Research on the Role of AIGC Technology Acceptance and Influencing Factors in Teaching Promotion in the Future Classroom

Wenmiao Zhang[1,a], HONG SIIOK[2,b]

[1]Northwest Normal University, Lanzhou, China

[2]University International College, Macau University of Science and Technology, Macau, China

[a]602472000@qq.com, [b]sylviasiiok@gmail.com

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Abstract: This paper focuses on future classroom scenarios and deeply explores the role of AIGC technology acceptance and its influencing factors in teaching promotion. By integrating the technology acceptance model, planned behavior theory, etc., to build a research framework, and using statistical analysis methods, we studied the application status of AIGC technology in education, the factors affecting acceptance, and its relationship with teaching promotion. The results show that perceived usefulness and subjective norms affect AIGC technology acceptance and teaching promotion. This study provides a theoretical basis and practical guidance for promoting the widespread application of AIGC technology in education and helps the innovative development of future classrooms. It aims to reveal the key influencing factors of AIGC technology acceptance, clarify its mechanism of action on teaching promotion, and provide a scientific basis and practical guidance for enriching educational technology research theory, helping educational institutions promote AIGC technology, and guiding teachers in effective application.

1. Introduction

With the continuous advancement of educational informatization, future classrooms are undergoing unprecedented changes. AIGC (artificial intelligence-generated content) technology, with its powerful content generation capabilities and personalized learning support, has become an important driving force for innovation and change in future classrooms. From automatically generating teaching courseware, intelligently answering students' questions, to customizing personalized learning paths based on learning data, AIGC technology has shown great potential for educational applications. However, the actual teaching promotion process faces the dilemma of uneven technology acceptance. Some teachers are skeptical about AIGC technology and are not very enthusiastic about its application; students also have problems such as difficulty adapting to its use. This situation seriously restricts the widespread application and in-depth development of AIGC technology in future classrooms.

Therefore, it is of great theoretical and practical significance to deeply explore the role of AIGC technology acceptance and influencing factors in teaching promotion in future classrooms. This study uses various methods, such as literature research, the technology acceptance model, planned behavior theory, etc., to construct a theoretical model suitable for studying AIGC technology acceptance in future classrooms, focusing on future classroom situations.

2. Theoretical Basis and Literature Review

2.1 Theoretical Basis and AIGC Technology Overview

The Technology Acceptance Model (TAM) and the Theory of Planned Behavior (TPB) are important theories for studying users' acceptance of new technologies. The TAM model believes that perceived usefulness and perceived ease of use are key factors that affect users' intention to use technology [1]. Perceived usefulness refers to users' subjective judgment that technology can improve

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work or learning performance, while perceived ease of use refers to users' feelings about the convenience of technology operation. On this basis, the TPB theory introduces three variables: attitude, subjective norm, and perceived behavioral control. Attitude reflects an individual's positive or negative evaluation of behavior, subjective norm reflects the influence of important others or groups on individual behavior, and perceived behavioral control represents an individual's perception of the difficulty of execution. These theories provide a solid theoretical framework for understanding users' acceptance of AIGC technology.

AIGC technology is a technology that uses artificial intelligence algorithms to automatically generate content. Its development has gone through a process from simple rule generation to complex content generation based on deep learning. In the field of education, AIGC technology has been widely used in many aspects. In the generation of teaching content, it can quickly generate teaching resources in various forms such as text, images, and videos to meet diverse teaching needs; in the evaluation of teaching quality, it provides objective and accurate learning evaluation by analyzing student learning data. However, in the application process, problems such as unstable quality of generated content and lack of teaching pertinence have also emerged.

2.2 Related Research Progress

In the research field of integrating AIGC technology and education, scholars at home and abroad have conducted extensive explorations, achieved a series of results, and identified many difficult problems to overcome.

Regarding the educational application practice of AIGC technology, the intelligent teaching system uses AIGC technology to customize learning plans and recommend learning resources based on students' learning behavior data. A study on an online learning platform showed that after the introduction of AIGC technology for learning resource recommendation, students' course completion rate increased significantly, demonstrating the remarkable effectiveness of AIGC technology in meeting students' personalized learning needs. AIGC technology helps teachers complete tasks such as homework grading and student situation analysis, greatly improving teaching efficiency. Taking English composition correction as an example, the correction system using AIGC technology can quickly point out grammatical errors, improper vocabulary usage, and other problems. It reduces teachers' workload and provides students with timely feedback, which helps improve students' writing skills. In addition, AIGC technology has also made achievements in constructing virtual learning environments. By creating scenarios, students can participate in immersive learning, enhancing their interest and immersion in learning. It is especially effective in teaching subjects such as history and geography.

