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Study on the Necessity and Implementation Path of Artificial Intelligence General Education in Vocational Colleges from the Perspective of Core Literacy Cultivation

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Abstract: Currently, we have entered the era of artificial intelligence (AI). The rapid development and wide application of AI technology have exerted a profound impact on all fields of society. Against this backdrop, this paper conducts an in-depth analysis focusing on general education in AI. First, it expounds the necessity of AI general education in cultivating the core literacy of vocational college students. Then, it puts forward effective implementation paths for such general education. The purpose is to provide valuable references for promoting the reform and innovative development of vocational education.

Keywords: Vocational colleges; Core literacy; Artificial intelligence general education; Implementation path

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1. Introduction

In the era of artificial intelligence (AI), AI technology has been widely applied in various fields and has had a profound impact on people's lifestyles and production methods [1]. As an important base for cultivating technical and skilled talents in China, vocational colleges shoulder important responsibilities and missions. The cultivation of students' core literacy is the core goal of teaching in vocational colleges. Vocational colleges aim to develop students' core literacy through various means and methods, so that students can acquire the abilities and qualities necessary to adapt to the development of future society. However, in the context of the AI era, new requirements have been put forward for students' core literacy. The traditional educational model of vocational colleges can hardly meet the development needs of students. In this regard, vocational colleges should keep up with the trend of the times, take the needs of industrial development as the guide, dynamically adjust their educational and teaching strategies, and integrate AI general education into their curriculum systems. This will

help students improve their knowledge systems, more effectively develop their core literacy, and thus provide a solid talent foundation for the sustainable development of society and the country in the future [2].

2. The necessity of developing general education on artificial intelligence in vocational colleges

Developing general education on artificial intelligence in vocational colleges holds significant practical significance. This article provides a brief analysis from the following aspects.

2.1. It is an essential requirement to adapt to the development of artificial intelligence technology

At present, we have entered the era of artificial intelligence. The rapid development and wide application of artificial intelligence technology are reshaping various fields of society [3]. From the manufacturing sector to the education sector, and from the transportation sector to the financial sector, artificial intelligence technology is ubiquitous. As an important base for talent cultivation in China, if vocational colleges lack in-depth understanding and research on artificial intelligence and fail to incorporate it into their curriculum systems, it will severely restrict the cultivation of students' core literacy and also hinder their future employment and development to a certain extent. Therefore, to enable students to better meet the needs of industrial development and adapt more quickly to the AI-driven society, vocational colleges should attach importance to the development of general education on artificial intelligence.

2.2. It is a key measure to cultivate students' core literacy

Against the backdrop of the AI era, the core literacy of students in vocational colleges not only include professional knowledge and skills, but also encompass the ability to understand and apply new technologies and new equipment [4]. Actively developing general education on artificial intelligence can broaden students' horizons, strengthen their cognition, and help them improve their knowledge system, thereby effectively cultivating their core literacy. Through systematic learning, students can gain a deeper understanding and mastery of AI-related knowledge, laying a solid foundation for their future career development. At the same time, when vocational colleges carry out general education on artificial intelligence, they can also effectively cultivate students' innovative ability, problem-solving ability, and adaptability, enabling them to quickly adapt to the future work environment, cope with various challenges, and gain an initiative position in the future society. Therefore, actively developing general education on artificial intelligence in vocational colleges is a key measure to cultivate students' core literacy.

2.3. It is the core driver for promoting the innovative development of teaching in vocational colleges

The development of general education on artificial intelligence in vocational colleges also serves as the core driver for promoting the innovative development of teaching in these institutions [5]. The in-depth integration of artificial intelligence technology with education and teaching in colleges not only drives the innovation of teaching concepts, but also breaks through the limitations of traditional teaching in terms of time and space, enriches teaching models, and more effectively improves teaching effectiveness and the quality of talent cultivation. In terms of curriculum design, colleges can utilize artificial intelligence tools to provide abundant teaching resources for the implementation of education and teaching, as well as offer personalized guidance

and education to students, thereby meeting their diverse needs. Meanwhile, with the assistance of artificial intelligence technology, teachers can gain a more accurate understanding of students' learning progress and grasp their learning needs. This enables teachers to optimize teaching design, further enhance teaching effectiveness and quality, and ultimately achieve the innovative development of education and teaching.

2.4. It is a response to society's demand for high-quality talents

With the continuous development and progress of society, the demand for talents is also undergoing constant changes [6]. Against the backdrop of the AI era, the talents cultivated by traditional vocational colleges can hardly meet the development needs of enterprises. The development of general education on artificial intelligence in vocational colleges not only helps students improve their knowledge system and cultivate their professional literacy and comprehensive abilities, but also equips them with strong adaptability, enabling them to meet society's demand for high-quality talents.

