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Paradigm Reconstruction and Path Exploration of AI Practical Teaching Driven by Digital Transformation

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ABSTRACT
Driven by the digital transformation, artificial intelligence (AI) technology is deeply integrating into the field of education, and driving systematic changes in practical teaching. This paper takes the paradigm reconstruction and path exploration of the integration of AI technology and practical teaching as the research object, and constructs a progressive analytical framework from the aspects of cognitive transformation, behavioral application, and effect intensification. Firstly, it analyzes the transformation of teaching philosophies from the traditional model to intelligent cognition, and points out that the renewal of the concept of teacher-student collaboration and the cultural recognition of the digital education ecosystem constitute the psychological basis for accepting the new paradigm. Secondly, it elaborates on the implementation path from translating concepts into specific teaching behaviors, focusing on the rational selection of intelligent tools and platform integration, innovative application of blended teaching models, and targeted improvement of teachers' and students' digital literacy. Finally, it reveals the effectiveness of this transformation in improving teaching quality, achieving precision and personalized teaching, enhancing students' learning experience and interaction participation, and promoting the construction of innovation model for sustainable education. From concept enlightenment to behavior transformation and then to performance release, the overall research presents the complete thread of the transformation and upgrading of practical teaching in the AI era, and provides practical guidance for the orderly implementation of AI practical teaching in the context of digital transformation.

KEYWORDS
Digital transformation; AI; Practical teaching; Paradigm reconstruction

1 Introduction

With the vigorous development of the digital economy and the rapid iteration of artificial intelligence (AI) technology, the education sector is undergoing an unprecedented and profound transformation. Digital transformation has become an important engine driving the modernization of education, and AI technology, as the core driving force, is reshaping the form and mode of traditional practical teaching. Currently, practical teaching is at a transformation stage from knowledge imparting to competence cultivation, from standardized teaching to personalized learning, and from single skill training to comprehensive literacy development. Therefore, an urgent need arises to explore new teaching paradigms that meet the requirements of the new era. Under the era background of digital transformation, this paper takes the in-depth integration of AI technology and practical teaching as the research focus, and establishes an analytical framework from the aspects of cognitive transformation, behavioral application, and effect intensification to comprehensively study the paradigm reconstruction and implementation paths of AI practical teaching. It aims to provide theoretical support and practical guidance for the digital transformation of education, promote the overall improvement of talent training quality, and thereby serve the innovation-driven development strategy in China.

2 Cognitive Transformation: Acceptance Foundation of AI Practical Teaching

2.1 Reshape Teaching Philosophies and Realize the Transition of Traditional Intelligent Cognition

In the context of the continuous penetration of digital transformation into the education sector, reshaping teaching philosophies and achieving the transition from traditional intelligent cognition to AI-era cognition is a prerequisite for the smooth implementation of AI practical teaching [1]. AI practical teaching is intended to establish a new teaching philosophy centered on students and with technology as the enabling carrier. Meanwhile, teachers should change their cognition and clearly recognize that AI technology is an important foundation for optimizing the teaching process, accurately matching learning needs, and improving the quality of practical teaching. Therefore, educators are requested to strike an appropriate balance between technology and teaching. They should not only be adept at leveraging the advantages of AI in data statistics, personalized recommendation, and practical scenario simulation, but also give full play to their unique roles in value guidance, thinking inspiration, and emotional communication. At the same time, it is necessary to guide the teaching team to reach a consensus to focus the core goal of AI practical teaching on the cultivation of students' practical abilities, innovative thinking, and digital literacy, thus promoting the transformation of teaching philosophies from the conventional knowledge-transmission-oriented model to a competence-development-

oriented model, and laying a solid ideological foundation for the comprehensive implementation of AI practical teaching.

2.2 Update the Perceptions of Teachers and Students and Build a Synergistic Cognition of Mutual Improvement in Teaching and Learning

To promote AI practical teaching, it is necessary to simultaneously update the perceptions of teachers and students, and form a new type of cognitive relationship of mutual improvement in teaching and learning and common development. In the era of AI, a great deal of knowledge-based content can be easily accessed through technological tools [2], while the unique value of teachers lies mainly in guiding the learning direction, stimulating students' interest, cultivating critical thinking and ethical awareness, and designing challenging tasks. As a result, teachers need to adopt a positive attitude towards changes in the era, overcome their fear or resistance to new technologies, and position themselves as organizers, collaborators, and enablers of learning. In addition, through continuous learning, they should master the basic principles of AI and its educational applications, then confidently apply the technology to the classroom, and effectively guide students. In AI practical teaching, students should use intelligent tools to assist themselves in data analysis, simulation analysis, or solution generation. This new type of teacher-student relationship emphasizes mutual learning and joint progress. Teachers acquire new cognition from students' rapid acceptance and innovative application of new technologies, while students enhance their practical abilities and thinking levels under the guidance and enlightenment of teachers.

