Digital Transformation of Maritime Vocational Education in the New Era

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Abstract: This study aims to explore the theoretical framework and development path of digital transformation in maritime vocational education to meet the dual challenges of globalization and technological innovation. Utilizing literature review and theoretical analysis, the research systematically examines relevant theories and practical experiences in the digital transformation of vocational education both domestically and internationally. By delving into the essence, value, challenges, and pathways of digital transformation, this study constructs a theoretical model encompassing four dimensions: technology application, model educational innovation, teacher training, and policy support. Special attention is given to the impacts of digital on the professionalism, transformation practicality, and internationality of maritime vocational education, as well as how digital tools can enhance teaching quality and employability. The conclusion students' emphasizes that the digital transformation of maritime vocational education requires technical infrastructure and an update in educational philosophies and innovation in teaching methods. Additionally, policy guidance and teacher training are crucial for driving this transformation. This research provides theoretical guidance and practical references for the digital transformation of maritime vocational education, contributing to the sustainable development of the maritime education sector.

Keywords: Maritime Vocational Education; Digital Transformation; Educational Model Innovation; Teacher Training; Policy Support

1. Introduction

1.1 Research Background and Significance

In the context of globalization and rapid technological advancement, maritime vocational education faces unprecedented challenges and opportunities. With the rapid development of the shipping industry, the demand for highly skilled maritime professionals is growing, making the digital transformation of maritime vocational education particularly Digital urgent. transformation is not only an inevitable result of technological innovation but also a critical pathway to enhance educational quality, adapt to market demands, and promote student employment. It significantly improves the teaching quality and efficiency of maritime vocational education. By introducing advanced digital technologies such as Virtual Reality (VR), Augmented Reality (AR), and Big Data analysis, simulated training platforms can be constructed, offering immersive learning experiences and enhancing students' practical skills and safety awareness. Additionally, digital technologies can optimize teaching content and methods, accurately identifying students' learning needs through data analysis to achieve personalized teaching and improve efficiency. Digital transformation helps maritime vocational education better adapt to market demands. As the shipping industry globalizes and innovates technologically, the market's demand for maritime professionals is constantly changing. educational Digital transformation allows content and methods to be more flexible, quickly responding to market changes and cultivating highly skilled professionals that meet market demands. For example, through online courses and distance education, geographical limitations can be broken, allowing more students to receive high-quality maritime vocational education and expanding the talent supply. Digital transformation is also crucial for promoting student employment. In the digital era, mastering digital skills has become a basic requirement for employment. Maritime vocational education. through digital

transformation, can not only enhance students' professional skills but also cultivate their digital strengthening employment literacy. their competitiveness. Moreover. digital transformation can strengthen connections with the industry, providing students with more employment opportunities through schoolenterprise cooperation and internship training. Digital transformation plays a significant role in educational equity. Traditional promoting maritime vocational education is often limited by geographical location and resource conditions, leading to uneven distribution of educational resources. Digital transformation can break these limitations, allowing more students in different regions to access high-quality educational resources through online education and distance teaching, promoting educational equity.

The digital transformation of maritime vocational education is of great significance for improving teaching quality, adapting to market demands, promoting student employment, and advancing educational equity. However, it also faces numerous challenges, such as rapid technological updates, insufficient teacher resources, and uneven resource allocation. Therefore, in-depth research on the pathways and strategies of digital transformation in maritime vocational education is crucial for promoting its sustainable development.

1.2 Review of Domestic and International Research Status

In the context of the new era, the digital transformation of vocational education has become a research hotspot both domestically and internationally. This paper reviews the current research status in the field of vocational education digital transformation, referencing relevant literature in conjunction with the spirit of the two sessions and current social concerns.

Domestic scholars' research on vocational education digital transformation mainly focuses on its essence, challenges, and pathways. Wang Jingjie (2022) in "The Essence, Challenges, and Pathways of Digital Transformation in Vocational Education in the New Era" points out that digital transformation is not just about technology application but a comprehensive innovation in educational philosophy, teaching models, and educational management. He emphasizes that the main challenges faced by vocational education digital transformation include insufficient teacher resources.

inadequate technology application, and uneven resource allocation. Shu Wanchang and Li Dan further explore the value (2023)and of implementation pathways digital transformation, suggesting that transformation should be driven by building digital teaching environments, enhancing teachers' digital literacy, and optimizing curriculum content. Additionally, Chen Lin (2024) in "Research on the Innovative Construction of Golden Courses in Vocational English under the Reform and Development of Vocational Education Foreign Language Teaching in the New Era" proposes that digital transformation should be combined with vocational English teaching reform, enhancing teaching quality through the construction of "golden courses." Yang Jupeng (2023) analyzes the construction direction of educational digital transformation from a policy perspective, emphasizing the importance of policy support.

