

Contemporary Technological Changes Impact on the Talent Training Objectives of Higher Vocational Education

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Abstract

This study discusses the impact of contemporary technological changes on the cultivation objectives of higher vocational education. Today, the wave of the new science and technology revolution is impacting all fields of human society. Each occupation shows corresponding technical requirements and is subject to changes in science and technology, people's habits and other factors, resulting in a distinctive era. The technological revolution and occupational changes also require higher vocational education to make corresponding improvements and changes. The new round of scientific and technological revolution puts higher and more complex requirements on the structure of human knowledge and ability. Composite talents with multiple skills are needed. The boundaries of academic talents, engineering talents, technical talents and skillful talents will be blurred more and more, and having system thinking and innovation ability will become the basic requirements for all kinds of talents. The talent training objectives of higher vocational education should strengthen the cultivation of systematic thinking and innovation ability, and cultivate composite talents who master multiple skills. Further adhere to the doctrine of all-round development of human beings, to ensure that the development of various aspects of human physical and intellectual, ability and aspirations in coordination.

Keywords

Talent Training Objectives; Higher Vocational Education; Career Change; Composite Talents.

1. Introduction

Today, the wave of the new science and technology revolution is impacting all fields of human society[1]. Under the baptism of the new science and technology revolution, human society is undergoing unprecedented and profound changes in production and life. On the one hand, the scientific and technological revolution is strongly enhancing the development ability of human subjects, strengthening and confirming their subjectivity, and playing a strong role in the free and comprehensive development of human beings; on the other hand, it is putting forward higher requirements for human scientific and technological literacy and thinking style.

The occupational changes caused by the technological revolution are a concentrated expression of the influence of technology on people and their compliance with the requirements of technological progress. Occupations are social, normative, economic, technical and contemporary in nature. Each occupation shows corresponding technical requirements and is subject to changes in science and technology, people's habits and other factors, resulting in a distinctive era. The progress of social productivity and the development of science and technology are the fundamental factors of occupational changes, while the increasingly diverse and constantly differentiated occupational changes largely influence the diversification of our social structure.

Education provides a workforce with certain knowledge and skills for occupations. Higher vocational education provides education in accordance with the industries and occupations that are gradually divided into production industries of the national economy. In terms of specialization and teaching contents, it focuses on the requirements of a certain occupation so as to train young students to be able to engage in a certain occupation after graduation. The technological revolution and occupational changes also require higher vocational education to make corresponding improvements and changes. In this paper, we study the impact of contemporary technological changes on the cultivation objectives of higher vocational education.

2. Overview of Contemporary Technological Change

Since the second half of the 20th century, science and technology have shown an integrated development trend, with science and technology combining with each other, the technologization of scientific development and the scientificization of technological progress, making the integration of science and technology deeper and deeper[2,3]. At the same time, science-based technological progress and industrial innovation have become increasingly important development models, and the integration of science-technology-industry and the transformation of technological achievements into real production have become faster and faster.

Contemporary scientific and technological changes are characterized by the cross-fertilization of multiple technologies and subject areas[4]. "The cross-fertilization of information technology, biotechnology, new energy technology, and new materials technology is triggering a new round of scientific and technological revolution and industrial change." In the new round of scientific and technological revolution, "there is an increasing trend of cross-fertilization between disciplines, between science and technology, between technologies, and between natural sciences and humanities and social sciences." Contemporary scientific and technological changes are in the transition conversion from information civilization to intelligent civilization[5]. With the deepening of the intelligent revolution, information civilization will enter the peak of comprehensive development and gradually give way to an intelligent civilization with the possibility of intelligent interconnection. Emerging technologies are more dependent on application scenarios. In the new round of technological revolution, application scenarios and big data support are increasingly becoming key elements of technological progress and breakthroughs. These technologies will be expected to achieve multi-scene applications in the manufacturing field and service field.

The "Made in China 2025" promulgated by the Chinese government in May 2015 pointed out that the deep integration of a new generation of information technology and manufacturing industries is triggering far-reaching industrial changes and forming new production methods, industrial forms, business models and economic growth points. The "Outline of National Innovation-driven Development Strategy" released in May 2016 emphasized the accelerated evolution of the new round of scientific and technological revolution, industrial change and military change. The impact on reshaping the world's competitive landscape and changing national power contrasts. In May 2016, the National Development and Reform Commission released the "Internet+" Artificial Intelligence Three-Year Action Implementation Plan". Subsequently, in the two sessions in 2017, "artificial intelligence" was included in the government work report for the first time. It can be seen that the government's decision-making management affirms the accelerated evolution of the new round of scientific and technological revolution, industrial change and military change, and agrees that a new scientific and technological revolution and industrial change cycle is underway, and that intelligent technology is the primary component of the group scientific and technological revolution.

