

POSITIVE TEACHING METHODS COMBINED WITH ARTIFICIAL INTELLIGENCE IN UNIVERSITY TEACHING

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Abstract: *Artificial Intelligence is undergoing a superior development phase and can potentially create significant changes in people's daily lives. In teaching, AI is introducing new teaching and learning methods, which have been tested in many countries with varying degrees of development and success. This article aims to analyze the opportunities, challenges, and future impacts of AI in combination with active teaching methods at universities. The article evaluates the changes that AI brings to teaching and the difficulties when applying AI to university teaching. It also proposes some key solutions to address these issues. AI is opening new opportunities in teaching, from personalizing the learning process to providing access to the knowledge and skills necessary for the 21st century. However, applying active teaching methods combined with AI in university teaching also faces challenges, from ensuring teaching quality to ensuring that AI does not create discrimination. This article proposes some solutions to address these issues, from training teachers about AI to developing policies to ensure that AI is used fairly and transparently.*

Keywords: *University teaching; Active teaching methods; AI.*

I. Introduction

Artificial Intelligence, also known as AI, is increasingly becoming an indispensable part of our daily lives, and it has made significant changes in various fields. It is one of the fields where AI has made a big difference in university education.

Active teaching methods, a teaching approach focused on creating a positive learning environment and promoting active student participation, have proven

effective. It has helped enhance student engagement and improve learning outcomes. However, the application of this method in university teaching needs to be thoroughly researched to ensure effectiveness.

AI is increasingly becoming an important tool in education. It helps personalize the learning process and provides immediate feedback to students. However, the integration of AI into active teaching methods needs to be researched

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to identify potential benefits and challenges. Designing and implementing a teaching system that combines active teaching methods and AI requires a deep understanding of both fields. In addition, this also needs to consider factors such as resources, teacher training, and student acceptance. This requires careful consideration and a detailed plan.

In general, AI has been creating significant changes in our daily lives and has made considerable changes in many fields, especially in university education. When combined with active teaching methods, AI can create an optimal learning environment, bringing many benefits to both students and teachers. However, this needs to be thoroughly researched to ensure these benefits are utilized effectively and safely. This article aims to research the application of AI combined with teaching methods in universities, analyze the benefits and difficulties in applying AI combined with university teaching methods, and propose some measures to improve the quality of teaching using AI combined with active teaching methods in university teaching.

II. Theoretical background

2.1. AI in university teaching

According to the report by McKinsey (2023), AI is described as a remarkable advancement in technology, allowing machines to learn and perform tasks automatically, tasks that previously only humans could perform. The highlight of AI lies not only in its ability to perform tasks but also in its ability to learn from data.

AI possesses the capability to absorb and analyze data, subsequently making accurate predictions and effectively resolving issues. Furthermore, AI has the potential to generate new

content, unveiling possibilities that were previously unimaginable to humans.

Based on the report by Mindmaid (2023), over the past decade, AI has made remarkable strides, particularly in the fields of deep learning and artificial neural networks. AI technology has brought about a vast potential to improve teaching and learning processes, creating opportunities for each individual to optimize their learning journey. This not only helps broaden access to knowledge but also aids in developing the necessary skills for the 21st century.

Thus, AI has and continues to open up new opportunities in teaching, helping us create a future where everyone has the right to access the knowledge and skills necessary to succeed in the 21st century.

2.2. Positive teaching methods

The positive teaching method (PTM), also known simply as positive PTM, is a widely applied modern educational method. This method is built on the view that teaching is not merely the transmission of knowledge but also needs to ignite each student's passion, initiative, and creativity.

PTM is not merely teaching according to a predetermined curriculum, but also creating a diverse learning environment with various activities. This method aims to create a positive learning space where students can freely explore, learn, and develop themselves.

Thus, the positive teaching methodology not only assists students in actively assimilating knowledge, but also aids them in developing creative thinking, self-learning capabilities, and a passion for learning. This is the objective that all educational methods aim for, not just to convey knowledge but also to foster personal development.

III. Research methodology

Desk research methods

The author group conducted desk research to clarify the concepts of AI and positive teaching methods in university education. The authors synthesized some popular positive teaching methods combined with AI in university teaching and the benefits and challenges of applying AI in conjunction with university teaching methods.

This article provides an overview of theories and research related to AI and active teaching methods. The main observations are classified by topic and analyzed through synthetic and narrative methods.