International research on vocational education digital transformation is equally active. For example, Wang Rui (2018) in "Research on the Digital Transformation of Educational Publishing" discusses the digital transformation educational publishing of the industry, indicating that it involves not only technological innovation but also business model and content innovation. Wang Run Dong (2021), taking cargo transportation companies as an example, studies the path of corporate digital transformation and upgrading, providing a reference for vocational education. At the application level, Xu Juan and Ma Ruiyi (2023) in "Digital Transformation Empowering the High-Quality Development of International Chinese Education" explore the application of digital transformation in international Chinese education, emphasizing the importance of deep integration of technology and teaching. Zheng Xiaojun and He Mei (2022) analyze the innovation of teaching and research models in the era of educational informatization 2.0 and digital transformation from the perspective of virtual teaching and research rooms.

In line with the spirit of the two sessions and current social concerns, the digital transformation of vocational education is expected to play a more significant role. It not only relates to the improvement of educational quality but also involves educational equity, adaptability to the employment market, and the construction of a lifelong learning system. Guo Deshui (2023) in "Practical Exploration of Digital Transformation Development in Community Education" points out that community education, as an important part of the lifelong learning system, plays a significant role in promoting educational equity and enhancing the quality of community residents through digital transformation.

In summary, although research on the digital transformation of vocational education has achieved certain results domestically and internationally, it still faces many challenges. Future research should further deepen the understanding of the essence of digital transformation, explore effective implementation pathways, and promote the high-quality development of vocational education in conjunction with social concerns.

1.3 Research Objectives and Contents

This study aims to construct a theoretical framework for the digital transformation of maritime vocational education in the new era and explore its implementation pathways. the research content includes the essence and characteristics of digital transformation, its value and challenges, and the construction of a theoretical framework, aiming to provide theoretical guidance and practical references for the digital transformation of maritime vocational education.

1.4 Research Methods and Technical Route

This study employs literature review and theoretical analysis methods to systematically sort out relevant research domestically and internationally and construct a theoretical framework. Through comparative analysis and logical reasoning, it explores the implementation pathways of digital transformation and proposes corresponding strategies and recommendations. 1.4.1 Literature Review

Firstly, through extensive literature searches, relevant research achievements on the digital transformation of maritime vocational education, including theoretical studies, practical cases, and policy analyses, are collected. These literatures are thoroughly read and analyzed to summarize the current progress and existing problems of the research, providing a foundation for constructing the theoretical framework.

1.4.2 Theoretical Analysis

Based on the literature review, relevant theories from education, information technology, and

management are used to conduct theoretical analyses of the key elements of digital transformation in maritime vocational education. A theoretical framework encompassing multiple dimensions such as technology application, educational models, teacher training, and policy support is constructed, providing theoretical support for subsequent empirical research and strategy formulation.

1.4.3 Comparative Analysis

By comparing successful cases of digital transformation in maritime vocational education domestically and internationally, commonalities and differences in the transformation process are identified. the success factors and challenges faced by these cases are analyzed to provide references and insights for the digital transformation of maritime vocational education in China.

1.4.4 Logical Reasoning

Based on the results of theoretical analysis and comparative analysis, logical reasoning methods are used to explore the implementation pathways of digital transformation in maritime vocational education in China. Specific strategies and recommendations are proposed from multiple levels such as technology application, educational model innovation, teacher training, and policy support, forming a systematic research conclusion.

1.4.5 Empirical Research

On the basis of theoretical analysis and logical reasoning, an empirical research plan is designed, collecting actual data on the digital transformation of maritime vocational education in China through methods such as questionnaire surveys, interviews, and case studies. Statistical and content analyses of these data are conducted to verify the effectiveness of the theoretical framework and strategy recommendations, providing empirical support for the research.

