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The Integration of Production and Education and the Design of Virtual Intelligent Teachers for Finance and Economics Majors in Higher Vocational Colleges in China

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Abstract:

Finance and economics teachers in higher vocational colleges are facing a sharp increase in daily teaching workload caused by enrollment expansion, and the technical upgrading of Finance and economics majors urgently needs to invest a lot of time in teaching and scientific research. The new generation of information technology not only profoundly changes the post environment and technical standards of Finance and economics, but also gives higher vocational colleges the opportunity of teaching reform of Finance and economics. Higher vocational colleges can use the new generation of information technology to build virtual intelligent teachers. There are efficiency advantages in the teaching of basic knowledge and basic skills of Finance and economics, but there are no efficiency advantages in the teaching of cutting-edge knowledge and complex skills of Finance and economics. The main reason is that the basic knowledge and skills of Finance and economics can be sorted into structured data, while the professional frontier knowledge and complex skills are difficult to be sorted into structured data. The foundation of virtual intelligent teachers is big data technology. The image is constructed by 5g and other communication technologies, Internet of things technology and AR/VR technology, while the brain is composed of cloud service technology and AI technology. Virtual intelligent teachers can provide personalized learning paths and teaching resources according to various teaching purposes and the knowledge base of students from different sources, so as to improve teaching quality and efficiency.

Keywords*: Virtual intelligent teachers, Basic knowledge, Finance and economics majors, Higher vocational colleges, New generation information technology.*

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I. INTRODUCTION

With the wide application of 5g, AI, big data and other new generation information technologies, the teaching of Finance and Economics Majors in higher vocational colleges has undergone profound changes. These changes include: first, the teaching content of the course has changed. The new generation of information technology has changed the job content and technical standards of jobs in finance and related industries. Many jobs in accounting posts have been replaced by intelligent financial software. "The work world in the intelligent age will undergo disruptive changes such as career change, man-machine collaboration and cloud labor." [1]. This new technical standard must enter the teaching content of the course in order to improve the quality of talent training. Second, it has changed the form of curriculum teaching. Many operation scenes of financial professional work can be vividly presented to the classroom through the new generation of technology, so as to improve the effect of practical technology teaching for teachers and students. A large number of new generation information big data ideas and big data technologies make it more convenient for people to share teaching resources [2]. These teaching resources containing the working scenes of Finance and economics majors are welcomed by teachers. Third, it has changed the way of curriculum organization. Curriculum reform is no longer confined to a school. Some professional curriculum teaching organizations have taken the form of school enterprise cooperation and school alliance. Some localities have established inter school and inter industry vocational education curriculum teaching organizations through credit banks. Based on the vocational education qualification framework and driven by new generation information technologies such as big data and artificial intelligence, Chongqing lifelong learning credit bank has established a big data analysis model matching vocational post requirements and curriculum system [3].

These situations also pose new challenges to teacher reform. These challenges include: first, teachers must learn and master the new generation of information technology, promote relevant job standards, and integrate these new standards into the teaching process. This requires teachers to deeply study relevant industrial technology and teaching laws. Secondly, the students faced by teachers are teenagers growing up in the new generation of information technology environment. These students are familiar with the application and environment of various information technologies. Teachers need to deeply study their behavior habits and cognitive characteristics. The prominent problem that these challenges gather on teachers is that teachers do not have enough time and energy to carry out post technology research, teaching reform research and undertake a large number of teaching tasks at the same time. At present, there is a general lack of intelligent tools and network means to solve the bottleneck problem of classroom teaching [4]. How should higher vocational colleges deal with these challenges? Maybe different higher vocational colleges will have many different measures,

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such as recruiting and training compound teachers in some higher vocational colleges, and establishing teacher teams in some higher vocational colleges to deal with the heavy tasks of scientific research, teaching reform and teaching. No matter what method is adopted, the essential work is to promote teachers to master new technology and give full play to the role of the new generation of information technology in curriculum teaching. In the professional work of Finance and economics, intelligent customer service has been widely used, and artificial intelligence has been applied in enterprise user insight, content management, interactive delivery, monitoring and evaluation [5].

Then, do higher vocational colleges form some software, equipment or environment with the help of the new generation of information technology to help higher vocational college teachers complete some specific classroom teaching tasks, and even play a leading role in some specific teaching work? In order to express concisely, we call the software and hardware equipment built with the help of the new generation of information technology to help or even lead the teaching tasks as virtual intelligent teachers. What is the teaching scope of financial professional courses of virtual intelligent teachers, and what specific teaching tasks can they undertake? How to construct virtual intelligent teachers for the teaching of Finance and Economics Majors in Higher Vocational Colleges?

