

Research on the Practical Pathways of Integrating Artificial Intelligence Technology into Vocational School Professional Classroom Teaching

Xueqi Li

Zaozhuang Vocational College of Science and Technology, Zaozhuang, Shandong, China, 277599

Abstract: Modern education emphasizes the comprehensive development of learners, requiring continuous innovation in technology and management to adapt to societal changes and talent growth demands, thereby enhancing the quality of educational practices. This paper begins with the challenges in traditional vocational school professional classroom teaching, exploring the practical value and pathways of integrating artificial intelligence technology into vocational school professional classroom instruction. It discusses the construction of an informatized teaching system, improving the integration of technology and classroom content, emphasizing multi-theory synergy, highlighting the flexibility of technological application, and optimizing the teaching management team, all aimed at serving future vocational school professional classroom teaching efforts.

Keywords: artificial intelligence technology; vocational schools; professional classroom teaching; practical path

1. Preface

Vocational schools are degree based vocational education institutions and an important component of China's modern education system. They mainly provide vocational and technical education to students, while also taking into account theoretical guidance. It is generally believed that vocational schools originated in Europe. In China, vocational colleges are divided into three categories: primary, intermediate, and advanced, with a total of over 8400 schools and more than 28 million students. On the one hand, this indicates the vigorous development trend of vocational education in China, which can provide a large number of vocational and technical talents for society. On the other hand, it also requires strengthening education work, constantly managing education according to social changes and talent growth needs, and seeking more breakthroughs and improvements[1]. In this context, artificial intelligence technology has received more attention. This technology mainly utilizes modern equipment and theory to simulate and extend human functions, in order to optimize and replace some traditional manual work processes. In the field of education, the value of artificial intelligence technology has also received attention, and exploring its practical advantages and paths for integration into vocational school professional classroom teaching has certain practical significance.

2. Problems in traditional vocational school professional classroom teaching

2.1 Insufficient resources

From the current perspective, traditional vocational schools' professional classroom teaching work has the characteristics of mature models and rich experience, which can match the general needs of students' growth. But the continuous development of modern society has led to changes in the demand for talent, which also requires vocational schools to make more adjustments. At present, a considerable number of vocational schools organize teaching with textbooks and a small amount of auxiliary resources as the core, with a small total amount and low richness, which is not conducive to students mastering more knowledge and skills. For students majoring in landscape design, textbooks mainly provide basic design principles, requirements, and limited cases. Most complex and three-dimensional design content is difficult to fully present through traditional books and textbooks, and students' absorption and mastery of relevant knowledge are therefore not ideal.

2.2 Significant limitations in time and space

Vocational schools mainly focus on improving students' practical skills, with theoretical teaching as an auxiliary. Most majors require frequent participation in practice to enhance students' practical abilities. Currently, a considerable number of vocational colleges help students improve their skills through on campus and classroom guidance, which has the characteristics of high concentration and high knowledge density. However, it also brings about limitations in terms of time and space. After leaving the classroom and campus, most students are unable to receive continuous guidance. If some students have a strong interest in learning about "fashion design" or have a weak grasp of certain knowledge, they can generally only conduct research through self-study and cannot continue to receive professional guidance. Due to the difficulty of professional knowledge, their learning and growth efficiency may not reach the optimal level.

2.3 Lack of initiative among students

Vocational colleges provide rich knowledge content, diverse professional knowledge and other basic knowledge. At the same time, modern society favors compound talents, which requires students to invest more energy in mastering different knowledge and improve their initiative to ensure the absorption level of knowledge. Currently, a considerable number of vocational schools fail to attach importance to stimulating students' initiative in the process of organizing teaching. For example, some schools believe that students are generally over 16 or 18 years old, have the awareness and ability to independently manage themselves, and whether they actively learn does not require school intervention. Some students only provide simple encouragement and guidance to students, without fully understanding whether they actively learn after class and the quality of their active learning, which has limited management value.

2.4 Teachers face excessive work pressure

China has a large number of vocational colleges and a large student base. As of the end of 2025, the number of full-time teachers in each vocational school is about 1.46 million, with a teacher-student ratio of about 1:20, which is lower than most developed countries and some developing countries. The teacher-student ratio in vocational colleges in countries such as France and Greece is around 1:8, while in countries such as Germany, Spain, and the United Kingdom it ranges from 1:10 to 1:12. In the United States and Japan, it is around 1:14. Teachers have relatively less teaching pressure and more ample time[2]. At the same time, vocational school teachers in China face significant work pressure and need to participate in scientific research activities in addition to their regular teaching work, which further depletes their energy and affects their personal growth and professional happiness. This can also have indirect negative effects on students' growth.