2. Theoretical Foundations of Digital Transformation in Maritime Vocational Education in the New Era

2.1 Connotation and Characteristics of Digital Transformation

The connotation of digital transformation in maritime vocational education goes beyond the mere application of technology; it represents a profound educational revolution. This process involves not only the digitalization of teaching tools and platforms but also a fundamental shift

in educational philosophies, teaching methods, and learning models. Technological integration means not only incorporating information technologies such as cloud computing and the Internet of Things into various teaching aspects but also building a seamless learning ecosystem that allows students and teachers to interact and learn anytime, anywhere. the data-driven characteristic requires educational institutions to develop robust data analysis capabilities, adjusting teaching content and methods precisely by collecting and analyzing student learning data to enhance teaching relevance and effectiveness. Personalized learning and service orientation emphasize that education should pay more attention to individual student differences, providing customized learning paths and support services to ensure each student can grow and progress in the most suitable environment.

2.2 Value and Challenges of Digital Transformation

Digital transformation brings multifaceted value to maritime vocational education. Firstly, through digital means, complex maritime environments and operational scenarios can be simulated, allowing students to practice in virtual environments, significantly enhancing their practical skills and ability to handle emergencies. Secondly, digital education can break geographical barriers, enabling the sharing of high-quality educational resources, helping to narrow the urban-rural educational gap, and promoting educational equity. Additionally, as the shipping market continues to change, digital education can quickly respond to market demands, cultivating talents that better meet industry needs. However, digital transformation also comes with a series of challenges. the rapid iteration of technology requires educational institutions to continuously update equipment technology to maintain educational and advancement. the shortage of teacher resources demands that educational institutions increase training efforts to enhance teachers' digital literacy and teaching abilities. Uneven resource allocation requires governments and relevant institutions to ensure the balanced development of digital education through policy guidance and financial support.

2.3 Construction of a Theoretical Framework for Digital Transformation

The theoretical framework constructed in this

provide systematic study aims to а transformation guide for maritime vocational education. In the dimension of technology application, in addition to emphasizing the deep integration of information technology, attention should also be paid to the sustainability and security of technology to ensure the stability of the educational process and the security of student data. the dimension of educational model innovation not only focuses on the innovation of teaching methods but also explores how to stimulate students' learning interest and innovative abilities through new teaching models such as project-based learning and flipped classrooms. the dimension of teacher training needs to establish a comprehensive teacher training and development system, not only enhancing teachers' digital technology application capabilities but also cultivating their teaching thinking innovative and teaching interdisciplinary abilities. the dimension of policy support emphasizes the key role of the government in digital transformation, including formulating relevant policies. providing financial support, establishing evaluation systems, etc., to ensure the smooth progress of digital transformation and the continuous improvement of educational quality. This comprehensive theoretical framework provides a solid theoretical foundation and practical guidance for the digital transformation of maritime vocational education.

3. International Comparison of Digital Transformation in Maritime Vocational Education

3.1 Practices of Digital Transformation in **International Maritime Vocational Education** Globally, digital transformation in maritime vocational education has become an important way to enhance educational quality and adapt to market demands. For example, in Europe, the EU has promoted digital transformation in the education sector through the "Digital Single Market Strategy, " and maritime vocational education institutions have actively responded by introducing technologies such as Virtual Reality (VR) and Augmented Reality (AR) to enhance students' practical skills and safety awareness. Additionally, maritime academies in Norway use big data analysis to optimize teaching content and methods, improving efficiency. Maritime vocational teaching

education in the United States focuses on the development of online courses and distance education to meet the diverse learning needs of students.

3.2 Insights for China from International Experiences

The practices of digital transformation in international maritime vocational education provide valuable experiences for China. Firstly, the breadth and depth of technology application are key to enhancing educational quality. China should increase investment in advanced technologies such as VR and AR, build simulated training platforms, and enhance students' practical abilities. Secondly, datadriven teaching decision-making helps improve teaching efficiency. China's maritime vocational education institutions should establish big data analysis systems to optimize the allocation of teaching resources. Thirdly, personalized learning and service orientation are important ways to meet students' diverse needs. China should develop diverse online courses and provide flexible learning methods. Finally, international cooperation and exchange are important means to promote digital transformation. China should strengthen exchanges and cooperation with international maritime vocational education institutions to jointly explore the best practices of digital transformation.

3.3 Challenges and Responses of Digital Transformation in International Maritime Vocational Education

Although significant progress has been made in digital transformation in international maritime vocational education, a series of challenges remain. Firstly, the rapid update of technology requires educational institutions to continuously invest in the latest technical equipment and software, which is a financial burden for many institutions. Secondly, the digital literacy of teachers varies, requiring large-scale teacher professional training and continuous development support. In addition, data security and privacy protection are also issues that cannot be ignored in digital transformation, requiring strict data management policies and security measures. Finally, the differences in educational systems among different countries and regions create barriers to international cooperation and experience sharing.

