



**THE INFLUENCING FACTORS OF STUDENTS'
ACCEPTANCE OF ARTIFICIAL INTELLIGENCE USAGE AT
PINGDINGSHAN VOCATIONAL COLLEGE**

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**AN INDEPENDENT STUDY SUBMITTED IN PARTIAL FULFILLMENT
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This Independent Study has been Approved as a Partial Fulfillment of the
Requirements for the Degree of Master of Business Administration

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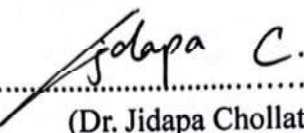
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ABSTRACT

This study focused on the influencing factors of students' acceptance of artificial intelligence (AI) usage at Pingdingshan Vocational College, taking the Unified Theory of Acceptance and Use of Technology (UTAUT) as the theoretical foundation. It aimed to comprehensively and in-depth explore the specific factors influencing students' acceptance of AI technology at Pingdingshan Vocational College, as well as their internal connections and mechanisms of action.

By constructing a corresponding structural model, the research rigorously verified the research hypotheses and the model. The research encompassed an analysis of the impacts of four core factors—performance expectancy, effort expectancy, social influence, and facilitating conditions—on students' acceptance of AI usage, and based on this, a questionnaire was designed to conduct an empirical study with students from Pingdingshan Vocational College as the survey subjects.

This study employed a quantitative research method, collecting data through questionnaires. A total of 400 questionnaires were distributed, and 377 valid questionnaires were retrieved, resulting in an effective response rate of 94.25%. The research findings indicate that performance expectancy, effort expectancy, social influence, and facilitating conditions all have a significant impact on students' acceptance of AI usage.

Based on these discoveries, this study proposes strategic recommendations to optimize students' acceptance of AI usage at Pingdingshan Vocational College: (1) Cultivate students' internal driving forces for the application of intelligent technologies; (2) Establish a school support system for the application of intelligent technologies; (3) Promote the intelligent upgrading of the school's management support system.

Keywords: Pingdingshan Vocational College, students' acceptance of artificial intelligence usage, influencing factors

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The completion of this independent study not only serves as a summary of my past learning journey but also marks a new starting point for my future academic research. I will continue to uphold a rigorous and truth-seeking academic attitude, ceaselessly exploring and striving forward on the path of education.

Zhao Wenze

DECLARATION

I, *Zhao Wenze*, hereby certify that the work embodied in this independent study entitled "*The Influencing Factors of Students' Acceptance of Artificial Intelligence Usage at Pingdingshan Vocational College*" is result of original research and has not been submitted for a higher degree to any other university or institution.

(Zhao Wenze)
November 3, 2025



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Chapter 1 Introduction

1.1 Background of the Study

In the current digital age, artificial intelligence (AI) technology is flourishing at an unprecedented pace and is widely permeating various fields of social life, ranging from healthcare and transportation to education and entertainment, profoundly transforming people's production and lifestyle. As a crucial front for cultivating future talents, the education sector is actively embracing this trend by introducing AI technology into teaching and management to enhance educational quality and efficiency and drive educational innovation and reform (Wang, 2025).

Vocational colleges, as important bases for cultivating applied talents, shoulder the responsibility of supplying a large number of professionals with specialized skills and an innovative spirit to society. Against the backdrop of the increasing prevalence of AI technology, guiding students to actively accept and effectively utilize this advanced technology has become a significant challenge for educators in vocational colleges. Students' acceptance of AI technology usage not only directly relates to their own skill enhancement and career development but also exerts a profound influence on the reform and innovation of teaching and learning models in vocational colleges (Muhamad et al., 2025).

Pingdingshan Vocational College, as a vocational institution with its own unique characteristics, also faces the challenges and opportunities of guiding students to accept AI technology. Understanding the acceptance of AI usage and its influencing factors among students at this college holds significant practical implications for the school in formulating targeted educational strategies, optimizing the allocation of teaching resources, and improving the quality of talent cultivation. However, research on the acceptance of AI usage among students in vocational colleges is still in its infancy, especially empirical studies targeting specific colleges are relatively scarce. Students from different colleges may exhibit differences in professional backgrounds, learning environments, and cognitive levels, which may lead to variations in the influencing factors of their acceptance of AI usage (Hu & Zhang, 2024).

The Unified Theory of Acceptance and Use of Technology (UTAUT), a widely recognized theoretical model in the field of information technology acceptance, provides a robust theoretical framework for studying users' acceptance behavior towards information technology. This model comprehensively considers several key factors, including performance expectancy, effort expectancy, social influence, and facilitating conditions, enabling a relatively comprehensive explanation of the internal mechanisms underlying users' acceptance of information technology (Xu, 2024). Based on this, this study took the UTAUT as its theoretical foundation and focused on the influencing factors of students' acceptance of AI usage at Pingdingshan Vocational College. It aimed to thoroughly and comprehensively investigate the

specific factors influencing students' acceptance of AI technology at this college, as well as their internal connections and mechanisms of action, providing theoretical underpinnings and practical references for Pingdingshan Vocational College and other vocational colleges to enhance students' acceptance of AI usage.

1.2 Questions of the Study

This study investigated the influencing factors of students' acceptance of AI usage at Pingdingshan Vocational College, based on the Unified Theory of Acceptance and Use of Technology (UTAUT) and clarified the intrinsic relationships between various factors and students' acceptance of AI usage. This not only contributed to a deeper understanding of the psychological mechanisms and behavioral patterns underlying students' acceptance of AI technology but also provided a solid theoretical basis for the school to formulate targeted educational strategies, optimized the allocation of teaching resources, and improved the quality of talent cultivation. Based on the aforementioned theoretical background and practical considerations, this study focused on the following core questions, aiming to comprehensively and in-depth analyzed the key factors influencing students' acceptance of AI usage at Pingdingshan Vocational College:

(1) Does performance expectancy influence students' acceptance of AI usage at Pingdingshan Vocational College?

Performance expectancy reflects the benefits students expect to gain in terms of improved work performance and learning outcomes through the use of AI technology. If students believe that AI technology can effectively help them enhance learning efficiency, improve professional skills, achieve better academic performance, or bring positive impacts on their future career development, they may be more willing to accept and use this technology. Therefore, exploring the relationship between performance expectancy and students' acceptance of AI usage helps clarify the influence of students' value perception of AI technology on their acceptance behavior.

(2) Does effort expectancy influence students' acceptance of AI usage at Pingdingshan Vocational College?

Effort expectancy primarily involves the degree of effort students perceive is required to use AI technology. If students find AI technology easy to learn and operate, without requiring excessive time and effort to master, their likelihood of accepting and using the technology will increase. Conversely, if students perceive AI technology as complex and cumbersome, with high learning costs, they may develop resistance, reducing their acceptance of usage. Thus, studying the association between effort expectancy and students' acceptance of AI usage reveals the crucial role of technology usability in the acceptance process.

(3) Does social influence influence students' acceptance of AI usage at Pingdingshan Vocational College?

Social influence encompasses the attitudes, perceptions, and behavioral demonstrations of significant others (such as classmates, teachers, and family members) around students regarding the use of AI technology. When students observe positive use, evaluations, and encouragement of AI technology from those around them, they may be influenced by social pressure or social identity and be more inclined to accept and use this technology. Conversely, if those around them hold negative attitudes or have misunderstandings about AI technology, it may hinder students' acceptance of AI technology. Therefore, examining the relationship between social influence and students' acceptance of AI usage helps understand the influence of social environmental factors in the technology acceptance process.

(4) Do facilitating conditions influence students' acceptance of AI usage at Pingdingshan Vocational College?

Facilitating conditions refer to the organizational and technical support conditions available to students when using AI technology, such as relevant equipment, network environment, and training resources provided by the school. Favorable facilitating conditions can provide strong support for students' use of AI technology, reducing obstacles and difficulties during the usage process and thereby enhancing their acceptance of usage. Conversely, if facilitating conditions are inadequate, students may abandon use due to a lack of necessary support. Therefore, studying the connection between facilitating conditions and students' acceptance of AI usage can provide important references for the school to optimize the technology usage environment.

1.3 Objectives of the Study

When employing the Unified Theory of Acceptance and Use of Technology (UTAUT) to conduct an in-depth analysis of the influencing factors on students' acceptance of AI usage at Pingdingshan Vocational College, this study focused on four core dimensions that impact students' willingness to accept and utilized artificial intelligence technology from different perspectives. Based on this, the study aimed to achieve the following specific research objectives, with the goal of systematically exploring the specific impacts of each factor on students' acceptance of AI usage at Pingdingshan Vocational College:

(1) To investigate the impact of performance expectancy on students' acceptance of AI usage at Pingdingshan Vocational College.

(2) To investigate the impact of effort expectancy on students' acceptance of AI usage at Pingdingshan Vocational College.

(3) To investigate the impact of social influence on students' acceptance of AI usage at Pingdingshan Vocational College.

(4) To investigate the impact of facilitating conditions on students' acceptance of AI usage at Pingdingshan Vocational College.

1.4 Scope of the Study

This study was strictly confined to the student population of Pingdingshan Vocational College, focusing on the influencing factors related to their acceptance of artificial intelligence technology usage. In terms of research content, based on the Unified Theory of Acceptance and Use of Technology as the theoretical foundation, it comprehensively and in-depth analyzed the intrinsic connections and mechanisms of action between the four core factors—performance expectancy, effort expectancy, social influence, and facilitating conditions—and students' acceptance of AI usage at Pingdingshan Vocational College.

At the methodological level, a quantitative research approach was adopted. An empirical study was conducted by carefully designing a questionnaire and targeting students at Pingdingshan Vocational College. During the data collection process, a total of 400 questionnaires were distributed, and 377 valid questionnaires were ultimately recovered, resulting in an effective recovery rate of 94.25%, ensuring the reliability and validity of the research data.

Regarding the application of research results, based on the conclusions drawn from the empirical study, strategic recommendations were specifically proposed to optimize students' acceptance of AI usage at Pingdingshan Vocational College. The aim was to provide practical guidance for Pingdingshan Vocational College in the field of intelligent technology application education, helping the school enhance the quality of talent cultivation and educational management.

1.5 Significance of the Study

1.5.1 Theoretical Significance

This study, grounded in the Unified Theory of Acceptance and Use of Technology, focuses on the specific group of students at Pingdingshan Vocational College and delves into the influencing factors of their acceptance of AI usage. Through a

comprehensive analysis of the intrinsic connections and mechanisms of action between the four core factors—performance expectancy, effort expectancy, social influence, and facilitating conditions—and acceptance of AI usage, this study enriches the application connotations of technology acceptance theory in the field of vocational education.

Currently, research on the acceptance of AI usage among students in vocational colleges is still in its infancy, especially empirical studies targeting specific colleges are relatively scarce. This study fills the research gap in this area, providing a new perspective and reference framework for subsequent related research. It contributes to further expanding and refining the technology acceptance theory system and promoting its deepening and development in the context of vocational education.

1.5.2 Practical Significance

1.5.2.1 Significance for Pingdingshan Vocational College

For Pingdingshan Vocational College, the findings of this study hold significant practical guiding value. Understanding the influencing factors of students' acceptance of AI usage helps the school accurately grasp students' needs and pain points in the process of accepting and applying artificial intelligence technology, thereby formulating targeted educational strategies. For example, based on suggestions such as cultivating students' internal driving forces for intelligent technology application and enhancing effort expectancy proposed in the study, the school can optimize its curriculum settings, improve teaching methods, increase students' interest and enthusiasm for artificial intelligence technology, and promote students' skill enhancement and innovation ability cultivation in the field of intelligent technology.

At the same time, suggestions such as constructing a support system for intelligent technology application in the school and promoting the intelligent upgrading of the school's management support system can create a favorable environment for intelligent technology application in the school, improve the school's management efficiency and service level, drive the overall improvement of the school's educational and teaching quality, and enhance the school's competitiveness in the field of vocational education.

1.5.2.2 Significance for Other Vocational Colleges

The research results of this study are not only applicable to Pingdingshan Vocational College but also provide useful references for other vocational colleges. Different vocational colleges face similar challenges and problems in cultivating students' application abilities in artificial intelligence. The influencing factors revealed and the strategic suggestions proposed in this study have universality and can be

generalized. Other vocational colleges can, based on their own actual situations, refer to the methods and conclusions of this study to conduct relevant research and practical exploration, optimize their own artificial intelligence education models, improve the quality of talent cultivation, and better adapt to the requirements of the digital age for vocational education.

1.5.2.3 Significance for Social Development

With the rapid development and widespread application of artificial intelligence technology, the demand for talent with artificial intelligence application abilities in society is increasing day by day. As important bases for cultivating applied talents, vocational colleges' students' acceptance of AI usage and application abilities directly relate to the quality and competitiveness of the future social labor force. This study helps improve the artificial intelligence application levels of students in vocational colleges, supply society with more high-quality talents who meet the needs of the intelligent era, promote the in-depth integration and innovative application of artificial intelligence technology in various industries, and drive the digital transformation and sustainable development of society.

1.6 Definition of Key Terms

Performance expectancy refers to the extent of performance enhancement or positive outcomes that students anticipate artificial intelligence (AI) technology will bring to their learning, daily life, and other related activities.

Effort expectancy pertains to students' perceived difficulty in using AI technology. It involves students' subjective judgments regarding the effort, time, and learning costs required to master and apply AI technology.

Social influence denotes the impact exerted on students' decision-making regarding the use of AI technology by the attitudes, opinions, and behaviors of individuals in their social environment, including classmates, teachers, family members, and other significant others.

Facilitating conditions refer to the various objective conditions and resource supports present in students' environments that facilitate their use of AI technology.

Acceptance of AI usage represents the degree to which students approve of, are willing to try, and intend to continuously use AI technology in learning, daily life, and other scenarios. It not only reflects students' surface-level willingness to accept but also encompasses their behavioral tendencies to actually use AI technology and their positive attitudes during the usage process.

Chapter 2 Literature Review

2.1 Introduction

This chapter aims to review the major literature related to the Unified Theory of Acceptance and Use of Technology (UTAUT) and students' acceptance of AI usage at Pingdingshan Vocational College, providing a theoretical foundation for the variable relationships and research hypotheses of this study. The literature review covers key factors influencing students' acceptance of AI usage at Pingdingshan Vocational College, including performance expectancy, effort expectancy, social influence, and facilitating conditions. Through a systematic review of the existing literature, this chapter offers theoretical support for each variable in the research model. It helps determine the relationships between these variables and provides a basis for subsequent hypothesis testing.