3. The practical value of integrating artificial intelligence technology into professional classroom teaching in vocational schools

3.1 Abundant resources

The integration of artificial intelligence technology into vocational school professional classroom teaching has the advantage of abundant resources. From a common perspective, most artificial intelligence service providers rely on cloud technology and big data technology to provide services. Users can access the services through mobile intelligent terminals, personal computers, and other organizations. Common artificial intelligence service providers include Qianwen, Doubao, DEEPSEEK, etc. Quark and other overseas service providers can also provide intelligent services to domestic users. After users input their requirements, artificial intelligence service providers can provide massive resources based on relevant information, or use generative technology to integrate resources and directly provide structured and semi-structured resources to users, including teachers and students from vocational schools. This significantly improves the richness of resources during classroom teaching, broadens students' horizons, and guides them to access and master more knowledge.

3.2 Scalability

Unlike traditional classroom teaching methods, the application of artificial intelligence technology

is not generally limited by time and space. With access to hardware and network services, teachers and students can use artificial intelligence technology to organize learning and participate in teaching at any time. As mentioned earlier in the "Fashion Design" major, students develop an interest in classroom content or other knowledge. Even if they are outside the scope of the classroom, they can still organize their learning through artificial intelligence technology. After entering relevant questions and knowledge fragments, they can be analyzed by artificial intelligence technology to form semi-structured and highly structured answers, quickly completing problem processing, including general text content, as well as images, videos, etc., which can further improve presentation quality[3]. It is worth noting that most artificial intelligence service providers can provide services 24 hours a day, which improves the flexibility of student learning.

3.3 Enhancing students' initiative

The integration of artificial intelligence technology into vocational school professional classroom teaching practice can enhance students' initiative in learning, which is reflected in two aspects. Firstly, smartphones and personal computers are widely configured and applied, and students can use intelligent tools at any time, and most of them have the habit of applying intelligent tools. Existing research shows that the penetration rates of smartphones and personal computers among secondary vocational school students are around 95% and 35%, respectively, while those among higher vocational school students are around 99% and 55%, respectively, which basically meet the application needs of artificial intelligence technology. Secondly, the application of artificial intelligence technology is simple and efficient, which can generate a sense of learning achievement and guide students to think more, thereby enhancing their initiative. If students inquire about "commonly used software in modern landscape design", artificial intelligence technology can provide other services related to the problem while providing software information. Students can choose whether to view it or not, which can stimulate their learning initiative.

3.4 Reduce teachers' work pressure

In the professional classroom teaching practice of vocational schools, the application of artificial intelligence technology can help alleviate the work pressure of teachers. This effect is reflected in three aspects. Firstly, students can use artificial intelligence technology to complete simple problem analysis and general knowledge retrieval, and teachers do not need to answer all questions for students in detail. As a result, the teaching pressure in both the classroom and post class stages is reduced. Secondly, artificial intelligence can serve teachers to participate in teaching and research work, as well as to prepare lessons, reducing the energy and time consumption of teachers to independently complete basic work through modern technology. Thirdly, the application of artificial intelligence technology is relatively standardized, and student learning experience, teacher teaching experience, etc. can be quickly shared with the support of artificial intelligence technology. Moreover, the adaptability of artificial intelligence technology to other theories and teaching methods is high, which can meet the needs of different technologies and theories linkage, further improve teaching efficiency, and indirectly reduce the workload of teachers.

4. The practical path of integrating artificial intelligence technology into vocational school professional classroom teaching

4.1 Building an information-based teaching system

Attempting to apply artificial intelligence technology and leverage its positive role in professional classroom teaching in vocational schools requires the establishment of an information-based teaching system. From the perspective of vocational colleges, this work focuses on two aspects: software and hardware configuration, and improving the work ability of the academic team.

In terms of software and hardware configuration, the application of artificial intelligence technology in teaching work is concentrated on the terminal, without the need for schools to independently purchase computers or build remote homework platforms. Therefore, vocational colleges only need to configure computers or integrated teaching equipment in multimedia construction and information classrooms according to the general needs of teaching work. In terms of software configuration, intelligent tools can be installed on hardware devices and work systems, and sufficient bandwidth resources can be configured for each classroom and student apartment to match the needs of students

for remote learning and classroom applications. In terms of academic team building, each school should select personnel with both management ability and technical level, enrich them to management positions, and form a team that can routinely complete academic management and artificial intelligence application management, serving teaching work and the subsequent development of the school. If necessary, outsourcing can also be used, and a specialized third party can be hired to build an information-based teaching system for the school.

