Analysis of the Logical Starting Point and Positioning Differences in Vocational Education Talent Cultivation

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ABSTRACT

As China's economic structure continues to optimize and the pace of industrial transformation and upgrading accelerates, high-quality development has become the main theme of economic growth, and the demand for highly skilled technical talents is increasingly urgent. Currently, due to biased social values and uneven educational quality, vocational education is often positioned as a subordinate to general education. However, from the perspectives of Multiple Intelligences Theory, Education Equity Theory, and Knowledge Production Theory, vocational education should be recognized as a distinct type, advancing alongside general education to jointly construct the modern educational system. Within the realm of higher education, vocational education needs to collaborate with research-oriented and applied technology-oriented education, implementing targeted strategies to meet the talent cultivation needs of modern industrial chain. Based on the horizontal differences among industrial chain job clusters and the vertical differences within job clusters, the professional settings and starting levels of vocational education should be scientifically planned, with clear definitions of cultivation orientations and standards for technical talents at different levels. This will provide a solid foundation of technical and skilled talents for the new round of technological revolution and industrial transformation.

Keywords: *Type education, Vocational education, Technical and skilled personnel, Talent training orientation.*

1. INTRODUCTION

With the acceleration of economic structural adjustment and industrial transformation and upgrading, China's economy has shifted from a high-speed growth stage to a high-quality development stage, requiring innovation, quality, and efficiency to replace scale and speed. Correspondingly, the demand for high-quality skilled talents is becoming increasingly strong. For a long time, vocational education has been regarded as an educational level attached to general education, which has led to its lack of attractiveness and triggered a crisis in the status and identity of vocational education, to some extent affecting the optimization of the national education system, the improvement of talent structure, and the high-quality development of the economy and society. The 2019 “Implementation Plan for National Vocational Education Reform” clearly states at the beginning that vocational education and general education are two different types of education, and they are equally important. The “Vocational Education Law of the People's Republic of China”, released in May 2022, includes "vocational education and general education are different types of education, have equal importance, are important components of the national education system and human resource development, and are important ways to cultivate diverse talents, inherit technical skills, promote employment and entrepreneurship, and promote economic and social development and comprehensive human development" in the legislative scope based on the "20 Articles on

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Vocational Education", providing important legal protection for promoting the transformation of vocational education into "type education". Later, in the report of the 20th National Congress of the Communist Party of China, it was emphasized to "coordinate the innovation of vocational education, higher education, and continuing education, promote the integration of vocational and general education, industry and education, and science and education, and optimize the positioning of vocational education types" , which further clarifies the type positioning of vocational education in the national education system. So what is the logical starting point and necessity of vocational education as a type of education? What is the difference in talent cultivation positioning between vocational education and general education? How should the differences in the positioning of talent cultivation among the middle, high, and undergraduate levels within vocational education be reflected? The clarification of the above three issues is the underlying logic for addressing the core issues of vocational education type positioning and planning for vocational education talent cultivation.

2. THE LOGICAL STARTING POINT AND NECESSITY OF TYPE EDUCATION

2.1 Type Education Based on the Theory of Multiple Intelligences

From the perspective of individual intelligence structure, traditional intelligence theories believe that intelligence is centered around language ability and mathematical logic ability, such as IQ theory and Piaget's cognitive development theory. However, since the 1990s, more scholars have believed that intelligence has multiple structures, such as Sternberg's triadic theory of intelligence and Ceci's theory of the uniqueness of the intellectual domain, as well as Gardner's seven theories of intelligence proposed by developmental psychologist. Whether it is dividing human intelligence into three relatively independent abilities: analytical ability, creative ability, and application ability, or dividing it into seven types of intelligence: speech-language intelligence, music-rhythm intelligence, logic-mathematical intelligence, vision-spatial intelligence, body-kinesthetic intelligence, self-awareness-introspection intelligence, and communication-communication intelligence, different individuals' intelligence has its unique characteristics and different forms of expression, and there are significant differences in the way people engage in intellectual activities in different disciplines or professions (Huo, 2000).