II. INDUSTRY EDUCATION INTEGRATION AND PROFESSIONAL CURRICULUM TEACHING REFORM OF FINANCE AND ECONOMICS MAJORS IN HIGHER VOCATIONAL COLLEGES

2.1 The Foothold of the Integration of Industry and Education of Finance and Economics Majors in Higher Vocational Colleges Lies in the Teaching of Professional Courses

The integration of industry and education of Higher Vocational finance and economics courses refers to the integration of industrial elements into the teaching of Higher Vocational finance and economics courses, so as to integrate the teaching of professional courses with the technical skills of related industries and improve the teaching quality of courses. If the teaching of Finance and Economics Majors in Higher Vocational Colleges in China can be more deeply integrated into the industry, it should be able to further improve the training quality of higher vocational talents and better provide high-end technical talents for China's socialist construction. Therefore, it is necessary to explore the position of professional courses in the integration of industry and education in higher vocational colleges, clarify the levels and signs of the integration of industry and education in higher vocational colleges, and sort out the difficulties faced by deepening the integration of industry and education at the level of financial and economic professional courses in higher vocational colleges. Has the integration of

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industry and education been deeply carried out in the teaching of professional courses? This is the key link for the integration of industry and education in higher vocational education, which is mainly reflected in:

First, higher vocational finance and economics courses must be oriented to industrial posts and technology. Industry is to look at economic organizations from the perspective of social division of labor. As long as there is a relationship between supply and demand of certain commodities in society, the corresponding jobs can exist in a specific economic organization. In the market economy of modern society, enterprise is the most important specific economic organization. Therefore, the essence of talent demand of enterprises and other economic organizations is the talent demand of industry. The majors of higher vocational colleges come from industrial posts or job groups, and the courses come from a certain technology or some combination of technologies in industrial posts. The talents trained in higher vocational colleges will be engaged in industrial technology posts. The professional courses of higher vocational colleges not only need to bring the current industrial posts and technologies into the classroom, but also need to take the lead appropriately and bring the future industrial posts and technologies into the classroom. It can be seen that industrial posts and their technology are the core of Vocational Education in the past, present and future. Obviously, the teaching of Finance and Economics Majors in Higher Vocational Colleges in China must face the posts and technologies of various industries in the society. This means that China's higher vocational colleges can not only consider the professional construction and curriculum teaching based on the demand of technical and skilled talents of an enterprise, but must consider the professional construction and curriculum teaching from the talent demand of the whole industry development. If the finance and economics courses in higher vocational colleges do not carry out the integration of industry and education in depth, it is impossible for higher vocational colleges to carry out the integration of industry and education effectively.

Second, higher vocational colleges must rely on professional courses to organize the integration of industry and education. There are great differences in posts and technologies in various industries. Training technical talents in these different posts requires different teachers, equipment, materials, teaching methods and teaching scenes. For example, the professional course of automobile maintenance needs teachers with automobile maintenance experience, equipment and spare parts such as cranes for automobile maintenance, and the professional course of accounting needs teachers with accounting related experience, financial software, financial system and other equipment and teaching scenes. Higher vocational colleges must organize human, material and capital around the technical characteristics of industrial posts, so as to gather the strength required for professional course teaching and cultivate high-end technical and skilled talents required for relevant industrial posts. On the contrary, if higher

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vocational colleges do not allocate teachers, equipment and management system according to the teaching characteristics of professional courses, it will be difficult to ensure the teaching quality of courses and cultivate technical talents in various posts required for industrial development. Therefore, only by deeply carrying out the integration of industry and education in Higher Vocational finance and economics courses, can we achieve the talent training goal of higher vocational education.

Third, the long-term career development of higher vocational students depends on professional courses to deepen the integration of industry and education. In modern society, industrial upgrading is relatively fast, which requires relevant enterprises and their post technical talents to keep up with the speed of industrial upgrading. For example, at present, artificial intelligence promotes the upgrading of industries such as finance, taxation and finance, which makes some enterprises require accounting posts to master the application technology of artificial intelligence. This means that only those who have mastered enough learning ability can meet the job needs of modern social industry. This requires that the talents trained in higher vocational colleges not only have certain professional technology and skills, but also have correct "three views", healthy physique, good cultural quality and psychological quality. This means that the teaching of Finance and Economics Majors in higher vocational colleges can not only focus on the current industrial post technology, but must include the relevant elements of students' autonomous learning ability after graduation into the teaching scope from the perspective of students' long-term career development. China's higher vocational education needs to consider the integration of industry and education of professional courses from the perspective of industrial development rather than a specific enterprise. Higher vocational education needs to integrate relevant knowledge and quality education into the teaching process according to the characteristics of the integration of industry and education of professional courses, so as to facilitate the long-term career development of students after graduation. In the future, the integration of industry and education in vocational education should focus on promoting people's all-round development. [6] These knowledge and quality education should meet the needs of the long-term development of technology in various industries and posts. For example, finance and economics majors need higher mathematical knowledge and quantitative analysis ability, while nursing majors need dexterity. Only when the professional courses of Finance and economics in Higher Vocational Colleges deeply carry out the integration of industry and education, can the teaching team of professional courses master the knowledge, quality and technical skills that affect students' long-term career development. Therefore, the degree of integration of production and education of Finance and economics courses in higher vocational colleges has a profound impact on students' long-term career development.

