the use of AI to make judgments about students' learning journeys or academic achievements must approached ethically. Furthermore, there is the issue of ensuring that educators that adequately trained in order to use AI tools effectively and those schools have the necessary infrastructure to implement and maintain AI-powered systems. The future demands the integration of AI into education, leaving much to be desire. The advancement of AI technology will result in the improvement of its capabilities, which will enable applications that are more advanced. By incorporating both augmented reality (AR) and virtual reality, AI has the potential to enhance learning by providing more hands-on experiences. In addition, the role of AI in lifelong learning will be important as the nature of jobs continues to change and demand for continuous skill development rises. AI will take advantage in helping people throughout their adult lives by providing them with personalized, adaptable and easily available learning experiences. With AI, the learning process could be on the edge of revolutionizing education by allowing making learning more personal and efficient, and providing students with greater access to quality education. As with any new technology, it is important to take into account the ethical implications of using AI and the potential issues it may pose.

2. The research question

the research question regarding the current and future application of AI in education, specifically focusing on technologies such as chatbots, is What role will AI-driven tools, such as chatbots and language models such as ChatGPT, work in transforming personalized learning and support systems for students in the next decade?. Therefore, the investigation of this paper focuses on integrating AI conversational chatbots into educational environments to gives scalable interactive real-time learning experiences. AI chatbots provide personalized leaning along with immediate feedback and ongoing student support stands to boost

engagement while improving both accessibility and academic outcomes. Moreover, this investigation aims to explore how these technological tools enable teachers and students through the automation of administrative tasks while providing student progress analytics and developing more interactive learning environments. However, Research consider exploring how evolving AI tools can meet the increasing need for personalized education while upholding ethical standards and ensuring that AI supports human teaching instead of replacing it.

This paper investigates the potential of AI in education, focusing on its impact on learning, administrative efficiency and educational equity. It will also address the ethical issues and obstacles involved in integrating AI into education to ensure that it benefits all students and teachers. A more comprehensive understanding of AI's potential and limitations will enable us to better prepare for the future of education, ensuring that this technology used responsibly and effectively in creating inclusive learning experiences that are more personalized and accessible.

3. Research Method

The methodology for reviewing related studies on AI chatbots in education started with a deep search to find relevant papers. Moreover, this search covers many academic databases such as Google Scholar, Scopus, Web of Science, and IEEE. Furthermore, applying search terms such as AI chatbots in education, AI in teaching, educational chatbots, and AI language models in education. The previous studies selected for inclusion in the review focus on AI chatbots or similar AI techniques used at any level of education from K-12 to college. However, the papers report on outcomes related to student learning, engagement, or support and should be peer-reviewed empirical studies published within the last 7 years. They should be studies checked by other experts and published in the past 7 years. The review omits articles that are incompatible with education or do not focus on chatbots or talking AI tech.

After the relevant studies selected, collect important details from each paper. This includes study characteristics, the type of AI technology used, the outcomes measured, the research design, and the key findings. All this information builds a comprehensive overview of the research on AI chatbots in education.

The next step in the method involves combining findings from the chosen studies. Moreover, this paper uses a narrative synthesis to sum up the main keys and results, looking at how AI chatbots affect various educational outcomes, such as student engagement, personalised learning, and teacher support. Therefore, the review also considers ethical issues.

Furthermore, check the literature for issues such as bias in AI chatbots where certain factors might shape the chatbot's answers. This paper addresses privacy concerns about how student data handled as well as the wider effects of using AI systems instead of or alongside human teachers in classrooms.

In the discussion, the results interpreted in the context of the bigger range of education. The review explores how to apply AI chatbots to boost student learning, get students more involved, and give personalised help. It also gives how AI chatbots might help teachers by doing routine tasks, giving insights on student progress, and supporting large classes or diverse groups of students. The review suggests areas for future study, including long-term research on how well AI chatbots work and looking at AI in specific educational settings.