Vocational college students are often at a disadvantage in selection mechanisms such as the middle and high school entrance exams, which mainly assess language or mathematical logic abilities. Research has also found that the language intelligence and operational intelligence of children with learning difficulties, as commonly defined by society, differ greatly (Xu,et al., 1992). Operational intelligence is much higher than verbal intelligence (Wang, 2003), and operational intelligence increases over time (Cheng, et al.,1993). This may be due to the fact that the right brain of such children is more developed than the left brain, fluid intelligence is stronger than crystal intelligence, or there may be psychological and language deficiencies (Wang, 2003). The first two reasons are that the problem of intellectual structure can be solved through adaptive education methods by changing the culture or learning environment. Every type of intelligence or different intellectual structure plays a significant role in human understanding and transformation of the world, with equal importance, and the environment and education are crucial for developing and nurturing these intellectual potentials. Therefore, conducting different types of education for talents with different intellectual structures is of great significance for optimizing the country's human capital.

2.2 Type Education Based on the Educational Equity Theory

The essential connotation and ultimate goal of education is “human development”. There are differences between people, and educational equity is reflected in three levels: equal opportunities, equal processes, and equal outcomes. Educational opportunity equity refers to providing equal educational opportunities to individuals of different types and social classes. It is an extension of the education external system equity based on Confucius' educational policy of "education without discrimination" (Liang&Sun, 2009); Fairness in the educational process refers to the implementation of targeted education based on the cognitive patterns, physical and mental characteristics, intellectual levels, and differences in abilities of student groups, rather than treating them equally or differently based on academic performance; Fairness in

educational outcomes does not mean that all students become the same type or reach the same level of development, regardless of individual characteristics, but rather that they reach the level they should reach and unleash their potential based on individual characteristics. Therefore, educational equity is not homogeneous equity, but differentiated equity. It is not about providing the same, equal, and homogeneous education, but about providing adaptive education with diverse types, distinct characteristics, and suitable for individual differences under the premise of equality (Yin, 2022). These educations should be based on individual intellectual characteristics, different cognitive styles, and different types of talents to form different types of education, achieving equal opportunities for "education without discrimination", fair processes for "teaching according to aptitude", and fair results for "making the best use of talents" (Liang&Sun, 2009).

2.3 Type Education Based on the Knowledge Production Theory

In general, knowledge can be divided into two types, theoretical knowledge including natural sciences, humanities, and social sciences; Practical knowledge is divided into technical and engineering sciences. The knowledge production in universities also includes two basic modes, one is the "Humboldt mode", which is a university knowledge production paradigm based on traditional disciplines and mainly theoretical. This production paradigm is a discipline category, linear, hierarchical, and relatively fixed knowledge production mode, aimed at pursuing the cognition of a single discipline, and the research organization is closed; Another type is the "application mode", which is a knowledge production mode that integrates resources across disciplines and uses multiple organizations as sources of knowledge based on the needs of social applications. It mainly focuses on research and development that can solve real-world social problems through applications, and is technology oriented, interdisciplinary, non-linear, networked, and equal dialogue. The research organization is open (Zhu& Zhang, 2015). In the original classification of universities, research-oriented universities often correspond to the production of theoretical knowledge under the first knowledge production paradigm, while applied universities or vocational undergraduate colleges correspond to the production of practical knowledge under the second knowledge production paradigm. Therefore, from the perspective of knowledge types and knowledge production paradigms, it is also necessary to classify corresponding universities and talent cultivation into different types, in order to provide more targeted education.