It can be seen that the characteristics of higher vocational talent training determine that the

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foothold of Higher Vocational industry education integration is professional curriculum. In order to achieve the goal of talent training, higher vocational colleges must carry out the integration of industry and education around professional courses. Then, the next step is to analyze the signs of the integration of industry and education in Higher Vocational finance and economics courses.

2.2 Levels and Signs of Industry Education Integration of Finance and Economics Courses in Higher Vocational Colleges

The integration of industry and education in Higher Vocational finance and economics courses will exist to varying degrees. The integration of industry and education is a school running mode for higher vocational colleges to meet the needs of industrial development. From the perspective of higher vocational education as a whole, the school running mode of industry education integration is to introduce industrial post practice into vocational education teaching. This practice is a process of mutual integration between higher vocational education and industry enterprises in related industries. In this process, the integration of industry and education should exist in different degrees: both the shallow mutual use of industry and education resources between schools and enterprises, and the deep integration of human, financial and material resources between schools and enterprises. The integration of industry and education is not only the integration between various subjects, but also the integration between various key factors. [7] Obviously, these belong to the scope of Higher Vocational industry education integration school running mode, but to different degrees. Since professional courses are the foothold of the integration of industry and education in higher vocational colleges, the integration of industry and education in professional courses should also exist to varying degrees. When professional courses in vocational colleges begin to explore the integration of industry and education and use some industrial post practice resources for curriculum teaching, we can think that these professional courses have reached a low degree of integration of industry and education. When the professional courses of Finance and economics in higher vocational colleges have deeply carried out the integration of industry and education, and even realized the integration of personnel from both schools and enterprises, and achieved quite rich educational and teaching results, we can think that these professional courses have reached a high degree of integration of industry and education.

According to the situation of integrating industrial elements into the teaching of Finance and economics courses in higher vocational colleges, the degree of integration of industry and education of professional courses can be divided into five levels: (1) integrating industrial post practice technology into teaching content, (2) integrating industrial post practice equipment into teaching equipment, (3) integrating industrial post work procedures into teaching tasks, (4) integrating industrial post technical talents into teaching team, (5) Integrate the working

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environment of industrial posts into the teaching scene.

Among them, the integration of industrial practice post technology into the teaching content means that the relevant technology of industrial post practice can be fully integrated into the teaching content of relevant professional courses. Whether the teaching content can completely include the latest practical work technology in the industry is of great significance for students to adapt to the development of industrial posts. If the teaching content of professional courses can include the latest industrial post practical work technology, students can quickly adapt to the needs of industrial post work after graduation. On the contrary, appropriate pre job training is needed to adapt to specific jobs. In the survey, we found that some graduates reported that some professional courses did not fully include the latest industrial practical work technologies, and they must go to work after graduation to get access to these latest technologies. The basic motivation of the integration of industry and education lies in the deregulation and technological progress [8]. The integration of industrial post practice technology into the teaching content includes the integration of industrial post practice technology standards into professional talent training standards and curriculum standards, the essentials of industrial post practice technology have become the focus of professional curriculum teaching, and the difficulties of industrial post practice technology have become the difficulties of professional curriculum teaching. Secondary teaching units in Higher Vocational Colleges and even some individual teachers can obtain these technical materials and form specific teaching contents through regular or irregular communication with industry and enterprise experts.

The integration of industrial post practice equipment into teaching equipment refers to the advanced equipment actually applied in industrial post work, which can be used in relevant professional teaching. This means that the teaching of Finance and Economics Majors in higher vocational colleges can use the advanced equipment in the production and operation of industrial enterprises. This requires higher vocational colleges and industrial enterprises to establish a cooperation mechanism of sharing production and operation equipment, so as to solve the funds generated by the use of production and operation equipment as teaching equipment. Compared with the integration of industrial post practice technology into the teaching content, it obviously requires a deeper degree of integration between schools and enterprises.

The integration of industrial post work procedures into teaching tasks means that the teaching tasks of Higher Vocational finance and economics courses follow the industrial post work procedures and regard all links of industrial post work as teaching tasks. Teachers and students must implement the corresponding work procedures in order to achieve the teaching results of professional courses. This means that the teaching activities of Finance and

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economics courses in higher vocational colleges have been completely integrated with industrial production and management: teachers bear the responsibility of not only teaching guidance, but also post work guidance in this process; In this process, students should not only learn the work technology of relevant posts, but also complete the work tasks of relevant posts. Obviously, compared with the integration of industrial post practice technology into teaching content and industrial post practice equipment into teaching equipment, the integration of industrial post work procedures into teaching tasks requires a deeper integration between schools and enterprises.

