

# The Influence of New Economic Form on the Knowledge Development of Vocational Education Teachers

Wang Yuanyuan, Zhou Shen\*

*School of Economics and Management, Wuhan Railway Vocational College of Technology, Wuhan, China*

*\*Corresponding author. Email: 282972691@qq.com*

## ABSTRACT

Focusing on the knowledge development of vocational education teachers under the new economic form driven by knowledge innovation, the paper demonstrates the differences between vocational education and other education, the requirements of vocational teachers' knowledge and ability and the challenges they are facing, analyzes the influence of the change of economic forms on the knowledge development of vocational education teachers, and discusses the professionalism and education, technology standard and ability based. This paper analyzes the limitations of the technology-based view, expounds the six elements of competency based education, and puts forward some strategies and suggestions for the development of vocational education teachers' knowledge under the new economic situation such as strengthening the overall planning of vocational education teachers' training, taking the enterprise work experience as the starting point of teacher qualification, and completing teachers' ability improving through systematic training, realizing the integration of education and teaching ability, scientific theory and technical ability, and improving the knowledge structure of vocational education teachers, so as to promote the professionalization of vocational education teachers.

**Keywords:** *New economic form, Vocational education, Teachers, Knowledge development.*

## 1. INTRODUCTION

The National Society for the study of Education USA proposed in 1902 that the main way to improve education is to study the construction and development of teachers' knowledge which is the core element of teachers' professional development, and directly affects the quality of education [1-3]. To ensure the quality of education, we must improve teachers' professional standards, and the key to improve teachers' professional standards is to clarify the knowledge base of teachers' profession.

In this sense, the knowledge construction and development of vocational education teachers are definitely closely related to the quality of vocational education. At present, our country is in the critical period of transforming the mode of economic development, optimizing the economic structure and transforming the driving force of growth [4, 5]. The new economic form puts forward new requirements and challenges for the knowledge construction and

development of vocational education teachers [6].

## 2. THE INFLUENCE OF THE CHANGE OF ECONOMIC FORM ON THE KNOWLEDGE DEVELOPMENT OF VOCATIONAL TEACHERS

Vocational and technical education has kept in close touch with the economy [7]. Throughout the history of western social development, it presents clear that scientific progressing leads to technological altering, while technological altering hastens industrial revolution, which in turn promotes the development of vocational and technical education. The new mode of production requires new educational methods for labor force, which constitutes the main factor in the development of vocational education [8, 9]. Different economic forms have different requirements for the knowledge and skill structure of workers, and then put forward different requirements for the knowledge construction and development of vocational education teachers [10, 11].

The typical feature of vocational education in the agricultural economy era was the traditional apprenticeship. In the family manual workshop, the apprentice follow master was the way to complete the training of experience and technology through "learning by doing". The technology at this time was called early technology. It was the skill and craft formed by the accumulation of experience in people's production and life, and had the characteristics of limited natural ability and slow development. Obviously, early technology was limited by human natural potential, i.e., the power and energy directly given by human body, which could not go beyond human hands and senses, called the nature of pre modern technology. Due to this limitation, the early technology was slow or hardly developed. Daily experience is passed from father to son, from mother to daughter, and from master to apprentice. The characteristics of early technology and the production mode of handicraft industry determine that the teachers of early vocational education were technology imparters, namely parents and masters. Their professional knowledge, namely, production and life experience, was passed on from the previous generation to the next generation through labor.

Industrial economy had given birth to the modern vocational education system, which imparted scientific and technological knowledge and skills to the educated through centralized training [12]. In the era of industrial economy, the industrial structure was stable and the technological progress was slow. Educators with corresponding work experience and post skills could be competent for vocational education and teaching. At this time, vocational education teachers mainly came from the industry, such as Germany at the end of the 19th century and the beginning of the 20th century. Similarly, in Britain before 1944, most vocational and technical teachers were directly transferred from the industry. The first batch of vocational education teachers in Brazil were technicians and workers without any educational background.