Overall, the origin of type education lies in individual differences. Individuals with different intellectual structures should implement classified education to maximize their potential and achieve the production of different types of knowledge, thus realizing the essence of education that maximizes the development of human personality. Therefore, general education and vocational education should be aimed at two groups with different intellectual structures, and these two different intellectual structures are essentially equal and indistinguishable. There should be no artificial distinction of superiority or inferiority at the operational level, that is, only a distinction of types, without a distinction of levels. Vocational education diversion is essentially not about eliminating a portion of people, but about allowing individuals with different intellectual structures to receive education that is more suitable for their intellectual development. Vocational and general education integration builds a bridge for communication and collaboration between two types of talents and education at different stages of individual development.

3. THE POSITIONING OF TALENT CULTIVATION BETWEEN VOCATIONAL EDUCATION AND GENERAL EDUCATION

3.1 Classification of Higher Education

Both general education and vocational education are important components of the national education system and human resource development. In February 2017, the "Opinions of the Ministry of Education on the Establishment of Higher Education Institutions during the 13th Five-Year Plan Period" classified China's higher education as generally research-oriented, application-oriented, and vocational skill-oriented. Research-oriented higher education institutions mainly focus on cultivating innovative talents in academic research, conducting theoretical research and innovation. The degree granting levels cover bachelor's, master's, and doctoral degrees, and graduate education accounts for a large proportion. Applied higher education institutions mainly engage in the cultivation of undergraduate and above level

applied talents that serve economic and social development, and engage in research on social development and technological applications. Vocational skill-oriented higher education institutions mainly engage in the training of vocational level skilled talents in the front line of production management services, and actively carry out or participate in technical service and skill application reform and innovation. For applied universities, the Ministry of Education's "Guiding Opinions on Guiding Some Local Ordinary Undergraduate Universities to Transform into Applied Universities" proposes that applied universities have the responsibility and mission of cultivating applied technical and skilled talents. Applied universities with the qualification to cultivate professional degree graduate students should establish a professional degree graduate student training model guided by vocational needs, focusing on practical ability training, and using industry university integration as a means. In the new vocational education law, it is further clarified that vocational education is implemented to cultivate high-quality technical and skilled talents, so that learners have the professional ethics, scientific culture and professional knowledge, technical skills and other comprehensive qualities and action abilities required for engaging in a certain profession or achieving career development. The "Standards for the Establishment of Undergraduate Vocational Schools (Trial)" and the "Management Measures for the Establishment of Undergraduate Vocational Education Majors (Trial)" propose that undergraduate vocational schools and undergraduate vocational education should adhere to demand-oriented and service-oriented development, adapt to the new round of technological revolution and industrial transformation, actively serve the upgrading of industrial foundations and modernization of industrial chains, serve the construction of a modern economic system and the need for higher quality and fuller employment, adhere to the direction of market-oriented, service-oriented development, and employment promotion, adhere to the positioning of high-level technical and skilled talent training, promote the vertical and organic connection of secondary vocational education, vocational education at the junior college level, and vocational education at the undergraduate level, and promote the integration of general and vocational education.

3.2 Positioning Differences of Talent Cultivation in Different Categories of Higher Education

From the classification of higher education and the missions of different types of colleges and universities, it can be clearly stated that the talent cultivation positioning of research-oriented universities is theoretical research and innovative talents. They are committed to discovering and explaining the essence and laws of natural and social phenomena in the basic theoretical research and innovation fields of natural sciences and social sciences, covering the three levels of undergraduate, graduate, and doctoral education, with a focus on graduate training; The positioning of talent cultivation in application-oriented universities is to cultivate applied technology and research-oriented talents, focusing on serving the development needs of regions and industries for talent and scientific and technological application research, covering undergraduate and above levels, with undergraduate and professional master's degree training as the main focus; The talent cultivation positioning of vocational skill-oriented universities is focused on high-quality technical and skilled talents, mainly to meet the demand for frontline talents in production management and services, covering vocational undergraduate and vocational college programs. Among them, vocational undergraduate programs are positioned as high-level technical and skilled talents, mainly to serve the needs of the new round of scientific and technological revolution and industrial transformation, the upgrading of industrial foundations, and the modernization of industrial chains. Taking the new materials industry chain as an example, research-oriented universities cultivate research-oriented talents who can invent new materials, focusing on research and innovation in basic disciplines such as physics and chemistry; Application-oriented universities cultivate problem-solving talents who apply new materials to different fields such as aerospace, building materials, sports and leisure; Vocational skill-oriented universities should cultivate practical talents who can apply new materials to a specific field.(“Table 1”)