3. Contemporary Career Changes

Human development and the development of science and technology have historical synchronization. Modern science and technology provide modern people with time and space for active development, so that the connotation of human development is constantly enriched and expanded[6,7]. Science and technology are renewing the structure of human knowledge and skills, intelligence and innovation ability. Intellectual and innovative labor is gradually becoming the main form of labor. People need to constantly master and improve the relevant Capabilities. The new technological revolution has given human development a new connotation and a new quality[8]. In 2017, the McKinsey Global Institute predicted that 400 million jobs could be replaced by robots by 2030. Only the small part of the workforce that involves humanity, ideals, creativity, and thoughtfulness cannot be replaced by machines, which will overturn the traditional concept of talent. In the future, only the workforce that cannot be replaced by artificial intelligence will be called talent. At the same time, the change of science and technology urgently requires the overall improvement of human scientific and cultural quality.

Technological progress has improved the labor skills and overall quality required for the occupation. The new scientific and technological revolution puts higher and more complex requirements on the structure of human knowledge and abilities. Armed with the latest technologies such as information technology, biotechnology, new material technology and new energy technology, the process of production labor will become an automatic system integrating scientific knowledge and technology from multiple disciplines and fields, which requires composite talents who are not only proficient in professional knowledge and skills, but also familiar with multidisciplinary knowledge and master multiple skills[9].

Technological advances have expanded the variety of occupations' labor objects. The changes brought by the new round of technological revolution to the production methods will be disruptive: big data and blockchain are becoming key factors of production, and intelligent information technology is redefining the production process. Big data and blockchain are becoming key factors of production and promoting the optimization and upgrading of production factors.

4. A Case Study of Talent Training Objectives in Higher Vocational Education

4.1. Dual Cooperation Higher Education in Germany

Germany believes that only by building a diversified higher education system can we effectively meet the demand of society for different types of talents and meet the development trend of popularization of higher education. German colleges of higher specialties and vocational colleges have adopted the dual cooperation model of close integration between schools and enterprises. German universities of applied sciences emphasize the cultivation of students' practical ability, applied research and technological development in the target orientation of talents training. According to the data, practical teaching at German universities of applied sciences accounts for 30% of the whole teaching process. Students are required to go to the school's training base or the production line of the enterprise for a three-month professional internship. Students are required to complete scientific research and technology development projects, and be able to apply scientific research and technological achievements to production. Provide for the inclusion of faculty members' applied research capabilities, technological development capabilities, and patented technologies applied for in the evaluation of their titles[10].

4.2. Community-Based Higher Education in the United States

Community colleges are the mainstay of higher vocational education in the United States. Vocational and technical training has always served as an important function of community colleges in the United States. Students who receive vocational education in community colleges make up the majority of students, and through their studies they acquire a wide range of specialized skills and knowledge. The practicality of majors and curriculums. Community colleges emphasize serving the local economy and production development. They focus on developing students' applied technical skills and operational skills. The majors set up cover almost all the vocational and technical fields demanded by the local society. Enrollment is determined based on labor market demand. Students taking vocational courses spend at least half of their time taking specialized courses and doing internships, etc., at least 15% of their time on basic skills training, about 20% of their time on strengthening their written and verbal skills, and the rest of their time taking other courses.

4.3. Short-term Vocational Education in Japan

The characteristics of higher vocational education in Japan include: emphasis on combining the acquisition of theoretical knowledge with the cultivation of application skills, and the cultivation of students' application skills. For example, Toyokai University of Technology has set up a rich and diverse form of practical activities and arranged a two-month-long practical training in the fourth year of university, in which students must choose internship positions related to their major. The orientation of human resources development goals emphasizes the cultivation of creative ability as an important element of the individual's ability to survive in the rapidly changing society of the future, and the ability to create as an important ability for student development. Nagaoka University of Technology highlights the importance of the creative spirit and creative ability by setting up more developmental and creative experiments in the practical activities of the upper grades. Japanese universities of technology and science actively promote industry-academia-research cooperation to ensure the quality of training of technically applied human resources. The University of Technology and Science then cooperates with companies and jointly establishes a technology development center to jointly promote industry-university-research cooperation. The university and the company make efforts to promote research and development by turning the latest research results into practical technology for the company and putting them into practice as a consortium.

