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A Study on the Path to Enhancing the Post Competence of Vocational Education Talents in Elderly Care Services from the Perspective of New-Quality Productive Forces

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Abstract: With the acceleration of population aging in China, the contradiction between the supply and demand of elderly care service talents has become increasingly prominent. As a new form of productive forces driven by digital technology, knowledge capital, and collaborative innovation, new-quality productive forces provides a new perspective for the cultivation of vocational education talents in elderly care services. By systematically sorting out relevant theoretical and practical achievements at home and abroad, this study explores effective paths to enhance the post competence of vocational education talents in elderly care services from the perspective of new-quality productive forces, which is of great significance for promoting the transformation of the elderly care service industry towards high-end and intelligent development.

keyword: Vocational Education Talents; New-Quality; Elderly Care Services

Introduction

New-quality productive forces is a concept developed on the basis of traditional productive forces theory. It emphasizes the significance of factors such as knowledge, technology, innovation, and informatization to production efficiency and economic growth in the modern economic system. The core of new-quality productive forces lies in intangible elements, including information, data, intellectual property rights, innovation capabilities, and technology application. These elements have become key drivers for promoting economic growth and industrial upgrading. Elderly care services integrate resources related to elderly care, medical and health care, and health management, providing the elderly with continuous and comprehensive health services covering health education, preventive health care, disease diagnosis and treatment, rehabilitation nursing, long-term care, and hospice care. Post competence refers to the abilities and qualities required to be competent for job requirements and achieve excellent performance in a specific job position, organizational environment, and cultural atmosphere. Elderly care services is a practical industry that provides care for the elderly. Due to the particularity of its positions, there is a stronger demand for competence, which mainly includes professional knowledge and skills, followed by qualities and abilities such as hard work, and communication and expression skills. By systematically sorting out relevant theoretical and practical achievements at home and abroad, this study explores effective paths to enhance the post competence of vocational education talents in elderly care services from the perspective of new-quality productive forces, which is of

great significance for promoting the transformation of the elderly care service industry towards high-end and intelligent development.

1.Enhancing the Post Competence of Vocational Education Talents in Elderly Care Services from the Perspective of New-Quality Productive Forces: A Strategic Choice for Promoting the High-End and Intelligent Transformation of the Elderly Care Service Industry

1.1 The Impact of the Proposal of the New-Quality Productive Forces Concept on the Field of Vocational Education in Elderly Care Services

As a new form of productive forces driven by digital technology, knowledge capital, and collaborative innovation, new-quality productive forces is reshaping the global economic pattern through intelligent production methods and green development paths. Its core characteristics are reflected in the in-depth penetration of technical elements, the value transformation of data resources, and the coordinated promotion of ecological sustainability, marking a paradigm shift in the development of human productive forces from factor-driven to innovation-driven [1]. New-quality productive forces is "an advanced form of productive forces that breaks away from traditional growth models and is characterized by high technology, high efficiency, and high quality". This assertion emphasizes the importance of knowledge, technology, innovation, informatization and other factors to production efficiency and economic growth in the modern economic system. The core of new-quality productive forces lies in intangible elements such as information, data, intellectual property rights, innovation capabilities, and technology application, which have become key drivers for promoting economic growth and industrial upgrading.

The rise of new-quality productive forces has put forward new requirements for the education system. Education is no longer merely a process of imparting knowledge and skills; instead, it needs to pay more attention to cultivating students' innovative abilities, critical thinking, and lifelong learning habits, so as to enable them to become high-quality talents who can adapt to the development of society and economy in the future[2-3]. As important bases for cultivating high-quality application-oriented technical and skilled talents, higher vocational colleges are faced with both new opportunities and enormous challenges in the new economic environment. Vocational education must be closely integrated with the development of new-quality productive forces. Through reform and innovation, it should cultivate more high-quality workers and highly skilled talents who meet the needs of new-quality productive forces, and continuously empower the development of new-quality productive forces [4-5].

In the field of vocational education for elderly care services, this means putting forward new and higher requirements for the independent cultivation of elderly care talents. It is necessary to further establish the "new concept" of "intelligent elderly care" education and explore a "new model" for cultivating high-quality workers and highly skilled talents. In terms of curriculum design, it is necessary to keep pace with the times. The curriculum should not only cover knowledge related to traditional elderly care services, but also integrate modern science and technology, strengthen in-depth industry-education integration with enterprises, ensure that talent cultivation is in sync with the industrial development in the elderly care field, and accurately meet the needs of industries and enterprises as well as the development requirements of new-quality productive forces.

