



# Study on Vocational Education Talents under the Background of Digital Economy

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**ABSTRACT.** The deep integration of digital technology represented by big data, artificial intelligence and 5G technology and traditional industries leads the rapid development of social economy. With the deepening of the digital transformation of the industry, the demand for digital skilled talents in various industries is increasing rapidly, and the shortage of talents has become a key factor affecting the development of the digital economy. To improve the overall digital literacy of the whole people and the quality of digital technology professionals is an inevitable requirement of China's quality economy development. Vocational education, as an important type of education, bears the responsibility of cultivating digital economic talents for the country. By analyzing the development status and talent challenges of China's digital economy, this paper proposes the construction of the training mode of digital skills talents in vocational education. This mode includes the establishment of digital talent training guarantee system, accurate positioning of vocational education digital talent training direction, development of vocational education digital talent training plan according to ICT industry and non-ICT industry specialty classification, and around digital talent training goals of the "digital skills oriented", "industry skills oriented", "digital skills, industry skills balanced" to implement talent training plans.

**Keywords: Key words:** digital economy, digital skills talents, talent training

## 1 Introduction

With the formation of the aging population structure and the popularization of higher education, China has shifted from the era of "demographic dividend" to the era of human resources "intellectual dividend"[1], providing intellectual support for the development of digital economy. However, with the continuous advancement of digital industrialization, industrial digitalization and digital governance, there is a gap in digital skills talents, including the talent quantity gap and structural deviation, which restricts the economic development of countries and regions. Starting from the function of higher vocational education serving local economy, this paper analyzes how to train

digital talents for vocational education and provides some solutions for the development of local digital economy.

## 2 Achievement of China’s digital economy

Modern science and technology is changing with each passing day. With the change of the industry 1.0 era to 4.0, under the integration of the new generation of digital technologies, such as big data, cloud computing, Internet of Things and artificial intelligence, the upgrading of the social industrial structure and the reconstruction of the talent structure have been promoted, and the social production efficiency and economic benefits have been improved. The strength of a country’s digital governance capacity, its national digital energy and digital literacy partly represent the strength of the country’s governance capacity and modernization capacity.

## 3 Steady development and good trend of digital economy

As a new form of economy in the future, the digital economy is developing vigorously. All countries around the world are working hard to seize the “digital economy dividend”, and China is no exception. Developing the national economy and accelerating the social construction of the digital economy have become China’s national strategy. All provinces (autonomous regions and municipalities directly under the Central Government) have also formulated policies related to the digital economy to actively respond to the government’s deployment. China’s digital economy has developed rapidly in the past 20 years and has made certain achievements. According to the white paper of digital economy of the China Academy of Information and Communications Technology over the years, the changing trend of digital economy scale and GDP proportion of digital economy is analyzed (see Figure 1 ).

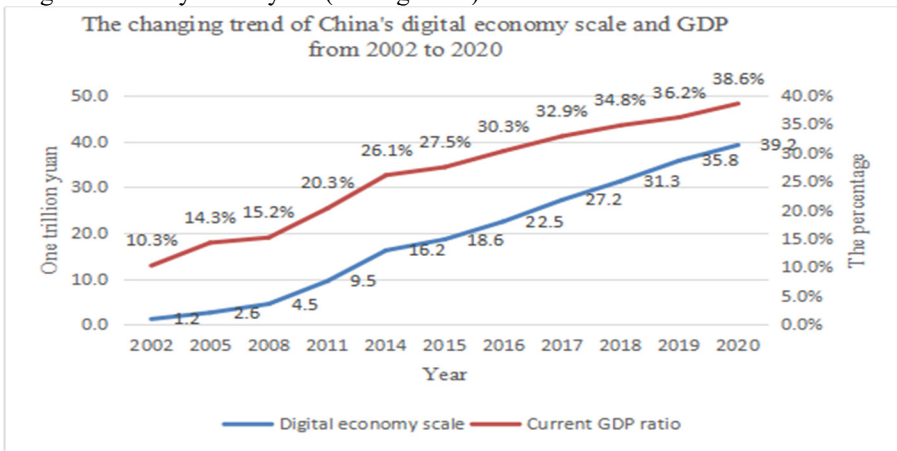


Fig. 1. Changing trend of China’s Digital Economy scale and GDP from 2002 to 2020(self-drawing)<sup>[2]</sup>

