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Overview and developmental analysis of China's technical and vocational education and training

 Yinghui Fan¹,  Haiyan Zheng²,  Romeo Salvo Ebonite³,  Werson Role De Asis^{4*},  Ronaldo Antalan Juanatas⁵

^{1,3,4,5}College of Industrial Education, Technological University of the Philippines, Ermita, Manila, 1000, Philippines.

²Weifang University of Science and Technology, Shouguang, Shandong, 262700, China.

Corresponding author: Werson Role De Asis (Email: werson_deasis@tup.edu.ph)

Abstract

Vocational and technical education and training (TVET) in China is a key pathway to enhance labor productivity and drive economic development. Since the initiation of reforms and opening up, under the high attention of the Chinese government, we have experienced rapid development, from quantity expansion to quality improvement. This article delves into the current status and development trends of vocational and technical education in China, analyzing it from various aspects such as the legal environment, infrastructure, teacher enhancement, teaching methods, and cultural context. This paper conducts macro-research and analysis through policies and regulations and refers to relevant papers from Google Scholar and CNKI for micro-analysis. A telephonic interview was carried out with a total of 38 participants from four different vocational schools, industries, and enterprises. The user conducted similarity and differentiation comparisons using both Excel and Mind Mapping software. The research shows that China's vocational education market has entered a phase of rapid growth, and online education has also seen substantial development. However, due to China's vast territory and constraints arising from economic development and regional disparities, as well as diverse ethnic and cultural factors, vocational education and training (TVET) still faces numerous challenges, such as uneven economic and industry development, urban-rural disparities, teacher shortages, and the separation of schools and enterprises. This article aims to provide insights into the development of vocational and technical education and training from the perspectives of personalized education, talent cultivation, and talent needs. It is intended to expand and enhance the influence of vocational education development and broaden the perspective of vocational and technical talents.

Keywords: Career planning, School enterprise cooperation, TVET, Vocational and technical education, Vocational education, Work-integrated learning.

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1. Introduction

According to China's modern national education system, the Ministry of Education (MOE), which is in charge of vocational education in secondary and higher vocational institutions, and the Ministry of Human Resources and Social Security (MHRSS), which is in charge of vocational training in training institutions, coordinate technical and vocational education and training (TVET) programs in China. Vocational education is divided into levels starting from junior high school graduation, as shown in Figure 1. It consists of various levels of vocational education, including secondary vocational education, specialized senior vocational education, undergraduate-level vocational education, and professional degree graduate education. It provides vocational and technical skills training and development for people of different ages. It mainly adopts a service-oriented, employment-oriented, combined engineering and on-the-job training model to train high-quality workers and skilled personnel for society and to meet the real needs of economic transformation and upgrading, social management innovation, and livelihood improvement.

Whether a diploma certificate is issued or not, China's vocational education system can be divided into two categories: diploma vocational education and non-diploma vocational education. A diploma in vocational education includes secondary and higher vocational education, with public institutions as the leading operators and private institutions as auxiliary. A non-diploma in vocational education refers to vocational training that meets industry needs. Meanwhile, based on different training objectives, it can be divided into enterprise management training, vocational skills training, and vocational examination training. Private institutions are the leading operators in this category.