To study the popular active teaching methods combined with AI in university teaching, the research team focused on examining the following aspects: AI helps personalize the learning process, develops learning content interacting with AI, AI creates a virtual learning environment, and AI supports lecturers in teaching.

Methods of synthesis, analysis, and evaluation

From the collected information, the author group proceeded to synthesize and select the information suitable for the research content and used a combination of descriptive statistical methods and narrative to clarify the situation. The author group has analyzed the benefits and difficulties when applying AI combined with active teaching methods in university teaching, including:

(i) *Four benefits of AI in Personalizing Learning*; developing interactive learning content with AI; Creating a virtual learning environment, and supporting lecturers in teaching

(ii) *The four difficulties of AI are* Data reliability, interaction with humans,

Privacy issues, and dependence on technology. From there, the research team proposes solutions to improve teaching quality through active teaching methods combined with AI: Building a data collection system, Improving interaction with humans, Establishing privacy protection regulations, and Building training programs for lecturers and AI managers to reduce dependence on technology.

IV. Applying active teaching methods combined with ai in university teaching

Teaching methods (including both direct and online) and the improvement of teaching methods are closely related to AI. One of the key points of the current teaching reform is to improve teaching methods, implement teaching based on the active and proactive activities of students with the scientific organization and guidance of teachers to develop independent and creative thinking, contributing to the formation of methods and self-learning needs, self-cultivation, interest in learning, creating confidence and joy in learning. More than ever, improving teaching methods, testing, and evaluation is very important and necessary in the current stage that Resolution No. 29-NQ/TW, dated November 4, 2013, has determined: “Improving forms, methods of examination, testing and evaluating teaching results towards evaluating students’ capacity.”

Instructors need to flexibly innovate teaching methods, combining traditional and active approaches, and applying technology to enhance students’ initiative and creativity. The classroom should be a place to generate knowledge and ideas through cooperation and discussion, with the instructor as the organizer and guide. Instructors need to transform their teaching approach from imparting knowledge to

forming qualities and capabilities and exploiting students' potential. Teaching integrated knowledge and enhancing group work skills help students learn how to research, solve problems, and process information. In addition, instructors need to enhance the application of AI and proficiently use digital tools to support teaching. (Duc, T. K, 2013)

Active teaching methods incorporating AI in university teaching are becoming popular. Some methods include:

Personalizing learning: Applying AI in Teaching. AI can develop distinct learning strategies for each student based on the student's abilities and learning process. These AI systems can monitor the student's learning process, recognize the difficulties that the student is facing, and provide appropriate solutions. With AI, each student can have a separate learning plan designed based on their abilities and learning process. This not only helps enhance learning effectiveness but also helps students develop better in their own way.

Developing interactive learning content with AI: AI can be applied to develop interactive learning content, including teaching games, interactive video lectures, and online practical exercises. These tools not only help enhance student engagement but also provide students with opportunities to learn through practice, a method that has been proven effective in enhancing understanding. With AI, we can create teaching games, interactive video lectures, and online practical exercises designed to enhance student engagement.

Creating a virtual learning environment: AI is changing how we learn and teach. One of the applications of AI in teaching is to create a virtual learning environment. A virtual learning environment is where students can

interact with each other and the instructor through technology. AI helps create this environment by using technologies such as machine learning, natural language processing, and virtual reality.

a/ Machine Learning: helps create personalized learning systems. These systems can track students' learning progress and adjust the learning content based on their needs and abilities.

b/ Natural Language Processing: helps create learning support systems capable of answering questions and explaining complex concepts.

c/ Virtual Reality: AI can be used to create a virtual learning environment where students can practice new skills in a safe and controlled environment. These environments can include virtual laboratories, virtual reality simulations, and teaching games.

Supporting instructors in teaching: AI has the ability to assist instructors in creating customized learning content. Based on the specific learning needs of each student, AI can help instructors create lectures and exercises suitable for each student's level and needs. This not only helps improve the quality of teaching but also helps students absorb knowledge more effectively.