According to Figure 1, the scale of digital economy increased from 1.2 trillion yuan in 2002 to 39.2 trillion yuan in 2020[2], with an increase of 3167%; the GDP of digital economy increased from 10.3% in 2002 to 39.6% in 2020, with an increase of 285%. In the past 20 years, the scale of digital economy in China's digital economy and the proportion of GDP of digital economy have been steadily increased year by year and will continue to grow in the future. Digital economy is becoming more and more important and having a more and more profound impact on China's social and economic development.

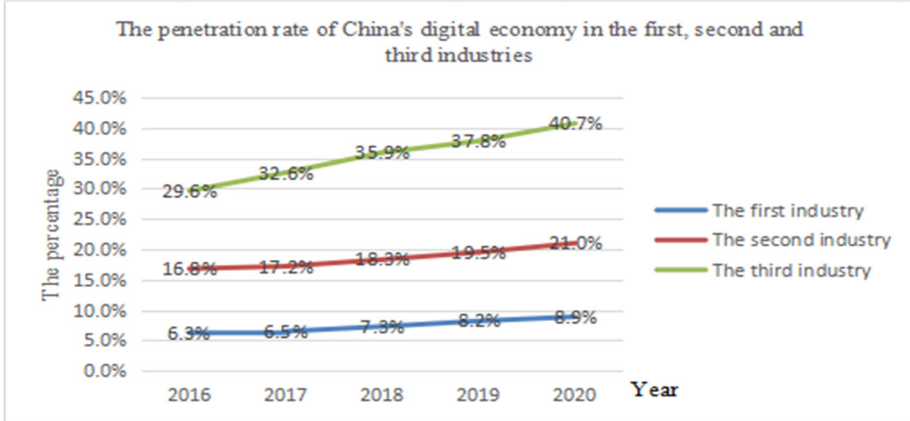
#### **4 The "New Workers" behind digital technology and their role in promoting the efficient operation of social life**

The strong development of digital economy, is the premise of national support, and also depends on the workers behind digital technology. The new workers are digital technology engineers, live online teachers, live online with goods anchor, software development engineers, cloud pharmacy platform managers, agricultural managers under the digital economy "new workers". Based on the strong support of digital technology, People's lives are more efficient and convenient than ever before. There are e-commerce platforms, mobile payment systems, network salesmen, live-streaming sellers, express delivery staff and other e-commerce whole chain service system. There are an online booking registration platform and a call system developed by and based on digital technology, online medical treatment platform and other medical service systems. Furthermore, there are MOOCs platforms that break the limitations of educational areas and school boundaries so that more students can share high-quality educational resources. Moreover, there are smart platforms such as e-government and Smart Cities that make social public services more convenient and efficient. The advancement of digital technology has changed the way a society is organized and operated. The intuitive performance is that it has greatly saved people's living cost and economic cost, and improved people's satisfaction with the level of government governance and life happiness. Especially since the outbreak of COVID-19 at the end of 2019, digital technology has helped China's epidemic prevention work, and the development and application of health codes, travel cards, and close-contact codes has greatly improved the efficiency and accuracy of population movement information surveys, which has minimized the risk of the spread of the pandemic and made China a model in controlling the epidemic around the world. Meanwhile, during the self-quarantine, digital technology has provided the support of online learning and online classroom platforms for students, online collaborative office platforms at home for office workers, and emerging online shopping platforms to minimize the impact of the epidemic.

## 5 The talent challenge facing China's digital economy development

The average GDP of the global digital economy from 2018 to 2020 was 40.3%, 41.5%, and 43.7% respectively, while China accounted for 34.8%, 36.2%, and 38.6% respectively[2]. It shows that China's digital economy is not high enough. There are still great challenges to the strategic goal of “building an industrial power in 2045” and the blueprint of “Industry 4.0” respectively[3]. However, the challenges of China's digital economy are brought by the insufficient number, low quality, and poor structure of digital talents.

