A Study on Artificial Intelligence and Its Impact on Education

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ABSTRACT

Artificial Intelligence is a booming technological domain capable of altering every aspect of our social interactions. In education, AI has begun producing new teaching and learning solutions that are now undergoing testing in different contexts. It is usually associated with computers and the Internet. Artificial intelligence in all areas of human life has had an important boom in the last ten years. It is very powerful and has the potential to infuse changes in different sectors of the society. AI is a tool that can be applied in different ways and at different levels. It has been extensively adopted and used in the education sector. Artificial Intelligence (AI) in education has the potential to be a game-changer for every student and teacher. AI in education has given a completely new perspective of looking at education to teachers, students, parents, and educational institutions as well. This paper aims to present the concept of artificial intelligence (AI), and its impact on education. Especially it represents the impact of AI on students and teachers. This study uses an analytical approach based on a theoretical survey of previous literature. A qualitative research approach was used in the present study. Mainly secondary data is used in the present study. The data for the study was collected from various research articles, journals, PhD thesis and books.

Keywords: Teachers, students, artificial intelligence, education, Technology.

1. INTRODUCTION:

Technology has always played a significant role in education. Advances in digital technologies and computer sciences are leading us toward a technological society where machines are designed and developed to meet human needs while simultaneously becoming smarter. The use of information technology and the Internet in education is one of the most important indicators of society's transformation into an information society. The use of information technology has impacted the education sector in different ways. Intelligence has been a characteristic of human beings since ancient times. Artificial Intelligence (AI) is being implemented in more and more fields, including education. Artificial Intelligence (AI) is a replication of human intelligence into a computer machine so that it can think and act likes a human. It is a technology that helps a computer machine to think like a human. The term *artificial intelligence* was first mentioned in 1956 by John McCarthy (Russel & Norvig, 2010). Artificial Intelligence aims to imitate human behavior. Artificial intelligence has so much impact on society in general, both positive and negative way. It is the discipline that deals with ensuring that computers are more capable of performing tasks that human beings do. They include some technologies like smartphones, the internet, search engines, different apps, and household appliances. Artificial intelligence (AI) is defined as computing systems, which engage human-like processes such as learning, adapting, synthesizing, self-correction and the use of

data for complex processing tasks. It contributes to increasing the efficiency and effectiveness of education systems.

Artificial Intelligence in Education is developing new solutions in education for different situations. In the educational system, educational goals can be better achieved and managed by artificial intelligence. Artificial intelligence-aided education includes intelligent education, innovative virtual learning, and data analysis and prediction. AI has improved efficiency in the performance of administrative tasks, such as reviewing students' work, grading, and providing feedback on assignments through automation using web-based platforms or computer programs. Some other areas in which AI has been applied in the education sector include curriculum and content development, and instructions leveraging technologies such as virtual reality, web-based platforms, robotics, video conferencing, and 3-D technology, which have made it possible for students to learn better. Artificial Intelligence can develop and imitate the decision-making process that is adopted by people.

AI in education is not about replacing human teachers with robots, but it is about using computer intelligence to help teachers and students and making the education system much better and more effective. AI has various uses and applications in different sectors of education. In the 1970s, AI in education occurred as a specialist area to cover new technology in teaching & learning. The main aim of AI in education is to facilitate learners with flexible, personalized, and engaging learning along with the basic automated task. There are many examples of successful AI-powered educational tools and platforms currently in use. Some of the most popular are: Duolingo is a language learning app that uses AI to personalize lessons for each user. ALEKS is an AI-powered math learning platform that provides adaptive assessments and personalized learning plans. Coursera uses AI to recommend courses to students based on their interests and previous learning history. ChatGPT (Chat Generative Pre-trained Transformer) is a large language model-based chatbot developed by Open AI and launched on November 30, 2022, that enables users to refine and steer a conversation towards a desired length, format, style, level of detail, and language. ChatGPT is a free-to-use AI system.

2. OBJECTIVE OF THE STUDY:

The study seeks to assess the impact of Artificial Intelligence on education. More particularly, it seeks to ascertain how Artificial Intelligence has affected various aspects of education, especially for teachers and students. The present study also aims to discuss the various challenges related to the use of AI in education.

3. RESEARCH METHODOLOGY:

A qualitative research method was used in the present study. This research study is analytical, which is based on the use of a systematic review as a method to answer the research question through a systematic and replicable process. The scope of this study covers the impact of AI on the education sector. Mainly secondary data was used for the study purpose to answer the research question. Data for this study was collected from various sources, like- Journal articles, professional publications, books, theses, dissertations, etc.

4. DISCUSSIONS:

Artificial Intelligence (AI) has the potential to address some of the biggest challenges in education today. AI helps the students and teachers in several ways. It can increase the quality and quantity of feedback provided to students and teachers, as well as suggest resources to advance their teaching and learning. This not only makes the learning experience more enjoyable for students but also helps them to retain more information. AI to accelerate the transformation of education systems towards inclusive learning that will prepare young people to thrive and shape a better future. AI can help foster the skills students will need to shape the future. At the same time, through the use of

these technologies, teachers can enhance their own teaching practice and professional experience. Artificial intelligence impacts teaching-learning, communication, planning, assessment, and management etc.