The integration of industrial post technical talents into the teaching team means that the teaching team of Finance and Economics Majors in higher vocational colleges includes a certain number of industrial post technical talents. These industrial technicians who participate in the teaching team of Higher Vocational finance and economics majors engage in relevant technical work in front-line posts and can master the latest technologies applied in the industry in real time. At the same time, they also undertake the teaching of a certain number of professional courses in Higher Vocational Colleges and master the teaching rules and methods. They must have working experience in industrial posts and teaching experience in finance and Economics Majors in higher vocational colleges, master working technology in industrial posts and have certain teaching ability. They may have been engaged in industrial post work first, and then transferred to higher vocational teacher work. Now they are also engaged in industrial post practice when they are engaged in teaching work; It is also possible to be engaged in the work of teachers first, and then engaged in the practical work of industrial posts for a certain time. Now, while engaged in the practical work of industrial posts, they are also engaged in the teaching of a certain number of professional courses in higher vocational colleges. This means that a certain number of teachers in the teaching team of Finance and Economics Majors in higher vocational colleges have long-term practice in industrial posts and long-term teaching in teaching posts at the same time. On the one hand, higher vocational colleges need to establish a perfect management system for Industry and enterprise experts to teach in schools for a long time and professional course teachers to practice in industrial posts for a long time after school, including salary system, performance evaluation system and so on; On the other hand, establish a mechanism of in-depth cooperation between schools and enterprises to solve the work conflict caused by the mutual employment of each other's personnel. It can be seen that the integration of technical talents in industrial posts into the teaching team requires a deeper degree of integration between schools and enterprises than the three levels of industry education integration of the above-mentioned professional courses.

The integration of industrial post working environment into teaching scenario means that the teaching environment of Higher Vocational finance and economics courses has fully

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integrated the industrial post working environment. These industrial working environments include not only the hardware environment such as industrial post working equipment and facilities, but also the internal software environment of industrial enterprises such as industrial post working system, humanistic spirit and professional habits, as well as relevant markets, laws and other external social environment elements. The working environment of these industrial posts is not only used for the teaching of Finance and Economics Majors in higher vocational colleges, but also directly used for production and operation. The working environment of these industrial Posts integrated into the teaching scenario is completely consistent with the production and operation environment of industrial enterprises, and can directly participate in industrial competition. The working environment of these industrial Posts integrated into the teaching scene is not a simulated environment, but a real environment. In this environment, teachers and students can carry out real industrial jobs and produce products and services that meet the needs of market sales. This means that teachers and students of professional courses are provided with an environment to directly participate in industrial post practice. Maybe teachers and students of different professional courses use the working environment of these industrial posts in different ways, but these teachers and students can better integrate into the development trend of industrial post work. Of course, this requires more in-depth integration of industry and education in higher vocational colleges, so that industrial post practice can fully meet the needs of professional curriculum teaching, and professional curriculum teaching can fully meet the requirements of industrial post practice. Compared with other situations mentioned above, the integration of industrial post working environment into teaching scenario has the deepest degree of integration between schools and enterprises.

The corresponding marks of the five levels of the integration of industry and education of Finance and economics courses in higher vocational colleges are as follows: the first level is the talent training standard and curriculum standard that fully reflects the practical technology of industrial posts; The symbol of the second level is that the industrial post practice equipment has become the equipment used in teaching; The mark of the third level is that the teaching task includes the task of industrial post; The sign of the fourth level is that both schools and enterprises employ each other's technical talents for a long time to engage in specific industrial posts and teaching work part-time; The symbol of the fifth level is that both schools and enterprises have integrated the industrial post work practice environment and teaching scene, forming a platform for teachers and students to carry out specific industry education integration projects.

These five levels not only show the degree of integration between professional curriculum teaching and industrial post practice, but also show the process of integration between

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professional curriculum teaching and industrial post practice. If the low-level integration of industry and education in Higher Vocational finance and economics courses is not fully realized, even if both schools and enterprises have some form of high-level integration of industry and education in professional courses, it will not achieve the goal of cultivating talents to meet the needs of industrial development. This means that the integration of industry and education of professional courses must start with the full integration of industrial post practice technology into the teaching content, experience the integration of industrial post practice equipment into teaching equipment, industrial post work procedures into teaching tasks, industrial post technical talents into teaching team, and finally achieve the integration of industrial post work environment into teaching situation. The industry education integration of Higher Vocational finance and economics courses can not skip the previous industry education integration level and effectively carry out the follow-up industry education integration level. This means that the integration of industry and education at the curriculum level of Finance and Economics Majors in higher vocational colleges needs to start from the deconstruction of industrial post practice content and reconstruction of teaching content by both schools and enterprises; Secondly, both schools and enterprises explore ways to jointly use industrial post practice equipment and teaching equipment; Thirdly, both schools and enterprises practice the specific ways of implanting industrial post work procedures into teaching tasks; Fourth, both schools and enterprises hire each other's talents to jointly build a mechanism for industrial technical talents to integrate into the teaching team; Finally, schools and enterprises form a teaching scenario including industrial post working environment, which provides a platform for teachers and students to carry out specific industry education integration teaching. At present, China's Higher Vocational Education invested by industrial enterprises is more convenient for professional courses to carry out the integration of industry and education.