2.3 Embrace the Digital Ecosystem and Build a Contemporary Consensus on Teaching Culture

With the comprehensive advancement of digital transformation, it has gradually formed a new digital ecosystem based on digital technology and characterized by collaborative innovation in the education sector [3], and AI practical teaching is an important part of this ecosystem. To truly implement and sustainably develop AI practical teaching, it is imperative to build a consensus on the digital ecosystem across the entire school and even the broader educational community, and to foster a shared understanding of teaching culture that conforms to the characteristics of the times. Both teachers and students should recognize the value of the digital ecosystem in their cognition, actively integrate into the development trend of digital education, and form a teaching culture consensus that meets the needs of the times. In terms of cognition guidance, schools can use methods such as themed lectures, case sharing, and on-site observation to make students and teachers realize the role of AI technology in enriching teaching resources, expanding practical scenarios, and improving learning efficiency, thus eliminating their resistance to digital technology. At the same time, they should guide teachers and students to set common teaching goals, connect personal development with the construction of the digital education ecosystem, and regard the recognition of the digital ecosystem and the practice of AI practical teaching as their common pursuit, thus forming a development trend featuring top-down linkage, collaborative advancement and mutual improvement in teaching and learning, and providing spiritual support for the long-term stable implementation of AI practical teaching.

3 Behavioral Application: The Implementation Process of AI Practical Teaching

3.1 Select Optimal Intelligent Tools and Integrate Teaching Platform Resources

Selecting appropriate intelligent tools and integrating teaching platform resources are the prerequisites for the smooth implementation of AI practical teaching, and a crucial link for the connection between cognitive transformation and teaching practice. In the context of digital transformation, various AI teaching tools are emerging in an endless stream, and widely applied in various fields such as intelligent lesson preparation, personalized learning guidance, and practical scenario simulation [4]. Therefore, when choosing tools, based on teaching goals and practical needs, priority should be given to AI tools that are easy to operate, functionally compatible, and highly secure. Meanwhile, attention should be paid to the integration and optimization of teaching platform resources to break the information barriers between different platforms. Specifically, it should integrate AI tools with existing teaching management platforms and learning resource platforms to achieve consolidated management and optimal reutilization of teaching resources. It also should rely on the platform to integrate students' practical data to provide data support for subsequent teaching improvements. In addition, a resource update and maintenance mechanism needs to be built to promptly supplement the latest practical resources suitable for industry development, and ensure that AI teaching tools and platform resources meet teaching requirements, thereby providing stable technical and resource guarantees for the orderly advancement of AI teaching practice.

3.2 Innovate Teaching Methods and Explore Blended Teaching Models

Based on the selection of appropriate tools and platforms, applying them to transform and enhance teaching methods is the key to the successful implementation of AI-based practical teaching. It requires breaking away from the conventional teaching model dominated by teachers' lectures and demonstrations, and actively exploring student-centered blended teaching methods that integrate online and offline learning, and feature human-machine collaboration. In terms of teaching processes, AI can be utilized to further advance the flipped classroom. Before class, students use the intelligent teaching platform to independently study AI-recommended microlecture videos and interactive materials, and complete preliminary online assessments. During class, teachers organize project-based discussions targeting common difficulties identified in the pre-class data, and guide students to use AI tools in groups for in-depth exploration and scheme design. After class, the AI platform can push extended exercises, project collaboration tasks, or simulation tests, and provide continuous learning support. In terms of teaching methods, project-based learning, inquiry-based learning, and challenge-based learning can be used to assist students in conducting literature research and review, provide multiple schemes, and conduct simulation deduction and comparison. The innovation of teaching methods enables a deeper, more proactive, more targeted, and more personalized learning experience, and liberate teachers from repetitive tasks and allows them to focus on teaching design and interaction with students.