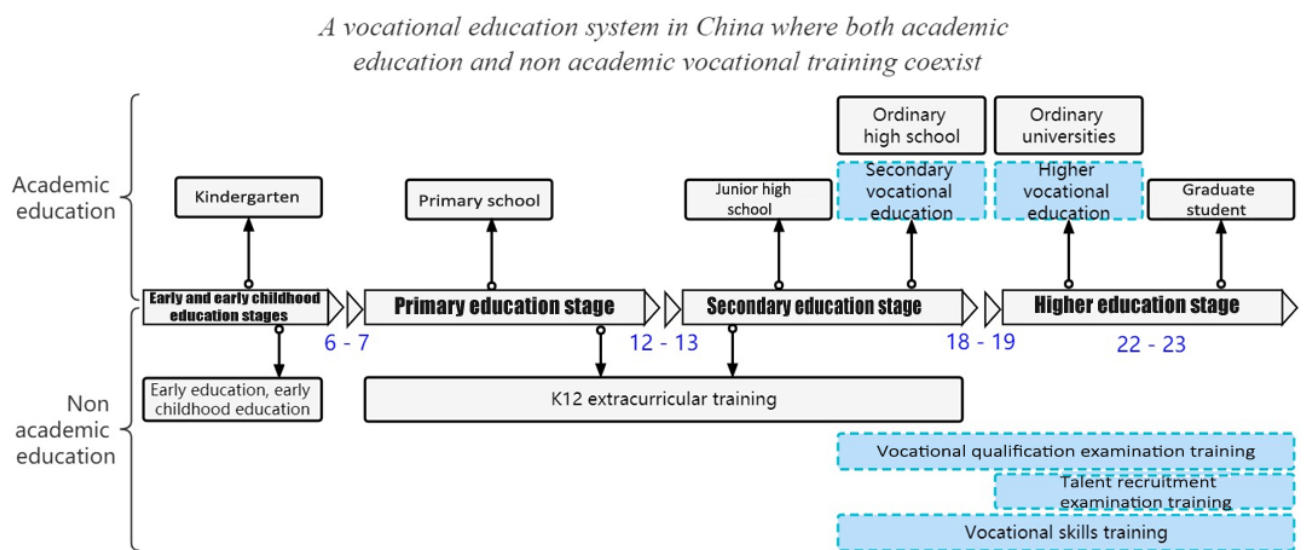


Figure 1.
China's educational system.

This paper surveyed and researched four well-known vocational and technical colleges in China. These four colleges are full-time, regular higher vocational colleges that have received government approval and are registered with the Ministry of Education. They have the independent authority to award nationally recognized academic diplomas. Among them, three are public institutions, and one is private. The research scope includes interviewing faculty members, employers, student representatives, and public (parent) representatives from four well-known vocational and technical colleges in China and analyzing websites, public materials, and other relevant information.

The following issues are explored and demonstrated through research on the development stages, current system, and future development trends of vocational education and training (TVET) in China. The current institutional framework of China's vocational education system (b) Information integration between society, industry, enterprises, and vocational colleges; (c) Visiting study and promotion paths for teachers in vocational colleges; and (d) The construction of work-study integration, personal values, and career planning for students in vocational college.

In recent years, China's vocational education has undergone a series of educational system reforms, from the initial stage of development to a rapid growth stage and from a deepening reform stage to a development and improvement stage, achieving significant progress. Through research, learning, and a deep understanding of the current situation, future development trends, and pressing issues of China's vocational and technical education and training (TVET), insights have been proposed to accelerate the system framework construction of TVET, enhance and consolidate the social status and influence of vocational education, and expand its attractiveness among the people. This has profound significance for the development of vocational education in China.

The organization of this paper is as follows: Section 1 introduces the institutional framework and education system of vocational education and training (TVET) in China, the background, the relevant issues to be researched and argued, and the research significance. Section 2 focuses on elaborating on research points and conclusions of the literature cited in this paper, as well as the paper's theoretical framework. Section 3 introduces the research methods used in this paper and the scope of data collection. Section 4 analyzes and discusses based on research materials and interview records and puts forward opinions. Lastly, Section 5 points out the research conclusion of this paper.

2. Literature Review

The study by Li, et al. [1] argues that the importance of TVET for national development has been recognized by global organizations [1]. With the continuous development of our country's social economy, vocational education and training in China have undergone institutional improvements through central coordination and local management. It has achieved large-scale development through deepening education system reforms, policy openness, and innovative integration. According to Yuan [2] research, vocational education and training in China have achieved specific results, forming a reasonable structure for vocational education and continuously improving the quality of vocational skills and talents. The employment rate of secondary vocational graduates has remained stable at around 95%, and the employment rate of higher vocational graduates has exceeded 90% Yuan [2]. Lin [3] research points out that China's higher vocational education has experienced 20 years of rapid development, has already occupied half of the "prominence" of higher education, and has become a backbone force of vocational education [3].

Sun [4] research proposes that the new Vocational Education Law passed in 2020 sets the legislative direction for the development of vocational education, strengthens government functions, encourages participation from all sectors of society, and establishes a diversified mechanism for vocational education that includes industry guidance and corporate involvement [4].

As a developing country, China's economic level is still in development, and there are still many aspects of vocational education that need to be reformed and improved. Based on China's vast territory and the differentiated characteristics of regional economic development, Liu [5] research points out regional development imbalances and structural imbalances in China's vocational and technical education. In addition, there is insufficient integration between industry and education, insufficient cooperation between schools and enterprises, insufficient education funding, a scarcity of "dual-qualified" and skilled teachers, and social phenomena such as "educational credentialism" and "diploma discrimination" [5-7]. The vocational training market lacks a strict qualification certification system and regulatory means, and the quality of training is not optimistic [8].

The requirement to establish a high-quality vocational education system is urgent. Zhuang [9] proposes in their research that the development of vocational education in China should be based on central planning, local governance, and integration of vocational and general education and should follow a path of organic unity between personal development and national needs, as well as open and inclusive development [9]. It should take the path of high-quality development through collaborative innovation among the "three educations" (vocational education, higher education, and continuing education) and integration of science and education [10].