Considering the new economic form driven by knowledge innovation, on the one hand, innovation accelerates, the life cycle of technology and products is increasingly shortened, and a new technology will be eliminated in about two to three years; on the other hand, knowledge and economy penetrate and promote each other [13]. It is said that "knowledge plays an increasingly important role in the production process of products and services; the content of knowledge in products and services is getting higher and higher". Modern science and technology has become the main factor of economic growth, "the integration process of science and technology and production has intensified". For the same reason, the transformation and upgrading of industrial structure lead to the acceleration of post updating and the increase of uncertainty of jobs. The cultivation of students' single post skills can no longer

meet the needs of economic development. Economic development needs practitioners who have a certain degree of innovation ability, research and development ability and strong learning ability. Developed countries have expanded the professional orientation of vocational education, from specialized skills training to general skills training. Therefore, vocational education teachers cannot cultivate talents to fulfill the request of the labor market only by one skill. The new economic form poses new challenges to the knowledge structure and learning ability of vocational education teachers.

### **3. CHALLENGES FACED BY VOCATIONAL EDUCATION TEACHERS IN THE NEW ECONOMIC SITUATION**

In recent ten years, the development of China's strategic emerging industries has provided the technical basis for the rise and development of knowledge economy, and also put forward higher requirements for the quality and specification of talent training in vocational education [14, 15]. On April 1, 2019, the Ministry of human resources and social security, the General Administration of market supervision and Statistics Bureau officially released 13 new career information to the society, including artificial intelligence engineering and technical personnel, Internet of things engineering and technical personnel, big data engineering and technical personnel, cloud computing engineering and technical personnel, and digital managers, which are the first batch of new jobs released since the promulgation of the 2015 edition of the national classification of occupations, mainly concentrated in the field of high tech, while supported by higher professional and technical knowledge and ability. The scholars realized that many changes appear too fast, constantly challenging the society and vocational education itself. The release of new vocation has attracted the attention of many domestic vocational colleges, but it is facing the plight of lack of relevant professional teachers, which brings new challenges to the development of vocational education teachers and personnel training.

#### **3.1. Professionalism and Education**

As an important type of education, vocational education has both educational and vocational attributes. It not only follows the laws of education and teaching, but also abides by the regulations of vocational development [16, 17]. The students trained in vocational education should be comprehensive and practical talents who not only need to master theoretical knowledge, but also have strong practical ability. At the same time, they also need to have a power of creativity [18]. All of these need to be achieved through a well-designed teaching system. If the content of knowledge imparting in education is neglected, it means that the essence of

education is ignored [19-21]. The lack of the essence of education is no different from vocational training, and the lack of professional attributes is no different from general education.

From the perspective of teachers' knowledge construction, the cross-border nature of vocational education largely depends on the "cross-border" of teachers' knowledge structure, which refers to the unity of academic, normal and professional. The development history of vocational Education in western developed countries tells us that teachers from enterprises have obvious advantages in practical experience. However, due to the lack of normal education background, their knowledge structure is not complete enough. As teachers come from the professional society, their business model is more colorful. Their advantages lie in that they have established extensive connections with the corresponding professional environment and provide unlimited innovation potential; while their disadvantages rest with the crisis of occupational localism and the lack of formal specialization. The teachers selected from various industries have some obvious shortcomings. When they started teaching, they did not have any practical teaching experience or any training. In the actual teaching, their faculty load (night courses) will be relatively small, and it will take longer time, such as a few years, to accumulate experience. Their teaching technology is usually very elementary and immature, especially in dealing with class problems and course preparation. The most prominent tendency is that they are not actively imparting knowledge, but inculcating information passively.

It can be recognized from the above discussion that as a kind of "cross-border" education, the knowledge construction and development of vocational education teachers should deal with the relationship between professionalism and education, and take professional experience as the starting point of vocational teacher education. On this basis, the teachers' training should be carried out systematically to promote the professional development of vocational education teachers, and the unity of professionalism and education should be achieved.

### ***3.2. Technology based View and Capability based Standpoint***

What knowledge is most valuable? This is Spencer's cry that British education at that time paid more attention to classical subjects than practical knowledge. Under the new economic situation, this problem becomes increasingly more serious and of great practical significance: what kind of knowledge should vocational education teach students? What is the most valuable and useful thing that students get in the learning stage of vocational education? Should the college attach importance to the teaching of technology

and the cultivation of students' post skills, or should we emphasize the development of human beings and the cultivation of students' learning ability and innovation consciousness?

There is no doubt that professionalism is a special attribute of vocational education, but we cannot separate the essence of education and equate professionalism with technicality. From the perspective of knowledge, technology is operational knowledge, while from the perspective of activity, technology aims at practice. In this way, the process of vocational education is understood as the process of imparting practical skills and technical knowledge, and the purpose of vocational education is to cultivate technical and skilled talents who are able to meet the requirements of the post.

