**Artificial Intelligence in Digital Learning Platforms in Education: Impact, Benefits, Limitations, and Future Prospects**

**Abstract:**

Education is experiencing a major shift driven by the integration of Artificial Intelligence (AI) and digital learning systems. AI is reshaping the way learners receive personalized instruction, how assessments are conducted, and how administrative tasks are managed. Meanwhile, digital platforms are making learning more accessible, flexible, and inclusive for diverse groups of students. This paper investigates the effects of AI and digital education tools on modern learning environments, outlining their key advantages, potential challenges, and future prospects. Grounded in current technological trends and scholarly research, this study presents a new outlook on how these innovations are transforming both teaching methods and educational experiences.

**Keywords:** Artificial Intelligence, Digital Learning Platforms, Personalized Learning, Education Technology, AI in Education.

**1.Introduction:**

Artificial Intelligence (AI) is rapidly transforming various aspects of life, and education is no exception. It has emerged as a valuable solution for overcoming challenges in the education sector and accelerating progress toward **Sustainable Development Goal 4 (SDG 4)**, which focuses on quality and inclusive education. Through its data collection and analysis capabilities, AI helps educators monitor student participation, track academic growth, and support student well-being. Additionally, AI-powered applications provide platforms for teacher-student interaction and allow for personalized progress tracking (Colchester et al., 2017).

AI holds the potential to **enhance educational practices** by making teaching and learning more efficient and tailored. Using adaptive learning technologies, AI can identify each student's unique strengths and areas for improvement, thereby customizing educational content to better meet their needs. Tools such as **virtual reality (VR)** can simulate real-world experiences—like visiting historical landmarks or exploring foreign cultures—right from the classroom. This fosters deeper engagement and improves information retention by offering students a **hands-on, immersive learning experience**. The integration of **augmented reality (AR)** with AI further contributes to a more engaging educational environment. AR allows learners to interact with digital elements superimposed on their physical surroundings through devices like smartphones or interactive displays. These experiences make information more accessible and can transform traditional lessons into dynamic, interactive sessions (Thongprasit & Wannapiroon, 2022).

While AI presents numerous benefits in the field of education, its implementation must be handled with care. Issues such as **data security, ethical use, and equal access** need to be addressed through well-defined policies. There should be transparent guidelines regarding how student data is collected, stored, and shared. Moreover, it is crucial that AI tools are used to **enhance learning outcomes and support innovative teaching**, rather than reinforcing outdated systems that may hinder creativity, critical thinking, or diversity.

**2. Literature Review:**

**Paek (2021)** emphasizes that using Artificial Intelligence (AI) in education should be encouraged more broadly, especially through direct application of technology and algorithms. AI is now a significant force transforming society and is becoming a key driver of educational reform. It is compelling educators to rethink learning objectives, modify curricula, and adopt innovative teaching methods. There is a shift from traditional public education based on information transfer to more personalized, creative education. AI is reshaping the traditional curriculum, with tools like chatbots acting as learning assistants and virtual tutors. This approach, known as Artificial Intelligence in Education (AIED), is still developing. To advance this field, there is a need to clarify core concepts, unify terminology, and expand the scope and depth of research methodologies.

**Chen (2020)** points out that modern technological tools have greatly aided the development of AI, which now plays a visible role in education. This study aimed to explore the impact of AI on teaching, learning, and academic administration. AI supports student learning through interactive software and 3D simulations, creating immersive digital environments. However, AI also poses risks, including academic dishonesty and the creation of false content. At present, AI mainly serves as a support tool in education, but its presence is expected to grow. Chatbots, for example, can replicate teacher interactions. The use of these technologies has led to better instruction and efficiency among educators while enabling personalized academic experiences based on each student’s capabilities and needs.

**Alam (2022)** states that AI is rapidly changing education across the globe. It allows learners to access classroom materials at any time and from anywhere. AI tools are widely used by educators and students alike, offering benefits such as 24/7 availability, remote access, and seamless navigation through learning content. In the near future, AI is expected to become inseparable from education systems. While it won't replace teachers, it will become an essential resource alongside them. Just as AI influences personal and social life, it will positively impact academics. However, concerns related to data security, intellectual property, and privacy for both students and educators also arise with increased AI integration.