Finally, the review concludes with a summary of the key findings, highlighting the potential impact of AI chatbots in education. The conclusion emphasises the practical implications for educators and policymakers considering the integration of AI tools into teaching and learning environments, and it provides recommendations for future research, particularly in areas that have underexplored or where there are gaps in the current literature.

Finally, the main points showing how AI chatbots might change or affect education. The conclusion emphasises the practical implications for educators and policymakers considering the integration of AI tools into teaching and learning environments who are thinking about using AI tools for teaching and learning.

4. AI Related Studies in education

In recent years, researchers and practitioners have been highly interested in the integration of Artificial Intelligence (AI) into education. During the evolution of this field of AI, scholars have looked at many aspects of how AI could applied in educational systems and what challenges and opportunities it presents. This section will explore into the literature on AI's role in education, with an emphasis on personalized learning, administrative automation, AI-based classroom tools, teacher-student collaboration, and ethical considerations associated with AI integration.

The use of advanced AI technologies in learning environments is a major problem facing education policymakers(Mageira et al., 2022). Therefore, Interactive AI opens up new possibilities for alternative and innovative tools, such as AI- chatbots. However, The use of chatbots in educational environments remains limited(Yang & Evans, 2019). The use of AI in education has become a popular area of research, with personalized learning being facilitated by AI systems that can adapt educational materials to suit the individual needs of

learners(Maghsudi et al., 2021). Incorporating personalized learning into academic instruction has been found to have a significant impact on students' engagement, motivation, and performance(Kaswan et al., 2024). Moreover, personalized learning has the potential to increase student engagement and self-directed learning. By utilizing AI-based systems like intelligent agents or virtual tutors, students can receive guidance from outside experts outside the classroom to ensure ongoing learning beyond formal instructional hours. A further significant area of research in education that highlights the importance of AI-based classroom tools for enhancing teacher-student interactions. Teachers and students can now access virtual assistants, chatbots or AI-powered teaching assistant. Therefore, by providing solutions to student questions, explaining complex concepts and offering practical solutions, these tools can help students solve problems(Kasthuri & Balaji, 2021). The potential of AI chatbots to offer personalized assistance to students in large classrooms or online learning environments. The use of AI-driven simulations and virtual worlds is becoming more prevalent in facilitating experiential learning. Students can gain a deeper understanding of complex concepts by immersing themselves in artificially created environments, such as historical sites or scientific laboratories, using VR tools powered by AI.

In addition, artificial intelligence has the potential to promote inclusive educational methods by assisting different types of learners, including those with disabilities. Text-to-speech and speech-to-text capabilities could obtained by students with learning disabilities, such as dyslexia, with AI tools like speech recognition and natural language processing.

AI technologies and more specifically those relating to natural language processing (NLP) – such as chatgpt or Copilot, are changing the landscape of business, with specific influence on education. AI-powered chatbots are now used at all level of education include, colleges and universities for purposes as varied as customized learning and student support and administrative work and academic counselling. Moreover, AI chatbots such as chatgpt are beginning to turn the atmosphere of learning by providing a greater degree of interactive and personalized assistance to students(L. Liu et al., 2022). The language model, chatgpt from openai, can generate semi-human-like responses to students' queries about learning topics, as a result augmenting engagement and personalized support to the students' learning process(Nguyen, 2023)(Gill et al., 2024). Moreover, chatbots could help students by providing immediate assistance with academic questions in the classroom, tutoring them with topics such as mathematics, literature, or science, and assisting them with their tasks and homework. Therefore, Chatbots serve as an online tool for providing insight to students