Table 1. Classification of talent cultivation characteristics in different types of colleges and universities

Education Classification	Talents Classification	Talent cultivation Field	Talent cultivation Goals	Talents Ability	Talent cultivation Emphasis	Connotation of cultivation mode
Research-oriented type	Theoretical research and innovative talents	Basic theoretical research fields in natural sciences, social sciences, and other fields	Propose new theories, hypotheses or models, enrich the knowledge system of disciplines, promote the development of disciplines, and strive to discover and explain the essence and laws of natural and social phenomena.	Theoretical research and theoretical innovation ability	The cultivation of logical reasoning, theoretical construction, and critical thinking abilities	Deep theoretical knowledge+innovative ability
Application-oriented type	Applied technology and applied research talents	Applying theoretical research results to specific fields such as practical production and daily life	By applying theoretical knowledge, developing new technologies, products or optimizing existing technologies, improving production efficiency, enhancing quality of life, and promoting social progress.	The ability to apply theoretical research results to solve social practice problems	Cultivation of practical ability and innovative spirit	Broad theoretical knowledge + application ability
Vocational skill-oriented type	Technical skilled talents	Frontline fields of operation for economic and social production service positions	Solve career development problems, one should be able to engage in technical practical activities in organizational management and service fields, possess operational skills and be able to carry out practical operations, and meet the needs of social and economic operation and development.	Practical operational skills and the ability to solve technical skills problems in professional positions	Cultivation of professional abilities and qualities	Theory sufficient + professional ability

4. POSITIONING DIFFERENCES OF CULTIVATING TECHNICAL AND SKILLED TALENTS IN VOCATIONAL EDUCATION AT DIFFERENT LEVELS

The updated Vocational Education Major Directory for 2023 (2021 version) includes 361 majors in 19 major categories for secondary vocational education majors, 748 majors in 19 major categories for higher vocational education majors, and 273 majors in 19 major categories for higher vocational undergraduate majors. It can be seen that there are significant differences in the professional settings among middle, high, and undergraduate vocational education. Although China does not have clear standards for the training of vocational, higher vocational, and undergraduate talents, the 2019 "Guiding Opinions of the Ministry of Education on the Development and Implementation of Professional Talent Training Plans for Vocational Colleges" put forward unified requirements for vocational college talent training, which emphasizes the equal importance of imparting basic knowledge and cultivating professional abilities, strengthening students' professional literacy and professional technical accumulation, and integrating professional spirit, professional spirit, and craftsmanship into the entire process of talent training. At the same time, efforts should be made to cultivate students' innovative spirit and practical ability, enhance their vocational adaptability and sustainable development ability. By analyzing the descriptions of the training objectives for high-level undergraduate talents in vocational education in the four previously released documents (“Table 2”), it can be found that there are differences in the training of high-level undergraduate talents in vocational education. Junior vocational education cultivates high-quality workers and skilled talents who work on the front line of production and service. They should possess necessary cultural basic knowledge, professional

knowledge, and relatively proficient vocational skills, as well as strong employability and certain entrepreneurial abilities; Higher vocational education cultivates skilled talents with essential theoretical and specialized knowledge, practical work abilities and skills, and entrepreneurial spirit; Vocational undergraduate education cultivates high-quality technical and skilled personnel with basic theoretical knowledge and skills, advanced abilities such as technology research and development, design, and the ability to transform achievements, solve comprehensive problems, and perform advanced operations. They also possess preliminary innovation, employment and entrepreneurship abilities, and sustainable development capabilities.