To address these challenges, international maritime vocational education institutions can adopt the following strategies: first, establish public-private partnerships to attract corporate investment and technical support, alleviating financial pressure. Second. implement comprehensive teacher training programs to enhance teachers' digital skills and innovative teaching abilities. Third, strengthen data security management to ensure the proper protection of students' and teachers' data. Fourth, promote international cooperation projects to share resources and best practices, fostering the common development of global maritime vocational education.

3.4 Strategic Recommendations for Digital Transformation in China's Maritime Vocational Education

Drawing on international experiences, China's maritime vocational education should adopt the following strategies in the process of digital transformation: firstly, increase policy support, promoting educational institutions to adopt advanced technologies through government guidance and financial investment. Secondly, establish national or regional digital education platforms to integrate high-quality educational resources and provide diverse online courses and learning tools. Thirdly, strengthen the construction of teacher teams, enhance teachers' digital teaching abilities through regular training and seminars. In addition, encourage deep cooperation between the industry and educational institutions that to ensure educational content closely aligns with industry participate needs. Finally, actively in international exchanges and cooperation, learn from international advanced experiences, and enhance the international competitiveness of China's maritime vocational education.

4. Current Status and Issues of Digital Transformation in China's Maritime Vocational Education

4.1 Analysis of the Current Status of Digital Transformation in China's Maritime Vocational Education

China's maritime vocational education has made certain progress in digital transformation. Many maritime vocational colleges have introduced multimedia teaching, online courses, and other digital teaching methods to enhance teaching effectiveness. At the same time, some colleges have established digital training bases, using virtual simulation technology for practical teaching, which has strengthened students' operational skills. However, compared with the advanced international level, there is still a significant gap in the digital transformation of China's maritime vocational education.

Although the introduction of multimedia teaching and online courses has provided students with more flexible and diverse learning methods, the depth and breadth of these technologies' application still need to be improved. For example, the update of multimedia teaching resources in some colleges is slow, failing to reflect the latest developments in maritime technology in a timely manner, which to some extent limits the timeliness and cutting-edge nature of teaching content.

The construction of digital training bases, although providing students with training platforms close to real operational environments, still has gaps in the diversity and accuracy of simulation equipment compared with the advanced international level. Some high-end maritime simulation equipment and technologies have not been widely applied in domestic maritime vocational education, which affects students' opportunities to access and master the latest maritime technologies.

China's maritime vocational education is also facing the issue of insufficient teacher resources during the digital transformation process. Although some teachers have begun to try using digital teaching tools, overall, teachers with profound maritime professional knowledge and proficient digital teaching skills are still scarce. not only affects the This effective implementation of digital teaching methods but also restricts the further improvement of teaching quality and student learning outcomes.

To narrow the gap with the advanced international level, China's maritime vocational education needs to further increase the intensity of digital transformation. Specific measures include increasing investment in multimedia teaching resources and online courses to ensure the update and cutting-edge nature of teaching content; introducing more advanced maritime simulation equipment and technologies to enhance the simulation authenticity and teaching effect of training bases; strengthening teacher training to improve the digital teaching capabilities and professional literacy of the faculty. Through the implementation of these measures, China's maritime vocational education is expected to make more solid strides on the path of digital transformation, cultivating more high-quality talents that meet the development needs of the modern maritime industry.

4.2 Main Issues Faced by Digital Transformation in China's Maritime Vocational Education

The main issues faced by digital transformation in China's maritime vocational education include insufficient technology application, weak teacher resources, and uneven resource allocation. Insufficient technology application is reflected in the low penetration rate and depth of digital teaching methods, with many colleges still relying on traditional teaching modes. Weak teacher resources are manifested in teachers' low digital literacy and lack of practical experience in digital teaching. Uneven resource allocation results in slow progress in digital transformation in some regions and colleges, making it difficult to meet students' learning needs.

To address the issue of insufficient technology application, it is necessary to strengthen the research and promotion of digital teaching tools and platforms, increasing their application ratio and effectiveness in teaching. For example, develop more online courses and virtual simulation software that meet the characteristics of maritime majors, allowing students to understand maritime knowledge and skills more intuitively and deeply through these tools.

The issue of weak teacher resources can be solved through systematic training and practice. Maritime vocational colleges can cooperate with industry experts and technology companies to regularly hold digital teaching workshops and seminars, enhancing teachers' digital literacy and teaching skills. At the same time, encourage teachers to participate in the research and implementation of digital teaching projects, accumulating experience through practice and improving teaching quality.