2.2 Literature Review

2.2.1 Unified Theory of Acceptance and Use of Technology (UTAUT)

2.2.1.1 Concept of the Unified Theory of Acceptance and Use of Technology (UTAUT)

In their research, Venkatesh et al. (2003) reviewed the literature on user acceptance models, discussed eight prominent technology acceptance models, and conducted an empirical comparison of these eight models and their extensions. They established a unified and comprehensive model, the Unified Theory of Acceptance and Use of Technology (UTAUT), and empirically validated this unified model in their study. Specifically, the UTAUT model integrates elements from eight models: the Technology Acceptance Model (TAM), the Theory of Planned Behavior (TPB), the Theory of Reasoned Action (TRA), the Innovation Diffusion Theory (IDT), the Social Cognitive Theory (SCT), the Motivational Model (MM), the Expectation Confirmation Model (ECM), and the Model of PC Utilization (MPCU). It is used to explain the influencing mechanisms and factors behind the acceptance and use of new technologies.

In the UTAUT model, independent variables and moderating variables jointly influence the dependent variable (i.e., users' acceptance and usage behavior of information technology). Independent variables shape users' behavior by directly affecting their expectations, perceptions, and attitudes towards technology, while moderating variables influence users' acceptance and usage behavior by moderating the relationships between independent variables and the dependent variable. The UTAUT model proposes four core independent variables that directly influence users'

acceptance and usage behavior of information technology. These four core constituent variables are performance expectancy, effort expectancy, social influence, and facilitating conditions (Li et al., 2022).

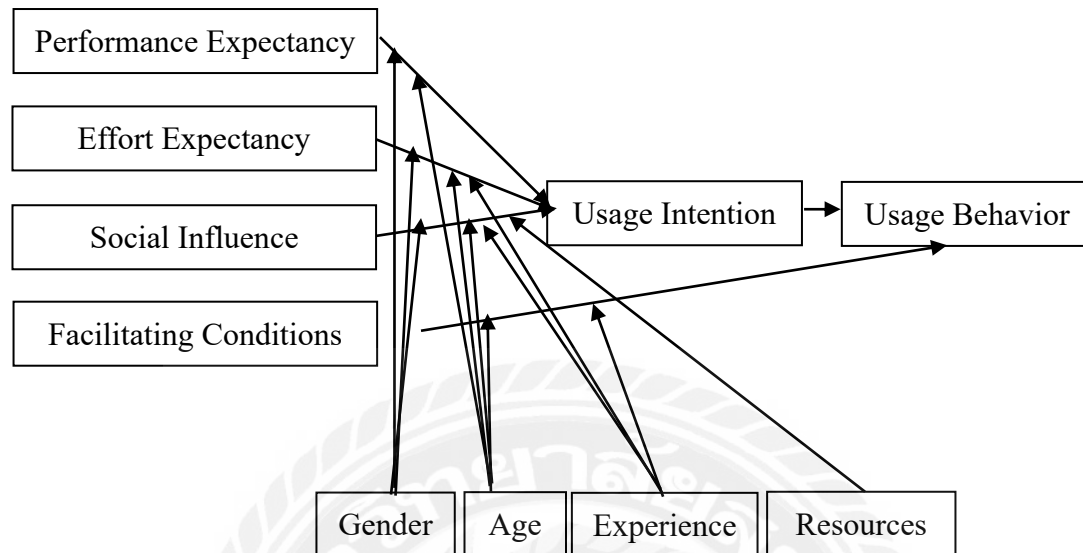


Figure 2.1 Unified Theory of Acceptance and Use of Technology (UTAUT)

Specifically, performance expectancy refers to the extent to which users believe that using a certain technology can enhance their task or work performance. This usually strengthens their willingness to use the technology, as the expected benefits drive a positive attitude towards it. The higher the performance expectancy, the higher the users' acceptance and willingness to use the technology are typically. Effort expectancy refers to users' perceived ease of use of the technology. A lower effort expectancy (i.e., the technology being easier to use) will increase users' willingness to use it, as they are more inclined to accept technologies that are not complex. The lower the effort expectancy, the higher the users' acceptance and willingness to use the technology. Social influence involves users' perceptions of others' views on their use of the technology. When users feel that others expect or support them to use the technology, this social pressure or identification will enhance their willingness to use it (Xu, 2024). The greater the social influence, the higher the users' acceptance and willingness to use the technology are typically. Facilitating conditions refer to users' perceived resources and conditions that support the use of the technology, which directly affect users' actual usage behavior. Even with a strong willingness to use, a lack of necessary resources or support can limit the practical application of the technology. The better the facilitating conditions are, the higher users' acceptance and usage intention towards the technology usually tend to be.

Moderating variables such as age, gender, experience, and voluntariness further adjust the impacts of these paths. For example, younger users may have a lower effort expectancy for new technologies, gender may influence users' sensitivity to social

influence, experienced users may rely less on facilitating conditions, and voluntariness may moderate the impact of performance expectancy on usage willingness. These moderating variables enable the UTAUT model to be flexibly applicable in different contexts and populations, refining the analysis of technology adoption behavior.

As a theoretical framework for understanding technology acceptance behavior, the UTAUT model has been widely applied in the education field to study the adoption and use of new technologies (such as online learning platforms, educational applications, and digital tools) by teachers and students. By analyzing these variables and their relationships, the UTAUT model helps identify key factors influencing the successful implementation of educational technologies, thus guiding the design and promotion of educational technologies (He & Qi, 2022).

Given that the UTAUT model constructs a comprehensive and systematic theoretical framework for in-depth analysis of the core influencing factors in the technology adoption process, it is extremely appropriate for this study to select this model as its theoretical support framework. This choice not only ensures that the research comprehensively covers key variables such as performance expectancy, effort expectancy, social influence, and facilitating conditions but also helps precisely analyze how these variables jointly influence students' behavioral decisions regarding the acceptance of artificial intelligence, thereby providing a solid theoretical foundation and empirical reference for research on technology adoption in the education field. Specifically, the model identifies four core constituent elements: performance expectancy, effort expectancy, social influence, and facilitating conditions, which can effectively explain students' acceptance and usage behavior of AI technology during the learning process (Zhong et al., 2020). Performance expectancy considers students' expectations that AI technology can enhance learning efficiency and quality; effort expectancy involves students' perceptions of the difficulty level of learning AI technology; social influence focuses on the impact of external factors such as classmates, schools, teachers, and educational policies on students' use of AI technology; facilitating conditions evaluate the impact of external resources and support (such as training and technical support) on technology adoption. In addition, the UTAUT model also takes into account moderating variables such as age, gender, and experience, whose roles in students' technology acceptance in the educational environment cannot be ignored. In conclusion, the UTAUT model provides a structured and empirically validated framework for studying students' acceptance of AI technology, enabling an in-depth analysis of the multi-dimensional factors influencing students' technology use.

2.2.1.2 Research Status of the Unified Theory of Acceptance and Use of Technology (UTAUT) in the Education Field

In the realm of education, the UTAUT model has been applied to research on a wide range of topics, including online learning platforms, distance education platforms, e-learning platforms, multimedia learning stations, online learning communities, online learning, online learning resources, and the construction of online learning systems (Wang, 2025). In terms of research subjects, it mainly involves college students, middle school teachers and students, and university teachers (Muhamad et al., 2025). Based on the UTAUT theory, Hu and Zhang (2024) took students as the research subjects to analyze the factors influencing the willingness to use cooperative teaching and verified the impacts of various variables on the willingness to use cooperative teaching. Li and Cheng (2025), from the perspective of college students' learning of digital and intelligent technologies, analyzed the moderating role of overconfidence in the relationship between performance expectancy and learning intention, demonstrating that individual psychological factors play a crucial role in the process of educational technology acceptance.

The UTAUT model has been widely applied in research on different types of educational platforms. Lu and Sun (2024) found in their research on the application of distance education platforms that social influence and facilitating conditions play key roles in students' willingness to use the platforms. There are differences in technology acceptance between student groups from different regions, such as urban and rural areas. When studying the improvement of digital literacy among vocational college teachers, Chen and Liang (2021) discovered that performance expectancy and effort expectancy affect teachers' digital literacy development, and moderating factors such as age and teaching experience also influence teachers' technology acceptance. Li et al. (2022), taking primary and secondary school students as the research subjects, explored the factors influencing the behavioral intention and usage behavior of mobile technology acceptance in high school students' English learning. They found that performance expectancy, social influence, hedonic motivation, and behavioral habits have positive impacts on usage behavior.

The application of the UTAUT model in the education field indicates that when students and teachers accept new technologies, personal expectations, external social influence, and the convenience of technology use are key factors influencing their willingness to use. Subsequent research can explore how to formulate personalized technology strategies based on these factors for different educational groups.

2.2.2 Artificial Intelligence

2.2.2.1 Concept and Development of Artificial Intelligence

Artificial Intelligence (AI), as a comprehensive and cutting-edge discipline, aims to simulate, extend, and expand human intelligence through computer systems, covering multiple technical fields such as machine learning, deep learning, natural language processing, and computer vision. Its development history can be traced back to the 1950s, with Alan Turing's proposal of the "Turing Test" as the theoretical starting point. Subsequently, it has undergone paradigm evolutions such as symbolism and connectionism. In 2016, AlphaGo's victory over the human Go champion marked a new stage in AI technology. Breakthroughs in deep learning algorithms have promoted the popularization of applications such as image recognition and voice interaction. Currently, the rise of generative AI (such as ChatGPT and Sora) has further expanded the creative boundaries of AI, transforming it from an auxiliary tool to a collaborative creative role and having a profound impact on the education field. The rapid development of Artificial Intelligence (AI) technology is profoundly reshaping the educational ecosystem. Through algorithm optimization, data-driven approaches, and scenario adaptation, it provides technical support for innovation in educational models, upgrading of learning experiences, and modernization of educational governance.

2.2.2.2 Development of Artificial Intelligence Technology and Its Educational Adaptability

As an interdisciplinary field that simulates human intelligence, AI encompasses a cluster of technologies including machine learning, natural language processing, and computer vision. Its development has evolved through paradigms such as symbolism, connectionism, and deep learning. The emergence of generative AI (e.g., ChatGPT, Sora) has further expanded the boundaries of human-machine collaboration. In the education field, AI technologies have transitioned from "auxiliary tools" to "cognitive partners" through functions such as personalized recommendations, intelligent diagnostics, and multimodal interactions. Adaptive learning systems dynamically adjust content difficulty based on students' cognitive levels, enhancing learning efficiency, while intelligent tutoring systems address doubts through natural language interactions, compensating for insufficient teaching resources.

Lu and Sun (2024), based on an "AI + Higher Education" case database, constructed an AI literacy framework encompassing four roles: educators, learners, managers, and developers. They found a significant positive correlation between student acceptance and the degree of course intelligence. Chen (2024), in their interpretation of the 2024 Horizon Report (Teaching and Learning Edition), pointed out that student acceptance is influenced by three factors: technological practicality, teacher guidance, and the quality of peer interactions. Baaran and Duru (2024)

conducted a survey on generative AI cognition among normal university students in Guangdong Province and found that 82.3% of students recognized its teaching auxiliary value but lacked awareness of ethical risks such as algorithmic bias and data privacy. Li et al.'s (2017) survey of 32 university libraries nationwide revealed that AI book recommendation systems improved resource utilization, but students' privacy protection awareness was significantly lower than their technology acceptance, indicating that the lack of ethical education may constrain long-term acceptance willingness.

Wang et al.'s (2019) experiment showed that the vocabulary growth rate in the e-book group was significantly higher than that in the traditional textbook group, and the situational awareness function increased the learning fun score. Gu's (2021) comparison in EFL classrooms found that the AI-assisted group scored higher than the traditional group in productive vocabulary knowledge tests. Xu's (2019) cross-cultural study showed that learners' primary motivation for using digital resources was vocabulary expansion, and multimodal input improved memory retention. Jiang et al.'s (2023) vocabulary learning app, through spaced repetition algorithms, improved long-term memory effects by 2.4 times.

The penetration of AI into the education field has extended from the technical tool level to the educational philosophy level. Its core value lies in achieving large-scale personalized teaching through human-machine collaboration. Future research needs to transcend the techno-centric perspective, construct a student-centered intelligent education theoretical system, and promote practical innovation through interdisciplinary collaboration, ultimately achieving the organic unity of technological empowerment and the essence of education.

2.2.3 Acceptance of AI Usage

2.2.3.1 Concept of Acceptance of AI Usage

In academia, to date, there has been no consensus on the definition of students' acceptance of intelligent technology. The Unified Theory of Acceptance and Use of Technology (UTAUT) proposed by Venkatesh et al. (2012) explains users' technology acceptance behavior from four core elements—performance expectancy, effort expectancy, social influence, and facilitating conditions—as well as other relevant influencing factors. Based on the characteristics of vocational education and in accordance with the UTAUT theory, this study defines students' acceptance of AI usage as the state of students' acceptance of artificial intelligence technology from the perspectives of these four core elements. This definition emphasizes the combined effects of internal factors (performance expectancy and effort expectancy) and external factors (facilitating conditions and social influence).

Specifically, performance expectancy refers to students' perception of the extent to which artificial intelligence technology can enhance their learning efficiency or abilities. Effort expectancy implies the perceived ease or difficulty students experience when learning and using artificial intelligence technology. Social influence represents the attitudes and impacts of students' surrounding environment, such as teachers, classmates, and families, on their use of artificial intelligence technology. Facilitating conditions are the technical support and resource guarantees provided by schools and society for students. This definition not only presents the core elements of the UTAUT theory but also incorporates the actual situation in education, providing theoretical and practical references for schools to improve students' acceptance of intelligent technology.