3. Implementation paths of general education in artificial intelligence in vocational colleges

Vocational colleges play a crucial role in delivering general education in AI, as it holds significant value for students' development [7]. To implement such education more effectively and foster students' core literacy, colleges should take the following measures.

3.1. Restructuring the curriculum system to enhance teaching effectiveness

3.1.1. Developing a systematic curriculum system

Against the backdrop of the artificial intelligence era, a systematic general education curriculum system for artificial intelligence should be established based on the actual needs of students in institutions at different levels [8]. Specifically, for students at the junior college level, emphasis should be placed on imparting basic knowledge of artificial intelligence and training practical application skills, enabling them to understand basic concepts of artificial intelligence and common application scenarios, as well as to use artificial intelligence tools to complete simple tasks. For example, agricultural vocational colleges can offer courses such as "Fundamentals of Artificial Intelligence" and "Introduction to Agricultural Big Data Analysis." For undergraduate students, artificial intelligence should be deeply integrated with their majors, with a focus on cultivating their comprehensive literacy to equip them with the ability to build innovative business models empowered by artificial intelligence. Taking agricultural vocational colleges as an example, courses like "Smart Agricultural System Design" and "Agricultural Robot Technology and Application" can be offered.

3.1.2. Offering interdisciplinary integrated courses

To more effectively cultivate students' core literacy, vocational colleges should actively provide interdisciplinary integrated courses. These courses serve to break down disciplinary barriers and help students improve their knowledge systems [9]. For example, in the agriculture major, colleges can add courses such as "Agricultural Unmanned Irrigation Systems," "Artificial Intelligence and Smart Agriculture," and "Agricultural Internet of Things Technology." Through such courses, students can gain an understanding of the innovative applications of AI technology in the agricultural field, broaden their horizons, and develop their comprehensive literacy. At the same time, colleges should encourage teachers from different disciplines to cooperate in teaching, so as to promote the flow and sharing of knowledge.

3.2. Innovating teaching models to stimulate students' learning interest

Against the backdrop of the AI era, traditional teaching models can hardly meet the needs of students' development [10]. In response to this, teachers in colleges should keep pace with the times, take stimulating students' learning interest as the orientation, and adopt a variety of methods and means to enhance the effectiveness of general education in AI. Specifically, the following measures can be taken.

3.2.1. Adopting project-based learning

Teachers can introduce project-based learning into general AI education. Based on the teaching content, teaching objectives, and students' learning conditions, real-world projects can be used as carriers, requiring students to complete project tasks through group cooperation. This enables students to better learn and master AI knowledge in the process of solving problems, and cultivate their problem-solving abilities [11]. For example, in the agriculture major, a project titled "Design of an AI-Based Crop Pest and Disease Identification System" can be set up. Students are required to use technologies such as image recognition, machine learning, and sensors to design an intelligent and automated system for identifying crop pests and diseases. This approach not only stimulates students' interest in learning and helps them better master AI technologies, but also strengthens their teamwork and communication skills—achieving multiple goals with one effort.

3.2.2. Introducing case-based teaching

In teaching practice, teachers can incorporate representative cases of AI applications and guide students to research and analyze these cases, helping them understand how AI technology is applied in different fields and its effects [12]. For instance, the case of "Smart Farm Management System" can be selected. Teachers can guide students to explore the innovative applications of AI technology in farm management, and analyze its advantages and disadvantages based on their own experiences. This approach not only helps strengthen students' understanding, allowing them to grasp the value of AI technology in a more intuitive and concrete way, but also cultivates their critical thinking and innovation capabilities.

3.2.3. Conducting blended teaching

Teachers can also apply the blended teaching model to general AI education. By leveraging the abundant resources on online education platforms—such as teaching videos and typical cases—they can expand teaching formats, enrich teaching content, and enhance educational effectiveness. Meanwhile, students can access learning resources that best suit their individual needs, breaking free from the time and space constraints of traditional teaching to improve their learning outcomes. For example, video courses on basic AI knowledge can be provided on online platforms for students to learn independently before class; during in-person classes, teachers can then focus on answering students' questions, guiding them in in-depth discussions, and facilitating hands-on practice.