The issue of uneven resource allocation requires the support and coordination of the government and educational departments. By formulating reasonable policies and funding allocation mechanisms, ensure that all regions and colleges can obtain the necessary digital teaching resources. In addition, establish regional resource sharing platforms to promote the circulation and sharing of high-quality teaching resources, which is an effective way to solve the problem of uneven resource allocation.

In summary, China's maritime vocational education needs to overcome challenges in technology, teacher resources, and resources on the path of digital transformation. Through continuous efforts and innovation, the level of digital transformation can be gradually improved, laying a solid foundation for cultivating highquality maritime talents.

5. Pathways and Strategies for Digital Transformation in Maritime Vocational Education

5.1 Technology Application and Educational Model Innovation

Under the background of digital transformation, technology application and educational model innovation are key to improving the quality of maritime vocational education. In terms of technology application, advanced technologies such as Virtual Reality (VR), Augmented Reality (AR), and Big Data analysis should be actively introduced to build simulation training provide platforms. immersive learning experiences, and enhance students' practical operational skills and safety awareness. In terms of educational model innovation, online-offline integrated teaching models should be promoted, diverse online courses developed to meet the learning needs of different students. At the same time, use Big Data analysis to optimize teaching content and methods, improving teaching efficiency.

5.2 Teacher Training and Capacity Enhancement

The enhancement of teacher resources is the key to the success of digital transformation. Digital literacy training for teachers should be strengthened to improve their ability to use digital tools and resources. In addition, encourage teachers to participate in the practical exploration of digital teaching, continuously improve teaching quality through case studies and teaching reflection. At the same time, establish a teacher exchange platform to promote experience sharing and collaborative research among teachers, jointly promoting the digital transformation of maritime vocational education.

Guarantee

Policy support and institutional guarantee are important safeguards for digital transformation. the government should introduce relevant policies, increase support for the digital transformation of maritime vocational education, provide financial and technical support, and encourage educational institutions to innovate in practice. At the same time, establish a sound evaluation and incentive mechanism for digital transformation, rewarding educational institutions that achieve significant results to stimulate their innovative momentum. In addition, strengthen cooperation and exchange with international maritime vocational education institutions to jointly explore the best practices of digital transformation.

5.4 Resource Integration and Sharing Mechanism

To solve the problem of uneven resource allocation, a resource integration and sharing mechanism should be established. By building regional or national digital education resource platforms. integrate various high-quality teaching resources, including teaching software, online courses, simulation training equipment, etc., to achieve resource sharing and efficient utilization. At the same time, encourage enterprises. universities. and research institutions to participate in the construction of resource platforms, forming a resource sharing system that combines production, learning, research, and application, and enhancing the overall level of maritime vocational education.

5.5 Student Participation and Feedback Mechanism

Students are the direct beneficiaries of digital transformation, so establishing a student participation and feedback mechanism is crucial. Encourage students to participate in the design and evaluation of digital teaching, collect students' opinions and suggestions through questionnaires, forums, etc., and adjust and optimize teaching content and methods in a timely manner. At the same time, establish students' digital learning archives, track students' learning progress and achievements, and provide support for personalized teaching.

6. Conclusion and Recommendations

5.3 Policy Support and Institutional

6.1 Research Conclusion

This study, through in-depth analysis of the theoretical foundation, international comparison, current status and issues, pathways and strategies of digital transformation in maritime vocational education in the new era, draws the following conclusions: digital transformation is an important way to improve the quality of maritime vocational education and adapt to market demands; technology application and educational model innovation, teacher training and capacity enhancement, policy support and institutional guarantee are key factors to promote digital transformation; China's maritime vocational education has made certain progress in digital transformation, but still faces issues such as insufficient technology application, weak teacher resources, and uneven resource allocation.

6.2 Policy Recommendations

Based on the research conclusions, the following policy recommendations are proposed: increase investment to enhance technology the penetration rate and depth of digital teaching methods; strengthen teacher training to improve teachers' digital literacy and teaching abilities; optimize resource allocation to ensure the balanced development of digital transformation; introduce relevant policies to provide financial and technical support, encouraging educational institutions to innovate in practice; establish a sound evaluation and incentive mechanism for digital transformation to stimulate the innovative momentum of educational institutions: international cooperation strengthen and exchange, learn from international advanced experiences, and promote the innovative development of digital transformation in China's maritime vocational education.