**Popenici (2017)** discusses the potential long-term impact of AI on higher education and the responsibilities institutions must take. AI can act as a useful companion to both students and teachers by fostering innovation and curiosity in learners. It provides a platform for teachers to enhance student thinking and learning. Whether AI is an educational ally or threat depends on philosophical analysis rather than scientific data. AI brings flexibility, efficiency, and productivity, contributing to the effectiveness of students, faculty, and institutions. It delivers personalized content tailored to each student’s interests, learning pace, and abilities, helping minimize distractions and support focused learning. Ultimately, AI offers valuable support in solving academic challenges for all stakeholders.

**Muresan (2023)** envisions AI playing a transformative role in future careers, with significant implications for the education sector. While the presence of humanoid robots in classrooms remains distant, AI is already making learning more personalized and accessible. It can adjust teaching strategies and content delivery based on individual learners' needs. AI-driven learning systems help nurture essential human skills such as collaboration and communication. These systems also provide innovative resources like virtual assistants, which encourage students to explore, think critically, and develop their creativity.

**Göksel (2019)** analyzed AI’s role in current and future education, highlighting three main research themes: deep learning and adaptive methods, intelligent tutoring systems, and long-term educational applications of AI. While AI can significantly improve human life, it’s important to evaluate its implementation critically. Ethical guidelines must be created for how student-generated data is used. Additionally, educational processes involving AI should be regularly assessed to avoid overdependence on automated systems.

**Huang (2021)** suggests that as AI continues to develop, its influence on education will increase significantly. As its applications expand, they will bring new opportunities and challenges for educators, students, and institutions. AI is expected to enhance performance through its unique and diverse features, offering tailored learning experiences for all users.

**Baker (2000)** raises key questions about the future and unity of AIED (Artificial Intelligence in Education) research. He believes that meaningful AIED research must go beyond creating models—it must link educational theory, experimental studies, and the design of educational tools. Effective AIED research requires clearly defined relationships among theory, educational phenomena, and practical applications. Because of these complex demands, conducting AIED research is a challenging task.

**Chen (2022)** explores how AI has led to the development of new technologies designed to support diverse academic goals. Educational institutions produce large datasets across various disciplines such as mathematics, science, and languages. These datasets are analyzed using methods like Machine Learning (ML), Educational Data Mining (EDM), Natural Language Processing (NLP), Neural Networks (ANNs), and affective computing. For AI-based personalized learning to be effective, it’s essential to ensure transparency in data usage, involve teachers in system design, and back AI's value with robust experimental results.

## **3.Methodology**

This study adopts a **conceptual research framework** to explore the **advantages, disadvantages, and future prospects** of incorporating Artificial Intelligence (AI) into the education sector. The methodology is rooted in **qualitative analysis**, primarily relying on a **comprehensive literature review**. Relevant academic publications, recent scholarly research, expert insights, and recognized theoretical models in the field of AI in education were critically analyzed. This approach enables a broad yet in-depth understanding of the current trends, challenges, and potential impacts of AI integration within educational systems.

### ****4.Objective No. 1: Meaning of Artificial Intelligence (AI)****

The roots of Artificial Intelligence (AI) can be traced back to the 1950s, when Alan Turing introduced a test known as the "imitation game" to determine whether a machine could exhibit behavior similar to that of a human. Turing suggested that if a human evaluator is unable to distinguish between responses from a human and a machine, the machine can be considered to have human-like intelligence (Popenici & Kerr, 2017).

Artificial Intelligence is commonly defined as the ability of machines or computers to perform mental tasks that are generally associated with human cognition (Majid, 2022). As per Baker et al. (2019), AI refers to the capability of machines to undertake cognitive processes such as learning, reasoning, and solving problems—skills typically linked to human intelligence.

In simpler terms, AI is the simulation of human mental processes by machines. The aim of this field is to design intelligent systems that can perform tasks requiring human-like intelligence. These tasks include problem-solving, recognizing speech and images, understanding natural language, learning from past experiences, and making decisions.

## **5**. **Artificial Intelligence in Education (AIED)**

The integration of Artificial Intelligence into educational settings can be traced back to the 1970s (Miao et al., n.d.). Over time, **AI in Education (AIED)** has evolved into a dynamic field encompassing a wide range of applications—from personalized learning systems and intelligent tutoring platforms to AI-assisted writing analysis, game-based learning environments, and chatbot-based student support. These systems not only enhance one-on-one student-computer interaction but also scale across entire schools, mobile learning contexts, and informal learning environments.