1.2 With the Deepening of Aging and the Prominence of the Low Fertility Rate, China's Elderly Care Field is Undergoing Significant Digital Transformation

At present, China is facing a historical intersection of population aging and the development of new-quality productive forces. Research shows that by the end of 2024, the number of elderly people aged 60 and above in China will exceed 300 million, and it is expected to reach nearly 500 million by the middle of the 21st century. With the continuous growth of the total number of elderly people, the internal structure of the elderly population is also changing. Predictions indicate that the scale of the elderly population aged 80 and above will increase gradually from 31.37 million in 2019 to 69.05 million in 2035, and is expected to reach 126 million in 2050. Generally, the physical functions of the elderly gradually decline with age, and the number of disabled and semi-disabled elderly will increase accordingly. If the current development trend continues, the number of disabled and semi-disabled elderly in China will increase from more than 40 million at present to over 100 million

by 2050[6-7]. With the rapid development of population aging and the continuous growth of the elderly population scale, the elderly care service system is facing dual challenges: on the one hand, the demand for care for disabled and semi-disabled elderly has surged, resulting in a gap of tens of millions in professional care talents; on the other hand, the traditional elderly care service model is limited by its labor-intensive characteristics and is difficult to meet the large-scale and high-quality service demands, so it is urgent to realize transformation and upgrading with the help of new-quality productive forces.

Data shows that China's fertility rate has been declining in recent years. The number of births in 2022 and 2023 fell below 10 million, reaching 9.56 million and 9.02 million respectively[7]. In the next period, China is expected to continue its current low fertility rate. The decrease in the number of births will restrict the total labor supply in the future, and the problem of insufficient manpower will gradually emerge in some fields. On the one hand, the growth of total labor supply is restricted; on the other hand, the growing number of elderly and advanced-aged people need care. This downward and upward change will make the traditional elderly care model, which relies solely on manual labor to provide care for the elderly, face severe challenges in the future. Therefore, it is inevitable to actively explore new elderly care methods to meet the future elderly care needs.

With the deepening of aging and the prominence of the low fertility rate, the elderly care field is increasingly dependent on technological progress. With the wide application of new technologies such as artificial intelligence, the Internet of Things, the Internet, big data, and cloud computing in the national economy and social development, the elderly care field is undergoing significant digital transformation, and the trend characteristics of elderly care digitalization and digital elderly care are becoming increasingly prominent. As the main position for cultivating elderly care talents, vocational colleges shoulder the important responsibility of talent cultivation. They should adapt to the needs of the era of great health, actively embrace and integrate with advanced science and technology, comprehensively improve the level of independent talent cultivation, and ensure that the cultivated elderly care service talents are in sync with the industrial development in the elderly care field and accurately meet the job needs of industries and enterprises.

1.3 Structural Contradictions in China's Vocational Education for Elderly Care Services from the Perspective of New-Quality Productive Forces

Vocational education for elderly care services is the core carrier of talent supply, and its development quality is directly related to the ability to respond to aging. At present, although China's vocational education for elderly care services has formed a "theory + practice" training framework, there are three structural contradictions: first, the curriculum system lags behind technological changes, and the coverage of new-quality skills such as intelligent care equipment operation and digital assessment of the elderly's capabilities is insufficient, making it difficult to meet the demand for compound talents under new-quality productive forces; second, the "dual-qualified" characteristics of the teaching staff are not prominent, and the proportion of teachers with both clinical experience and digital technology compound capabilities is low; third, the depth of industry-education integration is insufficient. School-enterprise cooperation mostly stays at the internship level, lacking a "work-study integration" collaborative education mechanism, and most colleges and universities have not established substantive cooperation with intelligent elderly care enterprises. This mismatch between supply and demand leads to a shortage of talents in the elderly care industry. International experience shows that the improvement of post competence relies on a dynamic curriculum adjustment mechanism, an evaluation system involving industries, and lifelong learning channels. However, domestic research on the coupling analysis between new-quality productive forces and the ability demands of elderly care service talents is still insufficient.

To sum up, exploring the path to improving talents' post competence from the perspective of new-quality productive forces is not only a practical need to solve the "silver talent shortage", but also a strategic choice to promote the transformation of the elderly care service industry towards marketization, application, convenience, and intelligence.