According to the penetration rate of China's digital economy to the first, secondary, and tertiary industries from 2016 to 2018, the demand and demand trend of talents in the three industries are analyzed (see Figure 2). Our contry is divided into three industries. The first is production, the second is processing and the third is service industry.



**Fig. 2.** The Penetration Rate of China's Digital Economy in the Primary, Secondary, and Tertiary Industries(self-drawing)<sup>[2]</sup>

According to figure 2, (1) the penetration rate of digital economy in the tertiary industry is the highest and the enhancement trend in the secondary industry is the second, but the lowest; the penetration rate to the primary industry is the lowest and increases year by year, and the enhancement trend is secondary to the tertiary industry. (2) The tertiary industry has the largest demand for digital technology talents and the highest demand for the secondary industry, but the lowest demand trend among the three industries; the lowest demand for the primary industry is secondary to the tertiary industry and higher than the secondary industry.

Digital economy promotes the restructuring of digital industrial and employment structure, which is an opportunity for the employment and entrepreneurship of digital skilled talents, as well as a challenge for countries and regions to train digital talents. With the development of digital technology, career iteration appears in society, and some traditional occupations disappear. Subsequently, some emerging occupations that need the support of digital technology emerge at the historic moment, and the demand

for digital skills talents is increasing, and the demand is in short supply. According to the White Paper on the Development and Employment of China's Digital Economy (2019) released by the China Academy of Information and Communications Technology, there were about 190 million jobs in China's digital economy in 2018, accounting for 25% of the total employment, up 11.5% year on year, exceeding the growth rate of China's total employment in the same period<sup>[2]</sup>. According to "Towards 2035: conquering the Talent War under the Digital Economy", the total employment capacity of China's digital economy industry in 2035 is nearly 450 million, and it is urgent to cultivate a large number of digital talents<sup>[4]</sup>. According to the modeling and measurement results of Yan Shiping, the improvement of the development level of digital economy reduces the demand for the labor force for secondary education and increases the demand for the labor force for higher vocational education or above<sup>[5]</sup>, high documents of the European and America and Japan's digital economy labor analysis, digital economy of higher education labor demand growing the fastest, and calculate the digital economy sector practitioners average education years of about 13.5 years, higher vocational college or above labor quantity accounted for 56.4%<sup>[6]</sup>.

National vocational education has the function of directly serving the local level and promoting regional economic development. In order to actively respond to the change of talent demand of industrial digital transformation and digital technology upgrading, we should actively think and explore the reform of talent training mode in vocational education, especially the problem of digital talent training in higher vocational education.

## **6 The training strategy of the vocational education digital talent**

According to the author's experience in teaching management in recent years. According to the 2020 annual report of global digital talent development, digital talent is with digital skills, Digital talent development is of significance for the balanced development of digital economy in various regions of China to draw on the practical experience of the development of European Union, Japan and other countries, and the reality of the construction of digital talents in western regions of China.

### **6.1 Provide the digital talent training system guarantee**

On the basis of full research, the regional government shall formulate digital economy policies and digital economy development plans. The regional government strengthens the communication with other economically developed provinces and regions, seeks successful experience, adjusts measures to local conditions to formulate suitable for the region, and increases the investment of digital economy construction, forming system and funding guarantee. For example, in Guangxi Digital Economy Development Plan (2018-2025) (2021 revision), Guangxi in the western region puts forward safeguard measures such as strengthening organization and leadership, innovating system and mechanism, optimizing the development environment, increasing financial support and

strengthening talent training and introduction, so as to help the development of regional digital economy[7].