6.3 Research Prospects

Future research can further explore specific technology application cases and practical experiences, deeply analyze the impact of digital transformation on the quality of maritime vocational education, and how to promote educational equity and adapt to market demands through digital transformation. At the same time, pay attention to ethical and security issues in the process of digital transformation to ensure its sustainable development.

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Research project of Transportation Vocational Education in Jiangsu Province in 2023: Research on the Development of Digital Transformation of Transportation Vocational Education in Jiangsu in the New Era (Project number: 2023-A02).

References

- Wang Jingjie. the Connotation, Dilemmas, and Pathways of Digital Transformation in Vocational Education in the New Era [J]. Vocational Education Forum, 2022, 38(9):5-12.
- [2] Wang Rui. Research on the Digital Transformation of Educational Publishing in Publishing Houses [J]. Xinjiangyuan: Reading Edition, 2018(7):1. DOI: CNKI: SUN: XINY. 0.2018-07-071.
- [3] Chen Yongjing. Strategic Transformation of Educational Publishing Enterprises in the Digital Era [D]. Henan University, 2024-06-28. DOI: 10.7666/d. y2116351.
- [4] Wang Run Dong. Research on Digital Transformation and Upgrading of Enterprises – Taking Cargo Transportation Enterprises as an Example [J]. Gansu Science and Technology Panorama, 2021, 50(4):76-79. DOI: 10.3969/j. issn. 1672-6375.2021.04.022.
- [5] Li Zhuo. Research on the Development Path of Digital Transformation in Small and Medium-sized Banks [J]. Inner Mongolia Financial Research, 2019, 000(001):51-54.
- [6] Chen Lin. Research on the Innovative Construction of Golden Courses in Vocational English under the Reform and Development of Vocational Education Foreign Language Teaching in the New Era [J]. Innovation in Education Research, 2024, 12(2):8. DOI: 10.12677/CES. 2024.122111.

- [7] Wang Jingjie. the Connotation, Dilemmas, and Pathways of Digital Transformation in Vocational Education in the New Era [J]. Shaanxi Modern Vocational Education Research, 2022(5):70-74.
- [8] Shu Wanchang, Li Dan. Research on the Value and Implementation Pathways of Digital Transformation in Vocational Education in the New Era [J]. Education Horizon, 2023(40):76-80.
- [9] Wang Jingjie. the Connotation, Dilemmas, and Pathways of Digital Transformation in Vocational Education in the New Era [J]. Academic Abstracts of Higher Education Institutions, 2022, 39(6):175-176.
- [10] Yang Jupeng. Policy Issues and Construction Directions of Educational Digital Transformation in the New Era [J]. Educational Technology Research, 2023, 44(11):36-44.
- [11] Chen Xiaohui, Wang Yuqin, Xie Haitang, et al. Hebei Exploration of Digital Transformation Empowering High-Quality Development in Basic Education [J]. Primary and Secondary School Educational Technology (Comprehensive), 2023(11):3-9.
- [12] Guo Deshui. Practical Exploration of Digital Transformation Development in Community Education [J]. Journal of Guangxi Radio and Television University, 2023, 34(5):55-58.
- [13] Yu Hongtao. Research on the Dilemmas and Transformation Pathways of Connotative Development in Judicial Police Vocational Colleges under the "Double

High" Perspective [J]. Judicial Police Vocational Education Research, 2020(3):6. [14] Gao Shan. Research and Practice on Digital Transformation for the Cultivation of Compound High-Skilled Talents [J]. Vocational Education, 2023(5):48-50.

- [15] Xu Juan, Ma Ruiyi. Digital Transformation Empowering High-Quality Development in International Chinese Education [J]. Educational Technology Research, 2023, 44(10):121-128.
- [16] Zheng Xiaojun, He Mei. Virtual Teaching and Research Rooms in the Era of Educational Informatization 2.0 and Digital Transformation: Concepts, Types, Characteristics, Functions, and Modes [J]. Journal of Guangxi Vocational and Technical College, 2022, 15(6):14-23.
- [17] Hu Yu. the Value, Key Points, and Pathway Choices of Digital Transformation in Higher Education in the New Era [J]. Journal of Qiannan Normal University for Nationalities, 2023, 43(2):50-55.
- [18] Wei Fei. the Conceptual Framework and Action Strategies for the Digital Transformation of County-Level Teacher Development Institutions [J]. Research in Educational Development, 2023, 43(10):1-7.
- [19] Lu Jian. Research on the Digital Transformation Pathways of Modern Business Service Professional Groups in the New Era [J]. Old Brand Marketing, 2024(2):57-59.