Table 2. Training objectives for talents at different levels of vocational education

Document number	Document name	Talent cultivation goals
Jiaozhicheng [2019] No. 13	Guiding Opinions of the Ministry of Education on the Formulation and Implementation of Professional Talent Training Plans for Vocational Colleges	Emphasis should be placed on imparting basic knowledge and cultivating professional skills, strengthening students' professional ethics and technical accumulation, and integrating professional spirit, professional spirit, and craftsmanship spirit into the entire process of talent cultivation... Emphasis should be placed on the mutual growth of learning and application, the integration of knowledge and action, and the cultivation of students' innovative spirit and practical ability, as well as the enhancement of their vocational adaptability and sustainable development ability.
Jiaozhicheng [2009] No. 2	Principles and Opinions of the Ministry of Education on Formulating Teaching Plans for Secondary Vocational Schools	Cultivate high-quality workers and skilled talents who meet the requirements of China's socialist modernization construction, have comprehensive development in morality, intelligence, physical fitness, and aesthetics, possess comprehensive vocational abilities, and work on the front line of production and service. Having basic scientific and cultural literacy, the ability to continue learning, and an innovative spirit; Having good professional ethics, mastering necessary cultural foundation knowledge, professional knowledge, and proficient vocational skills, possessing strong employability and certain entrepreneurial abilities.
Jiaogao [2000] No. 2	Opinions of the Ministry of Education on Strengthening the Training of Talents in Higher Vocational and Technical Education	On the basis of possessing essential theoretical and specialized knowledge, students should focus on mastering the basic abilities and skills required for practical work in this professional field, having the practical work ability to quickly adapt to the needs of frontline positions in production, construction, management, and service, and having entrepreneurial spirit, good professional ethics, and a sound physique.
Ji Jiaozhicheng [2014] No. 1	Guiding Opinions on the Development and Implementation of Talent Training Plans for Vocational Undergraduate Majors (Trial)	Adapting to the needs of economic and social development, aligning with the high-end, intelligent, and green transformation of industries, following the law of cultivating technical and skilled talents, targeting comprehensive and complex occupational positions (groups), cultivating high-quality technical and skilled personnel with good qualities, knowledge, and skills, mastering relatively systematic basic theoretical knowledge and technical skills, mastering certain technical research and development, process design/scheme design, process monitoring, and technical practice abilities in this professional field, being able to engage in the transformation of scientific and technological achievements and experimental results under guidance, producing and processing high-end products, providing high-end services, being able to solve comprehensive and complex problems and carry out advanced operations, possessing preliminary innovation ability, employment and entrepreneurship ability, and sustainable development ability.

From the above, it can be seen that vocational schools should have necessary cultural and professional knowledge in the field of knowledge, vocational schools should have necessary basic

theoretical and specialized knowledge, and vocational undergraduates should master systematic theoretical knowledge; In the field of abilities, vocational schools should have strong employability and certain entrepreneurial abilities, vocational schools should have practical work abilities and entrepreneurial spirit, and vocational undergraduate schools should have technical research and development design abilities, innovation abilities, employment and entrepreneurship abilities, and sustainable development abilities; In terms of literacy, there is a common emphasis on professionalism, professionalism, and craftsmanship. Taking tourism services and tourism management as an example, junior vocational schools need to master the cultural foundation knowledge of high school and the basic knowledge of tourism services in the knowledge field, and have the ability to find employment, that is, the basic ability to enter the tourism industry; In the field of knowledge, higher vocational colleges should be familiar with the core concepts, basic principles, and basic methods of tourism services and management, and possess the ability to work practically, that is, the ability to effectively complete job duties; Vocational undergraduate programs should not only have a comprehensive and in-depth understanding and mastery of tourism disciplines or fields, but also systematically understand the connections between tourism sub fields and interdisciplinary fields, and possess the ability to develop and design innovative tourism service products.