#### ***3.2.1. Limitations of technology based view***

In the mode of technological rationality, technology is the leading role, but people are the supporting role. People should passively adapt to the needs of technology. However, vocational education is narrow and paranoid only limited by technical training. The reasons are as follows:

First, from the perspective of education, it is not only training, but also a process of promoting physical and mental development; it is a conscious social activity with the direct goal of influencing people's physical and mental development; is understanding, bearing the value orientation; education includes making people complete certain things independently in a way that contains a certain depth and breadth of understanding in activities considered valuable; and it should not only "know what it is", but also "know why". For an educated person, it is not enough to master the skill knowledge or know-how. He must also have a set of knowledge and some kind of conceptual schema, and reorganize the fragmented information into meaningful knowledge content. This means a certain understanding of the principles of organizational facts. On the basis of understanding, it is capable to organize experience, depict the characteristics of things, and further explore the "why" behind things, that is, the laws and principles behind the phenomenon.

Second, from the sight of professional skills and general techniques, vocational education should not only cultivate students' professional skills, but also enable them to acquire those broad and referential crafts. A technical worker must have the conditions not to be able to understand a specific skill required for a specific job, but to be able to handle various materials with simple tools through systematic training of hands, eyes and hearts, and have the general skills to solve common problems. As early as the 1980s, German vocational education has stressed the need to cultivate students' coping ability. Participate in the design and creation of a

future world of technology and progress in a socially, economically and environmentally responsible manner. China is in the key stage of economic structure adjustment and transformation and upgrading. Vocational education should prepare for general skills, and transform from professional training to “broad, professional and multi-functional” talents training.

Third, from the angle of students’ development, the national vocational education reform implementation plan clearly points out that it is necessary to improve the modern vocational education system with equal emphasis on academic education and training, and unblock the growth channels of technical and skilled talents. With the promotion of the construction of high-level applied talents training system, the level of vocational education is more abundant. With the mutual penetration of vocational education and general education, students can flow freely in the two types of education. Therefore, higher vocational education is no longer the end point of vocational education, and one skill can no longer meet the needs of talent growth and development. We must pay attention to the reserve of students’ basic knowledge, pay attention to the cultivation of students’ learning ability, creativity and innovation consciousness, so as to meet the needs of students’ further education and employment, and provide impetus for their sustainable development.

3.2.2. Connotation of competency based theory

Competency based education (CBE) refers to the vocational teaching system that organizes courses and teaching around the knowledge, skills and abilities required by vocational jobs. Its core is from the needs of professional posts and post groups to analyze layer by layer, determine the ability to engage in the industry, and to clear training objectives.

CBE takes the comprehensive analysis of professional role activities as the starting point, sets the basic principle of providing the industry and society with the high ability talents to perform their duties, emphasizes the dominant position of students in the learning and training process, and clarify the core of making the students have the practical ability necessary for a certain occupation.

“Ability” in CBE refers to a kind of comprehensive professional ability, which includes knowledge, attitude, experience (in activity field) and feedback (in evaluation and evaluation field) elated to the job. Only when these four aspects meet the requirements can students be recognized as having “special ability”. Several special abilities constitute a “comprehensive ability”, and some comprehensive abilities constitute a certain “vocational ability”, as shown in Figure 1.

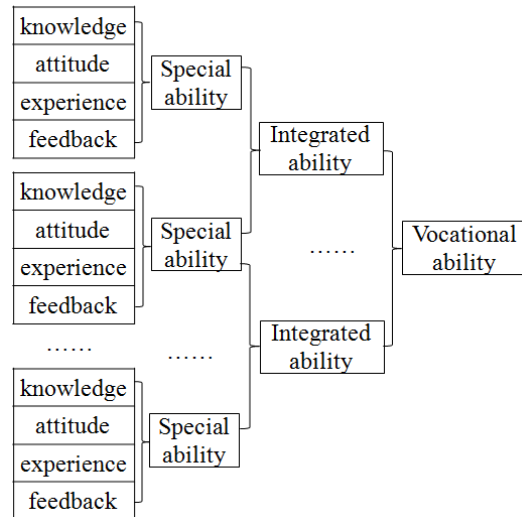


Figure 1. Ability constitution in CBA

The six elements of CBE are shown in Table 1, which are: taking professional ability as the target; setting the teaching ability as the basis; emphasizing self-learning and self-evaluation; focusing on the flexible and diverse teaching; emphasizing strict and scientific management; granting professional qualification certificate or credit.