Initially focused on tools that directly supported students, AI applications have expanded to also assist educators and administrative systems. This includes **student-facing AI** (personalized instruction, feedback), **teacher-facing AI** (lesson planning, grading), and **system-facing AI** (resource allocation, institutional management) (Miao et al., n.d.). AIED also draws from a variety of disciplines such as neuroscience, linguistics, psychology, sociology, anthropology, and education, fostering inclusive, adaptive, and personalized learning environments.

### ****Understanding Artificial Intelligence****

AI is commonly defined as the **simulation of human cognitive functions** using computers (Meinhart, 1966), involving capabilities like learning, reasoning, decision-making, and problem-solving (Stantion, 1995). In the educational sector, AI is used to enhance both teaching and learning by making processes more efficient, personalized, and data-driven. By automating routine tasks and enabling customized learning paths, AI acts as a transformative force in reshaping traditional educational practices.

### ****6.Key AI Tools and Applications in Education****

Here are several prominent applications of AI currently shaping the educational landscape:

* **Personalized Learning Platforms:** Platforms like Coursera, edX, and Knewton use AI algorithms to adjust course content, assessments, and learning paths based on individual student needs and progress.
* **Intelligent Tutoring Systems (ITS):** Tools such as DreamBox and Carnegie Learning provide tailored feedback and instruction, particularly in subjects like math and science.
* **AI Chatbots and Virtual Assistants:** Systems like IBM Watson Assistant and Blackboard Ally offer 24/7 support to students, answering queries, sharing course resources, and assisting with administrative tasks.
* **Plagiarism Detection Tools:** Programs like Turnitin and Grammarly use AI to identify plagiarism and ensure academic integrity in student submissions.
* **Language Learning Applications:** AI-driven apps like Duolingo and Babbel customize lessons based on learner performance and provide real-time feedback to enhance fluency.
* **Virtual Laboratories:** Platforms such as Labster offer interactive, simulation-based lab experiences that allow students to conduct experiments virtually—especially valuable in STEM education.
* **Automated Essay Scoring Systems:** AI tools like ETS’s e-rater automatically assess and score written work, saving educators time while offering feedback to students.
* **Campus Security Enhancements:** AI technologies, including facial recognition and predictive analytics, contribute to safety and surveillance on educational campuses.
* **Career Services Optimization:** Tools like Handshake help match students with internships and job opportunities aligned with their skills, interests, and educational background.
* **Adaptive Assessment Platforms:** Programs like ALEKS adjust assessment difficulty based on real-time student performance, supporting personalized instruction.
* **Natural Language Processing (NLP) in Language Education:** AI-based applications such as Rosetta Stone use NLP to offer rich, interactive language instruction experiences.

**7.Objective No. 2 Advantages of Artificial Intelligence in Education**

Artificial Intelligence (AI) has revolutionized educational systems by offering smarter, faster, and more tailored learning experiences. It helps both learners and educators by increasing productivity, improving learning outcomes, and supporting institutional management. Below are some key benefits of integrating AI into education:

### ****7.1. Faster Task Completion****

AI can perform certain educational tasks more quickly and efficiently than humans, such as grading tests or managing data (Chhaya et al., 2020).

### ****7.2. Personalized Learning Experiences****

Advanced AI algorithms can create customized learning paths based on each student's academic progress, preferences, and learning styles.

### ****7.3. Adaptive Assessment****

AI can design intelligent tests that automatically adjust question difficulty based on the student’s responses, offering more accurate evaluations of knowledge and skills.

### ****7.4. Gamification and Student Engagement****

By incorporating game-like features, AI can make learning more engaging and enjoyable, motivating students to participate actively and maintain focus.

### ****7.5. Faculty Support****

AI tools assist teachers and researchers by providing timely updates on academic advancements, generating insights from educational data, and streamlining routine tasks.

### ****7.6. Instant Feedback****

AI-driven platforms can offer immediate feedback on student assignments, essays, and quizzes, helping learners understand their mistakes and improve in real-time.

### ****7.7. Predictive Admissions****

AI systems can analyze applicant data to help institutions predict student success, which aids in making informed decisions about admissions and scholarship awards.

### ****7.8. Virtual Labs and Simulations****

AI-powered virtual labs enable students, especially in science and engineering, to conduct experiments safely and repeatedly in a digital environment.

### ****7.9. Social and Emotional Learning (SEL)****

AI can monitor indicators of student well-being and emotional status, offering support resources or alerting educators when intervention may be needed.