5. Re-examination of Talent Training Objectives of Higher Vocational Education in the New Era

5.1. Dynamic Adjustment

The goal of talent training changes with the development of social and economic development and science and technology, and has dynamic properties. The level of economic development at a certain social stage directly determines the type of talent needed. With the development of technology, the socialization of production has increased and new requirements for the quality of workers have been put forward. The history of productivity development shows that laborers initially concentrated in the agricultural sector, then shifted to the industrial sector, and currently to the service sector and information industry. High-technology has contributed to the change and development of the skill composition of field technology application talents from mainly empirical factors to mainly scientific knowledge factors. The National Vocational Education Reform Implementation Plan proposes that "vocational education provides institutional guarantee and talent support for the development of modern manufacturing, modern service, modern agriculture and modernization of vocational education." The core of the new generation of information technology industry is intelligence, and the leading role of

intelligence will become more and more prominent. The new technologies represented in 5G, industrial internet, big data center, etc. will comprehensively affect various industries, including modern manufacturing, modern service industry and modern agriculture. The training objectives of talents in the new era should reflect the requirements of the above-mentioned industries for practitioners.

5.2. Serving New Types of Talent

The traditional classification of talents believes that these four different types of talents are needed in the whole socio-economic, scientific and technological development. Academic talents are a group of specialized talents who specialize in exploring and revealing the essence and laws of the objective world; Engineering talents specialize in transforming scientific principles, theorems, laws, etc. into engineering designs, schemes, plans or decisions, they are designers or engineers, etc.; Technical talents are those who take designs, plans or decisions as the starting point and reproduce these products of ideas into material products or mass-produced commodities that They are craftsmen, field engineers and so on; skilled talents mainly rely on skilled operation skills and experience to complete products, and they undertake part of the work of transforming designs (drawings) into material products. Higher vocational education is to cultivate a large number of process-oriented and application-oriented senior technical talents and management talents with strong "realizing ability", which are urgently needed by the society. Technology is renewing the structure of human knowledge and skills, intelligence and innovative ability. The new round of scientific and technological revolution puts higher and more complex requirements on the structure of human knowledge and ability. Under the system of scientific knowledge and technology that integrates multiple disciplines and fields, composite talents with multiple skills are needed. The boundaries of academic talents, engineering talents, technical talents and skillful talents will be blurred more and more, and having system thinking and innovation ability will become the basic requirements for all kinds of talents.

5.3. Adherence to the Doctrine of Comprehensive Human Development

The doctrine of comprehensive human development holds that the development of human physical and intellectual strength, abilities and interests is unified in the harmony of the full and free development of personality and the coordinated development of various aspects.

Multiple Intelligences theory states that each individual possesses, in varying degrees, eight intelligences: verbal, mathematical-logical, spatial, musical, physical-motor, interpersonal, self-awareness, and natural-observation intelligences, all of which exist in a relatively independent manner. There is no superiority or inferiority among each intelligence, but individuals have their own unique strengths and weaknesses.

Combining several theories above, it can be seen that the general principle of the goal of human resources training is the all-round development of human beings. Comprehensive human development does not require everyone to develop into one model. It is necessary to face the differences in the composition of the intelligence of individuals and to educate different types of talents. The ability of individuals to solve practical problems in life or create products needed by society should be used as a criterion to measure the level of intelligence, and the development of the personality of the educated person should be organically unified with the perfection of personality.

6. Conclusion

Today, the wave of new technological revolution is impacting all fields of human society. The goal of talent training should change with the development of social and economic development and science and technology. Not only the information technology industry, but also the

vocational education personnel training objectives corresponding to modern manufacturing, modern service industry, modern agriculture and other industries should strengthen the cultivation of systematic thinking and innovation ability, and cultivate composite talents who master multiple skills. Further adhere to the doctrine of all-round development of human beings, to ensure that the development of various aspects of human physical and intellectual, ability and aspirations in coordination

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