Table 1. Six elements of CBA

1.Targeting on professional ability
2.Ability as the basis of teaching
3.Self-learning and self-evaluation
4.Flexibility and diversity in Teaching
5.Strict science in management
6.Professional qualification certificate

From the above analysis, it is shown that the technology-based vocational education no longer fulfills the request of today's social and economic development. The construction of the teaching staff of vocational education puts forward higher requirements for the construction and development of teachers’ knowledge. Academic ability and practical ability will be in the same important position. Only in this way can we realize the balance between theoretical education and practical training, give consideration to both professional skills and general skills in the process of vocational education and teaching, and cultivate high quality talents according to the requirements of the times and the needs of economic development.

#### **4. STRATEGIES FOR THE DEVELOPMENT OF VOCATIONAL EDUCATION TEACHERS' KNOWLEDGE UNDER THE NEW ECONOMIC SITUATION**

##### ***4.1. Integrating work experience and teaching ability***

In the west, the practice of vocational education precedes the establishment of teacher training system of vocational and technical education, and the primary source of vocational education teachers is technical workers. Relevant experience shows that: professional knowledge and professional experience of disciplines are significant, but these two are not enough to be qualified for teaching activities; technical or vocational teachers need to be trained systematically. For example, Denmark provides vocational education teachers' introductory training for those who are transferred from enterprises, mainly teaching courses in pedagogy, psychology and teaching methods. Through pre job training, educational practice, teaching practice and other activities, teachers from enterprises can further accept the training and practice of theoretical knowledge and teaching methods to improve the structure of professional knowledge, obtain the basic theoretical basis and teaching ability of vocational education, and enable them to correctly analyze, evaluate, design and carry out the implementation of vocational education teaching process, so as to achieve the integration of work experience and education and teaching ability.

##### ***4.2. Integrating scientific theoretical knowledge and practical technical ability***

Under the new economic form, modern science and technology has become the main factor of economic growth. On the one hand, the integration process of science and technology and production has intensified, technology is no longer based on experience but on science, and scientific theory is ahead of the application of technology, which requires technology to play a role under the guidance of scientific theory. On the other hand, with the transformation and upgrading of industrial structure, job uncertainty increases and employment mobility increases, so it is increasingly hard for students to match their post skills with their jobs. It is not the ultimate goal of vocational education to help students acquire post skills nowadays. It is vital to abandon the idea of belittling theory, and realize that with the development of social economy, theoretical learning will definitely become increasingly important. In the future, the workplace, changing work types and even cross professional work will be normal. Without solid theoretical knowledge and learning transfer ability,

a person will be difficult to move a single step.

From the point of view of the construction and development of teachers' knowledge, it is the development trend of world vocational education to extend the training system of vocational education teachers to graduate stage. The importance of theoretical knowledge in the knowledge structure of vocational education teachers is increasingly prominent. The Committee of the joint conference of German ministers of culture and education divides the knowledge system of teachers into three categories: profound scientific knowledge, flexible knowledge based on situation, and professional theoretical knowledge. It also considers that scientific theoretical knowledge is the prerequisite of teaching. The development of society and economy requires vocational education teachers not only to have certain technical ability, but also to have profound scientific and theoretical knowledge, so as to cultivate high-quality talents suitable for economic development.

#### **5. CONCLUSION**

Today's education is tomorrow's economy, which has become the consensus of the contemporary public. The new economic form asks educational circles make clear the professional orientation of vocational education, pay attention to the cultivation of students' comprehensive quality and ability, and change the cultivation of specialized talents with one skill, at least, to the cultivation of versatile talents of wide specialty, so as to improve the vocational transformation ability of practitioners, which puts forward higher requirements for the knowledge construction and development of vocational education teachers.

By discussing the influence of the new economic form on the knowledge development of vocational education teachers, and analyzing the technology-based view and ability based theory, it can be seen that the former, technology-based view, has certain limitations, while the latter, ability-based education, pays attention to the dominant position of students in the learning process, aiming to enable students to have the practical ability necessary for a certain occupation, which is greatly based on teachers' perfect knowledge construction.

Vocational education not only needs to follow the basic principles of education, but also requires showing solicitude for the characteristics of occupation. Through the integration of work experience and education teaching ability, scientific theory knowledge and practical technology ability, improving the knowledge structure of vocational education teachers and promoting the professionalization of vocational education teachers, it is capable to effectively promote vocational education and cultivate more applied talents needed by the society.

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