The Xing [11] study pointed out the urgent need to establish a sound education mechanism that combines morality, skills, and knowledge, to establish a talent development mechanism that bridges vocational and higher vocational education, and to promote the integrated development of vocational education with general education and continuing education. Efforts should be made to cultivate millions of high-quality and highly skilled talents, promote China's transition from a manufacturing country to a manufacturing power, from "Made in China" to "Created in China," and from a large vocational education country to a strong country [11]. The orientation of vocational education in China is gradually shifting from an emphasis on educational levels to educational types. It is emphasised that the educational essence and teaching characteristics of higher vocational education should be used to create regionally outstanding and leading higher vocational institutions and support the healthy, substantial, and scientific growth of vocational education [12, 13]. A national qualification framework is suggested to achieve mutual recognition of teaching achievements and qualifications at all levels, promoting in-depth cooperation between schools and enterprises through improving the 1+X certificate system [14-17]. The government is responsible for promoting collaboration and ensuring that small and medium-sized enterprises receive irresistible incentives to cooperate with vocational and technical education and training schools and colleges [18]. In Cui, et al. [19] research, vocational education should serve the construction of a modern new development pattern, adapt to the inheritance and innovation of culture in the new era, train young talents to become the core of ideological and value guidance in groups, and build a socialist cultural power [19].

Nan [20] research proposes that in promoting the training of vocational education teachers, effective ways for the professional development of Chinese vocational education teachers should be explored based on an international perspective, promoting the training, improvement, and team building of "dual-qualified" teachers [20].

A representative of the National People's Congress [21] proposed in his research that the proportion of vocational education funding should continue to increase in terms of education funding allocation. It is necessary to establish a standard for per capita financial allocation for secondary vocational education appropriate for the scale of school operation, teaching quality, and cost of vocational schools. The focus should be on vocational education to ensure that the per capita funding for secondary vocational education students is higher than that of ordinary high school students. At the same time, it is necessary to establish a third-party quality evaluation system to enhance the recognition of vocational education achievements further. Through organizing visits from model workers and artisans to schools, building innovative workshops for model workers and artisans in relevant professional fields, and promoting the further improvement of vocational education teaching standards [21]. In addition, Ou [22] also said that building platforms for integrating industry and education can allow for a wide range of exchange activities and the inclusion of innovative elements in the growth of industrial clusters. This can lead to the collection of policies, funds, resources, and elements for integrating industry and education and achieving the effects of the industrial cluster [22].

The outbreak of the novel coronavirus in 2019 has affected the development of global politics, economy, culture, and education, but it has also provided opportunities for the transformation of vocational education. Research by Qin and Li [23], Qian [24], and Fang and Jili [25], among others, pointed out that the impact of the 2019 novel coronavirus epidemic has

promoted the further development and application of distance education and artificial intelligence, emerging more artificial intelligence technologies and learned solutions, innovative laboratory programs, and new Artificial Intelligence (AI), abbreviated as AI majors and courses. Online classrooms, flipped classrooms, micro-classes, blended teaching, and other teaching methods have enhanced students' adaptability to diversified learning styles and cultures, making vocational education more responsive, flexible, and powerful than traditional education in the past [23-25].

Zhang and Cai [26], Lin, et al. [27], and Ran [28] proposed the concept of the "metaverse" in vocational education. It refers to a virtual and real integrated vocational education environment created using emerging information technologies such as VR/AR/MR, digital twins, 5G, artificial intelligence, and blockchain. This environment simulates teaching scenarios and provides students with immersive experiences. Human-machine interactive learning enriches the authenticity and situationality of classroom teaching, strengthens the effectiveness of learning, and promotes the development of students' thinking and innovation abilities. It provides a new direction for the future development of vocational education [26-28].

The informatization of vocational education has become a crucial task, despite being a product of science and technology development. There still needs to be a significant gap in the infrastructure construction of vocational education information. Qu [29] research suggests that the government and relevant departments should increase investment to improve the construction and application of information technology teachers and digital resources [29].

The inaugural World Conference on the Development of Vocational and Technical Education, initiated and hosted by the Chinese government, was held in Tianjin, China. The event attracted representatives from more than 120 countries and regions. Concurrently, the first World Skills Competition for Vocational Colleges was also held, drawing participation from over 100 countries, nearly 300 vocational colleges, and more than 1000 contestants. This competition is the largest vocational college skills competition with the highest number of participating countries to date. The competition introduced innovative elements such as international and domestic participants forming teams to collaborate and a combination of "online competition venues and offline competition locations," resulting in 101 awards.