2.A Study on the Path to Enhancing the Post Competence of Vocational Education Talents in Elderly Care Services from the Perspective of New-Quality Productive Forces

2.1 Reconstruction of the Core Dimensions of Post Competence of Elderly Care Talents from the Perspective of New-Quality Productive Forces

The technology penetration, data-driven, and ecological collaboration of new-quality productive forces require the competence model of elderly care talents to break through the single dimension of traditional care skills and evolve towards a compound, digital, and sustainable direction. Their post competence should cover three major dimensions: digital operation capability, interdisciplinary collaboration capability, and green service awareness. The details are as follows: (1) Digital application capability: Mastering the operation and maintenance of intelligent care equipment; using big data platforms to analyze the health trends of the elderly; and utilizing the Internet of Things technology to realize intelligent environmental safety management and control. For example, "digital care record systems" have been widely used in Japanese care facilities, requiring staff to record and analyze care data in real time. (2) Interdisciplinary collaboration capability: Integrating interdisciplinary knowledge such as medical care, psychology, nutrition, and social work, especially in chronic disease management, it is necessary to connect with roles such as doctors, rehabilitation therapists, and psychological counselors. For instance, the position of "elderly health manager" in the Netherlands needs to coordinate medical resources in an overall manner and formulate personalized health management plans. (3) Green service and humanistic care capability: Practicing low-carbon care models, while strengthening emotional support and dignity protection. Swedish elderly care institutions have implemented "zero-waste care", embedding environmental protection concepts into service processes and reducing the use rate of disposable consumables by 70%.

2.2 A Trinity Improvement Path of "Technology Empowerment - Curriculum Reconstruction - Ecosystem Co-construction"

"Technology empowerment" refers to the construction of an intelligent practical training system. The technical carriers include VR/AR simulation systems, digital twin elderly care homes, and AI intelligent assessment platforms. The VR/AR simulation system is applied to the practical training of disabled elderly transfer and emergency treatment to cultivate standardized safe operation and emergency decision-making capabilities; the digital twin elderly care home is used for the simulation and drill of the whole-process care tasks to cultivate resource scheduling capabilities and multi-role collaboration capabilities; the AI intelligent assessment platform is used for the practical training of early screening for elderly cognitive impairment to cultivate data analysis capabilities and risk prediction capabilities.

"Curriculum reconstruction" refers to the development of modular dynamic curriculum groups. The curriculum system structure is divided into four modules: basic competence module, digital skills module, interdisciplinary integration module, and sustainable development module. The basic competence module includes geriatric physiology and pathology, and care ethics and regulations; the digital skills module covers intelligent equipment operation and maintenance, and health big data analysis; the interdisciplinary integration module involves elderly mental health intervention and age-appropriate environment design; the sustainable development module includes green care practice and elderly care service innovation management. In the implementation process, 30% of the curriculum content is updated every semester, and a "micro-certificate" system is introduced to certify new technical capabilities, such as the certification of "elderly digital health manager".

"Ecosystem co-construction" refers to the creation of an industry-education integration community. Through the formulation of a school-enterprise collaboration mechanism, industrial colleges are jointly established with intelligent elderly care enterprises. The "dual-tutor system" is implemented, and enterprise engineers are hired to teach technical application courses. A government-school-research cooperation platform is established, relying on the "Elderly Care Service Talent Training Base" of the Ministry of Civil Affairs, and scientific research institutions are united to develop application standards for age-appropriate technologies. With reference to the German "dual-system" training model and the Japanese care worker qualification certification system, a competence evaluation standard in line with international standards is established.

Conclusion

Starting from the perspective of new-quality productive forces, this study systematically explores the effective paths to enhance the post competence of vocational education talents in elderly care services. It can be concluded that driven by new-quality productive forces, the transformation of the elderly care service industry has put forward new requirements for talents' post competence, including digitalization, intelligence, humanization, and diversification. At present, the post competence of vocational education talents in elderly care services has problems such as disconnection between skills and industry,

and single knowledge structure. The root causes lie in deficiencies in the teaching system, industry-education integration, and other aspects. The construction of a "six-in-one" improvement path covering "objectives - curriculum - teaching - integration - faculty - evaluation" can effectively enhance the post competence of vocational education talents in elderly care services. In addition, it is necessary to accelerate the construction of the trinity of "technology empowerment - curriculum reconstruction - ecosystem co-construction".

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Conflict of Interests

The authors declare that there is no conflict of interest regarding the publication of this paper.

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