# THE ROLE OF ARTIFICIAL INTELLIGENCE (AI) IN ENHANCING CREATIVE KNOWLEDGE DEVELOPMENT IN EDUCATION

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**Abstract:** Artificial intelligence, or AI, is one topic that is frequently debated in relation to contemporary technology. This study examines artificial intelligence (AI) in relation to the growth of creative knowledge, particularly in the field of education. More individualized and spontaneous learning that adapts to students' cognitive capacities and activity requirements is made possible by AI technology. All of this encourages critical thinking and creativity. AI makes it possible for teachers and students to communicate and work together more. However, there are a number of obstacles that make the use of AI in education problematic, such as concerns about data privacy and ethical technological dependence. Thus, this study highlights the necessity of implementing AI with caution and consideration for laws that preserve the harmony between technology and human unity. To put it another way, this study suggests that in order for AI education to realize its full potential, it is necessary to improve teacher preparation, technology infrastructure, and ongoing evaluation.

## INTRODUCTION

Education has been significantly impacted by artificial intelligence (AI) in the quickly evolving digital age. One of the key pillars of a nation's development, education, is about to enter a new era in which technology is crucial to assisting in the teaching and learning process. Enhancing the development of creative knowledge is one of AI's primary functions in education. This is crucial for the growth of students' critical thinking, inventive, and problem-solving skills.

Creative knowledge encompasses more than just art or design; it also includes the capacity to come up with original concepts and innovative solutions to problems that arise in daily life. In the realm of education, the growth of students' creative knowledge can inspire the generation of fresh concepts that lead to constructive change in the social, technological, and academic spheres. AI makes this development process more dynamic and effective, allowing

educators and students to design more engaging and dynamic learning environments (Sternberg, 2006).

A computer system that can do tasks that typically require human intelligence is said to possess artificial intelligence. By evaluating and utilizing the data in the system, this technology is able to make judgments. In artificial intelligence, learning, reasoning, and self-correction are all processes that take place. This procedure is comparable to a human making a decision after conducting prior analysis. John Mc Carthy defined artificial intelligence as the ability to understand and replicate human cognitive processes and create devices that mimic human behavior in 1956. Being smart is defined as possessing knowledge and experience, thinking (the ability to make judgments and act), and morality.

The growth of individuals and society depends greatly on education. In the current era, technological advances have an endless impact on all aspects of human life, including education. One of the new technologies that is currently hot is artificial intelligence (AI). AI is the capacity of a system to perform tasks such as learning, planning, and problem solving comparable to humans. AI has the potential to improve teaching and learning in education. AI is used to assess student data in order to personalize learning. AI is able to thoroughly examine student data in order to better understand their preferences and needs. This enables educators and educational platforms to offer content that is suited to the comprehension and interest levels of their pupils. Additionally, students' areas of strength and weakness in comprehending the subject matter can be determined using an AI-based adaptive learning system. Artificial intelligence is a human invention that affects society in both positive and negative ways. Artificial intelligence is being developed with the goal of making human labor in the digital world easier. However, because industry and information technology are developing at an accelerating rate, artificial intelligence also brings up concerns about potential negative effects.

Based on this, AI may adapt educational content and provide appropriate feedback to increase students' understanding. The use of AI in education refers to two strategies that can be used to use artificial intelligence (AI) in educational environments. First, the teacher's task is transferred to an AI system that functions as a tutor for each student. Many classrooms have already made extensive use of pintar technology that adapts to each student's needs in the form of a cerdas tutoring system (Moleenar, 2021). An alternative artifical intelligence to increase human intelligence and assist humans in educational activities.

Even though AI has many benefits for education, it is important to consider issues like ethics, data privacy, and the negative effects of technology. For example, student privacy data

collected by AI-based systems must be properly protected to prevent misuse. In addition, technological advancements might slow down teacher-student interaction, which is a crucial component of the educational process. Because of this, it is important to understand more clearly how artifical intelligence an be used to increase the development of creative knowledge in the field of education as well as how technological advancement can be carried out with diligence and a focus on strengthening the bond between technology and human interaction.

With an emphasis on the advantages and difficulties encountered, this study attempts to investigate how AI can foster the growth of creative knowledge in the field of education. It is envisaged that practical methods to maximize AI's use in the educational system can be developed with a better grasp of the technology's promise and constraints. The findings of this study are anticipated to aid in the future creation of more creative and inclusive educational policies.

## RESEARCH METHODS

A research methodology known as library research methods, or simply library research methods, collect and examines data published in the form of scientific literature, such as books, journal articles, study reports, as well as additional sources. The goal of this approach is to get a thorough grasp of a particular study issue while applying what is already known to generate fresh ideas, support or broaden preexisting theories, or develop a theoretical framework. Researchers use the library research method to find relevant literature for their issue, read, summarize, and synthesize the information they find, then assess and interpret the findings. This method's primary goal is to produce an extensive and in-depth literature study on the topic under investigation.

When conducting research on subjects that have been thoroughly examined previously or when attempting to comprehend the advancement of knowledge in a specific field, the literature review method is quite beneficial. Researchers can also use this strategy to find gaps in the literature, approaches that produce inconsistent or diverse results, and potential paths for future research. Scientific research can benefit greatly from the use of library research techniques, particularly throughout the phases of planning and development. However, this approach can also be utilized as a stand-alone study whose goal is to create a comprehensive review of the body of literature in a certain topic without conducting any new research.

## RESULTS AND DISCUSSION

Artificial intelligence is the ability of machines to mimic and carry out tasks that typically require human intelligence. A few years from now finally, creation of increasingly complicated algorithms and artificial intelligence systems has been made possible by advancements in computer and data processing. AI can now learn from data and gradually get better thanks to technologies like machine learning and deep learning. Human life is impacted by artificial intelligence, or AI.