V. Benefits and challenges in applying ai combined with active teaching methods in university teaching

5.1. The benefits of applying AI in conjunction with active teaching methods in university instruction

Personalizing learning: Goleman (1996) pointed out that the emotions of students significantly influence their academic performance. However, according to the author group Beverly Park Woolf and colleagues (2013), providing attention based on the deep

knowledge of each student is impossible. This is where the personalization of teaching becomes important. Bali, and Maha (2017) introduced the method of ‘machine learning’ and data mining to explore distinct types of teaching data. The goal is to understand more about students and establish the content that students need to learn. Therefore, AI allows the personalization of the learning process according to the needs and abilities of each student. It can provide customized materials and learning methods and personal feedback to support individual development and learning progress.

Developing interactive learning content with AI: Kowalski S, Hoffman R, Jain R, Mumtaz M (2011) emphasized the role of chatbots in education. They create a new mode of interaction compared to traditional online learning systems, allowing uninterrupted student interaction. AI-powered chatbots can collect information about student preferences, learning habits, and common grammatical errors. In teaching, chatbots act as dedicated ‘teaching assistants’, designed with frequently asked question scripts, monitoring student learning progress, providing comments, and personal feedback, and suggesting personalized courses and learning materials.

Creating a virtual learning environment: The development of a virtual learning environment through AI has opened many new opportunities for teaching. One of the first benefits of AI is the ability to create a flexible learning environment. Students can learn anytime and anywhere without being limited by space and time. This helps students access knowledge more conveniently, thereby improving learning performance.

Supporting teachers in teaching: AI supports teaching with teaching chatbots as a typical application. Chatbots

help teachers save time and resources, facilitating the development of more creative and effective teaching activities. This not only enhances the quality of teaching but also makes it easier for students to access knowledge. With the continuous development of AI, we can expect that chatbots and other teaching support tools will become increasingly popular and effective, opening up new opportunities for improving teaching methods and enhancing the quality of teaching.

5.2. The challenges in applying AI in conjunction with active teaching methods in university instruction

According to Calum Chace (2018), the strong development of AI could pose a threat to human existence and control over the world, and James Barrat (2013) argued that AI makes humans the second most intelligent species on Earth. In teaching, AI not only brings benefits as presented but also poses challenges and difficulties when applied in practice. Thus, we may encounter some difficulties when integrating AI with active teaching methods into university teaching.

Reliability of data: Data plays a crucial role in ensuring the accuracy of machine learning algorithms and the predictive capabilities of AI. To achieve this, data needs to be comprehensive and accurate. However, collecting data for university teaching remains a significant challenge. According to UNESCO (2018), when collecting data, ensuring demographic representation (such as age, gender, and social background) is very important to analyze vulnerable and disadvantaged groups fully. This highlights the importance of data integration. When government systems are integrated, data from various fields are shared and become available.

Lack of human interaction: In the context of increasingly advanced AI

technology and its widespread application in many fields, especially teaching, a problem arises: the need for more human interaction. AI can provide support and feedback, but it cannot fully replace the role of human interaction. Human interaction plays an important role in the learning process. Students need opportunities to interact with teachers and peers to develop social skills and creative thinking. This interaction not only helps students better understand the learning content, but also helps them develop communication skills, teamwork, and problem-solving - skills that AI cannot replace.

Privacy issues: When applying AI in the field of teaching, a problem arises with the collection and processing of students' personal data. Protecting privacy and ensuring data security are important factors that need to be considered and adhered to. The use of AI in teaching often involves the collection and processing of students' data. This data may include information about learning behaviors, academic results, habits, and preferences of students. While collecting and analyzing this data can help improve the quality of teaching and create a personalized learning experience, it also raises issues about privacy and data security.

Dependence on technology: For teaching, the application of AI can be challenging if teachers and administrators are not thoroughly supported and trained. This not only requires knowledge about technology but also an understanding of how to maximize the benefits of AI in teaching and management. Thus, AI has opened a new era in the field of teaching, bringing significant benefits. However, the interaction between humans and AI also needs to be effectively managed to ensure that AI does not completely replace the role of humans in teaching but only supports and enhances the teaching capabilities of teachers.

VI. Some solutions to enhance the quality of instruction through the application of active teaching methods combined with AI

Building a data collection system:

The application of advanced technology and modern data analysis methods helps ensure efficiency and accuracy in this process. Data protection during collection, storage, and sharing is an important factor. Strong security measures, including advanced encryption technology and compliance with data security standards, need to be applied to ensure data is protected from security threats. Thus, building a robust data collection system not only improves the quality of education but also ensures data safety. This facilitates the effective use of data in analysis and decision-making in education.