However, existing research has shortcomings in integrating AIGC technology and teaching deeply. While AIGC technology offers extensive data during the teaching evaluation phase, there is currently no effective method or system to transform this data into actionable information for enhancing teaching quality.

In the field of technology acceptance research, there is a relative lack of research on the acceptance of AIGC technology in future classrooms. Past research on the acceptance of educational technology has mostly focused on traditional online teaching platforms and simple educational software. For AIGC, an emerging and complex technology, the mechanism of its acceptance influencing factors in future classroom contexts is not yet clear. Although conventional influencing factors such as perceived usefulness and ease of use have been identified, in future classrooms, how situational factors such as the degree of intelligence of the teaching environment, the educational and cultural atmosphere, and individual factors such as the unique digital literacy structure of students and teachers will work together on the acceptance of AIGC technology remains to be explored in depth. Existing research lacks systematicity and comprehensiveness when exploring the relationship between AIGC technology acceptance and teaching promotion. Most studies simply mention that technology acceptance has an impact on promotion, but do not deeply analyze how the influencing factors of acceptance affect the specific path of teaching promotion by acting on the willingness of teachers and students to use. For example, when schools promote AIGC technology, they often ignore

teachers' perception of the ease of use of technology. If teachers find the operation complicated, even if they realize that the technology is useful, they may reduce their enthusiasm for use, which will ultimately hinder the promotion of technology. Moreover, whether this relationship differs in educational environments at different educational stages and in different regions also requires further research [2].

In summary, although the research on AIGC technology in the field of education has made some progress, whether it is the application depth of AIGC technology, the comprehensive analysis of the factors affecting acceptance, or the in-depth exploration of the relationship between acceptance and teaching promotion, there are still research gaps. This study, which deeply explores the role of AIGC technology acceptance and influencing factors in teaching promotion in future classrooms, is of indispensable and important significance for improving the educational technology research system and promoting the widespread application of AIGC technology in education.

3. Research Design and Methods

3.1 Research Model and Hypothesis

In order to further explore the role of AIGC technology acceptance and its influencing factors in teaching promotion in future classrooms, this study is based on the technology acceptance model (TAM) and the theory of planned behavior (TPB), combined with the view of technological innovation in the innovation diffusion theory, to construct a comprehensive theoretical model that is applicable to the context of this study. The technology acceptance model (TAM) shows that perceived usefulness and perceived ease of use are the core factors that affect users' intention to use technology [3]. In the context of AIGC technology being applied to future classrooms, perceived usefulness is reflected in the subjective judgment of teachers and students that AIGC technology can improve teaching efficiency and optimize learning experience. For example, teachers believe that AIGC technology can help them quickly generate a variety of teaching courseware, and students feel that the technology can assist them in completing complex homework tasks. This cognition of the practical value of technology will directly affect their willingness to use it. Perceived ease of use focuses on the convenience of technology operation. AIGC technology with a friendly interface and easy-to-understand instructions will make users more willing to try it. Figure 1 explains the technology acceptance model.

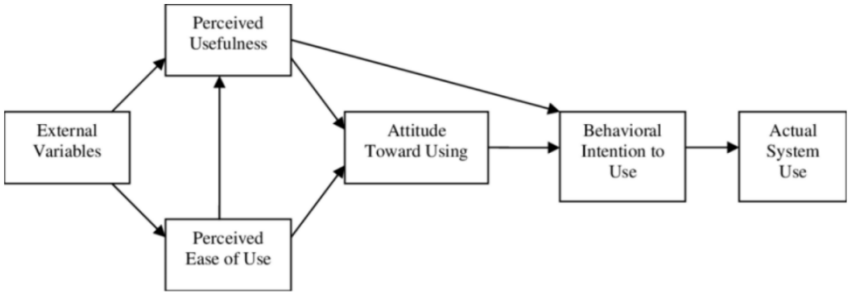

Fig 1. Technology acceptance model

The theory of planned behavior (TPB) further expands the research perspective and introduces three key variables: attitude, subjective norm, and perceived behavioral control. In the application of AIGC technology, users' attitude towards AIGC technology reflects their preference for using the technology. When teachers and students have a positive attitude towards AIGC technology and believe that it can bring many benefits to teaching and learning, they will actively explore and continue to use it. Subjective norms are reflected in the influence of support or expectations from important others such as school leaders, colleagues, and classmates on individuals' willingness to use AIGC technology. When important others around them are actively using AIGC technology, individuals are more likely to be influenced and follow suit. Perceived behavioral control is related to users' perception of their own capabilities and resources in using AIGC technology. If users believe

they have the appropriate skills and have adequate equipment and network support, their intention to use AIGC technology will increase significantly [4].