4.1 AI for students:

Currently, some educational programs are equipped with AI, scaffolding students to learn basic skills. AI will more likely provide students with an extensive range of services. With the rise of Artificial Intelligence in education, there are many different ways it is being used to help students learn, like Chatbots, Virtual Reality (VR), Learning Management Systems (LMS), Robotics, etc. There are so many benefits of AI. Currently, some tutoring programs are based on artificial intelligence to help students through writing, basic mathematics, and other subjects. Every student will have equal access no matter their learning ability or disability, this makes a massive difference since not all children learn at the same pace or possess similar skill sets. Following are some uses of AI for students:

- AI gives instruction based on students' strengths and weaknesses. If the student has some weaknesses in some areas or fails to understand a few topics, AI helps to overcome them.
- AI has provided students with improved learning experiences because AI has enabled the customization and personalization of learning materials to the needs and capabilities of students.
- AI systems easily adapt to each student's individual learning needs. AI systems can be programmed to provide personalized learning to students. With personalized learning, each student can have their own way of learning as per their level of understanding and need. So students feel less pressure on their studies.
- AI helps the students whenever they ask a question, it gives a complete explanation.
- Some students may be shy about taking risks or receiving critical feedback in the classroom. with AI, students can feel comfortable making the mistakes necessary for learning and receive the feedback they need for improvement.
- With these AI programs, students can learn the fundamentals of different subjects.
- AI is not only helping the students to learn the customized course as per their requirements, but it can also give feedback to students about their success level.
- AI systems can be programmed to provide expertise to students, a place where students can ask their doubts.
- Classes can be customized according to students' profiles and students' interests can be stimulated by exposing them to various content and courses.
- Artificial Intelligence Can Automate Grading in Educational Context. Grading homework and tests usually take a significant amount of time.

4.2 AI for Teachers:

AI has been reported as generally beneficial to teachers' instruction. Teachers can take advantage of AI in their planning, implementation, and assessment work. AI can reduce teacher workload. AI can take charge of various tasks such as grading, and giving constructive feedback on students' performance. AI has fostered the realization of quality, effectiveness, and efficiency in instruction or teaching. AI enables teachers to make their jobs better and helps them to better engage and support their students. Following are some uses of AI for teachers:

- By using AI teachers can classify students based on their abilities in a class and recognize who is a slow learner to understand the topics.
- AI is helpful for teachers during their planning of different types of course activities.
- AI assists them in identifying their students' needs so that they can determine the most suitable learning content and activities for their students.

- During activities, such as collaborative tasks, with the help of AI, teachers can monitor their students on time and give them immediate feedback
- AI has the provision of information on student Backgrounds. Teachers can get information from the AI system about their student's background.
- AI makes the teaching process more interesting. Utilizing AI-based applications makes instruction more interesting and easier for teachers.
- AI systems help teachers to decide on which exercises are most appropriate for their students based on their students' characteristics, it provides effectiveness of instructional practice.
- AI can show teachers how effectively they teach. Teachers can get feedback from the AI system.
- AI systems not only save time but also can provide teachers with more details about their strengths and weaknesses.

However, AI has shifted the role of the teacher to a facilitator. Teachers can integrate AI lessons as supplementary materials to assist weak students and provide hands-on experiences in the form of human interaction for students.

4.3 CHALLENGES:

Though Artificial intelligence is useful, it has some challenges in all areas of application, particularly in education. There are some dangers and disadvantages found with the random application of artificial intelligence in education. Some challenges of AI in education are briefly pointed out below:

- The use of artificial intelligence instruments can generate disconnection with emotions. Emotions as an important factor that would be affected in the process of teaching learning through the use of AI.
- Due to the absence of emotions, students can't feel that they are being cared for by the AI. When they have a question, and when they do not get a response from the AI, it will create a big problem.
- AI programs can instruct students only in basic subjects. However, these machines aren't perfect for teaching high-order thinking and creativity to students.
- Teachers fear not only that their positions will be replaced but also that a robot cannot closely monitor the personalized advances of each of the students in their classes.
- In most cases, the problem is that teachers are not being trained on how to use the new technology in their classrooms.
- Lack of specialized staff, the infrastructure of wireless communications, computers, and software are a big challenge.
- Ensuring equal access to AI-powered education for all students is also a challenge that needs to be addressed. It is important to ensure that all students, regardless of their socio-economic status or location, have access to these resources.
- There is a major chance of misusing the benefits of Artificial Intelligence by the students and teachers, as it is a robotic system.

5. CONCLUSION:

Artificial intelligence and its uses in our lives are growing day by day in many segments. Artificial Intelligence has the potential to make everyone's life easier through automation. In the field of education, AI has started showing its influence and working as a helping tool for both the students and teachers and supporting the learning process. AI programs are substituting particular types of classroom instruction by providing support for students to learn from anywhere in the world at any time. AI can be used as an educational tool that guides students toward their goals by providing personalized feedback on homework, quizzes, etc. With the help of AI, students can make their future bright. AI provides students with practical or experiential learning experiences, particularly

when used together with other technologies, such as virtual reality, 3-D, gaming, and simulation, thereby improving the students' learning experiences. Overall, AI has had a major impact on education, particularly, on administration, instruction, and learning areas of the education sector or within the context of individual learning institutions. Teachers and students using AI can achieve greater outcomes.

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