regarding their comprehension of the material(Jusoh & Kadir, 2025)(Clarizia et al., 2018). Therefore, aiding in self-reflection and improving their overall experience. The type of language Chatbots model such as chatgpt provides conversational practices for foreign language courses to students that are useful for developing the student's language proficiency through dialogue with the language model where they can also receive real-time correction on grammar and vocabulary use. In mathematics, these chatbots would use to describe the systematic process of solving a problem, therefore, simplifying concepts that may otherwise be difficult for learners who have a hard time with conventional teaching methods. Well, even though AI chatbots supposing to have many promises, they come with certain challenges that they might cause in K-12 education(Ni, 2024)(P. Zhang & Tur, 2024). However, there are some issues about overdependence by the students on AI in answering their questions. Therefore, this leads to a less critical mind-set and finally a lesser facilitation by teachers for more stimulating conversations among the students. In fact, through chatbots like chatgpt, help could be real-time in energies and efforts of teachers while strengthening the process of student learning. Otherwise, it complements the existing method of teaching.

In higher education, AI chatbots such as chatgpt and Copilot have seen used in a wider range, primarily for academic advising, tutoring, and administrative support. In programming and computer science education, particularly, AI chatbots have found utility with the advent of Copilot providing code completion, snippets completion, and a brief explanation of programming concepts in various coding languages. These suggestions tend to improve the coding skills of the student by guiding along the lines of suggestions responsive to the context of the individual coder, saving much time in debugging, and providing insight on best practices. It permits higher learning while drawing in students through the coding process. For instance, it could imagined that in a very efficient manner, with little personalized support in the case of significant enrolment in online courses, a simple cataloging logic would keep the system running while tracking the learning process. For broader academic-type subjects, chatgpt has already incorporated into the higher education system in place of tutorship for involving students in their tasks from answering basic conceptual questions to helping them expressively in writing(Bhullar et al., 2024). Therefore, the role chatgpt could put in assisting students in writing an essay by prompting them in generating topics, developing thesis statements, and even citing sources. By churning out multiple drafts or rendering feedback regarding clarity, structure, or style, ChatGPT helps in polishing the student's writing skills, thereby increasing their chances of producing higher academic work.

AI chatbots also enhance the classroom teaching and learning(Nee et al., 2023)(Ait Baha et al., 2024). Many universities are using chatbots to help students navigate through processes such as choosing classes, registering for classes, and checking for information about campus events. Furthermore, chatbots in higher education can, to a very large extent, streamline administrative processes by giving instant and on-call responses about students' queries, hence cutting down substantially on personnel needs and directly improving student satisfaction overall. Handling low-level queries allows university staff to focus on extended and more personalized support. In addition, chatgpt and similar models provide valuable help in academic research by assisting students in identifying academic source materials, summarizing research papers, and even generating first drafts of research proposals. Processes and standards governing the extent to which these AI tools can support students save time, increase productivity, and promote efficient academic work. However, the beneficial for academic research, there are risks the students would face under the consequences of plagiarism and academic integrity if, due to reliance on such tools too much, little attention is given to proper citation or exercise in understanding.

Increasingly, the integration of AI into education has raised concerns about the ethical implications and possible biases that come with learning(Okonkwo & Ade-Ibijola, 2021)(Limna et al., 2023). A significant issue is the use of AI in decision-making processes, including grading and admissions. If AI systems trained on data that reflects existing biases (such as those based on race, socioeconomic status or gender), then AI algorithms may unknowingly reinforce these bias. Therefore, the consequences of this could be ongoing inequalities in educational outcomes, especially for those who are not included.

The ethical issues associated with AI in education, specifically the potential for algorithmic bias in predictive analytics and admissions systems(K. Zhang & Aslan, 2021). The researchers maintain that AI systems require meticulous design and frequent audits to ensure fairness and transparency. By utilizing representative and diverse datasets, AI algorithms can trained to achieve this goal without the risk of reinforcing stereotypes or exclusionary practices. Moreover, the utilization of AI in education generates crucial inquiries about data privacy and security. Many people believe that their personal data is crucial for AI to function correctly, and there are concerns about the potential misuse or unauthorized access of this data. Therefore, it is crucial to establish strong data privacy regulations and ethical standards to ensure the protection of students' personal information, while also enabling AI systems to operate effectively.