3.3 Improve Digital Literacy and Enhance Skill Levels of Teachers and Students

Whether it is the adoption of tools or the innovation of teaching methods, the successful implementation of AI practical teaching depends on the substantial improvement of both teachers' and students' digital literacy and skill levels. Therefore, targeted training for improving digital literacy should be conducted to cover all aspects such as the operation of AI tools, data security norms, and digital teaching concepts. The training for teachers should emphasize the flexible application of AI teaching tools and the design of teaching plans with AI as the carrier. It can use case studies, practical exercises and other means to enable teachers to quickly master relevant skills and enhance their ability to optimize teaching with AI technology. For students, the training should focus on the basic operation of AI tools, the methods of using AI tools to complete learning tasks, and the ability to screen and integrate information, so as to guide students to actively utilize AI tools to improve learning efficiency. The systematic training and guidance can enhance the digital literacy and skills of both teachers and students, enable AI technology to truly integrate into the entire teaching process, give full play the enabling effect of AI technology in teaching, and achieve a steady improvement in practical teaching quality.

4 Effect Intensification: The Effectiveness Manifestation of AI Practical Teaching

4.1 Optimize Teaching Quality and Achieve Precision and Personalized Teaching

The in-depth development of AI-based practical teaching can effectively enhance teaching quality and promote precision and personalized teaching, which is also the primary goal of high-quality education development against the backdrop of digital transformation [5]. the intelligent teaching platform can be used to collect data on students' practical operations and information from their learning feedback, and data analysis can accurately identify each student's learning deficiencies. The accurate data derived therefrom can help develop individualized practical learning plans, push appropriate resources and tasks to students, and provide targeted guidance. At the same time, AI tools can track students' operational processes in real time, give immediate prompts when students make mistakes, and guide their thinking, thereby helping them solve problems efficiently. AI practical teaching can not only enables students with learning difficulties to receive sufficient assistance and improve their capabilities, but also offer challenging tasks to students having surplus academic energy and facilitate their personalized development, thereby comprehensively improving the overall quality of practical teaching.

4.2 Improve Learning Experience and Enhance Interaction Engagement

The integration of AI technology has significantly improved the practical learning experience of students, and enhance their sense of immersion, interaction and satisfaction. Virtual simulation and augmented reality technologies are employed to provide a risk-free "fault-tolerant" environment for students, and enable them to repeatedly perform high-risk and high-cost operations in a safe and controllable virtual environment, thus reducing their anxiety and stimulating their desire for exploration and innovative spirit. The real-time shared visual model and data facilitate in-depth discussions and mutual cooperation among group members, thereby enhancing the effectiveness of group collaboration. Moreover, teachers can be relieved from repetitive instructional duties and devote more energy to heuristic discussions,

creative guidance, and personalized tutoring. These changes can transform students from passive recipients to active participants and creators. While gaining a stronger sense of control and accomplishment, they also significantly enhance their learning engagement and intrinsic motivation.

4.3 Promote Educational Innovation and Build a Sustainable New Model

The continuous development of AI practical teaching prompts the educational system to form a new model characterized by sustained innovation and dynamic evolution. The data resources accumulated throughout the teaching process can enable the teaching model to be transformed from experience-based judgment to data-driven scientific optimization, thereby forming a teaching system with self-improvement capability. At the same time, the use of AI technology can generate new teaching cases, personalized question banks, and virtual simulation projects that are in line with the cutting-edge disciplines, enable the intelligent updating and dynamic expansion of the teaching resource library, and ensure the timeliness and forward-looking nature of teaching content. Such a model featuring the deep integration of industry and education can enhance the alignment of education with the demands of economic and social development, and ultimately foster a sustainable new educational ecosystem underpinned by technology, driven by data, and propelled by the joint development of teachers and students.

5 Conclusion

Under the background of digital transformation, the reconstruction of the AI practical teaching model should take cognitive transformation as the prerequisite, behavior application as the foundation, and effect intensification as the goal. This progressive process not only overcomes the drawbacks of traditional practical teaching, but also achieves a dual improvement in teaching quality and learning experience. In the future, it is necessary to continuously deepen the integrated innovation of AI and practical teaching to inject sustained momentum into the digital transformation of education, and help cultivate innovative talents that align with the demands of the times.

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