4.2 Improving the integration quality of technology and classroom content

There are many teaching projects and contents in vocational schools. In the process of applying artificial intelligence technology, it is necessary to avoid over generalization and improve the integration quality of technology and classroom content. In practical work, it is necessary to combine the classroom teaching needs of various majors and the common characteristics of artificial intelligence technology to enhance the effectiveness of technology application.

Taking the "Marketing" major as an example, the application of artificial intelligence technology can be approached from three aspects: first, the integration of basic knowledge; second, case processing and diversified presentation; and third, practical simulation. The characteristic of this major is rich in theory, but it needs to be tested through frequent practical activities. Teachers can use artificial intelligence technology to search for relevant theories in the pre class stage, and use generative artificial intelligence to compress core theories, so that they can be presented to students in a more concise way. On this basis, each school should analyze the current teaching content according to the teaching progress and form cases, such as 4P theory, 4PS theory, Boston matrix, etc., using artificial intelligence to present them through diversified cases and match the learning needs of different students. After completing the theoretical teaching content, artificial intelligence technology is used to process cases and generate virtual practice scenarios, such as enterprise management scenarios, production planning scenarios for different products, etc. Students participate in simulations using smartphones and personal computers to complete evaluation and simulation tracking using artificial intelligence technology, ensuring high-quality integration of technology and professional content.

4.3 Emphasize the linkage of multiple theories

The application threshold of artificial intelligence technology is relatively low and has high adaptability. Various modern teaching theories can be linked with artificial intelligence technology. In the future, vocational schools should also pay attention to the process of organizing classroom teaching to further demonstrate their technological advantages. Optional theories include case-based teaching method, micro lesson mode, flipped classroom, etc.

Taking flipped classroom as an example, the linkage between this model and artificial intelligence technology can be divided into three key stages. One is the preparation stage, which is mainly completed by teachers. Based on the teaching plan, established goals, etc., teachers collect content related to professional classroom teaching, integrate it, and send it to students online in the form of a file package. Students can use intelligent technology to further organize the relevant content, clarify key knowledge, and complete basic knowledge learning with the help of pre class and holiday time. The second is the classroom stage, which requires teachers and students to participate together, with teachers as guides and students as core subjects, using case studies to carry out teaching activities. Vocational colleges can use artificial intelligence technology to form two-dimensional and three-dimensional models according to teaching needs, gradually completing knowledge teaching. During this process, teachers should organize discussion activities based on students' needs, encouraging them to analyze simple problems using artificial intelligence technology to further enhance the efficiency of classroom time utilization. The third is the post class summary section, with students as the core and teachers providing targeted guidance only after students have raised their needs. If students have a deviation in their understanding of "problematic products" and "star products", and the information provided by artificial intelligence is relatively unfamiliar and difficult to understand, teachers can guide students to use intelligent technology to retrieve mature cases, deepen their understanding, or organize knowledge content and still send it to students in the form of data packets along with the next lesson's teaching content, taking into account the application of flipped classroom and student growth in the future[4].

4.4 Emphasize the flexibility of technology application

The application of artificial intelligence technology should focus on flexibility and leverage its advantages based on the specific situation of professional classroom teaching in vocational schools and the specific learning situation of students.

Taking the classroom teaching process described above as an example, students participate in learning and organize practice as the main body, but there are difficulties in utilizing some knowledge, such as students' inability to understand architectural design in three-dimensional mode, doubts about shear wall configuration parameters, and teachers' failure to prepare for relevant knowledge. To avoid learning delays, teachers can guide students to use artificial intelligence technology to analyze doubts, directly enter information such as learning needs and confusions, and ask AI technology to quickly help students understand the configuration requirements, parameter standards, and common principles of architectural design for shear walls, and then organize subsequent teaching work.

5. Conclusion

In summary, the integration of artificial intelligence technology into professional classroom teaching in vocational schools has certain practical significance and should be given attention in specific work. The traditional teaching mode of vocational schools is experienced and stable, but there are problems such as limited resources, insufficient extensibility, lack of student initiative, and high work pressure on teachers. By using artificial intelligence technology to provide assistance, the above problems can be controlled to a certain extent. In order to effectively leverage technological advantages, it is recommended that vocational schools organize professional teaching based on the characteristics of artificial intelligence technology and general teaching needs, complete the construction of information-based teaching systems, emphasize the high-quality integration of technology and classroom content, and provide support and assistance with different theories to enable artificial intelligence technology to play a flexible role. Finally, vocational colleges should also optimize their academic management teams, starting from the perspectives of conventional and technical management, to serve the application of technology and the growth of students.

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