In 2022, the WorldSkills Special Competition was held in 15 countries, including Germany and Japan, from mid-September to late November, with 62 competition events. The WorldSkills Competition is the "WorldSkills Olympics" and is the highest-level international vocational skill competition. Its competitive level represents the world's advanced level of vocational skill development.

Ma Hongda, from the 16th class of the Building Decoration Technician program at Zhejiang Construction Technician College in China, won a gold medal in the "Plastering and Drywall Systems" project at the Special Competition. He was dubbed the world champion of "plastering" by netizens.

As Chinese competitors won gold and silver medals at the WorldSkills Competition, vocational schools behind them gradually entered people's vision. Promoting vocational education and training has played a role in changing the public's bias and understanding of TVET.

In terms of the construction of the vocational education system, the research by Yi, et al. [30] suggests that the acceleration of modernizing the vocational education system should be promoted to enhance the quality of vocational education talent cultivation and the employment quality of vocational college graduates [30]. The study by Ha, et al. [31] argues that the design of technical and vocational education and training systems should be tailored to unique cultural, sociological, and economic backgrounds. Ha, et al. [31]. Luo, et al. [32] emphasize that poor communication skills can lead to underperforming business organizations. In the current highly competitive labor market demands, the communication skills provided by vocational and technical education and training institutions are crucial Luo, et al. [32]. Mingdan, et al. [33] point out that the employability skills of TVET graduates in the 21st century encompass both life and vocational skills, learning and innovative capabilities, information search and technological skills, as well as extensive interdisciplinary skills to address changes and complex challenges Mingdan, et al. [33]. Yang [34] highlights in their study that talent development positioning is critical to the quality of operation in vocational universities and is key to nurturing the core competitiveness of graduates [34]. The research by Li and Seeberg [35] proposes that leading a valuable life is an integral part of one's values [35].

Based on a review and comparison of previous studies, the innovation of this article lies in focusing on the development status of China's vocational education and training system and looking to the future from the perspectives of the construction of the self-value system of skilled personnel, personal career planning, and lifelong learning. It aims to achieve organic unity and coordinated development of personal growth and national development needs, realize self-value, and contribute to China's socialist cause.

3. Research Methodology

This study *employs* a combination of literature review and qualitative research methods, conducted in two distinct phases:

- a. The macro-level analysis is conducted through the examination of government policies, initiatives, and legal frameworks. The review encompasses pertinent material sourced from reputable platforms such as Google Scholar and the China Knowledge Network. A detailed, partial analysis is performed on infrastructure, teaching methods, and the cultural environment.
- b. Interviews are conducted with four vocational school management personnel, faculty members, counselors, and student representatives. These interviews aim to comprehensively understand qualitative data related to infrastructure development, human resource structure, professional curriculum development models, teaching methods, school-enterprise cooperation, admissions, student training plans, quality assessment, graduate employment placement, and existing issues.

Interviews are also conducted with representatives of employing enterprises to gather insights into new requirements for technical-skilled talents and specific measures companies adopt to enhance the quality of skill-oriented positions.

Interviews with parents, graduates, and the general public collect perspectives on vocational education awareness, recognition, expectations, and career planning.

3.1. Data Collection and Analysis

A total of 40 interview invitations were extended, resulting in the collection and documentation of 38 valid interview records (including 10 faculty members, 8 parent representatives, 8 corporate management representatives, 6 student representatives, and 4 graduate representatives).

Open-ended question lists were prepared before interviews to gather relevant and effective research data. Telephone interviews were conducted in April 2023, each lasting approximately 15 minutes. Verbal consent was obtained from all participants accepting the telephone interviews and permission to record the conversations. Subsequently, recorded files were organized, sorted, and coded. Mind Master software was employed for mind mapping analysis, facilitating divergent thinking and final summary reflections. Constructive directions were identified, and relevant themes were listed within the mind map, encompassing all data for each theme. Similarities and differences were compared using Excel software. The compiled records were then organized, categorized, studied, and analyzed. Additionally, interviews with representative participants were subject to further examination and discussion for insight into typical cases.

4. Results and Discussion

4.1. The legal Environment of TVET in China

China has made significant efforts in recent years to enhance the legal framework, implement various policy reforms, and strengthen institutional infrastructure to support vocational and technical education and training. These initiatives have been instrumental in driving the progress of vocational and technical education and training, thereby bolstering the quality and standards of vocational education, improving the skills of the workforce, and fostering economic growth.

In September 2020, the Ministry of Education of China jointly issued the "Action Plan for Improving the Quality and Efficiency of Vocational Education (2020-2023)," proposing to further clarify the positioning and development priorities of vocational education at all levels, systematically design and promote the construction of China's modern vocational education system, and form a systematic framework for modern vocational education.