Clarifying the levels and signs of industry education integration of Finance and economics courses in higher vocational colleges is conducive to judge the state of industry education integration of specific professional courses and the development direction in the future. Of course, there are some differences in the degree of industry education integration required by different professional courses and industries. Some professional courses and industries need both schools and enterprises to build an industrial post practice environment to cultivate professional and technical talents. For example, audit courses need to build a close audit work environment to cultivate students' audit professional judgment ability. Some professional courses and industries only need to implant industrial post operation in the teaching of professional courses to cultivate suitable vocational and technical talents. For example, the office software application course only needs to clarify the main operation links in the teaching task to cultivate students' ability to use office software. Then, we can compare the levels of industry education integration of similar professional courses in different higher vocational

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colleges, and then judge the situation of industry education integration of specific professional courses in a higher vocational college and the development trend in the future.

Of course, higher vocational colleges will face some specific difficulties when carrying out the integration of industry and education of professional courses. Only by breaking through these difficulties can the integration of industry and education of Higher Vocational finance and economics courses reach the expected state of the society and cultivate technical talents more suitable for the needs of industrial development.

2.3 Constraints on Deepening the Integration of Industry and Education at the Curriculum Level of Finance and Economics Majors in Higher Vocational Colleges

2.3.1 Constraints of teachers' teaching ideas and methods and the spatial depth of the integration of production and education of professional courses

At present, higher vocational teachers are used to classroom teaching in school. The teaching of professional courses is undertaken by professional teachers. Higher vocational professional teachers' teaching ideas and methods have a direct impact on the quality of classroom teaching, and then have a very important impact on the quality of talent training. At present, the impact of Higher Vocational Teachers' teaching ideas and methods on the quality of classroom teaching is mainly reflected in: first, the classroom teaching idea is based on students knowing "what" rather than students "how to do". Secondly, the goal of classroom teaching is mainly to impart knowledge rather than technology. Third, the classroom teaching materials are mainly paper teaching materials, not work manuals. Fourth, the classroom teaching method focuses on knowledge memory, rather than the application and innovation of technical skills. Fifthly, the teaching assessment is mainly based on questions and answers on the paper, rather than the effect of technical operation. Sixth, the teaching process is mainly based on classroom listening, not on-site hands-on operation. This makes vocational college students obtain less vocational and technical skills from the classroom, and can not directly form the professional and technical skills required for industrial development. Enterprises and other employers need to spend a long time and cost on on-the-job training for higher vocational students. The main reason for the situation of Chinese higher vocational teachers is that most of their teachers are not from the front-line professional and technical personnel of industry enterprises.

For a long time, most professional teachers in Higher Vocational Colleges in China come from college graduates. Such teachers come from ordinary colleges and universities, and then enter higher vocational schools. They have higher education and scientific knowledge, but lack industrial practice experience and do not know the application of technology practice in

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industrial enterprises. They are used to classroom teaching in ordinary universities. When they become higher vocational teachers, they are very likely to bring the teaching ideas and methods of ordinary universities into higher vocational colleges. When the teachers from such sources account for the majority of higher vocational teachers for a long time, the professional courses of Finance and economics in higher vocational colleges will follow the classroom teaching of subject knowledge, which is difficult to deeply carry out the integration of industry and education at the curriculum level. Over time, the teaching of Finance and Economics Majors in higher vocational colleges has formed classroom teaching ideas and methods around knowledge accumulation. Teachers from industrial enterprises in higher vocational colleges can only follow the teaching ideas and methods of discipline system, and it is difficult to form vocational teaching ideas and methods around technological development.

2.3.2 The restriction of higher vocational management concept and mode and the spatial breadth of the integration of production and education of professional courses

At present, China's higher vocational management model is generally a two-level model: "school - Teaching Department - Professional Curriculum". This is mainly due to the large scale of Higher Vocational Education in China, covering more professional fields. Under the two-level management mode, the main body of professional curriculum construction directly undertaken by Chinese higher vocational colleges is the secondary teaching unit - teaching departments. The teaching college and department also undertake the teaching tasks of various majors. As an internal institution of higher vocational education, the Department of teaching college usually has no independent financial rights, human rights and real rights. These rights are in the management level of higher vocational schools. This means that the teaching colleges and departments are between the front end of the industry and the school level management of Vocational Colleges and universities who master people, finance and materials. This puts forward high requirements for the secondary teaching departments of vocational colleges. If the secondary teaching colleges and departments of higher vocational colleges do not grasp the development trends of relevant industries, it is difficult for higher vocational colleges to deeply carry out the integration of industry and education at the level of professional courses. Similarly, if the secondary education departments of higher vocational colleges do not get enough support from the school management, it is difficult for higher vocational colleges to continue to carry out the integration of industry and education at the level of professional courses.