5. TRAINING OBJECTIVES DIFFERENCES OF TECHNICAL AND SKILLED TALENTS IN SECONDARY AND UNDERGRADUATE EDUCATION BASED ON JOB GROUPS

Taking the hotel industry as an example, job groups can be divided into different job groups according to organizational structure, such as general manager's office, human resources, marketing, finance, engineering, catering, room service, etc. Different job groups and positions within each group have different requirements for knowledge, abilities, skills, and nutrition, resulting in horizontal and vertical differences. Horizontal differences are reflected in the overall requirements for knowledge, abilities, and qualities among different job groups. Frontline operational job groups such as catering and housekeeping emphasize practical skills and service awareness, which are more suitable for talent cultivation in secondary and higher vocational schools; The second-line functional job groups such as marketing, human resources, and finance place greater emphasis on management skills and regulatory awareness. For example, hotel revenue management positions require relatively rich industry knowledge, market knowledge, financial knowledge, and data analysis knowledge. They have high requirements for data analysis, predictive decision-making, pricing ability, etc. Therefore, they are more suitable for undergraduate or even graduate level talent cultivation.

The vertical differences in job groups within the hotel industry are reflected in the varying requirements for knowledge, abilities, and qualities at different levels within the same job group. Taking the catering job group as an example, it includes segmented job groups such as the management department, catering kitchen, catering service, etc. Each job group includes different levels of basic employees, supervisor level employees, manager level employees, and director level employees, and the corresponding vocational education levels are also different. Taking vocational schools as an example, the focus is on cultivating side dish workers, vegetable cutters, and junior chefs for hot dishes, cold dishes, and pastries, as well as basic catering service personnel; Vocational education can cultivate senior chefs such as key chefs who possess excellent culinary skills and innovative abilities, as well as supervisory talents in catering services who are proficient in the process and knowledge of catering services and have certain team management abilities; Vocational undergraduate programs should cultivate high-level talents who possess both superb culinary skills and innovative culinary abilities, as well as the ability to control costs and manage teams, as well as managerial and directorial talents in catering services. The interconnection of this series of talents is also constantly improving in their careers. For example, the catering service job group should focus more on optimizing and improving service skills when connecting vocational and higher vocational education, while improving abilities in supervision, team management, complaint handling, etc. When connecting higher vocational education and undergraduate education, they should focus on improving knowledge and abilities in marketing, cost control, financial management, and strategic management.

In summary, when it comes to the training of professional talents for a specific industry, it is necessary to conduct a comprehensive analysis of the industry job group and the knowledge, abilities, qualities, and needs of different positions in the job group. Based on the results of horizontal analysis, the talent training levels for different industry job groups should be determined, and the professional setting classification and starting point for different levels of professions should be reasonably planned. Based on the results of vertical analysis, the positioning and standards for the training of professional talents at different levels should be determined, focusing on their respective job groups, and thus forming effective connections between talents at different levels.

6. CONCLUSION

Vocational education, as type education, fundamentally stems from differences in individual intellectual structures. Therefore, from the perspective of educational equity, it is necessary to deeply develop this type of intellectual structure and carry out targeted knowledge production. From the perspective of social development, the evolution of the industrial chain requires the deep cultivation of different types of talents. Vocational education and general education need to each play their own characteristics in order to form an effective connection between the industrial chain, talent chain, education chain, and innovation chain. Therefore, vocational education that focuses on the cultivation of technical and skilled talents should not have a distinction between high and low education and general education. The differences between different levels of vocational education and higher education mainly stem from the horizontal differences between different job groups and the vertical differences within job groups. It is a must to effectively set up middle and higher education majors according to the differences in talent specifications at the horizontal level of specific industries and enterprise job groups, in order to avoid homogeneous settings; Based on the vertical differences within the job group, it is necessary to establish training standards and connection standards for talents at different levels of the same major, focus on the cultivation of talents at their respective levels, and avoid vague positioning or neglecting the essence caused by blindly extending upwards, in order to achieve a smooth path for the cultivation of technical and skilled talents within vocational education.

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