On October 12, 2021, the Central Committee of the Communist Party of China and the State Council issued "Opinions on Promoting the High-Quality Development of Modern Vocational Education," proposing the main development goal of achieving the overall level of vocational education among the top in the world and basically building a skilled society by 2035.

In 2022, the Vocational Education Law was revised for the first time in 26 years, clarifying that "vocational education is an equally important type of education as general education" and enhancing the important status of vocational education at the level of the national education system. The goals and principles of vocational education in China, as well as the responsibilities of the government and the management requirements for educational institutions, have been clarified in the form of laws and regulations.

At present, China has established the world's largest vocational education system, with 11200 vocational schools and over 29.15 million students. Vocational education has broad prospects [31].

At the same time, the Chinese government has also introduced a series of financial support policies, established special funds, provided loan support, granted tax incentives, and encouraged listed companies to carry out vocational education [32], providing financial support for vocational and technical education and training institutions.

4.2. Infrastructure

These four higher vocational colleges, which are the scope of the study, represent high-level and high-quality colleges in terms of campus location and infrastructure. There are national demonstration higher vocational colleges, modern apprenticeship pilot units, national civilized units, and advanced vocational education units in the city. As the cradle of frontline technical application talents, they have provided many talents for social construction over the years, positively contributing to China's economic construction and social development. The campus is green and beautiful, with various professional teaching laboratories, computer terminals, multimedia classrooms, and off-campus internship training bases.

However, in some remote areas, the teaching conditions in many schools still need to be improved. For example, a vocational school funded by county-level finance support needs more facilities for student practical training due to insufficient financial support. The teaching process is mostly based on theoretical learning, and students lack practical training environments. Many basic tool models cannot be completed in teaching because of the need for more facilities. These students must spend time and tuition fees to complete pre-job training after graduation. After graduation, these students will find it difficult to quickly adapt to the requirements of their job positions, indirectly pushing the labor force into society.

The responsible comrades of the Vocational Education and Adult Education Department of the Ministry of Education stated in an interview with reporters that the teaching conditions are the foundation of the high-quality development of vocational education. However, vocational education investment in China is still in arrears, and the foundation of secondary vocational schools needs to be stronger. The long-term relative low investment of financial education funds at all levels has led to the general non-standardization of teaching conditions. The problems of being "empty, small, scattered, and weak" are prominent, dramatically affecting vocational education's talent training quality and attractiveness.

To further improve the quality and attractiveness of vocational education, on November 2, 2022, the Ministry of Education and five other departments jointly issued the "Implementation Plan for the Vocational School Teaching Condition Standard Project," requiring comprehensive improvement of the teaching conditions of vocational schools. To ensure the

classroom operation and on-campus training of vocational school students, local governments and various departments in charge of vocational education are required to strengthen the infrastructure construction of vocational education and integrate various resources to build a batch of high-level training bases that integrate internship training, social training, and technical services. Vocational colleges must equip themselves with multimedia teaching equipment, computers, facilities, related teaching materials, books, etc., per the standard requirements specified in the implementation plan. At the same time, they must strengthen equipment maintenance and updating plans, integrate new knowledge, new technologies, and new processes into the curriculum, and introduce them into teaching.

4.3. Teaching Methods

The following are different teaching methods implemented in the following courses:

4.3.1. Science and Technology

Teachers focus on mastering knowledge and skills and complete multiple teaching steps such as lectures, demonstrations, imitations, and practices. They invite external experts to teach, exchange experiences with industry and business representatives, and conduct multiple practice sessions, including on-campus, social, and off-campus practices. They also arrange teaching plans based on local needs, industry-education integration, quality characteristics, and specialized development.

4.3.2. Agriculture

Teachers showcase real objects or visual aids to students and conduct demonstration experiments, including pictures, charts, maps, specimens, models, videos, teaching films, and experimental demonstrations. They entirely use on-campus practice venues such as the Colorful Seedling Breeding Center, Plant Disease and Pest Control Center, Teaching Animal Hospital, Food Safety Testing Center, and many other comprehensive on-campus training bases and laboratories, as well as external cooperative bases with schools and enterprises. External experts and industry representatives are also employed to discuss technology and experiments.

4.3.3. Mechanical Courses

Teachers lead students in operating and maintaining electronic or mechanical equipment in professional classrooms. They also teach, learn, and do things to complete the prescribed requirements. Through an integrated teaching method of theory and practice, theoretical teaching is combined with practical teaching. School-enterprise interaction, industry-education docking, and learning and doing are kept as one.