2.2.3.2 Research Status of Acceptance of AI Usage

Scholars have achieved certain research results in education-related fields, with extensive research content that has practical guiding significance. Regarding student acceptance, Xu (2024), based on the Theory of Planned Behavior, constructed an explanatory model for vocational college students' acceptance intention of online learning spaces. They found that the overall acceptance level of vocational college students towards online learning spaces was above average, and attitude, subjective norms, and perceived behavioral control all had significant positive impacts on behavioral intention. They also proposed strategies to improve acceptance, such as ensuring the effective supply of high-quality online educational resources. Xu (2024) took the network equipment configuration course as an example to explore the construction and practice of a digital ecological classroom. Through questionnaire surveys, he analyzed students' acceptance of the digital ecological classroom. The results showed that this model could effectively improve students' learning motivation and participation, providing practical references for the digital transformation of vocational education. In terms of teaching strategy research, Yu (2019) analyzed the application of informatization in Chinese language classes from the perspective of classic recitation teaching and elaborated on informatized teaching strategies for Chinese classic recitation, including stimulating students' recitation interest and conforming to students' cognitive laws. Chen (2024), in response to the current dilemmas in mathematics teaching, explored mathematics teaching strategies from the perspective of core competencies, focusing on aspects such as emphasizing the cultivation of thinking abilities and optimizing module content design.

Regarding the development of vocational education, He and Qi (2022) pointed out that promoting the coordinated development of vocational education and general education is the new positioning of the new-era relationship between vocational and general education in the new Vocational Education Law of the People's Republic of China. They suggested grasping its connotation from aspects such as realizing the foundational shift of education and promoting the coordinated development of

vocational and general education by reshaping the vocational education ecosystem with emerging technologies. Zhu and Xiong (2021) believed that the modernization of vocational education is one of the important aspects supporting the modernization of education. With value orientations such as integration and typification, it should focus on system construction, collaborative governance, and talent cultivation. Yang and Zhu (2023), through a systematic analysis of the implementation procedures of the vocational education college entrance examination in Province C, pointed out practical difficulties such as unreasonable allocation of enrollment plans and proposed optimization strategies such as strictly implementing national enrollment plan standards. In addition, Zhong et al. (2020) focused on the construction of a citizen media literacy assessment framework, used a comprehensive literature research method to analyze the current research status of scholars, and proposed that theoretical modeling and empirical research should be carried out from five dimensions.

Chai et al. (2024) conducted research on college students' views on the impact of artificial intelligence on the future job market. By collecting data from 141 college students, it was found that positive personality traits and technological self-efficacy were positively correlated with students' higher preparedness and optimism regarding the impact of artificial intelligence on work, providing practical implications for educators and policymakers and pointing out future research directions to help students better adapt to the artificial intelligence-driven labor market. Bou-Ghanem (2020) conducted a literature review on the Technology Acceptance Model and, considering consumers' cognition and feelings, constructed a model incorporating self-identity and free will to explain the factors influencing consumers' acceptance of artificial intelligence technology in smartphones and service robots. The research covered multiple fields such as e-commerce, e-learning, and hospitality. Baaran and Duru (2024) took middle school students as the research subjects, determined students' acceptance of artificial intelligence-based technologies, and explored the impact of cognitive styles on the decision-making process of technology acceptance. Through questionnaire surveys and data analysis of 50 students, the study provided valuable insights for integrating artificial intelligence into middle school education. Yao and Wang (2024) validated an extended Technology Acceptance Model for the use of artificial intelligence applications in education by pre-service teachers. Through structural equation modeling analysis of data from 400 pre-service teachers in the Central Visayas region of the Philippines, it was found that perceived usefulness, ease of use, and attitude were significantly related to the intention to use artificial intelligence applications. At the same time, they emphasized the importance of user-friendly interfaces, educational activities highlighting the advantages of artificial intelligence, and institutional support for pre-service teachers' acceptance of artificial intelligence applications.

2.2.4 Performance Expectancy

Performance expectancy refers to users' expectations that adopting a certain technology can improve work efficiency or achieve expected task performance. It is a core concept in technology acceptance and use theories, especially widely discussed in the Unified Theory of Acceptance and Use of Technology (UTAUT) model. Performance expectancy is one of the motivational factors and a major reason influencing users' decisions on whether to adopt new technologies. In the context of the adoption and application of educational technologies, as a core element, performance expectancy profoundly affects students' usage behavior and attitudes towards modern educational technologies.

Ma (2024) systematically collected qualitative research data through semi-structured interviews and focus group interviews. The study found that respondents widely recognized the positive impacts of generative artificial intelligence in enhancing teaching quality, promoting students' personalized learning processes, and improving students' learning efficiency. In professional teaching, teachers can significantly improve the comprehensibility and memorability of learning content and greatly enhance students' learning efficiency by using modern educational technologies represented by artificial intelligence. Tianjin Electronic Information College, in response to problems such as the difficulty of school-enterprise collaborative education and the uneven distribution of high-quality teaching resources, actively built a full-scenario learning platform integrating online and offline elements, breaking through the boundaries between the virtual and the real and achieving cross-time and cross-space connections. This platform, with in-depth integration of online and offline elements, is guided by "school-enterprise instructors" and "AI instructors" through human-machine collaboration, enabling students to engage in cross-time and cross-space collaborative learning on and off campus. Wuxi Mechanical and Electrical Higher Vocational and Technical School also actively incorporated advanced technologies such as virtual simulation and artificial intelligence, and developed a highly compatible CNC simulation training platform, allowing students to immerse themselves in the work process of occupational positions, making learning more interesting and attractive and enhancing student acceptance (Jiang et al., 2023).

As a national key secondary vocational school, Shanghai Trade School, during the epidemic, took the core courses of the food major as a breakthrough. Five teachers collaborated to actively use modern means such as multimedia information technology to carefully create digital course resources, fully demonstrating the advantages of online teaching in transcending time and space limitations, as well as resource sharing and flexible time and space. These measures not only improved teachers' teaching effectiveness and students' learning outcomes but also positively influenced students' willingness to use modern educational technologies, prompting them to adopt advanced technologies to enhance learning effects (Wang, 2022).

2.2.5 Effort Expectancy

Effort expectancy (EE) refers to the degree of effort that users anticipate they will need to invest when using a new technology. It mainly focuses on the ease of use and learnability of the technology. When users perceive a technology as easy to learn and use, they are more likely to accept and adopt it. Theoretically, a higher Effort Expectancy implies that users believe less effort is required to use the technology, thereby reducing the psychological and operational barriers to adopting the new technology. In this study, effort expectancy serves as a crucial indicator for measuring students' perceptions of the ease of use of artificial intelligence (AI) technology and their subsequent willingness to use it. Specifically, it refers to the level of difficulty students experience in learning, mastering, and applying AI tools. This variable encompasses three specific aspects: Firstly, the convenience of learning and mastering the operation methods of AI tools; Secondly, whether students can smoothly apply AI tools to learning activities in their professional practice; Thirdly, whether students can maintain confidence when facing technical difficulties, effectively solve problems, and continue to utilize AI tools. These aspects collectively constitute a comprehensive manifestation of effort expectancy, directly influencing students' acceptance and willingness to use AI tools.

Numerous researchers have conducted in-depth investigations from various perspectives and confirmed a close positive correlation between effort expectancy and students' acceptance of AI usage. In brief, the stronger the students' confidence in successfully using the technology, the more likely they are to accept and apply it. Zhang et al. (2015), through in-depth analysis of questionnaire data, thoroughly explored various factors influencing students' acceptance of artificial intelligence and their degrees of impact. Their research clearly indicated that students' effort expectancy has a significant positive impact on their level of acceptance of AI learning methods. Wang and Tian (2023) employed quantitative analysis methods to investigate the influencing factors and moderating effects on 814 students' acceptance of online-offline blended teaching. The study revealed that effort expectancy has a positive impact on students' willingness to engage in online-offline blended learning. Zhang (2025) pointed out in a study on the formation mechanism of students' intention to use generative AI that AI anxiety is one of the primary factors leading students to reject AI. Hu's (2024) research further delved into the cognition and application status of generative AI among students in vocational colleges. The study selected some students from six typical higher vocational colleges and seven secondary vocational schools in Shanghai as research subjects. The findings showed that over two-thirds of the students believed that generative AI was prone to causing technological anxiety, and more than 51% of the students thought that, due to unfamiliarity with how to use these tools, it was difficult to unleash their potential learning utility. This technological anxiety significantly affected their acceptance and use of generative AI technology.

Effort expectancy refers to students' expectations and confidence in successfully mastering and applying new technologies. Multiple studies, based on questionnaire data and technology adoption models, have confirmed the crucial role of effort expectancy. The existing research results indicate that students' willingness to use information technology is significantly positively influenced by effort expectancy. Specifically, when students believe that a certain information technology has low learning costs, is convenient to operate, and is easy to get started with during their initial attempts, they are more inclined to continuously adopt the technology (Wan & Zhao, 2016). When students have a high effort expectancy, they are more likely to perceive the use of AI tools as easy and feasible, thereby enhancing their willingness to use these technologies. This positive psychological expectation can significantly reduce technological anxiety and increase the likelihood of students trying and continuing to use new technologies. Specifically in the application of AI in various fields, effort expectancy represents the degree of effort students need to invest in conducting AI learning. When individuals continuously invest more energy, they are more likely to use new technologies (Li & Gu, 2021).

2.2.6 Social Influence

In technology acceptance and use models such as the Unified Theory of Acceptance and Use of Technology (UTAUT), social influence refers to the influence of the attitudes and behaviors of other individuals within an individual's social network on their acceptance and use of a certain technology. Based on the principles of social psychology, social influence posits that an individual's behaviors, beliefs, and attitudes are largely shaped by the social environment they are in and the people they interact with. These social relationships can include family members, friends, colleagues, superiors, or any group considered to influence personal decision-making. In this study, social influence reflects the extent to which students are influenced by the attitudes and behaviors of the people around them (such as classmates, teachers, and the school) when deciding whether to use AI tools.

Social influence is an indispensable dimension for understanding and analyzing students' acceptance of modern educational technology models. It profoundly reveals the important role of social structure and interpersonal relationships in the process of students' technology adoption. Feng et al. (2022) took primary and secondary school students from the Central Educational Technology Institute as research subjects and constructed a theoretical model of primary and secondary school students' acceptance of virtual experiments from the perspective of user technology acceptance. Their research found that social influence is a key factor in enhancing students' acceptance of virtual experiments. During the process of implementing information-based teaching in regions, the recognition and support from educational authorities, school leaders, parents, and teachers will continuously improve students' perception levels of the social influence factor, thereby enhancing their willingness to use (Li et al., 2017). In terms of

the construction of smart campuses, research by Chen et al. (2020) showed that when smart teaching policies are well-formulated, a positive smart teaching atmosphere is created, and smart teaching practices demonstrate good demonstration effects, students' willingness to accept teaching in smart classrooms will be enhanced. Chen and Bin (2024) explored the integration of information technology and vocational education teaching, especially in the context of the digital and intelligent era. They proposed a plan to establish a comprehensive vocational education teaching support system and resource library. This resource library includes a wealth of online teaching resources, detailed guides on using technical tools, and a peer mutual assistance forum. The establishment of this resource library can enhance teachers' teaching levels and students' learning effects. The positive influence of the community lies in creating a supportive and encouraging environment that promotes students' active application of emerging modern learning technologies.

Social influence plays a pivotal role in the process of students accepting artificial intelligence technology. Whether it is the application of AI-assisted learning tools, the exploration of AI-based personalized learning models, or the construction of various AI-empowered learning scenarios on campus, social influence is a key element in enhancing students' acceptance of AI. When students' social circles, such as classmates, club members, and friends, generally recognize and actively use a certain artificial intelligence technology, students will be subject to positive social influence. Conversely, if there are doubts or opposition to a certain artificial intelligence technology within students' social circles, students may develop resistance to the technology due to group pressure. Therefore, the recognition and support from teachers, parents, and school management are crucial for improving students' perception levels of the social influence factor. Teachers' positive introductions and guidance on artificial intelligence technology in the classroom can make students recognize the positive role of artificial intelligence technology in learning and stimulate their desire to explore. Parents' encouragement and affirmation of their children's use of artificial intelligence technology in daily life will provide psychological support to the children and enhance their confidence in using it. School management, through formulating relevant policies and creating a good environment for the application of artificial intelligence technology, such as building artificial intelligence laboratories and conducting artificial intelligence-themed activities, can make students truly feel the school's emphasis on artificial intelligence technology, thereby improving their acceptance of it. These aspects of recognition and support will directly affect students' acceptance and willingness to use artificial intelligence technology, thereby promoting students' better learning and growth in the era of artificial intelligence.

2.2.7 Facilitating Conditions

Facilitating conditions, in the Unified Theory of Acceptance and Use of Technology (UTAUT) model, refer to the objective factors that can support or promote

an individual's use of a certain new technology. These factors encompass necessary resources, infrastructure, technical support, and corresponding technical knowledge. They collectively act on individuals and influence their ability to use new technologies. In this study focusing on students' acceptance of artificial intelligence, facilitating conditions are mainly manifested as the comprehensive support provided by schools to students.

Schools equip students with sufficient hardware and software resources, which can facilitate the application of generative artificial intelligence in learning scenarios. For example, schools provide high-performance computer equipment to ensure the smooth operation of various artificial intelligence learning software and tools; schools build dedicated campus artificial intelligence learning platforms, integrating a wealth of learning materials and cases, enabling students to learn and explore anytime and anywhere. At the same time, schools offer a diverse range of relevant training resources to promote students' better mastery of artificial intelligence technology. These training resources include both online video tutorials and online courses, allowing students to learn autonomously according to their own time and pace; there are also offline lectures and workshops, where industry experts and scholars are invited to provide face-to-face guidance and communication for students, answering the questions they encounter during the learning process. In addition, schools arrange timely technical support teams. When students encounter problems while using artificial intelligence technology, they can quickly receive professional help and solutions to ensure that their learning process is not hindered.

Facilitating conditions emphasize the key significance of environmental and organizational support in the process of technology adoption and continuous use. If students feel that they have sufficient resources and support to use artificial intelligence technology, they are more likely to accept and effectively use this technology. Fang et al. (2018), based on the UTAUT model and combined with interviews and the characteristics of artificial intelligence learning platforms, constructed a model of influencing factors on students' behavioral intention to learn artificial intelligence. The research results showed that when schools provide facilitating conditions for students to conduct artificial intelligence learning, including support in terms of platforms, training, guidance, and funds, students are more willing to try to explore artificial intelligence learning and pursue better learning outcomes and personal development.

