

Chapter 9

Artificial Intelligence Plays a Crucial Role in Integrating Personalized Learning Methods Into STEAM Education

Diep Nguyen Thi Ngoc

 <https://orcid.org/0009-0002-4471-6038>

FPT-Greenwich University, Vietnam

ABSTRACT

Students, teachers, and educational institutions can gain a multitude of advantages by implementing tailored learning strategies that incorporate artificial intelligence in STEAM education. Learners are able to construct realistic and tailored study plans thanks to the deployment of artificial intelligence. By engaging in activities such as observational learning, statistical learning, reinforcement learning, and problem-solving through inquiry, students can independently broaden their knowledge base. Lecturers perform the functional role of expert consultants, offering pupils direction and making suggestions regarding the subjects they should study. Placing the learner at the forefront of the process is crucial to enhance the effectiveness of artificial intelligence in implementing personalized learning methods into STEAM education beyond expectations.

INTRODUCTION

According to studies, the two most important advantages of utilizing personalized learning methods in STEAM education are the following: learner-centered approaches that require customized lesson plans; different teaching methods; combining traditional teaching methods with new technology that works with digital resources; encouraging project-based learning that is connected to real-world issues; transforming teachers into knowledgeable guides and advisors in specific STEAM subjects; putting a lot of attention on collaborative learning, teamwork, and using students' strengths; and putting a lot of attention on cultural relevance and community engagement goals. Teachers have the power to build a comprehensive, exciting, and fruitful learning environment that caters to the unique needs of each and every student by incorporating individualized learning approaches into STEAM education. This permits

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teachers to create an environment that is conducive to learning. Individualized learning, as a consequence, fosters the development of abilities such as critical thinking, creativity, teamwork, and problem solving, all of which are necessary for achievement in STEAM subjects of study.

To add insult to injury, in this day and age of digital technology, AI is becoming an increasingly significant component of the field of information technology. In addition to supporting the methodical organizing of data, it also makes it possible for individuals, learners, and students to discover educational materials, resources, and research documents in a manner that is dependable and efficient. There is no denying that AI has the potential to enhance job efficiency beyond what was previously believed to be possible, to assist in the conservation of energy, and to make a significant contribution to the intellectual growth of individuals, students, and learners. Clearly, this illustrates that AI is an extremely useful tool for adapting STEAM education to the specific requirements of each individual learner. However, not only does AI make STEAM education more individualized, but it also improves the quality of teaching and learning, which results in a variety of benefits for both students and teachers. Consequently, AI has a number of advantages. Further elaboration on this topic will be provided by the findings of the research that is imminently to be conducted.

Research Method and Approach Method

The author makes use of a research methodology that focuses on her practical teaching experiences as well as the application of AI in the fields of education and professional practice. A contextual analysis of the subject matter on both a national and worldwide scale is also incorporated into the research methodology approach. AI has been included in the educational system since the year 2020, with the areas of science, technology, engineering, arts, and mathematics providing students with instruction on how to make efficient use of it as a technique for conducting searches. Students make use of AI to formulate questions and identify solutions to study problems by engaging in discourse on platforms that are powered by AI.

In addition to having extensive knowledge in the domains of sociology, history, design, and cultural studies, the author of this chapter also has a large amount of research expertise in cross-disciplinary fields. They regularly update contemporary design trends as well as a wide range of creative ideas derived from sources located both in the United States and throughout the world. An interdisciplinary approach is utilized by the author in this chapter. This approach incorporates the fields of fine arts, design, history, cultural studies, and sociology. The author also makes use of research procedures that are found in the real world. This approach investigates, substantiates, and demonstrates the use of AI (AI) in the field of education and training. The STEM education sector encompasses a wide range of fields, and it combines individualized learning methodologies across all of these fields. In order to guarantee that their products are in accordance with the standards of society and continue to be relevant in the modern world, the domains of fine arts and digital graphic design demand the utilization of a greater number of disciplines. Achieving the highest potential level of efficiency is the ultimate objective that must be accomplished.

In addition to that, the author of the chapter employs analytical research methods, selective information, and statistical analysis based on the investigation. Next, the author presents some real-world examples of the benefits and drawbacks of applying AI to include individualized learning strategies in STEAM education. These examples are presented in the following section. The study chapter's credibility and usefulness are both improved as a result of this.

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