The technological innovation in the innovation diffusion theory emphasizes the influence of the characteristics of new technologies in terms of relative advantages, compatibility, complexity, and testability on their diffusion and acceptance. For AIGC technology, its advantages in terms of high efficiency in content generation and compatibility with educational scenarios will promote the acceptance of teachers and students; however, if the complexity of the technology is too high, it may hinder its promotion. Combining these theories, the model constructed in this study covers multi-dimensional influencing factors and fully demonstrates the relationship between AIGC technology acceptance and influencing factors and teaching promotion.

3.2 Analysis of Research Variables

The variables involved in this study are divided into independent variables, dependent variables and control variables.

The independent variables include perceived usefulness, perceived ease of use, attitude, subjective norms, and perceived behavioral control. In terms of perceived usefulness, the actual functional value of AIGC technology in the teaching and learning process is mainly considered, such as whether it can help teachers design personalized teaching content and assist students in achieving a deep understanding and application of knowledge. Perceived ease of use focuses on the difficulty of technical operation, including the interactive interface's friendliness and the operation process's simplicity. Attitude reflects the user's overall emotional tendency towards AIGC technology. A positive attitude means that the user recognizes the value of the technology and looks forward to using it. Subjective norms focus on the impact of the external social environment on the user's willingness to use AIGC technology, such as the school's policy orientation and the use of peers in education. Perceived behavioral control focuses on the user's ability to use technology and resource acquisition, such as whether they have the skills to operate the technology and a stable network environment to support it.

The dependent variable is behavioral intention, which measures the possibility of users using AIGC technology in the future. This variable directly reflects the user's acceptance of AIGC technology and is a key indicator for studying whether AIGC technology can be effectively promoted in teaching. The control variables include age, teaching experience, and subject background. Age and teaching experience may affect users' acceptance of new technologies. Young teachers and students usually accept new technologies faster. In contrast, teachers with longer teaching experience may rely more on traditional teaching methods but may also find opportunities for innovative teaching from AIGC technology. Users with different disciplinary backgrounds have different needs and application methods for AIGC technology. The humanities focus on text creation and resource integration, while the sciences focus more on data processing and experimental simulation functions. These control variables help to more accurately analyze the relationship between core variables [5].

3.3 Comprehensive Application of Research Methods

This study uses various research methods to ensure the scientificity and comprehensiveness of the research. This study uses the literature research method. In the early stage of the research, we extensively consulted domestic and foreign literature on the application of AIGC technology in the field of education, the technology acceptance model, the planned behavior theory, etc., sorted out the existing research results and deficiencies, and provided a solid theoretical foundation and research ideas for this study. During the research process, we continued to pay attention to the latest research trends in related fields and promptly adjusted and improved the research content.

We used case analysis to explore actual applications. We collected cases of AIGC technology application in schools in different regions and educational stages, including successful experiences and challenges. Through detailed analysis of these cases, we understand the current application status of AIGC technology in teaching, the factors affecting its acceptance, and its actual role in promoting teaching from a practical level. For example, we analyzed a case of a university using AIGC technology to build online courses, explored the effectiveness in course design, improving student

learning outcomes, and other aspects, as well as the problems encountered in the technology application process, such as technology adaptability and teacher training [6].

First-hand data were obtained using the interview method. Structured and semi-structured interview outlines were designed for teachers and students. The interviews with teachers focused on their understanding of AIGC technology, their experience in teaching applications, the difficulties they faced, and their suggestions for teaching promotion; the interviews with students focused on their feelings about using AIGC technology in the learning process, the impact on learning outcomes, and their expectations for technology. Through interviews, we can gain an in-depth understanding of the needs and opinions of different user groups, providing rich qualitative data for the research.

In the data processing stage, this study used professional data analysis software to conduct in-depth analysis of the collected data. The data obtained through case analysis and interviews were coded and classified, and the content analysis method was used to extract key information, summarize the factors affecting the acceptance of AIGC technology and the relationship model with teaching promotion, and provide strong support for subsequent research.