4.3.4. Nursing

Teachers use situational simulations to lead students to learn from interns' perspectives, think, explore, discover, and solve problems. They cooperate with various city medical and health institutions, pharmaceutical companies, and research institutions to provide favorable conditions for students' clinical teaching and internships. They also conduct clinical teaching with multiple cooperating hospitals and clinical teaching hospitals in the city. This forms a "close cooperation, shared education" three-stage fusion talent training mode, fundamentally ensuring the quality of education and teaching.

4.4. Curriculum

According to interviews with vocational college management, teachers, and counselors, most vocational colleges generally set majors and courses based on the national professional directory. National vocational schools have opened more than 1,300 majors and over 120,000 professional points, which cover various sectors of the national economy [30].

4.5. Cultural Environment

4.5.1. Interview with Parents of High School Students

Ms. Jin is a career manager at a cutting-edge technology company with many years of experience managing technology companies. She is also the mother of a high school student, and her interview represents the standard views of many high school parents.

Many believe vocational and regular high schools are a dividing line in life. Students who have yet to work hard enough to enter regular high schools have to choose to enter vocational schools to learn vocational skills, except for a few students from wealthy families who can enter private high schools to continue their studies. Many parents look at vocational school students through colored glasses, thinking that vocational school students can only enter the lowest level of society after graduation, become blue-collar workers, earn little income, have low social status, and have a bleak future.

4.5.2. Interview with Regular High School Teachers

Ms. Lin is an outstanding Chinese teacher with over 20 years of experience teaching high school Chinese. She is very fair and has a forward-looking perspective from the perspective of subject planning and personalized teaching. She gave an evaluation:

Social development requires people with different abilities to invest in social construction and people's livelihood development. Our country has popularized nine-year compulsory education, and all children can complete primary and junior high school education with their peers. However, some students have a solid ability to absorb knowledge, have a deep interest in cultural knowledge, and like to explore the ocean of knowledge. These students can quickly enter regular high schools,

enter universities, and further their studies in higher education institutions. However, almost 50% or even more of students lack a strong interest in cultural knowledge, find learning boring, are out of sync with the teaching schedule, and cannot keep up with the pace. However, these students often have a lot of energy and are good at hands-on skills. They are very suitable for entering vocational schools. Vocational schools have less pressure on cultural knowledge courses, and they can choose to study and further develop in their areas of interest. With further age and mental growth, they can supplement and enrich their cultural knowledge in higher vocational colleges. From the perspective of personalized teaching, this is an ideal path for growth.

4.5.3. Interview with Representatives of Vocational Colleges

President Liu is the president of a well-known vocational college in China and has worked in the post for eight years. He explained from the perspective of vocational colleges' education and training of vocational and technical talents and social development needs. He elaborated on different industries, job categories, and characteristic training needs.

Currently, TVET has low recognition and evaluation in our society. However, our social development needs the technical talents of vocational colleges, and our education industry needs to cultivate the talents society needs. Although many people think that only those who cannot enter high school or afford college will choose to go to vocational schools, our society needs people with all kinds of talents, and not only those who go to college can become talented. Look at those who have not attended university but still constantly learn and become skilled in their favorite projects. Which company does not compete with them? Some industries, such as handicrafts and woodworking, require people with practical skills. Therefore, vocational education and training are indispensable to our education system.

4.6. Discussion

4.6.1. The Current Status of TVET Development in China

Figure 2 shows the scale and growth rate of China's vocational training market from 2015 to 2023. Based on research into policy regulations, relevant literature, and interview data in the field of vocational education in China in recent years, the following findings have been made:

- Vocational education in China has undergone stages of initial development, rapid growth, deepening reform, and development and improvement, with vocational education growing rapidly and widely, producing many skilled personnel for all sectors of society. However, the quality of vocational education has remained the same, along with the scale of development. China has entered the ranks of world vocational education powers but has yet to become a strong country in vocational education.
- Funding for vocational education is scarce. Education funding is the foundation of development and all material conditions. Due to a shortage of funds, many vocational colleges and universities need more funding for their specialties, shortages of teaching staff, and outdated professional equipment compared to production technology development.
- Vocational education certificates and vocational qualification certificates are separated. The existing Vocational Education Law needs mutual integration among various types of education within vocational education.
- There is still a particular information gap between professional settings, training directions, and the needs of employers. The mechanism for frontline teachers in vocational colleges and universities to actively participate in enterprise visits and studies needs to be improved, and the talent training system is seriously disconnected from the needs of the labor market.
- Vocational schools have a low social status among the people. The social status of vocational school teachers is lower than that of high school teachers.