Wang et al. (2019) believed that the impact of facilitating conditions on students' acceptance of artificial intelligence is direct and significant, and it is one of the main factors influencing students' acceptance. Strengthening artificial intelligence training for students, building suitable learning spaces, and providing relevant learning equipment to support students' artificial intelligence learning activities can promote students' acceptance of artificial intelligence technology. For example, schools can establish artificial intelligence laboratories equipped with advanced experimental equipment and tools, allowing students to deeply understand and master artificial

intelligence technology through practice; teachers can organize artificial intelligence interest groups and club activities, providing students with platforms for communication and cooperation and stimulating their interest in learning artificial intelligence.

Research by Zhou et al. (2024) also found that schools, through cooperation with technology enterprises and providing continuous training, can make up for deficiencies in teaching and improve students' learning conditions. A vocational college in Hunan collaborated with a well-known technology enterprise to jointly create a smart learning space and innovatively launched scenario-based and interactive artificial intelligence learning modes, fully meeting students' needs for autonomous learning and cooperative communication (Jiang et al., 2023). Students can use artificial intelligence technology to solve problems in simulated real scenarios, improving their practical abilities and innovative thinking. A school in Shanghai relied on relevant innovation projects to develop a comprehensive artificial intelligence learning platform integrating learning, practice, competitions, and innovation and entrepreneurship. It also cooperated with industry associations to jointly build a training "cloud platform," creating a multi-technology-integrated learning and practice environment. In such an environment, students can be exposed to the most cutting-edge artificial intelligence technologies and concepts, broaden their horizons, and enhance their learning effects.

Existing research indicates that facilitating conditions have a direct and significant positive impact on students' acceptance and adoption of artificial intelligence technology. These facilitating conditions include platform support, training resources, technical guidance, financial assistance, and cooperation with enterprises, among others. By providing sufficient hardware and software facilities, rich learning resources, and professional training, as well as timely online Q&A and technical support, students are more willing to try and actively explore the application of artificial intelligence technology in learning, aiming to achieve better learning outcomes and personal development. The better the facilitating conditions, the higher the students' acceptance and willingness to use artificial intelligence technology.

2.3 Introduction to Pingdingshan Vocational College

Pingdingshan Vocational and Technical College is a public full-time general higher vocational college located in Pingdingshan City, Henan Province. Situated on the west section of Chang'an Avenue in the Urban-Rural Integration Demonstration Zone of Pingdingshan City, the college inherits classic art and culture and continues the power of new construction amidst a thousand years of cultural influence and the development of a modern city.

The college's educational history can be traced back to the Pingdingshan Normal School, founded in 1959. In 1978, the Pingdingshan Teachers' Further Education

School was established, which underwent several name changes and integrations over the years: it was renamed the Pingdingshan Teachers' Further Education College in 1980 and the Pingdingshan Education College in 1986; in 2002, it merged with the Pingdingshan Normal School, and in 2009, it incorporated the Pingdingshan Culture and Art School; in March 2018, it was approved by the People's Government of Henan Province to be restructured into Pingdingshan Vocational and Technical College on the basis of Pingdingshan Education College.

The college currently has a new campus and a Yuanding Campus, with a total area of over 550 acres and a building area of nearly 186,000 square meters. The new campus, located on the west section of Chang'an Avenue, has a reasonable layout and complete functions; the Yuanding Campus, located on Yuanding Road in the city center, has convenient transportation. The college has 16 teaching departments covering various fields such as Chinese, Tourism and Hotel Management, Computer Science, Education, Mechanical and Electrical Engineering, and Finance and Economics. It offers 54 majors (including 52 regular junior college majors and 2 five-year junior college majors). The construction of major clusters is closely aligned with local industrial needs, forming four characteristic major clusters: Preschool Education, Study Travel, E-commerce, and Industrial Internet.

The college adheres to a student-centered approach and deepens the reform of cultivating compound technical and skilled talents. It implements the "1+X" certificate system and was listed as one of the third batch of pilot schools in Henan Province in 2020. It has been approved to set up 21 assessment sites covering 8 departments. In 2023, 2,698 students obtained primary, intermediate, and advanced vocational skill level certificates, with a completion rate of 281.04%, ranking fifth among higher vocational colleges in the province. Four majors, namely E-commerce, Online Marketing and Live Streaming E-commerce, Cross-border E-commerce, and Hotel Management and Digital Operations, adopt the modern apprenticeship training model. Schools and enterprises jointly formulate curriculum standards to achieve "dual-element education." Pingdingshan Vocational and Technical College has a total enrollment of approximately 14,000 students.

2.4 Conceptual Framework

This study analyzed the key factors influencing students' acceptance of artificial intelligence usage based on the Unified Theory of Acceptance and Use of Technology (UTAUT) model for artificial intelligence technology, combined with the characteristics of students' learning of artificial intelligence, and constructed a corresponding research model. According to relevant theoretical explanations and literature reviews, this study finally determined a research model on the influencing factors of students' acceptance of artificial intelligence. This model contains four core variables, namely retaining performance expectancy, effort expectancy, social

influence, and facilitating conditions from the UTAUT model. The study takes acceptance of AI usage as the dependent variable of the model to more comprehensively analyze the key influencing factors of students' acceptance of AI usage.

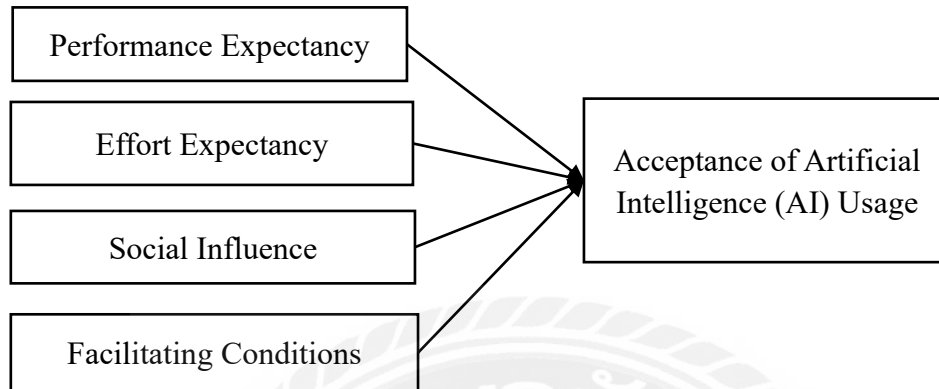


Figure 2.2 Conceptual Framework

Chapter 3 Research Methodology

3.1 Research Design

3.1.1 Research Framework and Theoretical Model

This study was grounded in the Unified Theory of Acceptance and Use of Technology (UTAUT) and, considering the characteristics of vocational education settings, constructed a structural model of the factors influencing the acceptance of AI usage among students at Pingdingshan Vocational College. The model focuses on four core variables: performance expectancy (students' expectations regarding the improvement of learning efficiency through artificial intelligence), effort expectancy (students' perceptions of the ease or difficulty of operating artificial intelligence technologies), social influence (the demonstrative and guiding effects of peers or teachers on students' use of artificial intelligence), and facilitating conditions (the level of hardware facilities, network environment, and technical support provided by the school). It also sets direct influence paths from these variables to students' acceptance of AI usage.

3.1.2 Research Method and Data Collection

This study adopted a quantitative research approach and collected data through structured questionnaires. The questionnaire design adhered to the following principles:

Scale Adaptability: The items were revised based on the original UTAUT model scale, taking into account the vocational education context.

Selection of Control Variables: Demographic variables, including students' gender, grade level, major, and household registration, were included to control for the interference of individual differences on the research results.

Questionnaire distribution was carried out through random sampling. This study utilized electronic questionnaires (via Wenjuanxing) to collect data and relied on the assistance of teachers for data acquisition. After excluding invalid questionnaires with excessive missing values, those filled out casually, and those with highly pronounced answer tendencies, 377 valid electronic questionnaires were obtained.

3.1.3 Data Analysis Strategy

This study employed quantitative analysis methods to systematically explore the relationships between the four core independent variables—performance expectancy,

effort expectancy, social influence, and facilitating conditions—and the acceptance of AI usage. Initially, descriptive statistical analysis was conducted to gain a preliminary understanding of sample characteristics and variable distributions. Subsequently, Cronbach's α coefficient and confirmatory factor analysis were used to examine the internal consistency and structural validity of the scale, ensuring the reliability of the measurement tools. Further, correlation analysis was applied to reveal the linear association directions among variables. Based on a multiple linear regression model, the independent influence of each variable on acceptance was tested. The adjusted R^2 value was used to assess the overall explanatory power of the model, while the variance inflation factor was employed to diagnose multicollinearity issues. Finally, SPSS and AMOS software were relied upon to complete the data analysis process, providing quantitative support for the analysis of the factors influencing the acceptance of AI usage among vocational college students.

3.2 Population and Sample

This study took all enrolled students at Pingdingshan Vocational College as the overall research population. According to the latest school statistics, the total number of enrolled students was approximately 14,387. To ensure the representativeness of the sample and the reliability of data analysis, a simple random sampling method was adopted to determine the specific survey subjects.

In terms of sample size determination, considering research resources and statistical power requirements, and referring to the sample size standards of similar studies in related fields, a sample size of 400 was finally determined for this survey. This sample size not only met the basic data requirements of multivariate statistical analysis methods such as structural equation modeling but also effectively reduced selection bias through random sampling, making the sample characteristics as close as possible to those of the overall population.

The specific sampling process is as follows: First, a complete list of student IDs of ordinary full-time students at Pingdingshan Vocational College was obtained. Then, a random number generator was used to non-repetitively select 400 student IDs from the list, and the corresponding students are the survey subjects of this study. During the sampling process, it was ensured that each student had an equal probability of being selected, and the sampling results were only related to the student ID sequence, avoiding human intervention or other non-random factors affecting the sample composition. Through the above methods, this study constructed a sample database with high representativeness, laying a foundation for subsequent empirical analysis.

3.3 Hypotheses

Based on the core constructs of the Unified Theory of Acceptance and Use of Technology (UTAUT) and considering the characteristics of artificial intelligence technology application scenarios in vocational colleges, this study proposed the following hypotheses to verify the mechanisms by which various influencing factors affect students' acceptance of AI usage:

H1: Performance expectancy has a significant positive impact on students' acceptance of AI usage.

Performance expectancy refers to the extent to which students expect that using artificial intelligence technologies can improve their learning efficiency or skill mastery levels. According to the UTAUT theory, when students believe that artificial intelligence technologies have practical utility for their academic or career development, their willingness to accept these technologies will significantly increase. Therefore, it is hypothesized that the higher the performance expectancy, the higher the student acceptance.

H2: Effort expectancy has a significant positive impact on students' acceptance of AI usage.

Effort expectancy reflects students' perceptions of the ease or difficulty of operating artificial intelligence technologies. The UTAUT model points out that the convenience of technology operation is a key factor influencing user acceptance. If students consider artificial intelligence tools easy to learn and use, their acceptance behavior will be more likely to occur. Hence, it is hypothesized that effort expectancy is positively correlated with acceptance.

H3: Social influence has a significant positive impact on students' acceptance of AI usage.

Social influence encompasses the demonstration, recommendation, and evaluation of artificial intelligence technologies by peers, teachers, or the school. Vocational college students are easily influenced by group behavior and authority guidance. If the surrounding environment holds a positive attitude toward artificial intelligence, students' willingness to accept it will significantly increase. Therefore, it is hypothesized that social influence has a positive effect on acceptance.

H4: Facilitating conditions have a significant positive impact on students' acceptance of AI usage.

Facilitating conditions refer to the technical support (such as hardware facilities, network environment, and training services) and institutional guarantees (such as

relevant policies and management regulations) provided by the school. The UTAUT model emphasizes that external support conditions are crucial for technology implementation. If vocational colleges can improve the infrastructure and service systems for intelligent technology application, it will directly promote an increase in student acceptance. Hence, it is hypothesized that facilitating conditions are positively correlated with acceptance.

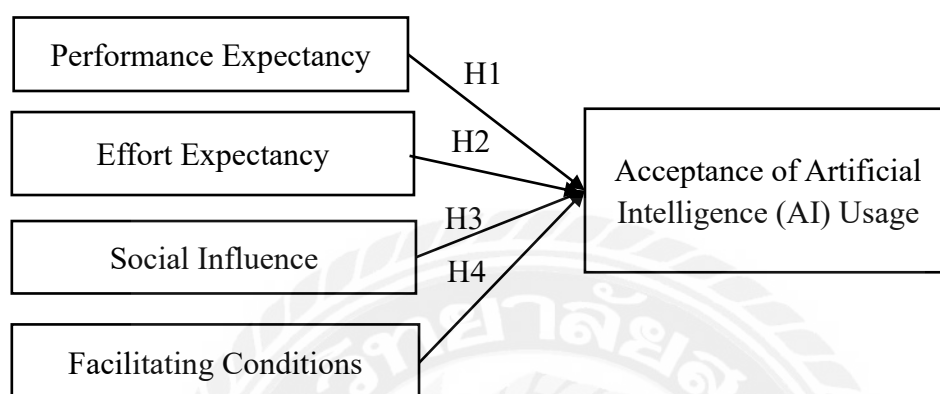


Figure 3.1 Hypotheses

3.4 Research Instrument

This study used a five-point Likert scale as the measurement tool. The scale options are symmetrically designed, specifically "A: Completely Disagree; B: Disagree Somewhat; C: Neutral; D: Agree Somewhat; E: Completely Agree," with scores ranging from 1 to 5. During the selection of measurement tools, this study strictly followed the norms and criteria for scale development. All scales used for measurement were selected from mature scales that have undergone reliability and validity tests. This study conducted descriptive analysis on demographic variables including grade, gender, major, and household registration to explore their impacts on the willingness to accept intelligent technologies. Based on this, the Technology Acceptance Model (UTAUT) was selected for in-depth analysis.

The artificial intelligence technology acceptance scale can be used to measure students' acceptance levels of artificial intelligence technologies. This scale is formed based on the research of Venkatesh et al. (2003), Liu et al. (2013), Mikalef et al. (2020), Gu (2021), and Xu (2019).

Given the special context of vocational education, this study made contextual adjustments to the measurement tools and establishes an evaluation framework with five dimensions, including four independent variables and one dependent variable.

The independent variables are performance expectancy (PE), effort expectancy (EE), social influence (SI), and facilitating conditions (FC), while the dependent variable is acceptance of AI usage.