A further ethical concern is the potential of AI to increase the digital divide, especially in impoverished and remote areas where access to technology may be limited. As AI-based tools become more prevalent in educational facilities, it is essential to ensure that students have access to the necessary technology and resources to benefit from these advancements, regardless of their socioeconomic status. Table 1 represents analysis that can used to assess the future of AI in education, along with its expected outcomes.

Table 1. Analysis the current and Future of AI in Education

Factor	AI Technology (e.g., ChatGPT, Copilot)	Expected Outcomes
Purpose of AI in Education	**ChatGPT**- Personalized learning, homework help, real-time Q&A, language learning, etc. **Copilot**- Assistance with coding, programming skills, real-time code suggestions.	**ChatGPT**- Enhances engagement through instant feedback, provides personalized support to diverse learners. **Copilot**- Helps students learn programming languages efficiently by providing immediate, context-aware suggestions.
Implementation Areas	**ChatGPT**- K-12 (primary, secondary) education for tutoring and homework support. **Copilot**- Higher education, particularly in computer science and engineering programs.	**ChatGPT**- Adoption across multiple subjects, providing personalized education at scale. **Copilot**- Widespread use in coding education, aiding students in practical coding projects and enhancing the learning experience.
Personalized Learning	AI-powered systems like **ChatGPT** can adjust to individual learning paces, provide tailored feedback, and offer targeted resources.	Students receive a more customized learning experience, allowing for better outcomes, especially for those who need extra help or require a faster pace. Individualized learning pathways for students with different needs.
Student Engagement	**ChatGPT-** can answer questions, create interactive quizzes, and simulate discussions. **Copilot-** engages students by guiding coding projects and offering suggestions.	Increased student motivation and participation due to interactive, hands-on learning methods. Encourages active learning, making students feel more involved and responsible for their own learning.
Teacher Support	**ChatGPT-** can assist teachers by automating grading and providing	Reduced workload for teachers, allowing them to focus more on

	teaching resources. **Copilot-** can support teachers in programming courses by providing resources and real-time feedback.	interactive teaching and mentorship. Teachers can rely on AI tools for support in lesson planning and student assessments, improving overall classroom efficiency.
Administrative Efficiency	**ChatGPT-** can automate administrative tasks such as answering FAQs, helping with scheduling, and managing student queries.	Reduces the burden on administrative staff, leading to improved resource management and quicker response times for students and staff. Streamlined processes and reduced manual workloads.
Access to Education	**ChatGPT-** helps bridge educational gaps by providing accessible tutoring outside school hours. **Copilot** -offers equal access to learning programming, especially in resource-limited areas.	More equitable access to educational resources and support for students who cannot access in-person tutoring are needed. Enables students in underserved or rural areas to access top-tier educational support in technical subjects.
Cost Efficiency	**ChatGPT-** provides scalable tutoring and learning support at a lower cost compared to traditional in-person tutoring. **Copilot-** reduces the cost of learning programming by automating feedback.	Reduces overall educational costs by lowering the need for additional teaching staff or resources. Brings down the cost of specialized education (e.g., coding) for students and institutions alike.
Ethical Concerns	**ChatGPT-** may raise issues with data privacy and security as it collects and stores student interactions. AI bias could influence the educational experience, especially in grading systems.	Efforts to ensure data privacy and ethical use will drive trust in AI tools, enabling their widespread use. Increased focus on eliminating bias in AI systems will enhance fairness and transparency in education.
Academic Integrity	**ChatGPT-** could use by students to complete assignments or generate essays, leading to issues of plagiarism. **Copilot-** may lead to over-reliance on the AI for coding tasks.	Clear guidelines and ethical usage frameworks will implemented to encourage responsible AI usage. Monitoring and detection tools may emerge to combat misuse of AI-generated content and encourage original work from students.
Long-Term Educational	**ChatGPT-** will evolve to offer deeper, more comprehensive	Education become more individualized, with AI tools