Enhancing human interaction:

While AI has the ability to solve certain problems, such as providing instant information or answering basic questions, it cannot fully replace interaction, guidance, and encouragement from instructors. Instructors are not only sources of knowledge transmission but also sources of motivation, encouraging students and supporting them to overcome difficulties. Therefore, while we continue to utilize AI technology in teaching, we also need to note that human interaction still plays a crucial role. We need to find ways to effectively combine AI and human interaction to create the best learning environment for students.

Establishing privacy protection regulations:

According to UNESCO (2019), the collection and use of personal data, even when used to improve learning, must always be maintained based on clear and informed consent, transparency, and fairness. Protecting privacy and ensuring data security are important factors to consider when using AI in teaching. AI

service providers need to comply with data protection and privacy regulations, and they need to ensure that student's data is appropriately protected. In addition, the use of AI in teaching also needs to be transparent and supervised. Students and parents need to be informed about how their data is collected and used, and they need to have the right to control their data.

Building training programs for teachers and ai managers to reduce dependence on technology: To optimize the benefits of AI in teaching, it is necessary to build a thorough training program for teachers and managers. Teachers will be equipped with the necessary knowledge and skills to use AI tools effectively. Moreover, continuous support will be provided so teachers can adjust and improve their teaching methods. Thus, teachers will be able to create the best learning environment for students, maximizing the power of AI. The training also helps teachers and managers grasp AI's potential and challenges in teaching. This helps them make smarter decisions about how to use technology and helps them better prepare for the changes that AI can bring in the future.

VII. Conclusion

In the field of teaching, especially university teaching, the application of positive teaching methods combined with AI will become an indispensable trend in the future. AI brings many significant benefits, including reducing administrative tasks and time-consuming tasks for teachers thanks to its automation capabilities. The personalization of the curriculum and the emergence of 'virtual tutors' or 'virtual assistants' will create a breakthrough in the AI-supported teaching system. Another noteworthy point is that AI creates interest in students through real-time feedback, causing students to

increase interaction time with the system because they feel quickly supported. However, applying AI to university teaching also faces some difficulties and challenges. University teaching provides knowledge and nurtures and develops people comprehensively, including culture, emotions, creativity, and other social skills. Therefore, comprehensive research and evaluation of related issues are needed, realizing that technology in general and AI in particular are just supportive tools; they must partially replace the human factor in teaching.

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PHƯƠNG PHÁP GIẢNG DẠY TÍCH CỰC KẾT HỢP TRÍ TUỆ NHÂN TẠO TRONG DẠY HỌC ĐẠI HỌC

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Tóm tắt: Trí tuệ nhân tạo đang trải qua giai đoạn phát triển vượt bậc và có khả năng tạo ra những thay đổi đáng kể trong cuộc sống hàng ngày của con người. Trong giảng dạy, AI đang giới thiệu các phương pháp giảng dạy và học tập mới, đã được thử nghiệm ở nhiều quốc gia với mức độ phát triển và thành công khác nhau. Bài viết này nhằm phân tích cơ hội, thách thức và tác động tương lai của AI kết hợp với các phương pháp giảng dạy tích cực tại các trường Đại học. Bài viết đánh giá những thay đổi mà AI mang đến cho việc giảng dạy và những khó khăn khi áp dụng AI vào giảng dạy Đại học. Đồng thời, bài viết đề xuất một số giải pháp chính để giải quyết các vấn đề này. AI đang mở ra những cơ hội mới trong giảng dạy, từ việc cá nhân hóa quá trình học tập đến việc cung cấp quyền truy cập vào kiến thức và kỹ năng cần thiết cho thế kỷ 21. Tuy nhiên, việc áp dụng các phương pháp giảng dạy tích cực kết hợp với AI trong giảng dạy đại học cũng gặp phải những thách thức, từ đảm bảo chất lượng giảng dạy đến đảm bảo AI không tạo ra sự phân biệt đối xử. Bài viết này đề xuất một số giải pháp để giải quyết các vấn đề này, từ đào tạo giáo viên về AI đến xây dựng các chính sách để đảm bảo AI được sử dụng công bằng và minh bạch.

Từ khóa: Giảng dạy đại học; phương pháp giảng dạy tích cực; trí tuệ nhân tạo.

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