### ****7.10. Alumni Engagement****

AI can personalize alumni experiences by suggesting relevant events, networking opportunities, and ways to give back, thereby strengthening alumni relations.

### ****7.11. Language Learning Support****

AI-enabled platforms offer immersive environments for learning new languages, including feedback on pronunciation, vocabulary, grammar, and cultural understanding.

### ****7.12. Plagiarism Detection****

AI-based tools can efficiently identify instances of academic dishonesty in student submissions, helping institutions uphold standards of integrity.

### ****7.13. Accessibility for All Learners****

AI ensures educational inclusivity by offering features such as alternative text for images, automatic video transcripts, and screen reader compatibility for students with special needs.

### ****7.14. Support for Educational Research****

Researchers can leverage AI to process large educational datasets, test hypotheses, and gain valuable insights into effective teaching strategies.

### ****7.15. Adaptive Content Delivery****

AI adjusts course content in real-time based on a student’s performance, ensuring that each learner receives material at the right pace and difficulty level.

### ****7.16. 24/7 Learning Assistance****

Virtual AI assistants and chatbots provide around-the-clock support, answering student questions, providing guidance, and offering academic resources (Dewangan, n.d.).

**8. Objective No.3.** **Disadvantages of Artificial Intelligence in Education**

Although Artificial Intelligence (AI) has transformed education by simplifying administrative tasks, enhancing teaching, and enriching learning experiences, it also brings a set of challenges and concerns. As Kengam (2020) points out, while AI presents remarkable opportunities, it also introduces certain risks. Below are some of the key disadvantages associated with using AI in education:

**8.1. High Implementation Costs**

Integrating AI into educational institutions often demands significant financial investment. Expenses related to software, hardware, infrastructure upgrades, and staff training can pose major challenges, especially for institutions with limited budgets.

**8.2. Data Privacy Risks**

AI systems require access to large volumes of student data to function effectively. This raises serious concerns about how personal and academic information is stored, shared, and protected. Any data breaches can have serious implications for students' privacy and security.

**8.3. Ethical Issues and Algorithmic Bias**

AI tools can unintentionally replicate existing biases found in training data, leading to unfair practices in areas such as student evaluations, admissions, and recommendations. These ethical issues require careful monitoring and algorithm transparency.

**8.4. Reduced Personal Interaction**

While AI can personalize learning content, it may also reduce opportunities for social engagement between students and educators. Human interaction is a critical part of emotional, social, and cognitive development, especially in collaborative learning environments.

**8.5. Threat to Employment**

There is growing concern that AI could replace certain educational roles, including administrative positions and some teaching-related functions. This technological shift may lead to job displacement in the education sector.

**8.6. Technical Challenges**

AI tools require ongoing maintenance, regular updates, and technical support. Any malfunction or system failure can interrupt the learning process and disrupt the overall academic environment.

**8.7. Lack of Human Connection**

AI-based learning platforms often lack the empathetic and motivational aspects of human instruction. The absence of in-person communication may affect student morale and diminish the mentorship element of education.

**8.8. Limited Support for Creative Thinking**

AI systems excel in tasks involving data processing, fact retrieval, and structured assessments but may struggle to promote creativity, deep critical thinking, and open-ended discussion — key components of higher-level education.

**8.9. Accessibility Challenges**

Students from disadvantaged backgrounds or remote areas may face difficulties accessing AI-powered platforms due to lack of internet connectivity or necessary digital devices, exacerbating educational inequality.

**8.10. Overdependence on Automation**

An overreliance on AI tools could lead teachers to rely heavily on automated processes, potentially weakening traditional teaching skills such as adaptability, empathy, and spontaneous decision-making.

**9. Objective No.4 How Can AI Further Support Online Learning and Digital Education?**

Artificial Intelligence (AI) has the potential to redefine online education by offering customized learning experiences, simplifying administrative duties, and delivering critical insights into student progress. Today’s AI systems empower adaptive e-learning platforms that adjust instructional content based on individual learner preferences and engagement levels. This personalized method promotes better involvement and enhances the overall learning outcome.

In addition, AI tools contribute to the automation of key administrative functions such as assignment grading, personalized feedback generation, and course content management. This automation allows instructors to invest more time in meaningful interactions with learners. Moreover, AI systems analyze large volumes of student data to identify learning patterns and trends, helping educators intervene early and provide focused academic support. The integration of AI in digital education can significantly improve delivery efficiency and promote broader accessibility and equity in learning.