Impact	learning experiences, providing students with real-time, personalized assistance across a wide range of subjects.	adapting to diverse learner needs. Teachers' roles will shift toward mentoring, guiding students in the use of AI tools, and fostering critical thinking.
Scalability	**ChatGPT** and **Copilot** can implemented at scale, reaching a wide range of students across multiple subjects and educational levels.	The scalability of these AI tools will enable their widespread adoption across both developed and developing regions, democratizing education and providing high-quality learning resources to a global audience.
Future recommendations	Continued advancements in AI and NLP will result in more sophisticated, context-aware chatbots. Integration of **ChatGPT** with other educational tools like virtual classrooms and learning management systems.	AI-powered education increasingly integrated into all aspects of learning, from administrative tasks to curriculum delivery. New AI-driven models will emerge, providing increasingly accurate and personalized learning area.

AI-based personalized learning has the great potential to enhance educational outcomes by adjusting lessons and assessments based on student data, improving engagement and performance. However, challenges such as implementation costs and concerns over data privacy and security must addressed. AI-driven teaching assistants can ease teacher workloads by automating tasks like grading and tutoring, but this could also reduce human interaction in classrooms, potentially affecting the teacher-student relationship negatively. Additionally, educational institutions can benefit from AI in automating administrative tasks, allowing educators to focus on teaching, though this requires significant investment in training and integration. AI is also poised to improve assessments by providing real-time feedback and adjusting based on students' learning progress, though it is essential to ensure the transparency of AI systems and eliminate biases to ensure fairness. AI can help bridge educational inequalities by providing all students with access to quality learning materials, but the digital divide in terms of technology access and internet connectivity remains a concern, particularly for underserved populations. Teachers must undergo ongoing professional development to effective integrating AI tools in classrooms, ensuring they can use technology to enhance education. Finally, ethical considerations, including data privacy, academic

integrity, and the responsible use of AI, will be crucial as AI tools such as chatgpt and Copilot become more widespread in education.

A study of 131 respondents indicates that 48.9% have utilized chatgpt in medical research(J. S. Zhang et al., 2024). Out of those, 43.7% use the platform at least on a weekly basis, with the majority engaging in writing, revising, editing, and summarizing. A good number, somewhere between 37.5% and 41.3%, indicated they spend over 25% of their working hours performing these tasks. Among non-users, more than half are not going to use chatgpt regardless of the situation. Compared to professors, textbooks, and lectures, chatgpt used more frequently, but less so than Anki flashcards and medical education videos. The research review 67 academic databases on AI chatbots in education were examined(Labadze et al., 2023). The study reveals several advantages for both students and educators. AI chatbots are beneficial for students, providing them with homework help, personalized learning opportunities, and skill training. Timesaving and better teaching methods are advantageous for educators. However, the study also points out problems - including reliability, accuracy and ethical issues that teachers themselves face(Harry, 2023)(Zhai et al., 2021). Moreover, AI chatbots such as chatgpt help students with their homework and with real-time tutoring and taking care of administrative tasks. The study reveals that most Chinese scholars advocate for the cautious application of GAI in education as it serves as an educational instrument that provides students with tailored educational experiences(M. Liu et al., 2023). The article (X. Zhang et al., 2023) outlines the importance of getting students ready for a future dominated by AI, which calls for restructuring the digital competencies and literacy in china. Cognitive humanistic approaches that foster higher order thinking, and emotional education along with academic ethics teaching, need the use of AI tools for effectiveness. In addition, there should be means to regulate abuse of AI such as chatgpt for plagiarism to enhance authentic solving of problems in higher education.