The acceptance of AI usage scale is a reliable and valid measurement tool for assessing students' acceptance levels of artificial intelligence technologies. This scale contains five key dimensions, each of which can effectively reflect the core factors influencing students' technology acceptance. The research results indicate that this scale performs well in terms of composite reliability, convergent validity, and structural validity, and can serve as a key tool for schools and educational researchers to measure students' technology acceptance.

Table 3.1 Questionnaire Items

Variable Classification	Item Number	Item	Reference Source
Performance Expectancy (PE)	PE1	I believe AI can stimulate my interest in professional learning.	Venkatesh et al. (2003)
	PE2	I think AI can help enhance my professional skills.	
	PE3	I believe using AI for learning can improve my learning efficiency.	
	PE4	I am willing to integrate AI into my future learning to enhance my competitiveness.	
Effort Expectancy (EE)	EE1	I find it easy to obtain learning resources related to AI.	Liu et al. (2013)
	EE2	I can easily master the basic operations of AI.	
	EE3	I can receive help from teachers or classmates when using AI tools.	
Social Influence (SI)	SI1	If my classmates use AI, I will also consider using it.	Mikalef et al. (2020)
	SI2	If encouraged by my teachers, I will be more willing to use AI.	
	SI3	If required by future jobs, I will integrate AI into my learning.	
Facilitating Conditions (FC)	FC1	The hardware and resources provided by the school are sufficient to support AI learning.	Gu (2021)
	FC2	The technical support provided by the school can meet my AI learning needs.	
	FC3	The school's infrastructure and network environment are suitable for AI learning.	
Acceptance of Artificial	AAIU1	I believe it is necessary to introduce artificial intelligence technology into course learning or practical operations.	Xu (2019)
	AAIU2	I plan to actively increase the frequency of	

Intelligence Usage (AAIU)		using artificial intelligence tools in the future.	
	AAIU3	If the school fully promotes AI-assisted teaching, I will actively adapt and rely on such technology to complete my learning tasks.	
	AAIU4	I am willing to recommend the use of artificial intelligence technology to classmates or friends to improve learning efficiency.	
	AAIU5	Even if I encounter operational difficulties, I will overcome obstacles through learning and continue to use artificial intelligence technology.	
	AAIU6	Artificial intelligence technology can significantly improve my learning outcomes and career competitiveness.	

3.5 Reliability and Validity Analysis of the Scale

3.5.1 Reliability Analysis

Reliability analysis, also known as consistency analysis, is used to test the consistency and authenticity of sample data. The most commonly used method is the Cronbach's Alpha coefficient. The value of the α coefficient generally ranges from 0 to 1. If it is negative, it indicates the presence of reverse-scored items in the questionnaire, which need to be recoded into positive items before further testing. A coefficient value below 0.6 suggests issues with the questionnaire items, necessitating the redevelopment of the scale questions. A value between 0.6 and 0.7 is marginally acceptable; between 0.7 and 0.8 indicates good reliability; and a value greater than 0.8 signifies excellent reliability. The reliability analysis of this questionnaire is as follows:

Table 3.2 Variable Reliability Test

Variable	Measurement Scale	Standardized Loading	Cronbach's Alpha	Composite Reliability (CR)
Performance Expectancy	PE1	0.828	0.829	0.886
	PE2	0.842		
	PE3	0.812		
	PE4	0.828		
Effort Expectancy	EE1	0.804	0.770	0.867
	EE2	0.808		
	EE3	0.804		

Social Influence	SI1	0.822	0.815	0.878
	SI2	0.749		
	SI3	0.862		
Facilitating Conditions	FC1	0.824	0.795	0.879
	FC2	0.837		
	FC3	0.828		
Acceptance of AI Usage	AAIU1	0.856	0.803	0.857
	AAIU2	0.851		
	AAIU3	0.848		
	AAIU4	0.815		
	AAIU5	0.842		
	AAIU6	0.834		

In the study of factors influencing the acceptance of AI usage among students at Pingdingshan Vocational College, the measurement scales corresponding to the independent variables—performance expectancy, effort expectancy, social influence, and facilitating conditions—as well as the dependent variable, acceptance of AI usage, all demonstrated good reliability. From the perspective of standardized loadings, the measurement indicators for each variable exhibited relatively high values. For instance, the standardized loadings of the four indicators for performance expectancy (PE1 - PE4) ranged from 0.812 to 0.842; those for effort expectancy (EE1 - EE3) ranged from 0.804 to 0.808; for social influence (SI1 - SI3), they ranged from 0.749 to 0.862; for facilitating conditions (FC1 - FC3), they ranged from 0.824 to 0.837; and for acceptance of AI usage (AAIU1 - AAIU6), they ranged from 0.815 to 0.856. These results indicate that each observed indicator has a strong explanatory power for the corresponding latent variable and can effectively reflect the respective variable.

In terms of Cronbach's Alpha coefficients and Composite Reliability (CR), the internal consistency of each variable scale also reached a high level. The Cronbach's Alpha coefficients for performance expectancy, social influence, and acceptance of AI usage were all greater than 0.8, while those for effort expectancy and facilitating conditions were greater than 0.77. Regarding CR, all variables exceeded 0.85. These data suggest a high correlation among the measurement indicators of each scale, enabling stable and reliable measurement of the corresponding variables. This lays a solid data foundation for further exploring the relationship between independent and dependent variables and conducting an in-depth analysis of the factors influencing the acceptance of AI usage among students at Pingdingshan Vocational College.

3.5.2 Validity Analysis

Validity analysis is an indicator used to test the rationality of data design. Factor analysis can measure whether the results align with expectations. The validity analysis

also employs scale data, and the personal information section in the first part of the questionnaire does not participate in this analysis.

3.5.2.1 KMO and Bartlett's Test of Sphericity

This test determines whether the questionnaire is suitable for subsequent factor analysis. The KMO value is used to assess the suitability for information extraction. Generally, a value higher than 0.8 indicates excellent validity and high suitability for information extraction. For Bartlett's Test of Sphericity, the p-value is observed; a p-value less than 0.05 is required to prove valid effectiveness.

The results of the KMO and Bartlett's Test of Sphericity for this questionnaire are presented in Table 3.3.

Table 3.3 Factor Analysis of Acceptance of AI Usage

KMO Measure of Sampling Adequacy		0.932
Bartlett's Test of Sphericity	Approximate Chi-Square	2123.601
	df	41
	P	.000

As shown in Table 3.3, the KMO values for the two scales in this questionnaire were 0.932, which is greater than 0.8, indicating that they were highly suitable for information extraction and factor analysis. Additionally, the p-value was 0, which was less than 0.05, proving the validity of the scales.

3.5.2.2 Factor Loading Coefficients

By observing the values of standardized loading coefficients, the correlation between each factor and its corresponding analysis items can be determined. A value greater than 0.7 and significant indicates a strong correlation; if the value is below 0.4 or not significant, it suggests a weak relationship, and the item may be considered for deletion.

Table 3.4 Factor Loading Coefficients

Factor (Latent Variable)	Measurement Item (Manifest Variable)	Standardized Loading Coefficient (Std. Estimate)
Performance Expectancy	PE1	0.831
	PE2	0.825
	PE3	0.837
	PE4	0.841
Effort Expectancy	EE1	0.852
	EE2	0.832

	EE3	0.821
Social Influence	SI1	0.819
	SI2	0.822
	SI3	0.835
Facilitating Conditions	FC1	0.829
	FC2	0.828
	FC3	0.838
Acceptance of Artificial Intelligence Usage	AAIU1	0.821
	AAIU2	0.812
	AAIU3	0.805
	AAIU4	0.823
	AAIU5	0.802
	AAIU6	0.814

From Table 3.4, it can be seen that the measurement items corresponding to each latent variable exhibited relatively high standardized loading coefficients. Specifically, the standardized loading coefficients for the four measurement items of performance expectancy (PE1 - PE4) ranged from 0.825 to 0.841; for effort expectancy (EE1 - EE3), they range from 0.821 to 0.852; for social influence (SI1 - SI3), they ranged from 0.819 to 0.835; for facilitating conditions (FC1 - FC3), they ranged from 0.828 to 0.838; and for acceptance of AI usage (AAIU1 - AAIU6), they ranged from 0.802 to 0.823. These results indicate that each measurement item has a strong explanatory power for its corresponding latent variable, suggesting high data reliability.

3.6 Data Collection

This study focused on the factors influencing the acceptance of AI usage among students at Pingdingshan Vocational College. To obtain scientific and reliable data to support the verification of research hypotheses and the derivation of conclusions, a rigorous and standardized quantitative research method was employed for data collection.

In terms of sample selection, ordinary full-time undergraduate students at Pingdingshan Vocational College were used as the overall research sample. To ensure the representativeness and randomness of the sample, a complete list of student IDs for ordinary full-time undergraduates at the college was obtained, covering students from different grades and majors to comprehensively reflect the overall characteristics of the student population. Subsequently, a random number generator was used to select 400 student IDs without repetition from the list, and the corresponding students became the survey respondents for this study. Throughout the sampling process, strict measures were taken to ensure that each student had an equal probability of being selected, and the sampling results were solely related to the student ID sequence, effectively avoiding human intervention or other non-random factors from influencing the sample.

composition. This approach constructed a highly representative sample pool, laying a solid foundation for subsequent empirical analysis.

During the data collection process, an online approach was adopted for questionnaire distribution. An electronic questionnaire was generated using a professional online survey platform (Questionnaire Star) and distributed to the selected students with the assistance of class teachers to ensure the completeness and accuracy of questionnaire responses.

A total of 400 questionnaires were distributed in this study. After rigorous screening, invalid questionnaires with incomplete responses or obviously unreasonable answers were excluded, resulting in 377 valid questionnaires and an effective response rate of 94.25%. The highly effective response rate provided sufficient and reliable data support for subsequent data analysis, facilitating the derivation of scientific and accurate research conclusions and the formulation of targeted strategic recommendations to optimize the acceptance of AI usage among students at Pingdingshan Vocational College.

3.7 Data Analysis

After successfully collecting valid data, this study employed a variety of professional statistical analysis methods to conduct an in-depth analysis of the data, aiming to verify research hypotheses and reveal the intrinsic relationships among variables.

First, a reliability analysis was conducted to test the questionnaire's reliability. The internal consistency of the measurement items for each variable was assessed by calculating Cronbach's Alpha coefficients and Composite Reliability (CR).

Subsequently, descriptive statistical analysis was performed on the collected data to understand the basic characteristics of the sample and the distribution of each variable. By calculating statistical measures of mean, standard deviation, minimum, and maximum values, a preliminary understanding of the data characteristics of variables such as performance expectancy, effort expectancy, social influence, facilitating conditions, and acceptance of AI usage was obtained.

Next, Confirmatory Factor Analysis (CFA) was employed to test the validity of each variable's measurement model. By constructing a structural equation model, the fit between each measurement item and its corresponding latent variable was examined.

After validating the measurement model's validity, Structural Equation Modeling (SEM) was further used to test the research hypotheses, exploring the influence paths and mechanisms of performance expectancy, effort expectancy, social influence, and

facilitating conditions on students' acceptance of AI usage. Through path analysis, standardized path coefficients and significance levels among variables were obtained.

By comprehensively applying various statistical analysis methods, this study conducted a thorough and in-depth analysis of the collected data, verified the research hypotheses, revealed the intrinsic relationships and mechanisms among variables, and provided a solid empirical basis for subsequent result discussions and strategic recommendations.



Chapter 4 Findings and Discussion

4.1 Findings

4.1.1 Demographic Characteristics and Basic Information of Participants

Regarding the basic situation of students at Pingdingshan Vocational College, the first part of the questionnaire set questions related to personal information. The 400 participants data extracted can, to a certain extent, reflect the overall student characteristics of Pingdingshan Vocational College. Summarizing the basic situation of students at Pingdingshan Vocational College can, on the one hand, verify the rationality of the sample data, and on the other hand, enable targeted data analysis in combination with the basic situation of students at Pingdingshan Vocational College during empirical analysis, to put forward more targeted suggestions. Therefore, a preliminary summary of the personal basic information of the respondents was conducted using SPSS software on the collected questionnaire data, as shown in Table 4.1.

Table 4.1 Descriptive Statistical Analysis of Participants

Basic Personal Information		Frequency	Percentage%
Gender	Male	199	52.8
	Female	178	47.2
Grade	First Grade	145	38.5
	Second Grade	127	33.7
	Third Grade	105	27.9
Major	Liberal Arts and History	192	50.9
	Science and Engineering	185	49.1
Household Registration	Rural	168	44.6
	Urban	209	55.4
Total		377	100

Table 4.1 analyzes student characteristics from multiple dimensions, which not only helps verify the rationality of the sample but also lays a foundation for subsequent targeted empirical analysis combined with students' backgrounds and the formulation of precise suggestions.

In terms of gender, there are 199 male students and 178 female students. In terms of proportion, male students account for a slightly higher share than female students, but the overall gap is not significant. This relatively balanced gender distribution enables the sample to better cover the viewpoints and behavioral patterns of students of different genders. Regarding the acceptance of AI usage, students of different genders may have differences due to factors such as thinking styles and interest preferences.

The grade distribution shows that first-year students have the largest number (145), followed by second-year students (127), and third-year students are relatively fewer (105). This distribution is in line with the general pattern of the number of students in different grades at the college. First-year students, having just entered the campus, are full of curiosity about new things and may have a high willingness to accept and explore new technologies such as artificial intelligence. However, they may also face some difficulties in the acceptance process due to a lack of relevant knowledge and experience. Second-year students, after one year of study, have accumulated a certain amount of professional knowledge and skills, and their cognition of artificial intelligence technology may be more in-depth. They can evaluate and accept artificial intelligence from the perspective of practical applications. Third-year students are facing important stages such as internships and graduation, and their focus may be more on employment and career development. Their acceptance of artificial intelligence technology may be more focused on whether it can provide help for their future career development. The distribution of students of different grades in the sample provides a solid basis for analyzing the changing patterns of the acceptance of AI usage from the perspective of students' growth stages.

In terms of major distribution, there are 192 students in liberal arts and history majors and 185 students in science and engineering majors, with a ratio close to 1:1. Students with different major backgrounds have significant differences in knowledge structure, thinking styles, and learning abilities, which may affect their acceptance of artificial intelligence technology. Liberal arts and history students usually have strong language expression, humanistic qualities, and logical thinking abilities. They may pay more attention to the applications of artificial intelligence in cultural heritage, language processing, and education. Science and engineering students, on the other hand, have a solid foundation in mathematics and physics and have a deeper understanding of the principles and applications of technology. They may be more inclined to explore the technological implementation and innovative applications of artificial intelligence. The balanced distribution of liberal arts and science students in the sample helps comprehensively analyze the impact of major factors on students' acceptance of artificial intelligence and provides a reference for formulating differentiated promotion strategies for students of different majors.