## **6.2 Integration of the campus management platform**

Colleges and universities are composed of functional departments and secondary colleges, each with its own characteristics and management priorities, and all have their own information management system of the department. Although the school has also established an operation system dominated by business flow, such as the academic administration system of the Academic Affairs Office, the personnel management system of the Personnel Office, the student management system of the Student Affairs Office, and the one-card system of the Finance Office, etc., the data ownership of each system is independent and incompatible with each other. Sometimes when the system is updated iteratively, the statistical results of the old and new system data are different. Different systems produce different types of data due to the different use of software and cannot directly connect, forming a physically isolated "data fault". That is to say, the current information barriers between the internal business departments of universities still exist, which cannot fully connect the whole process and the whole process of the business inside and outside the university. Therefore, building unified data center has become the trend of The Times. Both teachers or teaching managers, can be more intuitive understanding of the students and our teachers, such as teachers can access to the integration platform, much understanding their students 'growth experience, and students' characteristics from the experience, which can be more personalized counseling to students according to the characteristics.

## **6.3 Building a dynamic and multidimensional shared evaluation system**

In October 2020, the CPC Central Committee and The State Council issued the Overall Plan for Deepening the Reform of Education Evaluation in the New Era, requiring to reverse the unscientific education evaluation orientation, which triggered a boom of building a scientific evaluation system in various localities and universities. The information system has the functions of evaluation, inspection, specification, guidance, supervision and promotion, and has the functions of tracking, positioning and correction. Based on big data technology, using the efficient evaluation system as the criterion, teaching, scientific research, management, teachers, students and administrators and other elements of universities and various information of the external society can be presented digitally through the information platform. Sharing a multidimensional platform can realize the correlation analysis of data in different dimensions and the sharing of business data in various departments. breaking the shackles of internal data in the education industry and the "island" of the internal management platform to put education issues on the social network and data basis to seek the basis, and to solve the problem of data island between different fields, which is easy to conduct comprehensive and real-time evaluation of all links in colleges and universities. Changing the transformation of college evaluation from subjective experience to objective data, from macro

ambiguity to micro quantification, changing from results to process, lets teachers, students and teaching management from the traditional education, teaching, management be effectively liberated. Students' information ability can be effectively improved, and teachers' teaching gives them more vividness, interest and visibility.

## 7 The conclusion

In the context of the rapid development of digital economy, higher vocational education should strengthen the cultivation of digital talents, so as to promote the overall digital literacy of the whole people and the quality of digital technology professionals simultaneously. On the premise that the government improves the guarantee of digital talent training system, higher vocational schools should work with enterprises and industry associations to accurately locate the direction and target of digital talent training under higher vocational education. According to ICT industry corresponding majors and non-ICT industry corresponding majors, talent training programs are formulated respectively, curriculum structure system is designed and improved by major, and general education courses of digital technology such as "ARTIFICIAL intelligence +" are added to non-ICT industry corresponding majors, so as to enhance the integration of digital technology and industry and improve the speed of industrial upgrading and transformation. Through the integration of industry, teaching and research, we should strengthen the professional guidance of enterprises and industry associations for corresponding majors in ICT industry; Using the tripartite evaluation model of schools, enterprises and society is to further improve the quality of vocational education digital talent training, and provide better technical support for the development of national digital economy.

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## 9 References

1. Cao heping,Tang Lisha.The construction of innovative talent team under the background of digital economy[J].The open herald,2020,(01):50-55.
2. Collated according to digital economy white paper of China Academy of Information and Communication Technology over the years
3. xinhuanet, China's "Industry 4.0" blueprint has been unveiled to build China into an industrial powerhouse by 2045

4. Ruan Fang, Luo Guolun, CAI Jing-rong, Zhang Yi-hui. Towards 2035: Conquering the War for Talent in the Digital Economy[J]. Science and technology of China, 2017, (03): 25-36.
5. Yan Shiping, Wu Kedong, Wei Zhuangyu. Development of digital economy and evolution of Labor force structure in China[J]. The economic aspect, 2020, (10): 96-105.
6. Gao Wenwen. Research on the characteristics of human capital demand in digital economy[J]. Guizhou Social Sciences, 2021, (03): 114-120.
7. Guangxi Digital Economy Development Plan (2018-2025).

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