3.3. Strengthening faculty development to enhance teaching competence

Teachers are not only important organizers and participants of teaching activities, but also the core force in promoting teaching reform and cultivating students' core literacy [13]. Against the backdrop of the AI era, it is essential for vocational colleges to strengthen the development of their teaching faculty, improve their teaching standards, and lay a solid foundation for fostering students' core literacy.

3.3.1. Conducting teacher training

Colleges should regularly organize teachers to participate in specialized training programs on artificial

intelligence. The training content should cover, but not be limited to, AI technology theories, technology applications, and teaching methods, so as to improve teachers' teaching proficiency. At the same time, colleges can invite professionals and scholars in the field of artificial intelligence to the campus to deliver special lectures, host seminars, and other events. These activities aim to share advanced teaching concepts and models, help update teachers' perspectives, and enable them to master scientific and effective teaching methods and means.

3.3.2. Improving talent recruitment

Vocational colleges should also enhance their efforts in talent recruitment. By formulating talent recruitment plans, they can bring in a group of talents who have work experience in AI enterprises and possess outstanding teaching capabilities to teach at the colleges. This helps optimize the structure of the teaching faculty and improve the overall teaching standards. For example, colleges can establish cooperative relationships with AI enterprises and recruit technical backbones from these enterprises as part-time teachers. These part-time teachers can impart practical experience and the latest technological developments to students, bridging the gap between academic teaching and industry practice.

3.3.3. Establishing incentive mechanisms

To effectively stimulate teachers' enthusiasm in the general education of artificial intelligence, colleges should also establish incentive mechanisms [14]. On one hand, special funds can be set up to reward teachers who have performed excellently in the general education of artificial intelligence. On the other hand, the achievements of teachers in participating in AI-related training, curriculum development, and teaching practice can be incorporated into the evaluation system, serving as an important reference for professional title assessment, awards, and recognition.

In conclusion, through a variety of methods and means, vocational colleges should strengthen the construction of their teaching faculty, laying a solid foundation for improving the effectiveness of general education in artificial intelligence.

3.4. Improving the evaluation system to promote students' all-round development

Against the backdrop of the AI era, the traditional teaching evaluation system is incomplete, and its results can hardly reflect students' comprehensive abilities and real-level performance [15]. In this regard, it is necessary to improve the evaluation system to promote students' all-round development.

3.4.1. Establishing diversified evaluation indicators

A diversified evaluation indicator system should be established, which covers but is not limited to dimensions such as knowledge, skills, and attitude. The knowledge dimension mainly assesses students' mastery of basic artificial intelligence knowledge; the skills dimension primarily evaluates students' proficiency in using artificial intelligence tools; and the attitude dimension focuses on gauging students' learning attitude towards artificial intelligence general education. By building such a diversified evaluation indicator system, students are assessed from multiple perspectives, thereby effectively enhancing the accuracy and scientificity of the evaluation results.

3.4.2. Adopting diversified evaluation methods

In the past, the main evaluation methods primarily relied on assessments of students' theoretical knowledge

and skill application. This resulted in a relatively single evaluation approach, making it difficult to enhance the comprehensiveness of evaluation results. In response, a variety of evaluation methods can be adopted, such as student self-assessment, peer assessment, and the combination of process-oriented evaluation and result-oriented evaluation. These methods can effectively improve the comprehensiveness and objectivity of evaluation. For example, after students complete a project task, they can be organized to conduct self-assessment and peer assessment. This allows students to reflect on their own learning process and achievements, while also understanding the strengths and weaknesses of others. Teachers can then provide a comprehensive evaluation based on the results of students' self-assessment and peer assessment, combined with process-oriented and result-oriented evaluations.

3.4.3. Establishing students' electronic growth portfolios

Teachers can also leverage digital technology to create electronic growth portfolios for students' AI literacy. These portfolios record a wide range of student data in detail, such as academic scores, practical reports, and project reports. This approach helps teachers gain a clear understanding of students' learning status and progress, and based on this information, provide targeted guidance and suggestions. At the same time, students can review their own learning trajectory, identify their strengths and weaknesses, adjust their learning strategies in a timely manner, and ultimately improve their learning outcomes.

4. Conclusion

In conclusion, from the perspective of cultivating the core literacy of students in vocational colleges, carrying out general education on AI holds significant practical significance. To this end, vocational colleges and teachers should adopt various methods and approaches to foster students' core literacy, enabling them to become high-quality talents that meet the needs of social development. In the future, with the continuous development and application of AI technology, vocational colleges need to further deepen the reform of education and teaching, constantly explore and innovate the implementation paths of AI general education, and contribute to China's social modernization drive.

Disclosure statement

The author declares no conflict of interest.

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