The household registration distribution shows that there are 168 students with rural household registration and 209 students with urban household registration, with urban household registration students accounting for a slightly higher proportion. There are significant differences between urban and rural students in terms of growth environment, access to educational resources, and life experiences, which may affect their cognition and acceptance of artificial intelligence technology. Urban students usually have more opportunities to contact new technologies, may have an earlier and deeper understanding of artificial intelligence, and may be more confident and proactive in accepting new technologies. Rural students, on the other hand, may have

relatively less contact with artificial intelligence due to resource constraints and may need more guidance and support during the acceptance process. The distribution of urban and rural household registration students in the sample provides data support for analyzing the impact of household registration factors on students' acceptance of artificial intelligence and helps formulate promotion plans that take into account urban-rural differences.

The sample extracted in this study has a relatively reasonable distribution in terms of gender, grade, major, and household registration, and can well represent the overall characteristics of students at Pingdingshan Vocational College. This provides reliable data support for subsequent in-depth empirical analysis combined with students' basic situations, exploring multi-dimensional factors affecting students' acceptance of AI usage, and putting forward targeted and operable strategic suggestions.

4.1.2 Analysis of the Current Situation of the Acceptance Level of Artificial Intelligence Usage

Table 4.2 Descriptive Statistical Analysis of Acceptance of AI Usage

	Minimum Value	Maximum Value	Mean	Standard Deviation
Performance Expectancy	1	5	4.122	0.332
Effort Expectancy	1	5	4.153	0.339
Social Influence	1	5	4.121	0.322
Facilitating Conditions	1	5	4.156	0.408
Acceptance of Artificial Intelligence Usage	1	5	4.213	0.457

Table 4.2 presents the results of the feature analysis of each dimension of the students' acceptance level model of artificial intelligence usage, covering four core variables: social influence, effort expectancy, performance expectancy, and facilitating conditions. According to the data analysis, students' overall acceptance level of artificial intelligence usage is relatively high, with the average values of all core variables above 4.1 points (out of a full score of 5 points), indicating that most students hold a positive attitude towards the application of AI technology. Next, a detailed analysis of each dimension will be carried out in combination with the actual educational situation of students.

Performance expectancy refers to the actual benefits that the technology application brings to students. The average value of performance expectancy is 4.122, with a standard deviation of 0.332, which means that students generally believe that applying technology can effectively improve their academic performance, professional abilities, and career competitiveness.

Effort expectancy indicates that the ease of use of technology can lower the learning threshold. The average value of effort expectancy is 4.153, with a standard deviation of 0.339, which fully shows that students generally believe that AI technology is relatively easy to learn and apply.

Social influence refers to the promoting effect of the social environment on students' technology adoption. The average value of social influence is 4.121, with a standard deviation of 0.322, which means that the opinions of social groups such as classmates and teachers will have a certain impact on students' use of AI technology.

Facilitating conditions lie in the management support and resource guarantee provided by the school. The average value of facilitating conditions is 4.156, with a standard deviation of 0.408, which means that the school has provided relatively complete conditions in terms of hardware facilities, technical support, and learning resources.

Acceptance of AI Usage indicates that students demonstrate a notably high level of receptiveness, with a mean value of 4.213 and a standard deviation of 0.457. This suggests that the surveyed student population generally holds a positive and affirming attitude toward the adoption of AI technologies. The relatively higher mean value compared to other core dimensions reflects that students' actual willingness to accept and utilize AI goes beyond isolated perceptions of performance expectations, ease of use, social influence, or supportive conditions. Instead, it signifies a comprehensive, integrated evaluation and practical acceptance of AI applications in their learning and development. This finding implies that students not only recognize the potential value and user-friendliness of AI but are also inclined to actively incorporate such technologies into their academic or professional practices in real-world scenarios.

4.1.3 Correlation Analysis

Correlation analysis is used to measure the mutual relationship between variables, that is, to determine whether there is a relationship and how close the relationship is between data by analyzing the quantitative data set through the scale. It is a necessary analysis step before regression analysis. This study used the Pearson coefficient for correlation analysis to explore the correlation between each specific influencing factor and the acceptance of AI usage. Pearson analysis uses the correlation coefficient to represent the correlation between analysis items. An asterisk (*) indicates a

correlation, while the absence of an asterisk indicates no correlation. A correlation coefficient greater than 0 indicates a positive correlation, while a negative value indicates a negative correlation. In addition, when the correlation coefficient is greater than 0.4, it indicates a close relationship between the analysis items. The correlation analysis regarding the acceptance of AI usage in this study is shown in Table 4.4:

Table 4.3 Results of Correlation Analysis

	Performance Expectancy	Effort Expectancy	Social Influence	Facilitating Conditions	Acceptance of AI Usage
Performance Expectancy	1	.640**	.644**	.898**	.655**
Effort Expectancy		1	.615**	.938**	.617**
Social Influence			.632**	.917**	.607**
Facilitating Conditions			1	.945**	.618**
Acceptance of AI Usage					1

Note: ** Correlation is significant at the 0.01 level (two-tailed).

Table 4.3 can provide in-depth insights into the mutual influence mechanisms among variables and their contribution to the acceptance of AI usage.

(1) Overview of Correlations among Variables

From the data in Table 4.3, it is clear that the four variables of performance expectancy, effort expectancy, social influence, and facilitating conditions all show a highly significant positive correlation with each other (correlation is significant at the 0.01 level (two-tailed)).

The correlation coefficient between performance expectancy and acceptance of AI usage is 0.655**, indicating that performance expectancy has a significant positive impact on acceptance of AI usage. When students expect that using artificial intelligence can bring higher performance, such as improving learning efficiency, enhancing grades, and obtaining better career development opportunities, they are more likely to accept and actively use artificial intelligence. This suggests that when promoting the application of artificial intelligence in schools, highlighting the actual benefits and positive results it can bring to students can effectively enhance their willingness to accept it.

The correlation coefficient between effort expectancy and acceptance of AI usage is 0.617**, indicating that effort expectancy is also an important factor affecting acceptance of AI usage. If students believe that using artificial intelligence requires excessive effort, such

as learning complex operation procedures and investing a large amount of time, it may reduce their acceptance. Conversely, when using artificial intelligence is relatively easy and user-friendly, students are more willing to accept and use it. Therefore, when designing and promoting artificial intelligence applications in schools, attention should be paid to lowering the usage threshold, simplifying operation procedures, and reducing the effort cost for students during use.

The correlation coefficient between social influence and acceptance of AI usage is 0.607**, indicating that social factors play a non-negligible role in students' acceptance of artificial intelligence. When people around students, such as classmates, teachers, and family members, are using artificial intelligence and giving positive evaluations, students are more likely to be influenced by this social atmosphere and thus accept artificial intelligence. This reflects the important impact of social norms and group behavior on students' individual decision-making. When promoting artificial intelligence, schools can create a good social public opinion environment and give full play to the exemplary role of role models to guide students to accept artificial intelligence.

The correlation coefficient between facilitating conditions and acceptance of AI usage is 0.618**, indicating that facilitating conditions are one of the key factors affecting students' acceptance of artificial intelligence. When the facilitating conditions for using artificial intelligence are guaranteed, such as easy access to equipment, smooth network connectivity, and convenient software operation, students are more willing to use artificial intelligence. Therefore, schools and educational institutions should provide necessary hardware and software support and optimize the usage environment to create facilitating conditions for students to use artificial intelligence, thereby improving their acceptance.

The four variables of performance expectancy, effort expectancy, social influence, and facilitating conditions are not only interrelated with each other but also have a significant positive impact on acceptance of AI usage. This suggests that when promoting students' acceptance and use of artificial intelligence, we need to comprehensively consider multiple factors.

4.1.4 Regression Analysis

After determining that each influencing factor has a strong correlation with acceptance of AI usage, in order to further explore the causal relationship between each influencing factor and the acceptance of AI usage, this study conducted further regression analysis on each specific influencing factor. Taking four specific factors, namely performance expectancy, effort expectancy, and social influence, as independent variables and the acceptance of AI usage as the dependent variable, a linear regression analysis was carried out, as shown below:

Table 4.4 Results of Linear Regression Analysis

	Unstandardized Coefficient (B)		Standardized Coefficient (Beta)	p	VIF
	B	Standard Error (SE)			
Constant	0.115	0.041	-	0.001**	-
Performance Expectancy	0.147	0.034	0.048	0.001**	3.235
Effort Expectancy	0.164	0.039	0.067	0.002**	2.487
Social Influence	0.278	0.046	0.285	0.000**	2.039
Facilitating Conditions	0.233	0.047	0.247	0.000**	2.011
R ²	0.754				
Adjusted R ²	0.749				
F	F (7292) =784.65, p=0.000				
Durbin-Watson Statistic (D-W)	1.820				

(1) Interpretation of regression coefficients

The non-standardized coefficient B reflects the average change in the dependent variable when one independent variable change by one unit while other independent variables remain unchanged. The constant term is 0.115, indicating that when performance expectancy, effort expectancy, social influence, and facilitating conditions are all 0, the predicted value of the acceptance of AI usage is 0.115.

The B value of performance expectancy is 0.147, which means that when other conditions remain unchanged, for every one-unit increase in performance expectancy, the acceptance of AI usage increases by an average of 0.147 units. The B value of effort expectancy is 0.164, indicating that for every one-unit increase in effort expectancy, the acceptance of AI usage increases by an average of 0.164 units. The B value of social influence is 0.278, showing that for every one-unit increase in social influence, the acceptance of AI usage increases by an average of 0.278 units. The B value of facilitating conditions is 0.233, indicating that for every one-unit increase in facilitating conditions, the acceptance of AI usage increases by an average of 0.233 units.

The standardized coefficient Beta eliminates the influence of the dimensions of each variable, facilitating the comparison of the relative magnitudes of the impacts of different independent variables on the dependent variable. The Beta value of performance expectancy is 0.048, indicating that after considering the standardized impacts of all independent variables, the impact of performance expectancy on the acceptance of AI usage is relatively small. The Beta value of effort expectancy is 0.067, indicating that the impact of effort expectancy on the acceptance of AI usage is slightly greater than that of performance expectancy. The Beta value of social influence is 0.285,

which is the largest among the four independent variables, indicating that social influence has the most significant impact on the acceptance of AI usage. The Beta value of facilitating conditions is 0.247, showing that facilitating conditions also have a relatively large impact on the acceptance of AI usage, second only to social influence.

(2) Significance test (p-value)

The p-value was used to determine whether the impact of an independent variable on the dependent variable is significant. When the p-value is less than a given significance level (usually 0.05), it is considered that the independent variable has a significant impact on the dependent variable.

The p-values of the constant term, performance expectancy, effort expectancy, social influence, and facilitating conditions are all less than 0.001, indicating that at the 0.001 significance level, these variables have a highly significant impact on the acceptance of AI usage. That is, there is a real and non-random linear relationship between them and the acceptance of AI usage.

(3) Collinearity diagnosis (VIF value)

The variance inflation factor (VIF) was used to detect whether there is a multicollinearity problem among independent variables. Generally, when the VIF value is greater than 10, there is a serious multicollinearity problem; when the VIF value is between 1 and 10, the degree of collinearity is within an acceptable range.

The VIF values of performance expectancy, effort expectancy, social influence, and facilitating conditions are 3.235, 2.487, 2.039, and 2.011, respectively, all less than 10, indicating that there is no serious multicollinearity problem among these four independent variables, and the results of the regression model are relatively reliable.

(4) Model fit analysis

R^2 represents the proportion of the variation in the dependent variable explained by the independent variables in the model, with a value range between 0 and 1. The closer it is to 1, the better the fit of the model. The adjusted R^2 takes into account the impact of the number of independent variables on R^2 and is more objective when comparing different models. The R^2 of this model is 0.754, and the adjusted R^2 is 0.749, indicating that the independent variables in the model can explain 74.9% of the variation in the acceptance of AI usage, suggesting that the model has a good fit to the data and can well reflect the relationship between the independent and dependent variables.

The F-test was used to test the significance of the entire regression model, that is, to determine whether all independent variables as a whole have a significant impact on

the dependent variable. The F value of this model is $F(7292) = 784.65$, $p = 0.000$, indicating that at the 0.001 significance level, all independent variables as a whole have a highly significant impact on the acceptance of AI usage, that is, the regression model is valid.

The D-W value (Durbin-Watson value) was used to test whether there is an autocorrelation problem in the residuals of the regression model. Its value range is between 0 and 4. When the D-W value is close to 2, it indicates that there is no autocorrelation among the residuals. The D-W value of this model is 1.820, close to 2, indicating that there is no obvious autocorrelation problem among the residuals, further verifying the reliability of the regression model.

4.2 Discussion

4.2.1 Performance Expectancy Has a Significant Positive Impact on Students' Acceptance of AI Usage

From the perspectives of the Technology Acceptance Model (TAM), performance expectancy is regarded as one of the key factors influencing individuals' acceptance of new technologies. Performance expectancy refers to the degree to which an individual anticipates that using a particular technological system will enhance their work performance. In the educational context, for students, if they believe that using artificial intelligence (AI) can significantly improve learning efficiency, boost academic performance, and enhance future career competitiveness, that is, they expect AI to yield positive performance outcomes, they are more likely to hold a positive attitude towards AI and be willing to accept and use it. Based on this, this study proposes the hypothesis that performance expectancy has a significant positive impact on students' acceptance of AI usage, aiming to explore the internal connection between students' inner expectations of AI performance and their actual acceptance behavior.

In the linear regression analysis results presented in Table 4.4, the non-standardized coefficient (B) value of performance expectancy is 0.147, the standardized coefficient (Beta) value is 0.048, and the p-value is 0.001**, indicating that at the 0.001 significance level, performance expectancy has a significant positive impact on students' acceptance of AI usage. The non-standardized coefficient implies that, while keeping other independent variables constant, for every one-unit increase in performance expectancy, the acceptance of AI usage increases by an average of 0.147 units. Although the standardized coefficient is relatively small, combined with the significance test results, it still clearly demonstrates that performance expectancy is an important factor influencing students' acceptance of AI.