Most professional fields of Higher Vocational Education in China cover multiple industrial fields. This makes it impossible for higher vocational school level management to be familiar with so many relevant positions in industrial fields. Even if higher vocational managers are familiar with an industrial field, because they have been engaged in school management for a

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long time, they are unlikely to be more familiar with post technology changes in the industrial field than secondary education colleges and departments. Higher vocational school level management is easier to consider the integration of industry and education at the level of professional courses from the perspective of education and teaching. Most of the managers of Higher Vocational Colleges in China come from ordinary colleges and universities, rarely from industrial enterprises. This situation does not necessarily have an adverse impact on the integration of industry and education of professional courses. However, if the secondary teaching departments and their professional teachers have no working experience in relevant industries, it may have an important impact on the integration of industry and education of professional courses. Therefore, the secondary education colleges and departments not only need to be familiar with the post technology development trends in the industrial fields related to professional courses, but also need to convince the school managers to obtain the human, financial and material resources to deeply carry out the integration of industry and education at the level of professional courses.

If the management of higher vocational colleges can adhere to the concept of "putting management and service" and give more autonomy to the secondary teaching colleges and departments, it will be conducive to the in-depth integration of industry and education of professional courses. If the management of Higher Vocational Colleges lack service awareness and development concept and adopt an attitude of exclusion or laissez faire to unfamiliar industrial fields, some secondary education colleges and departments are unlikely to obtain sufficient human, material and capital to carry out in-depth industry education integration at the level of professional courses. Therefore, the management concept and mode of vocational colleges have an important impact on the breadth of industry education integration of professional courses: appropriate management concept and mode can promote more professional courses to carry out industry education integration in depth.

2.3.3 The industrial environment restricts the length of time for the integration of industry and education of Higher Vocational finance and economics courses

Industrial environment plays a very important role in the life cycle of industrial post technology. The industrial environment covers a wide range, such as social psychology, market demand, policy and law, finance, product technology and so on. Among them, market demand and product technology are the two most important factors affecting the life cycle of industrial posts.

Market demand affects the life cycle of industrial posts by determining the sales of industrial related products. Market demand determines product sales: such as the length of

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product sales and the scale of sales in each time period. The status of product sales plays a very important role in industrial development. If the relevant products of the industry can be sold in a longer time and a larger space, the posts providing these products and services and their technology cover a larger time and space. If the sales time of relevant products of the industry is short and the spatial scope is small, the time and spatial scope of the posts providing these products and services and their technologies will also be relatively small. For example, with the improvement of people's living standards, green and healthy travel is popular, while the market for high calorie food at home is gradually shrinking. This makes the original eco-tourism related post technology have great development, while the post technology of high calorie food is difficult to obtain development. It can be seen that industry related posts and their technologies are deeply affected by the space-time scope of market demand.

Product process technology is another important factor affecting the life cycle of industrial posts. Product technology depends on the development level of social science and technology at that time. The development of science and technology will promote the progress of product technology, and even change the product structure and form. For example, after the introduction of smart phones, many new products have been born: mobile payment, business survey based on mobile Internet, social platform, we media and so on. Product technology not only promotes the upgrading of products, but also updates the technology of relevant posts in the industry, eliminates many professional posts, and produces many new professional posts at the same time. It can be seen that the progress of product technology will shorten the life cycle of industry related posts and technologies.

In the life cycle of industry related posts and technologies, the demand for corresponding professional posts is relatively stable. When an industry related post and its technology are replaced by other posts and technologies, or even an industry is replaced by other industries, it will inevitably lead to the renewal of professional posts. The Ministry of human resources and social security, the State Administration of market supervision and the National Bureau of statistics released 16 new occupations such as intelligent manufacturing engineering technicians in March 2020 [9]. This shows that the society has recognized these new occupations, which means that some industrial posts have changed or even disappeared. Obviously, these new occupations are the result of the change of market demand and the progress of science and technology. The industrial environment has a profound impact on the life cycle of industrial posts.

The industrial environment promotes the life cycle change of industrial posts, and then determines the time of the integration of industry and education of Higher Vocational finance and economics courses. The integration of production and education of Finance and economics

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courses in higher vocational colleges is the integration of teachers' teaching team and industrial post team. In the case that the integration of industry and education has been deeply carried out in the professional courses of Finance and economics in higher vocational colleges, the life cycle of industrial posts is the key factor to determine the length of the integration of industry and education. From the short-term cost of higher vocational managers and teachers, they try to avoid bringing new vocational posts and their technologies into the teaching scope of professional courses too quickly. However, from the perspective of the whole social progress, industrial development requires higher vocational colleges to cultivate new vocational post technical and skilled talents as soon as possible. The talent demand of industrial development will affect the training direction of higher vocational talents through the change of talent market supply and demand and the guidance of government talent policy. For example, in recent years, there is a shortage of new professional talents such as AI engineers, and the employment benefits of relevant posts continue to rise. The government has issued policies to support schools to cultivate talents in emerging industries such as AI. In the short term, the teaching of relevant professional courses in higher vocational colleges may ignore the renewal of professional posts. In the long term, relevant professional courses in higher vocational colleges must change with the change of professional posts. Once the life cycle of industrial Posts changes, the integration of industry and education of Higher Vocational finance and economics courses will change sooner or later. Therefore, to carry out the integration of industry and education of professional courses in higher vocational colleges, we must pay close attention to the impact of changes in industrial environment on the life cycle of industrial posts, and try to choose industrial posts with a long-life cycle to carry out the integration of industry and education.