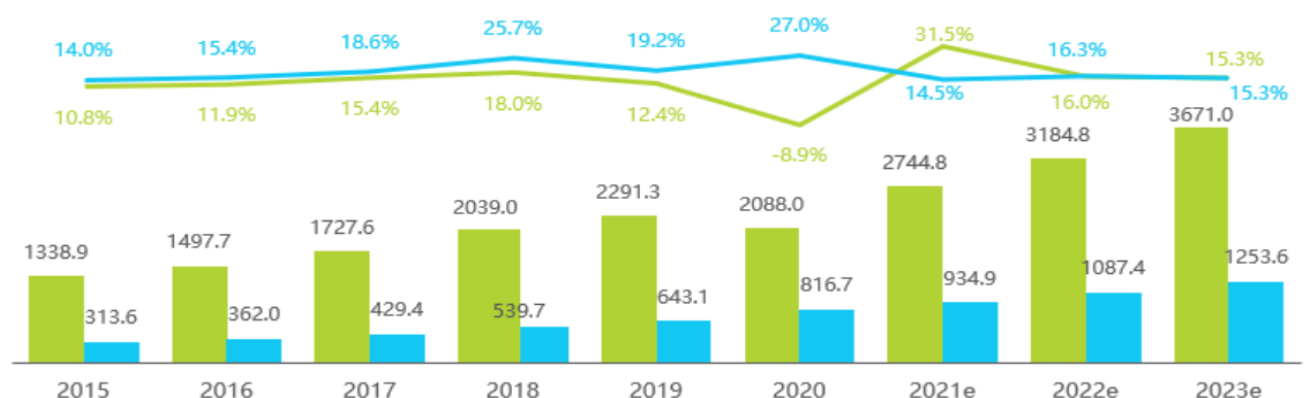


Figure 2.

The scale and growth rate of China's vocational training market from 2015 to 2023.

Source: IT Orange and iResearch Consulting.

4.6.2. Problems that Urgently Need to be Addressed in Vocational Education and Training (TVET) in China

Vocational education shoulders the crucial responsibilities of talent training, serving society, and innovation of skills. It is a necessary force to promote technological development and social progress. The quality of vocational education is directly

related to the quality of people's lives and the inheritance and innovative development of superior technology. Therefore, the following issues that urgently need to be addressed in the development of vocational education should be given more attention:

- a. Funding investment: Vocational education differs from general education in the characteristics of vocational skill training, practical training, digital terminals, simulation classrooms, etc., requiring more funding investment. Especially in the middle stage of vocational education, the allocation of per capita funding support needs to be increased.
- b. Faculty construction: As a major manufacturing country, China must invest more in master artisans. The proportion of high-skilled craftsman-type teachers in the vocational education faculty must be increased. At the same time, it is necessary to improve vocational college teachers' growth and promotion plans and broaden the research and development paths for talents.
- c. Diversified cooperation mechanisms: Many vocational colleges still require assistance with carrying out practical training, school-enterprise cooperation, and the integration of industry and education due to a variety of factors, such as funding, systems, and policies. This directly affects the quality and efficiency of the output of vocational and technical talents. Therefore, a long-term mechanism for school-enterprise cooperation and industry-education integration is needed.
- d. Information and resource sharing platform: Information asymmetry affects the quality of talent training in vocational colleges and prevents companies from recruiting qualified, skilled talents. Establishing a "school-enterprise communication mechanism" under the direction of the government, the industry, and businesses can encourage resource sharing and technical exchanges and strengthen the soft power of cultivating high-quality skilled talents, which is very urgent.

To solve these problems, there are still many difficulties at the national and social levels, and various background factors influence them. However, progress can be achieved as long as we develop and strive in the right direction.

4.6.3. Discussion on the Construction of the Value System for Skilled Talents

Our society is one of interaction and connection between people. When students transition from vocational schools to society and enter the workforce, they transform from being students to becoming independent, skilled professionals. They leave behind the protection of school and family and face the most basic level of work and life in society. Our priority should be to learn how to survive, then learn how to live, and then refine ourselves through life. This requires the support of a strong and honest value system. This support is reflected in the ability to remain strong in the face of difficulties and setbacks, to remain steadfast in our beliefs, to persevere in the face of adversity, and to maintain a positive attitude even in the face of failure. This honest and resolute value system can help students develop a sunny, responsible, and resilient personality full of personal charm. It will be deeply rooted in the subconscious, becoming the ideological foundation for their future work and life and a powerful force in their growth. By facing work and life head-on and attracting like-minded individuals or teams, we can progress and develop together until we become leaders of the younger generation.

There is a saying in China that good character can make up for a lack of ability, but ability cannot make up for a lack of character. This means that a person may have some shortcomings in their abilities, but if their character is excellent, they can still gain recognition from their organization. If they work hard, they can improve their abilities and compensate for their weaknesses. However, if a person's character is poor, even if they have strong abilities, it is also difficult to gain recognition from the organization.