There may be multiple mechanisms underlying the positive impact of performance expectancy on students' acceptance of AI usage. On the one hand, when students expect that AI can provide personalized learning resources to meet their different learning needs and paces, thereby improving learning outcomes, they will actively accept AI based on their desire for performance improvement. For example, AI-powered learning systems can intelligently recommend suitable exercises and learning materials according to students' learning situations, helping them master knowledge more efficiently. On the other hand, from the perspective of future career development, if students recognize the widespread application and importance of AI in various industries and believe that mastering AI-related skills can enhance their competitiveness in the future job market, they will also be more willing to accept and use AI to improve their expected career performance.

Given the significant positive impact of performance expectancy on students' acceptance of AI usage, educational practitioners should focus on enhancing students' awareness of AI performance. Schools and educational institutions can conduct relevant lectures, training courses, or practical activities to showcase specific application cases and positive effects of AI in learning and future career development, enabling students to directly perceive the performance improvements that AI can bring. At the same time, when promoting the application of AI, they should highlight its advantages in meeting students' personalized learning needs and improving learning efficiency, guiding students to form positive performance expectancy and thus increasing their acceptance and willingness to use AI.

4.2.2 Effort Expectancy Has a Significant Positive Impact on Students' Acceptance of AI Usage

Effort expectancy, originating from the Technology Acceptance Model, refers to the degree to which an individual anticipates the amount of effort required to use a particular technological system. When individuals believe that using a certain technology is relatively easy and does not require excessive effort, they are more likely to accept and use it; conversely, if they expect the usage process to be complex and require a great deal of energy, their acceptance may decrease. In the educational setting, students' effort expectancy regarding the use of AI will influence their acceptance attitude towards AI. If students find that AI is easy to operate and user-friendly, and can be seamlessly integrated into their learning process, they are more willing to accept and use it. Therefore, this study proposes the hypothesis that effort expectancy has a significant positive impact on students' acceptance of AI usage to delve into the role of effort expectancy in the process of students' acceptance of AI.

According to the regression results in Table 4.4, the non-standardized coefficient (B) value of effort expectancy is 0.164, the standardized coefficient (Beta) value is 0.067, and the p-value is 0.002**, indicating that at the 0.002 significance level, effort

expectancy has a significant positive impact on students' acceptance of AI usage. The non-standardized coefficient means that, with other conditions unchanged, for every one-unit increase in effort expectancy, the acceptance of AI usage increases by an average of 0.164 units. The standardized coefficient is relatively larger than that of performance expectancy, suggesting that effort expectancy holds a certain level of importance among the factors influencing students' acceptance of AI.

The positive impact of effort expectancy on students' acceptance of AI usage may be achieved through multiple pathways. Firstly, from the perspective of operational convenience, if the design of AI applications aligns with students' usage habits, featuring a user-friendly interface and simple operation procedures, students can quickly master the usage methods. In this case, they will perceive that using AI does not require excessive effort and are thus more willing to accept and use it. For example, some intelligent learning software has a clear and straightforward operation interface and intuitive navigation functions, allowing students to easily find the required learning resources. Secondly, learning cost is also an important factor influencing effort expectancy. If using AI does not require students to invest a large amount of time and energy in learning complex operation skills or theoretical knowledge, they will be more inclined to accept AI. In addition, when students encounter problems during the use of AI, timely and effective technical support and assistance can reduce their perceived effort in using AI and improve their acceptance.

Given the significant impact of effort expectancy on students' acceptance of AI usage, educational practitioners should focus on reducing the effort cost for students to use AI. When developing and applying AI educational products, it is essential to fully consider students' operational abilities and habits, design simple and easy-to-use interfaces and operation procedures, and avoid overly complex settings and functions.

4.2.3 Social Influence Has a Significant Positive Impact on Students' Acceptance of AI Usage

In the educational field, as part of a social group, students' attitudes towards accepting artificial intelligence (AI) are also influenced by social factors such as classmates, teachers, parents, and public opinion. When students observe that those around them are actively using AI and hold positive evaluations of it, they are more likely to be influenced by this social atmosphere, develop a favorable impression of AI, and be willing to accept and use it. Based on this, this study proposes the hypothesis that social influence has a significant positive impact on students' acceptance of AI usage to reveal the important role of social factors in the process of students accepting AI.

The regression analysis results in Table 4.4 show that the non-standardized coefficient (B) value of social influence is 0.278, the standardized coefficient (Beta)

value is 0.285, and the p-value is 0.000**, indicating that at the 0.001 significance level, social influence has an extremely significant positive impact on students' acceptance of AI usage. The non-standardized coefficient implies that, with other independent variables unchanged, for every one-unit increase in social influence, the acceptance of AI usage increases by an average of 0.278 units. The standardized coefficient is the largest among the four independent variables, fully highlighting the key position of social influence in the process of students accepting AI.

The positive impact of social influence on students' acceptance of AI usage mainly operates through multiple mechanisms. From the perspective of peer influence, the mutual communication and demonstration among classmates have an important impact on students' behavioral choices. If students' classmates generally use AI for learning and share the positive experiences and outcomes of using AI, students are more likely to be influenced by their peers, follow their behaviors, and accept and use AI. Teachers, as guides in students' learning process, also have a significant demonstration effect on students through their attitudes and behaviors. When teachers actively promote and encourage students to use AI and apply AI to assist teaching, students are more likely to accept AI. In addition, parents' attitudes and support also influence students' decision-making. If parents recognize the value of AI and provide students with the conditions and encouragement to use AI, students will also be more willing to accept AI. Public opinion and media publicity can also create a social atmosphere that guides students to form positive cognitions and attitudes towards AI.

Given the significant positive impact of social influence on students' acceptance of AI usage, educational practitioners should fully leverage the role of social influence to promote students' acceptance of AI. Schools can organize communication activities among classmates, allowing students to share their experiences and insights in using AI and creating a favorable peer influence atmosphere. Teachers should actively apply AI in teaching, demonstrate the advantages and value of AI, and guide students to correctly understand and use AI.

4.2.4 Facilitating Conditions Have a Significant Positive Impact on Students' Acceptance of AI Usage

The theory of facilitating conditions suggests that the resources and support conditions required for an individual to use a particular technological system will influence their acceptance and use of the technology. In the educational context, the facilitating conditions for students to use AI include the availability of hardware equipment, the stability of the network environment, the accessibility of software, and relevant technical support. When students can easily access and use the resources and support required for AI, they are more likely to accept and use AI; conversely, if the facilitating conditions are inadequate, students may abandon using AI due to difficulties. Therefore, this study proposes the hypothesis that facilitating conditions

have a significant positive impact on students' acceptance of AI usage to explore the role of facilitating conditions in the process of students accepting AI.

According to the regression analysis results in Table 4.4, the non-standardized coefficient (B) value of facilitating conditions is 0.233, the standardized coefficient (Beta) value is 0.247, and the p-value is 0.000**, indicating that at the 0.001 significance level, facilitating conditions have a significant positive impact on students' acceptance of AI usage. The non-standardized coefficient implies that, while keeping other independent variables constant, for every one-unit increase in facilitating conditions, the acceptance of AI usage increases by an average of 0.233 units. The standardized coefficient is second only to that of social influence, suggesting that facilitating conditions are one of the important factors influencing students' acceptance of AI.

The positive impact of facilitating conditions on students' acceptance of AI usage is mainly reflected in multiple aspects. In terms of hardware equipment, if schools or students themselves possess well-performing devices suitable for running AI applications, such as computers and tablets, students can smoothly use AI for learning. The stability of the network environment is also crucial. A stable network can ensure that students do not encounter problems such as lagging or disconnections during the use of AI, guaranteeing the continuity and smoothness of learning. The accessibility of software is also a key factor. When students can easily download and install the required AI learning software or applications, they are more willing to try using them. In addition, timely and effective technical support can solve various problems students encounter during the use of AI, reducing the difficulty and risk of using AI and improving their acceptance.

Based on the significant impact of facilitating conditions on students' acceptance of AI usage, educational practitioners should focus on improving the facilitating conditions for students to use AI. Schools should increase investment in hardware equipment and provide students with sufficient and well-performing devices to ensure that students can smoothly use AI applications. At the same time, schools should strengthen campus network construction, improve network stability and speed, and create a good network environment for students. In terms of software, schools can cooperate with relevant enterprises to provide students with free or discounted downloads and usage services for AI learning software, facilitating students' access to the required software resources. In addition, establishing a professional technical support team to promptly solve problems students encounter during the use of AI can provide students with comprehensive technical support and improve the convenience and acceptance of students using AI.

Table 4.5 Hypothesis Test Results

NO.	Hypothesis	Result
H1	Performance expectancy has a significant positive impact on students' acceptance of AI usage.	Supported

H2	Effort expectancy has a significant positive impact on students' acceptance of AI usage.	Supported
H3	Social influence has a significant positive impact on students' acceptance of AI usage.	Supported
H4	Facilitating conditions have a significant positive impact on students' acceptance of AI usage.	Supported



Chapter 5 Conclusion and Recommendation

5.1 Conclusion

This study, based on the Unified Theory of Acceptance and Use of Technology (UTAUT), focused on the influencing factors of students' acceptance of AI usage at Pingdingshan Vocational College. By constructing a structural model and designing a questionnaire for empirical research, it delved into the internal connections and mechanisms of action between the four core factors—performance expectancy, effort expectancy, social influence, and facilitating conditions—and students' acceptance of AI usage at Pingdingshan Vocational College.

In terms of research methodology, a quantitative research approach was adopted. A total of 400 questionnaires were distributed to students at Pingdingshan Vocational College, and ultimately 377 valid questionnaires were collected, with an effective response rate of 94.25%. This provided rich and reliable data support for the study.

The research results indicated that performance expectancy, effort expectancy, social influence, and facilitating conditions all have a significant impact on students' acceptance of AI usage at Pingdingshan Vocational College. Specifically, regarding performance expectancy, when students expect AI to enhance learning efficiency, improve learning outcomes, or bring other positive benefits, their willingness to accept AI significantly increases. This shows that students have a clear cognition and expectation of the practical value of AI, and the higher the practical value, the higher the acceptance. At the level of effort expectancy, if students believe that using AI technology is simple and easy to master, without requiring excessive time and effort to learn and adapt, their likelihood of accepting AI will be greatly enhanced. This suggests that reducing the usage threshold and improving the convenience of use are crucial for increasing student acceptance. In terms of social influence, the attitudes and behaviors of groups around students, such as classmates and teachers, towards AI have an important impact on them. When those around them actively use and recommend AI, students are more likely to be influenced and thus increase their own acceptance. This reflects the guiding and demonstrative role of the social environment in the process of students accepting new technologies. Regarding facilitating conditions, the technical support, resource guarantees, and a good network environment provided by the school can create favorable conditions for students to use AI, reduce obstacles and troubles during the use process, and thereby enhance students' acceptance of AI usage.

This study not only enriches the application of the UTAUT in the educational field, providing theoretical references and practical bases for subsequent related research, but also offers important insights for Pingdingshan Vocational College and other vocational colleges in promoting and applying AI technology. Based on these influencing factors, schools can take targeted measures, such as strengthening the

publicity and education on the practical value of AI, optimizing the operational design of AI products, creating a positive social influence atmosphere, and improving the construction of facilitating conditions, to increase students' acceptance and usage rate of AI and promote the effective application and in-depth development of AI technology in the educational field.

5.2 Recommendation

5.2.1 Cultivate Students' Internal Driving Forces for the Application of Intelligent Technologies

(1) Stimulate students' intrinsic motivation to accept intelligent technologies by meeting performance expectancy

In the context of the intelligent era, mastering AI technology has become a key competitive advantage in individual career development. To enhance students' cognitive level and learning enthusiasm for technology, schools can adopt the following series of measures.

From the perspectives of teachers and schools: First, teachers and schools should strengthen their understanding of the industry. Schools can organize special lectures, industry seminars, and enterprise open days to enable students to gain an in-depth understanding of the practical application scenarios of AI technology and industry development trends. For example, schools can invite industry leaders and technical experts to deliver a series of lectures to improve students' cognitive level of AI technology. Second, teachers and schools should conduct career planning guidance. Schools need to plan intelligent technology learning paths for students in accordance with the national AI industry development plan to help them clearly define their career development directions. Third, teachers and schools should leverage the exemplary effect. Schools can invite outstanding alumni to share their career growth experiences to enhance students' identification with intelligent technologies and boost their learning motivation.

From the perspective of students themselves, the design and implementation of personalized performance goals are crucial. First is hierarchical goal design. Schools should formulate differentiated learning goals based on students' existing foundational knowledge and their respective interests. Second is intelligent learning analysis. By introducing learning analysis systems, schools can track students' learning progress in real-time and dynamically adjust the difficulty of goals according to actual situations. Third is periodic assessment and feedback. Through regular assessments and feedback, schools can help students clarify their growth paths.

(2) Maintain students' overt behaviors in accepting intelligent technologies by improving effort expectancy

Creating personalized learning resources is key to meeting students' differentiated learning needs and improving their learning effectiveness. The specific implementation strategies are as follows: First, schools should build a diversified learning resource library containing various forms of resources. Schools need to integrate online courses, teaching videos, e-books, case libraries, and other types of resources to construct an intelligent learning resource platform. Second, schools should carry out the development and sharing of school-based resources. Schools should encourage teachers and students to jointly develop school-based teaching materials and teaching cases to ensure that the resources closely align with actual teaching needs.

The stratified teaching strategy can effectively meet students' personalized learning needs. First, regarding student ability stratification and dynamic adjustment, schools can use entrance tests and daily assessments to divide students into three different levels: basic, intermediate, and advanced. Schools should employ a dynamic stratification mechanism to adjust the levels every semester based on students' performance. Second, differentiated tutoring and support measures should be implemented. Teachers can provide additional tutoring for students with weaker foundations and offer advanced learning content for students with surplus capacity. Third, the establishment of a mentorship system and learning groups. Teachers can set up a mentorship system and form learning groups to provide one-on-one or group-based tutoring.

5.2.2 Establish a School Support System for the Application of Intelligent Technologies

(1) Build a Comprehensive Support System

High-quality technical support plays a significant role in enhancing students' learning outcomes. In terms of intelligent teaching construction, schools should focus on building high-performance computer laboratories and technical training bases, and actively introduce advanced teaching tools such as VR/AR equipment. By constructing a technical training center, schools can provide students with authentic and diverse practical scenarios, effectively improving their practical abilities.