At first, society only had a narrow perspective of chatgpt. It is now hard to ascertain, from research and experience, whether its pros outweigh its cons. However, as beneficiaries of this technology, there are need to adopt long-term impact with regard to its use. Where the future of humanity is concerned, there are ethical and legal obligations and the need to ensure data is of appropriate quality, the ability to analyse information, promote digital literacy, and secure privacy and safety of people in the digital sphere. With more experience, it could apply this technology better to improve its impacts on society. The development and advancement of AI technology makes it essential for us to think of what it can benefit other fields.

AI even used for teacher training, as a tool to assist in creating personalised lesson plans and tracking student progress. On the other hand, effective questioning techniques are essential for students to learn in chatgpt. Future studies should concentrate on particular prompt usage methods and enhance self-directed learning by employing metacognitive strategies(Kim et al., 2024). By assessing these factors, it is clear that the future of AI in education has great potential to revolutionize learning, but it must implemented thoughtfully to mitigate challenges such as privacy, bias, and misuse.

5. Results and discuss

Artificial intelligence (AI) must systematically integrated with education to meet specific objectives and requirements. Therefore, a well-structured approach is crucial. Education systems must identify these objectives by collaborating with educators, administrators, policymakers, and AI developers. However, AI integration will focus on achieving specific learning objectives, increasing student engagement, and simplifying administrative functions. By examining the weakness points of current educational systems, such as time-consuming administrative tasks or the need for personalized assistance, it becomes apparent that AI tools are suitable for their intended purpose to speed up and improve education processes.

AI has the potential to utilize in education by enabling adaptive learning to adjust lessons based on student progress. The initial step is to test these platforms in particular subjects to ensure they are compatible with current academic programs. Teachers due to the significant advantages of AI in automating grading and assessment processes save teaching time. The most effective way to assess is by selecting simpler assessment formats, such as multiple-choice or structured responses, and then implementing complex grading methods, such as assessing essays. Student support can significantly facilitated with AI chatbots. Therefore, the initial step is to utilize chatbots for addressing common questions before modifying their role with personalized academic guidance. However, to ensure successful integration of AI, teachers must receive adequate training and professional development in AI technologies. While AI can assist in the classroom, it should complement human interaction instead of replacing it. The educators are still the most important individuals in the educational system, tasked with encouraging critical thinking, emotional support, and individual guidance. Teaching with AI can help teachers automate the repetitive workload so they can concentrate on more interactive and engaging teaching. AI has the potential to make education more accessible, especially for students with disabilities. Immersive Reader and speech-to-text applications, powered by AI, can provide students with visual, hearing, or learning challenges

with personalized learning experiences and real-time support. To create an inclusive learning environment, schools must provide these tools to all students. It is advisable for schools to gradual integrate AI, starting with basic programs in specific classrooms or subjects. The ability to evaluate AI tools in practical scenarios provided by this, enabling teachers and students to provide feedback on the technology's progress. In order to achieve greater success in the end, schools should scale up slowly as AI programs become more widely implemented. The integration of AI into education is a gradual, ethical, and thoughtful process. By prioritizing specific objectives, teacher readiness, inclusivity, and data privacy, schools can use AI to enhance the learning experience without eliminating human educators. AI can utilized in primary and secondary schools by combining technology with human interaction. It is important to start with clear educational goals, then provide teacher training and follow through on using AI ethically so that it can improve educational outcomes. Through a gradual and thoughtful approach of piloting AI tools, integrating them into existing curricula, making sure they are useful for all students, we can make significant progress in education. Table 2, depicted, challenges and long-term impact that should consider implementing AI in Education.