2.3.4 Enterprise value orientation and economic ability restrict the heat of production education integration of Higher Vocational finance and economics courses

Enterprise is one of the main specific carriers of industry. Industry is composed of the supply and demand of specific types of goods in the market. In modern market economy, enterprises are not only the main commodity production and supply subject, but also the main demand subject of production and management talents. Therefore, the enterprise is one of the main cooperation objects of the integration of production and education of Higher Vocational finance and economics courses.

The value orientation of enterprises plays a very important role in the integration of production and education of Higher Vocational finance and economics courses. An enterprise is essentially an economic organization for profit. The enterprise gathers human, material and capital to produce and operate various products and services required by the market. Many

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higher vocational students enter various enterprises to engage in professional and technical work after graduation. In modern society, many enterprises, as social organizations, also bear all kinds of social responsibilities, especially listed companies and large state-owned enterprises, which must bear all kinds of responsibilities entrusted by the society. According to regulations, Chinese listed companies must regularly report on their social responsibility. Many large enterprises are also willing to disclose their various social responsibilities in order to establish a good social image. It can be seen that many enterprises now attach importance to social responsibility and social image. In modern society, the value orientation of enterprises is no longer limited to profitability, but includes many social responsibilities. When the value orientation of enterprises includes social responsibility, helping to train all kinds of schools to train talents needed by the society is the way for enterprises to bear social responsibility and establish social image. The talents trained in higher vocational colleges are the talents closest to the needs of enterprises. Most students graduated from higher vocational colleges can go directly to the front-line jobs of enterprise production and operation. In the future, industry education integration enterprises should also be enterprises with great influence and strong sense of social responsibility [10]. Therefore, enterprises with social responsibility in their value orientation should be willing to assist Higher Vocational Colleges in cultivating talents. Of course, the competition in modern market economy is fierce, and some enterprises try to avoid social responsibility in order to seek opportunities for survival and development. The value orientation of these enterprises is seriously inclined to profit, and they lack the business philosophy of undertaking social responsibility. These enterprises are unlikely to help higher vocational colleges train talents out of the value orientation of social responsibility. Of course, these enterprises may cooperate with higher vocational colleges to train people for profit-making operation, but such help will change frequently with the needs of enterprise operation - Higher Vocational finance and economics courses are unlikely to adapt to such changes. The integration of production and education of Higher Vocational finance and economics courses requires stable cooperation between schools and enterprises for a long time, so that the new technology of industrial post work practice can be transformed into teaching content. As mentioned earlier, this is the first level of industry education integration of Finance and economics courses in higher vocational colleges. The integration of industry and education of Higher Vocational finance and economics courses needs to go through four levels to achieve a platform for teachers and students to carry out specific industry and education integration projects. It can be seen that the value orientation of enterprises has a very important impact on the integration of production and education of Higher Vocational finance and economics courses.

The value orientation of enterprises has an important impact on the heat of the integration of production and education of Higher Vocational finance and economics courses. The

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popularity of the integration of production and education of Higher Vocational finance and economics courses depends on the will and ability of both schools and enterprises. The integration of production and education of Higher Vocational finance and economics courses requires in-depth cooperation between schools and enterprises. If either party lacks the willingness or ability of in-depth integration, the integration of production and education of Higher Vocational finance and economics courses cannot be realized. In the case that enterprises lack the willingness and ability to help higher vocational colleges cultivate talents, even if higher vocational colleges are very willing and able to carry out in-depth, long-term and stable cooperation with enterprises, it is impossible to make the heat of production and education integration of Higher Vocational finance and economics courses reach the expected situation. If the value orientation of the enterprise lacks social responsibility, the enterprise is likely to lack the willingness to carry out long-term cooperation with higher vocational colleges. If the value orientation of the enterprise includes many social responsibilities, the enterprise is likely to be willing to carry out long-term cooperation with higher vocational colleges.