The primary outcomes of using artificial intelligence (AI) in education will be covered here, along with how this technology might enhance the growth of creative knowledge. In order to optimize the advantages of AI in education, a number of difficulties and potential effects will also be examined, and then viable solutions will be discussed.

1. Personalized Learning through the Use of AI

   AI's capacity to produce individualized learning experiences is among its most important educational applications. Real-time ability assessments, data analysis of student interactions with instructional materials, and the identification of problem areas are all possible with AI-based learning systems. AI can then modify course content, present challenges that are appropriate for each student's skill level, and provide various learning strategies based on the findings of this study (Luckin et al., 2016).

   Additionally, through interactive simulations, technology-based experiments, and immersive learning settings, a number of AI-based applications including virtual tutors and adaptive learning platforms have assisted students in exploring their creative ideas. For instance, by offering quick, tailored feedback, programs like Google DeepMind and Duolingo have shown that they can enhance students' cognitive abilities. Using resources like generative algorithms or AI-based design software, AI in art and design education enables students to produce original works. This demonstrates how AI not only fosters creativity but also pushes the limits of conventional education.

   Artificial Intelligence has advanced rapidly in recent years and is now beginning to permeate the educational landscape. In the field of education, artificial intelligence is used in a comparatively wide range of technologies, particularly those that are based on Android or the internet, such as virtual mentors or teachers. In addition, there is a technology known as Netex Learning that offers a cloud platform that can be customized and includes virtual workshops, training, and other capabilities. Depending on what pupils require, Netex Learning will suggest books, videos, and online instruction (Manongga et al., 2022).

For example, adaptive algorithms are used by learning systems like DreamBox and Knewton to display content that is customized to each student's needs. By giving them access to more appropriate and relevant content, this aids pupils who might struggle to follow standard learning methods. This method's primary benefit is that it boosts students' involvement and motivation, which can encourage the growth of their creative knowledge.

2. Encourage more cooperation between educators and learners

Additionally, the use of AI in education promotes greater teacher-student collaboration. Teachers may create more relevant and interesting learning experiences, give more timely ideas, and receive immediate feedback on students' progress with the aid of AI-based technologies. Conversely, students can use AI technology to delve deeper into the subject matter or come up with original answers to challenges they encounter.

AI-driven tutoring systems such as Socratic and Querium for example, give students a way to work together efficiently while using technology that can help them solve problems. AI makes education more flexible and responsive, which inspires students to participate more actively in the learning process and think more imaginatively. On the other side, teachers can devote more of their time to working through more challenging issues and assisting pupils in overcoming more challenging topics.

3. Development of Critical and Creative Thinking Abilities

AI has a significant impact on pupils' ability to think critically and creatively. Students can learn in a more creative and enjoyable way thanks to AI technology like educational games and simulations. Students can work together on design and problem-solving projects using apps like Minecraft Education Edition, for instance, and use what they've learned to come up with original solutions. Through generative applications that may produce new content, AI also aids in the advancement of creative knowledge. AI can be applied in the arts to produce literature, music, or artwork according to student-defined parameters. Students may hone their artistic abilities, spark their imaginations, and push the limits of their creativity with the help of programs like DeepArt and Magenta.

4. Challenges in Using AI in Education

AI has a lot of promise to improve the growth of creative knowledge, but putting it into practice is not without its difficulties. The reliance on technology is one of the primary issues. Over-reliance on AI may prevent students from developing social and critical thinking abilities that are useful in the real world. Careful consideration must also be given to ethical and data privacy considerations. To prevent misuse, AI platforms' usage of

students' personal data needs to be strictly regulated (Binns, 2018). Therefore, in order to guarantee appropriate protection and moral use of personal data, the application of artificial intelligence necessitates a legal framework and transparency. AI must not breach anyone's privacy or be discriminating before it is widely used (Michael Reskiantio Pabubung, 2021).

Furthermore, proper infrastructure is necessary for the integration of AI in education. In order to support AI systems, educational institutions need to have enough hardware and software in addition to skilled human resources who can use the technology to its full potential. The effective application of AI in education might not be feasible without this backing.

There are several advantages to using AI in education, particularly when it comes to fostering creativity and personalizing instruction. By offering content that is appropriate for their skill level and makes learning more engaging and relevant, artificial intelligence (AI) can assist students in overcoming learning challenges. However, it is crucial to address current difficulties like technology dependency and data privacy concerns in order to guarantee that this technology has a positive influence. The effective integration of technology and educational policy will ultimately determine the long-term viability of AI in education. Maintaining a balance between autonomous and group learning, as well as between technology and human engagement, should be part of AI-based teaching and learning.

## CONCLUSIONS AND RECOMMENDATION

According to this study, artificial intelligence (AI) holds great promise for enhancing the growth of creative knowledge in the field of education by fostering more individualized learning experiences, facilitating improved teacher-student collaboration, and encouraging students' capacity for critical and creative thought. AI technology makes it possible to give content that is customized to each student's unique skills, enhancing the educational process by offering resources that encourage innovation and making learning more efficient and relevant.

However, there are a number of obstacles to overcome before AI can be used in education, including an excessive dependence on technology, possible data privacy concerns, and inadequate infrastructure in certain educational institutions. As a result, the use of AI in education must be done carefully and in accordance with laws that guarantee sustainability and harmony between technology and people. Enhancing technology infrastructure training for teachers and technology developers, raising awareness of ethics and data privacy, using AI to

promote creative collaboration, and constant evaluation and adaptation are some suggestions that can be made in light of the research's findings in order to optimize the advantages of utilizing AI in education.

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