At the level of computing resources and technical support, schools need to be equipped with high-performance GPU servers to meet the experimental requirements of machine learning and other tasks with high computational demands. Meanwhile, schools should form a professional technical support team to provide timely equipment maintenance and technical guidance for students, helping them quickly

resolve technical issues encountered during use. To enhance the technological application capabilities of teachers and students, schools should regularly organize technical training activities for both groups. The training content can cover the use of AI tools, the operation of programming platforms, etc. Through systematic and professional training, schools can ensure that teachers and students can proficiently use relevant technologies, thereby improving the overall level of technological application.

Enriching and optimizing digital learning resources is crucial for meeting students' personalized needs and improving learning efficiency. Schools should build a multi-level learning resource library, integrate high-quality resources from both domestic and foreign sources, and form a resource system covering various fields of intelligent technologies. Expanding practical and internship opportunities is a key way to enhance students' technological application capabilities, and school-enterprise cooperation is an important means to achieve this goal. Schools should actively cooperate with enterprises to provide students with more practical and internship opportunities, thereby improving their competitiveness. To build a comprehensive support system, schools need to advance in a coordinated manner from three dimensions: infrastructure, learning resources, and practical opportunities. By optimizing technical support, enriching learning resources, and expanding practical opportunities, schools can effectively improve students' technological acceptance and employment competitiveness.

(2) Create a Multi-party Collaborative Support Environment

The government should establish a special fund for intelligent technology vocational education to provide financial support for schools in terms of equipment updates, curriculum development, and faculty training. The government needs to focus on strengthening the construction of supervision and evaluation mechanisms, intensifying supervision over intelligent technology education in secondary vocational schools, and ensuring that the curriculum system aligns with industrial needs. The government should actively build a school-enterprise cooperation platform to promote the establishment of joint laboratories or intelligent technology training bases between schools and enterprises.

Industry associations should formulate the "Technical Vocational Education Curriculum Standards," clarify core courses and competency requirements, and complete the development of curriculum standards and competency frameworks. Industry associations should actively promote teacher training and qualification certification to ensure that teachers possess professional capabilities. Industry associations should build competition platforms and conduct industry evaluations, establish intelligent technology competition platforms at the national or specific regional level, stimulate students' learning enthusiasm and innovative spirit, and promote the development of intelligent technology education.

The education bureau can conduct social publicity and public education through activities such as science and technology exhibitions and open classes to raise the public's awareness of intelligent technology education. The AI Science Popularization Week, organized by the education bureau, has, to a large extent, enhanced the public's recognition of intelligent technology education and created a favorable social atmosphere for its promotion. Schools should align curriculum content with enterprise needs, collaborate with enterprises to develop real projects, and ensure that the curriculum content meets market demands. Schools should strengthen employment guidance in emerging fields, encourage students to focus on emerging fields such as intelligent manufacturing and new energy, and broaden the path for students' future career development.

According to the theory of home-school cooperation and the educational ecology theory, family participation is a crucial supportive factor in students' growth process, and home-school cooperation has a positive effect on improving students' learning outcomes. Schools should establish a home-school cooperation mechanism and strengthen communication between home and school through various activities such as parent-teacher meetings and open days. Schools can carry out family science and technology activities to improve parents' awareness of intelligent technologies, thereby stimulating students' learning interest. Schools should pay attention to students' mental health and provide emotional support. In conclusion, to optimize students' acceptance of intelligent technologies, the government, industry, society, and families need to make concerted efforts.

5.2.3 Promote the Intelligent Upgrading of the School's Management Support System

(1) Build a Symbiotic Intelligent Governance System

The construction of an intelligent governance system in schools is a key task in the digital transformation of education. Its essential significance lies in achieving a deep integration of technology empowerment, management innovation, and educational objectives. Schools need to uphold the concept of symbiosis, promote the intelligent reconstruction of the educational ecosystem, and comprehensively improve management efficiency and students' technological literacy by applying data-driven and intelligent technologies. In the field of data resource integration, schools need to establish a cross-departmental data sharing and analysis platform. By leveraging big data and artificial intelligence technologies, they can deeply mine data on students' learning behaviors and construct educational data portraits that encompass multiple dimensions such as interests, preferences, and skill mastery. At the level of management process optimization, schools need to build an intelligent decision support system. Schools can rely on it to dynamically adjust curriculum settings, teaching plans, and faculty allocation. Additionally, by introducing intelligent office

systems, they can promote the automation of core business processes, shift the management focus to educational quality monitoring and student literacy development, and comprehensively enhance the intelligence level and operational efficiency of school governance.

(2) Optimize Information Infrastructure

The construction of infrastructure is a key core element supporting intelligent teaching. In the current context of transformation, schools need to quickly adapt to the technological system brought by the times and build a high-quality learning environment for students. The specific implementation paths are as follows:

Firstly, in the field of network infrastructure construction, schools need to focus on building a campus network system that is high-speed, stable, and fully covered, providing support for large-scale concurrent access and high-quality data transmission. Schools can deploy a 10-gigabit backbone network and a 5G campus dedicated network to achieve comprehensive wireless coverage in teaching areas, effectively supporting new teaching models such as online teaching and remote practical training.

Secondly, for the construction of a smart teaching environment, schools need to equip themselves with intelligent teaching terminal devices, such as 4K ultra-high-definition interactive electronic whiteboards, holographic projection systems, and VR/AR immersive learning devices. By building smart classrooms, schools can enhance classroom interaction and participation and improve students' knowledge mastery. When constructing data platforms, schools should build distributed data centers and hybrid cloud platforms. This approach enables centralized storage and management of teaching resources. Vocational and technical schools can deploy educational big data platforms to integrate relevant teaching resources and provide teachers and students with convenient data access and analysis services, thereby supporting the intelligent recommendation of personalized learning paths.

(3) Enhance Teachers' Artificial Intelligence Literacy

Improving teachers' artificial intelligence literacy is crucial for promoting the application of intelligent technologies in the field of education. The enhancement of teachers' AI literacy is mainly manifested in three dimensions. In terms of technological cognition, teachers need to establish a basic cognitive framework for artificial intelligence technologies, involving an understanding of core concepts such as machine learning and deep learning, mastering the operation methods of common AI tools, and being aware of the application potential of AI technologies in educational scenarios.

In the field of instructional design, teachers should possess the ability to integrate AI technology into curriculum design. This specifically includes developing

intelligent teaching resources, designing personalized learning paths, and adjusting teaching strategies based on learning analytics. At the level of ethical cognition, teachers need to establish correct ethical concepts regarding the application of AI technology. This involves protecting data privacy, recognizing algorithm fairness, and grasping the boundaries of human-machine collaboration. In conclusion, enhancing teachers' artificial intelligence literacy is not merely about cultivating technical capabilities but rather a systematic project encompassing technological cognition, instructional design ability, and ethical awareness. Only by comprehensively improving teachers' AI literacy can schools truly achieve a deep integration of intelligent technologies with education and teaching, and promote the sustainable development of educational digital transformation.

5.3 Further Study

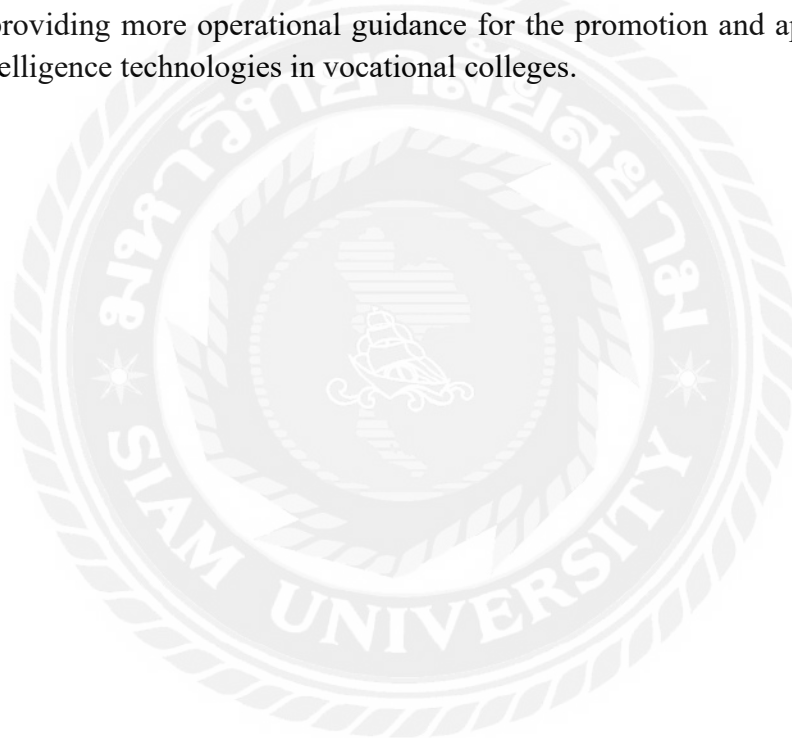
Although this study conducted a relatively comprehensive exploration of the influencing factors on students' acceptance of AI usage at Pingdingshan Vocational College and achieved certain results, there are still some limitations, providing directions and space for subsequent research.

This study only took students from Pingdingshan Vocational College as the survey subjects, and the representativeness and breadth of the sample have certain limitations. Students from vocational colleges in different regions and at different levels may have differences in knowledge backgrounds, learning environments, and cultural atmospheres, which may affect their acceptance of artificial intelligence. Subsequent research can expand the sample scope to include students from vocational colleges in more regions and at different levels, and even extend to the student population of general higher education institutions. Through comparative analysis, it can further reveal the commonalities and differences in the influencing factors on the acceptance of AI usage among different student groups, enhancing the universality of the research conclusions.

This study was mainly based on the Unified Theory of Acceptance and Use of Technology (UTAUT), focusing on the impact of four core factors—performance expectancy, effort expectancy, social influence, and facilitating conditions—on students' acceptance of AI usage. However, the acceptance of AI usage is a complex phenomenon that may also be influenced by many other factors, such as personal innovation ability, openness to emerging technologies, and awareness of artificial intelligence ethics. Subsequent research can further explore and introduce more potential influencing factors, construct a more comprehensive and detailed theoretical model, and delve into the interaction mechanisms among various factors to more accurately explain the formation process of students' acceptance of AI usage.

This study adopted a cross-sectional research design, which can only reflect the situation of students' acceptance of AI usage and its influencing factors at a specific point in time. However, students' acceptance of artificial intelligence may change over time, with technological development and the accumulation of their own experiences. Subsequent research can adopt a longitudinal research design, conduct long-term follow-up surveys on students, observe the dynamic change trends of their acceptance of AI usage, analyze the key factors influencing their acceptance at different stages, and provide a basis for formulating more targeted and timely intervention strategies.

Based on the research results, this study proposes a series of strategic suggestions for optimizing students' acceptance of AI usage, but these suggestions have not yet been empirically tested. Subsequent research can design specific intervention plans for these suggestions and implement and evaluate them in actual educational scenarios to verify the effectiveness and feasibility of the intervention strategies, providing more operational guidance for the promotion and application of artificial intelligence technologies in vocational colleges.



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Appendix

Questionnaire on the Impact of School Management Support on Students' Acceptance of Intelligent Technologies

Dear Students,

Hello! Thank you very much for taking the time to participate in our survey. There are no right or wrong answers; you simply need to fill in the questionnaire based on your actual circumstances. Your assistance is greatly appreciated. This study adopts an anonymous response format, and I promise that the questionnaire data and analysis results will be used solely for academic research purposes. I will strictly maintain confidentiality and properly safeguard your information. Please feel free to fill out the questionnaire with peace of mind. Thank you!

With the continuous development of technologies such as artificial intelligence (AI), schools of all types and industries are emphasizing the use of AI to drive performance. AI literacy has become an essential skill for contemporary students, and enhancing students' AI literacy is a necessary path towards transitioning from a country with a large internet user base to a global internet powerhouse. This questionnaire is designed to investigate students' acceptance of technologies in the era of intelligence and the role of school management support. The survey results will contribute to promoting the improvement of students' AI literacy. Thank you once again for your support!

Part I Personal Information

Your gender:

- ☐ Male
- ☐ Female

Your grade level:

- ☐ First Year
- ☐ Second Year
- ☐ Third Year

The nature of your major:

- ☐ Liberal Arts and Humanities
- ☐ Science and Engineering

The nature of your school:

- ☐ Public
- ☐ Private

Your household registration:

- ☐ Rural
- ☐ Urban

Part II:

Please judge to what extent you agree with the following statement; choose the most appropriate option, and mark the corresponding number "√." The questionnaire used a Likert scale, ranging from 1 to 5 in which one indicates strongly disagree, two indicates relatively disagree, three indicates neutral, four indicates relatively agree, and five indicates strongly agree

Measuring Item	Strongly Disagree	Relatively Disagree	Neutral	Relatively Agree	Strongly Agree
Performance Expectancy					
I believe AI can stimulate my interest in professional learning.					
I think AI can help enhance my professional skills.					
I believe using AI for learning can improve my learning efficiency.					
I am willing to integrate AI into my future learning to enhance my competitiveness.					
Effort Expectancy					
I find it easy to obtain learning resources related to AI.					
I can easily master the basic operations of AI.					
I can receive help from teachers or classmates when using AI tools.					
Social Influence					
If my classmates use AI, I will also consider using it.					
If encouraged by my teachers, I will be more willing to use AI.					
If required by future jobs, I will integrate AI into my learning.					
Facilitating Conditions					

The hardware and resources provided by the school are sufficient to support AI learning.					
The technical support provided by the school can meet my AI learning needs.					
The school's infrastructure and network environment are suitable for AI learning.					
Acceptance of Artificial Intelligence Usage					
I believe it is necessary to introduce artificial intelligence technology into course learning or practical operations.					
I plan to actively increase the frequency of using artificial intelligence tools in the future.					
If the school fully promotes AI-assisted teaching, I will actively adapt and rely on such technology to complete my learning tasks.					
I am willing to recommend the use of artificial intelligence technology to classmates or friends to improve learning efficiency.					
Even if I encounter operational difficulties, I will overcome obstacles through learning and continue to use artificial intelligence technology.					
Artificial intelligence technology can significantly improve my					

learning outcomes and career competitiveness.					
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