4. Research Results and Analysis

4.1 Sample Feature Analysis

The group participating in the survey showed a diverse distribution in terms of age, teaching experience and subject background. Young people are generally more willing to be exposed to AIGC technology. They grew up in an era of rapid development of digital technology and are more receptive to emerging technologies. Although experienced teachers are highly dependent on traditional teaching models, they are also beginning to realize the potential value of AIGC technology in improving teaching efficiency and innovating teaching methods. Participants from different disciplinary backgrounds have significant differences in their needs and concerns for AIGC technology. Liberal arts teachers value the technology's capabilities in text creation and resource integration, while science teachers are more looking forward to its performance in data processing, experimental simulation, and other aspects. This difference shows that when promoting AIGC technology, it is necessary to fully consider the characteristics of different groups and formulate targeted strategies.

In terms of the level of understanding of AIGC technology, most participants are at the initial stage of understanding, and only a small number of people have in-depth understanding and practical experience. This phenomenon reflects that the current popularity of AIGC technology in the field of education still needs to be improved. It is necessary to strengthen publicity and training to help teachers and students break the unfamiliarity and fear of new technologies and stimulate their enthusiasm for active exploration and application.

4.2 Experimental Analysis Results

The study reveals the inherent logic of factors influencing AIGC technology acceptance. The significant positive impact of perceived usefulness on behavioral intention indicates that when teachers and students truly feel that AIGC technology can solve practical problems in teaching and learning, such as improving lesson preparation efficiency and achieving personalized learning, they are more willing to actively use the technology. This suggests that educational technology developers should focus on the actual needs of educational scenarios and continue to optimize the functions of AIGC technology so that it can truly become an effective tool for improving teaching quality [7].

The importance of perceived ease of use further illustrates that the ease of operation of technology is a key factor affecting user acceptance. Complex operation procedures will greatly reduce the willingness of teachers and students to use it. Therefore, in the process of technology design and application promotion, it is necessary to simplify the operation interface, provide clear and easy-to-understand usage guides, lower the threshold for technology use, and ensure that users of different technical levels can easily get started.

Attitude, subjective norms, and perceived behavioral control also have important influences on

behavioral intentions. Positive attitudes stem from a full understanding of the advantages of AIGC technology, which means that educational institutions should strengthen publicity and guidance, showcase successful cases of technology applications, and help users establish correct technology cognition. The role of subjective norms highlights the impact of the attitudes and behaviors of important others such as educational administrators, peers, and family and friends on individual decision-making. Schools and education departments can create an atmosphere for the active application of AIGC technology by organizing exchange activities and commending advanced models. Perceived behavioral control emphasizes providing users with necessary resource support and technical guarantees to ensure that they have no worries during use.

In addition, the study confirmed that there is a close positive correlation between AIGC technology acceptance and teaching promotion. This finding shows that improving users' acceptance of AIGC technology is the key to promoting its widespread application in teaching. In the future, in the process of teaching promotion, the focus should be on improving users' technology acceptance, and through multi-dimensional measures such as meeting user needs, optimizing user experience, and creating a good environment, AIGC technology can be deeply integrated and effectively promoted in future classrooms.

5. Conclusion

Through systematic theoretical analysis and empirical research, this study identified the key influencing factors of AIGC technology acceptance in future classrooms and its mechanism of action on teaching promotion. Factors such as perceived usefulness, perceived ease of use, attitude, subjective norm, and perceived behavioral control significantly affect users' acceptance of AIGC technology, which is important in teaching promotion. However, this study also has some limitations. Although different regions and disciplines are covered in sample selection, there is still room for expansion of the sample scope. In terms of research methods, there is a lack of in-depth discussion of qualitative research methods. Regarding model construction, more complex situational factors and individual differences are not fully considered.

Future research can be carried out in multiple directions. First, further expand the sample range to cover more educational stages, teachers and students in different educational environments, and improve the universality of research results; second, deepen the theoretical model, combine more diverse theories and influencing factors, and more comprehensively explain the relationship between AIGC technology acceptance and teaching promotion; third, adopt a combination of multiple research methods, such as adding interviews, case studies and other qualitative research methods, to deeply explore the practical problems of AIGC technology in future classroom applications; fourth, pay attention to the integration of AIGC technology with other emerging technologies, explore its more innovative application models and promotion strategies in future classrooms, and provide stronger support for the in-depth application and promotion of AIGC technology in the field of education.

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