Therefore, while cultivating skills is important, we must also carefully plan to construct values and professional ethics. Vocational schools should integrate the construction of a value system into every aspect of skill training and campus life and cultivate positive education in the depths of students' hearts, enabling them to benefit for life in their future work and lives. Students should learn skills, how to work, how to plan their careers, how to live, and how to learn for life. At the same time, the most important thing is to guide students to develop self-motivation to shape their excellent character, to recognize the importance of personal growth planning, to appreciate the responsibility for their future in the construction of a value system, and to integrate their personal development with their work, social development, and national construction, laying a solid foundation for a brilliant life.

5. Conclusion

Through investigation and research, we have discovered that China's central and local governments are placing more value on vocational education and training (TVET). With the strong support of various policies and resources, vocational colleges, technical colleges, and training centers have significantly expanded in quantity and gradually improved in quality. Informatization and online education have become indispensable and powerful supplements to adapt to the times and environment. Vocational skill training is approaching industrial demand, with industrial demand becoming the development direction and the combination of engineering and learning, as well as practical education, becoming the trend of future development. The new normal, new technologies, and internationalization have put forward new requirements and challenges for the training direction, curriculum system, and vocational and technical education teaching staff.

Due to China's unique socialist national conditions and political system, the current institutional framework of China's vocational education system is different from that of Western countries, although vocational education and training (TVET) are two types of education and training systems under the same system concept, belonging to the Ministry of Education and the Ministry of Human Resources and Social Security. Although the humanistic environment, cognition, and social status of

vocational education still need some time to change, in China's greater social demand, the number of vocational education students is increasing year over year.

Therefore, the Chinese government still needs to increase its encouragement and support in policies, regulations, and funds to assist vocational education and training (TVET), keep up with the pace of industrial upgrading, adjustment, and technological development changes, integrate industry and education, and closely integrate talent training plans with industry needs.

Interestingly, the government's funding support for general education is significantly higher than for vocational education. Our research also found that higher education vocational colleges and secondary vocational education colleges in core cities are superior to vocational education colleges in local cities regarding venue, facilities and equipment, teaching resources, human resources, and funding sources. This is highly likely to lead to uneven regional development and conflicts of interest in vocational education and exacerbate the flow of vocational and technical talents. Through differentiated policy support, the government must gradually weaken the urban-rural gap and industrial imbalance.

Regarding talent cultivation and integration of vocational education, the "vocational education college entrance examination" system has been implemented first in provinces such as Shandong and Jiangxi. Graduates of secondary vocational schools can freely choose to participate in the general college entrance examination or vocational education college entrance examination, taking the most crucial step towards undergraduate education and higher education. It is worth noting that local industry education integration information service platforms, school-enterprise cooperation, the integration of education certificates and qualification certificates, and the visiting and promotion paths for vocational education teachers still need further work deployment and continuous deepening.

This article identifies the necessity of China's Vocational Education and Training (TVET) to promote the improvement of labor productivity and economic growth, analyzes the importance of cultivating and outputting high-quality vocational and technical talents from the perspective of vocational education, and proposes the responsibilities and future development plans of the government, society, enterprises, and vocational education institutions for talent cultivation from a macro perspective. Regarding personal values and career planning construction for vocational college students, most vocational colleges have begun to attach importance to moral and technical education. Incorporating ideological and moral education, professional literacy education, and career planning into the teaching syllabus and integrating them into students' daily lives and learning will help students develop their values from a more positive perspective and become an important measure to promote high-quality talent cultivation and output. However, from the standpoint of personal self-cultivation, individuals should take ultimate responsibility for their future career planning, attach importance to professional literacy and skill accumulation, establish a positive, optimistic, studious, humble, and inclusive value system for personal growth, and establish the concept and attitude of lifelong learning and cultivation. Currently, there is limited scholarly research on this particular viewpoint, which could potentially fill this knowledge gap and assist vocational education institutions in implementing student career planning courses that focus on individual students. This approach aims to enhance their intrinsic motivation and facilitate the integration of professional literacy, personal growth, and future development into their value system construction.

In summary, as a large country with a population of 1.4 billion, China has a unique Sinicized development characteristic due to its vast territory, north-south differences, and multi-ethnic characteristics. Despite encountering pressure and challenges from multiple sources, the Chinese government's diligent focus, consistent support, and strategic planning for vocational education and training (TVET) will enable it to effectively align with the evolving demands of new technologies and industries. Consequently, TVET will consistently produce top-notch vocational and technical professionals that will promote China's economic advancement and social progress.

The study's conclusions and recommendations need to be carefully explained, and more research is required because of the limited number of participants, the limited number of pertinent universities and enterprises, and individual capacity limitations.

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