**9.1. Tailored Learning in Online Education:**

Human instructors are known for adapting tasks to suit individual learners. Can artificial intelligence replicate this personalized approach? With technological advancements, AI can closely match it. Personalized learning—a cornerstone of online education—delivers content and assistance based on each learner’s unique needs, preferences, and learning pace.

Using AI-powered algorithms and data analytics, online learning platforms can assess a learner’s strengths, weaknesses, and progress. This helps develop personalized learning routes and recommend resources aligned with the student’s needs. AI tools also offer instant feedback and insightful evaluations to help learners track their performance and identify areas that need attention. Despite concerns like data security and algorithmic fairness, when implemented ethically, AI can greatly enhance personalized learning experiences, offering tailored academic support at scale.

**9.2. Automating Administrative Functions:**

In the same way automation transforms business operations, it can simplify many routine activities in online education. Incorporating AI into e-learning platforms can automate functions such as grading assignments, curating learning materials, and sending personalized learning suggestions.

This automation reduces the administrative burden on educators, allowing them to focus on student engagement, discussion facilitation, and personalized mentoring. AI can also monitor learning progress and provide performance reports to identify gaps that need to be addressed. Nevertheless, while implementing AI for automation, ethical considerations must be prioritized to ensure it does not compromise instructional quality or learner engagement. When used responsibly, AI can optimize workflow and boost efficiency in digital education systems.

**9.3. Improving Student-Instructor Communication:**

Effective communication between learners and educators is essential for a productive and engaging online learning experience. This interaction boosts student satisfaction, motivation, and comprehension of course content.

To strengthen this connection, educators can provide multiple digital communication options, timely responses, and ongoing encouragement. Designing collaborative and interactive activities encourages students to actively participate and critically engage with the subject, leading to a deeper understanding and enhanced skills. A robust communication framework helps build a strong virtual learning community and fosters academic growth.

**9.4. Virtual Teaching Assistants Powered by AI:**

AI-based teaching assistants are reshaping digital education by offering real-time support to both students and instructors. These intelligent systems utilize machine learning techniques to streamline instructional processes.

AI assistants are capable of:

* Addressing student inquiries
* Giving detailed assignment feedback
* Assessing learner submissions
* Analyzing student data for timely, personalized interventions

This technology improves operational efficiency and allows educators to concentrate on personalized teaching efforts. Through AI-driven assistants, online learning becomes more interactive, responsive, and supportive of student success.

**9.5. Smart Evaluation Systems:**

An emerging application of AI in digital learning involves intelligent grading systems. These AI-powered tools use advanced algorithms to assess and score student work efficiently and impartially.

They can evaluate a variety of assignments—including essays, quizzes, and projects—and deliver constructive feedback in real time. Automating assessment saves educators valuable time and provides learners with a better understanding of their strengths and areas that need improvement. As AI continues to evolve, these intelligent scoring systems are expected to become integral to online education, enhancing academic performance and helping students achieve their full capabilities.

## **10. Objective No. 5 Prospects of Artificial Intelligence in Education**

“Technological advances have opened a world of opportunities for students and teachers lately. With new access to online and traditional learning platforms, the possibilities for furthering educational goals seem limitless” (Escotet, 2023). Artificial Intelligence (AI) holds immense potential to reshape various aspects of the educational landscape. As it continues to evolve, its role in higher education is projected to grow, impacting learning, teaching, administration, and research from multiple perspectives.

### ****10.1. The Innovator’s Perspective****

Ed-tech entrepreneurs and innovators view AI as a transformative force that offers significant market opportunities. They see it as a tool capable of disrupting conventional educational systems by introducing novel platforms and methodologies that align with the changing needs of learners and institutions.

### ****10.2. The Student’s Perspective****

Students often have a balanced view of AI. While many appreciate the convenience and tailored learning experiences AI provides, there are growing concerns about the potential overdependence on technology. Some fear that AI might reduce human interaction and the personal guidance traditionally offered by mentors and instructors.

### ****10.3. The Teacher’s Perspective****

Educators generally maintain a cautiously optimistic stance on AI. They recognize its benefits in terms of automated grading and personalized support. However, concerns persist about potential job displacement and the loss of teaching quality if AI is not implemented responsibly. Many emphasize that AI should complement and support, rather than replace, the educator’s role.

### ****10.4. The Administrator’s Perspective****

University and institutional administrators often focus on the operational advantages of AI. They see it as a strategic tool to streamline administrative functions, cut operational costs, and improve resource allocation—potentially making education more efficient and affordable for students.