Table 2. Represents AI in education, challenges and long term impact

Challenges	Long-Term Impact
Limited Understanding, Sometimes struggles with complex or nuanced questions, maybe gave inaccurate answers.	Transformation of Education, reshape education, providing personalized, adaptive learning experiences.
Dependence on Technology, Students may rely too much on AI, reducing critical thinking and problem-solving skills.	Enhanced Teacher Roles, Teachers can focus on creativity and emotional intelligence while chatbots manage routine tasks.
Lack of Emotional, AI chatbots cannot replace human empathy, which is issues for student engagement.	Continuous Learning, Students can access to education beyond traditional classroom hours, supporting lifelong learning.
Language Barriers, Difficulty in understanding regional dialects, slang, or language nuances.	Larger Access to Education, AI chatbots can extend educational opportunities to underserved or remote communities. Eliminates language barriers
Privacy Concerns, The collection of student	Data-Driven Insights, Continuous collection of

data raises concerns about data security and student privacy.	student data will help in optimizing personalized learning paths.
Some educators may feel threatened by AI.	Teachers will take on more mentor roles, while AI handles administrative tasks.
Ethical Use of AI, There is a risk of biases in AI responses, which could lead to unequal treatment of students.	Collaboration and Communication, AI chatbots will facilitate better communication between students and teachers.
Integration Complexity, Chatbots may require technical effort to integrate with existing educational systems.	**Shifting Education Dynamics**, AI chatbots will change how learning is delivered, emphasizing automation and personalized approaches.

There are ethical implications in the use of AI chatbots in educational environments. Additionally, there are questions related to bias in AI systems. AI models for example, chatgpt train on large data sets that might have biases. Ensuring fair conditions for educational tools based on AI remains a concern for researchers and developers today.

Another obstacle is the threat of academic cheating. As they become better able to produce high-quality academic responses, students to plagiarize or shortcut the learning process may well employ AI chatbots. Educators should therefore establish guidelines around the appropriate use of AI within teaching practices. These AI chatbots will hopefully positively disturb the academic environment-now a very prominent mention includes that of chatgpt and Copilot-among such potential transformation is giving an utterly personalized piece of learning, impressive academic support, and improved efficiency in administrative management to primary, secondary, and higher educational institutions. Primary and secondary education use these for encouraging more interactive and efficient learning for students while higher learning institutions utilize such for academic writing, coding, and student support services. However, their introduction calls for close examination of ethical issues regarding data privacy, bias, and academic integrity. Adoption of best practice in use for AI by educators and institutions must guarantee that such tools complement human instruction and not replace it to realize the full benefits of AI while minimizing the abuse risks.

6. **Conclusion**

The adoption of Artificial Intelligence in education institutions has great impact in transforming teaching and learning environments. Moreover, AI has the ability to provide personalized learning experiences, automate administrative tasks, augment teaching, and provide greater accessibility to diverse learners. Therefore, at any education system with the implementation of AI chatbots, for students will be able to create a more customized, effective, and stimulating learning atmosphere. In addition, AI can serve as a driving force for teachers' professional development by helping them improve their teaching methods and overall effectiveness. Nevertheless, the successful incorporation of AI poses some needed caution like data security, fairness in technology use, and the gap of teacher education. The lack of equal opportunities, especially on less developed regions such as rural or poorly funded schools, needs to solve in order to provide equal utilization of AI applications. Additionally, it is important to reach a healthy balance between the power of AI and the fundamental roles teachers provide in encouraging creativity and emotional nurturing within the classroom. Therefore, the most beneficial method to implement AI in educational environment is in stages and with much consideration.

Although the application of AI chatbots at any level of education is still in its insufficiency, there are many potential advantages. Moreover, AI can improve individualised instruction, lessen administrative workloads, and give students immediate feedback to improve their progress. However, there are many issues still exist including, the digital divide, data privacy, teacher preparation, long term impact and moral problems. Moreover, in order to build more efficient, individualised, and equitable learning environments for every student, educational systems must consider these problems while utilising AI. Therefore, a comprehensive and careful strategy should consider in order to successfully implementing AI at any level of education to ensure that the technology effectively improves learning without overwhelming teachers or students. Several factors, including scalability, student needs, teacher support, and ethical considerations, should considered when implementing AI in these educational systems.

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