### ****10.5. The Researcher’s Perspective****

Scholars in education and artificial intelligence are enthusiastic about AI’s potential to revolutionize pedagogical methods. They view AI as a gateway to deeper insights into how students learn, which could lead to the development of more effective instructional strategies and cognitive research advancements.

### ****10.6. The Technologist’s Perspective****

For AI developers and tech researchers, higher education offers a dynamic testing environment. They are driven by the challenge of applying advanced AI tools in education, with the hope of innovating solutions that could later benefit other fields beyond academia.

### ****10.7. The Policy and Regulatory Perspective****

Policymakers express concerns about ethical issues such as data protection, algorithmic bias, and surveillance within learning environments. They highlight the importance of developing clear regulations to ensure that AI is applied ethically and responsibly in educational contexts.

### ****10.8. The Interdisciplinary Perspective****

Researchers and educators who span multiple academic disciplines recognize AI’s potential to bridge subject areas. By fostering interdisciplinary collaboration, AI can inspire the creation of integrated curricula that bring together diverse fields of study.

### ****10.9. The Sustainability Perspective****

Environmental advocates view AI as a way to reduce the ecological footprint of education. Remote learning enabled by AI minimizes the need for physical infrastructure and printed materials, contributing to more sustainable educational practices.

### ****10.10.The Global Equity Perspective****

AI holds the promise of narrowing educational disparities between developed and developing regions. Through AI-powered online platforms, high-quality learning resources can be made accessible to underserved, rural, or low-income communities, fostering greater educational equity worldwide.

### ****10.11.Future of AI in Education and Its Potential Impact:****

Artificial Intelligence is expected to **transform the education sector** and help resolve long-standing issues faced by educators and institutions. With forecasts suggesting that the AI education industry could grow to **$20 billion by 2027**, it is evident that this technology will play a major role in shaping future classrooms globally.

A major advantage of implementing AI in education is its capability to **lessen teachers’ workloads** and improve efficiency in handling routine administrative responsibilities. Tools like **automated assessments, intelligent tutoring systems**, and **customized learning platforms** are revolutionizing the learning process and the way educators deliver instruction. By automating repetitive tasks, teachers can dedicate more time to **student engagement** and concentrate on **innovative, interactive teaching methods**.

However, concerns still exist regarding the **performance and limitations** of AI-driven educational tools. Although these systems offer **personalized support and adaptive feedback**, they may lack the depth of **genuine human interaction** essential for emotional and social development. There is also a growing need for **regulatory policies and ethical guidelines** to manage the collection and use of student data responsibly. Despite these challenges, AI has tremendous potential to **boost productivity and innovation** in education. As institutions continue to incorporate AI technologies, the education system will likely evolve toward enhanced **teacher-student communication** and the development of **intelligent environments** that encourage both learning and peer collaboration—whether conducted virtually or within physical classrooms.

### 11.Conclusion:

The main goal of this study was to explore the influence of artificial intelligence (AI) on the education sector. A qualitative research approach was adopted, employing a comprehensive literature review as the primary methodology. Relevant sources such as academic journal articles, expert publications, and conference proceedings were examined to achieve the research objectives. The evolution of AI can be traced back to the emergence of computers and related technologies. In particular, the introduction of personal computers and subsequent advancements in processing power and system integration have significantly contributed to the rise of AI applications across various industries.

Among the sectors experiencing a transformative impact from AI, education stands out—especially within academic institutions, which were the focus of this study. The research examined AI’s role in enhancing administrative operations, teaching processes, and student learning. Initially, AI in education emerged through the use of computer-based systems, gradually evolving into online platforms and web-based learning environments. The development of embedded AI systems has introduced innovative tools such as humanoid robots (cobots) and chatbots, which can function independently or support instructors in delivering educational content. These technological advancements have improved teacher productivity and instructional effectiveness by automating routine tasks and enriching the overall learning experience. For students, AI has made learning more personalized and adaptive, tailoring content to individual learning needs and abilities. In conclusion, the study highlights that AI has brought significant changes to education, particularly in administrative functions, instructional delivery, and the personalization of student learning within institutional settings.

Author(s) hereby declare that generative AI technologies such as Large Language Models, etc. have been used during the writing or editing of manuscripts. This explanation will include the name, version, model, and source of the generative AI technology and as well as all input prompts provided to the generative AI technology

Details of the AI usage are given below:

1.ChatGPT

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