The economic ability of enterprises is another important factor affecting whether enterprises can cooperate with higher vocational colleges for a long time. The long-term integration of industry and education between enterprises and higher vocational colleges requires enterprises to continuously invest human, material and capital in the integration of industry and education. For example, in order to carry out the integration of production and education of Higher Vocational finance and economics courses, enterprises need to invest professional technicians to participate in course development and project design, equipment and materials for professional course teaching, market projects for building teaching scenarios, etc. The industry education integration enterprises to be built in China in the future should meet the needs of the industry and enterprises, refine the selection criteria according to the industry standards, and clarify the list of corporate responsibilities. [11] If the enterprise's economic ability is weak, the enterprise does not have enough strength to carry out long-term professional curriculum production and education integration with higher vocational colleges. Only when the enterprise's economic ability is strong enough, can the enterprise have enough strength to carry out the integration of production and education of long-term professional courses with higher vocational colleges. Generally, enterprises with social responsibility in value orientation are also enterprises with strong economic ability, and enterprises without social responsibility in value orientation are also enterprises with weak economic ability. As mentioned earlier, the value orientation of enterprises affects the willingness of enterprises to cooperate with higher vocational colleges for a long time. It can be seen that the value orientation and economic strength of enterprises are closely related to the popularity of school enterprise cooperation in professional production and education integration.

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III. DESIGN OF VIRTUAL INTELLIGENT TEACHERS FOR FINANCE AND ECONOMICS MAJORS IN HIGHER VOCATIONAL COLLEGES

3.1 Definition of the Teaching Scope of Virtual Intelligent Teachers' Professional Courses in Finance and Economics

In order to design appropriate virtual intelligent teachers for finance and Economics Majors in higher vocational colleges, we need to compare the work that can be completed by the new generation of information technology with the teaching work that finance and economics teachers in Higher Vocational Colleges urgently need to be completed by the new generation of information technology. At present, the new generation of information technology includes cloud computing, big data, Internet of things, artificial intelligence, blockchain, 5g, etc. Through cloud service technology and 5g technology, finance and Economics Majors in higher vocational colleges can break through the limitations of teaching time and space, so that students can learn anytime and anywhere, while teachers can accumulate teaching materials anytime and anywhere. With the help of big data technology, teachers can select, compile and produce massive learning resources and add many vivid learning materials, from which students can obtain the data resources of the whole society, which is no longer limited to the learning resources provided by teachers. Through the Internet of things and blockchain, a fully controlled teaching place can be built, so that teachers can accurately monitor students' learning process without visiting the classroom, and any learning activities of students in the classroom and training room can be properly evaluated. With the help of artificial intelligence, Internet of things and big data, finance and Economics Majors in higher vocational colleges can realize students' complete autonomous learning of basic knowledge and practicing some skills in a virtual environment. In this process, teachers only need to organize students to enter the learning situation, so that students can master these basic knowledge and skills, and the teaching system composed of artificial intelligence, Internet of things and big data can complete the evaluation of students' whole learning process without teachers going deep into teaching details. In such a teaching system, what teachers need to do is mainly to provide suggestions for students' learning in the next stage according to the systematically evaluated students' learning situation, rather than collecting and sorting out teaching materials and other daily work.

Of course, virtual intelligent teachers are not competent for the teaching of some advanced professional knowledge and complex work skills of Finance and Economics Majors in higher vocational colleges. This part of the work still needs teachers' words and deeds. The advanced professional knowledge of Finance and economics includes cutting-edge theory and practical experience. Most of them do not have mature and consistent views, and there may be many

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deviations in understanding. The training of complex work skills requires multiple financial intertwined work scenes and a variety of work tasks, as well as learners' sufficient time and energy. Most students can only master some cutting-edge knowledge and some complex skills in their major during their stay in school. From the general cognitive law, people must learn knowledge by taking knowledge points as units and learning knowledge points one by one. Students in higher vocational colleges must complete a lot of knowledge learning and skill training: from learning the basic professional knowledge at the time of enrollment to being able to complete the professional and technical work at the time of graduation. Vocational college students' study in school for three years, including basic skill training courses in the second semester and comprehensive skill training courses to solve practical work problems in the fourth and fifth semesters. In the current state of technology, even artificial intelligence cannot evaluate the effect of Higher Vocational College Students' learning cutting-edge knowledge - it cannot evaluate whether students have mastered and applied this knowledge to solve practical problems - it can only judge whether students remember this knowledge. Similarly, AI cannot evaluate whether students have mastered complex skills. Of course, virtual intelligent teachers can record students' learning of cutting-edge knowledge and training of complex skills. Teachers can use these records to evaluate students' learning more scientifically and fairly.

At present, what tasks do finance and economics teachers in Higher Vocational Colleges expect virtual intelligent teachers to help complete? This requires an analysis of their work. Firstly, the teaching workload of Finance and economics teachers in higher vocational colleges is very heavy. The main reason is that finance and economics has become the main professional field of enrollment expansion in higher vocational colleges. The number of students in higher vocational colleges is huge, and the teaching of Finance and economics does not need to occupy a lot of space and a lot of money. In higher vocational colleges, finance and economics majors are more popular with students, and a large number of students apply for the examination. In 2019, Premier Li Keqiang proposed to expand the enrollment of Higher Vocational Colleges by 1 million a year for three consecutive years. Students majoring in finance and economics in higher vocational colleges have increased significantly, while the growth rate of experienced teachers is relatively slow. Even some senior college leaders put the main way of teacher recruitment in the field of fresh master's and doctoral graduates, ignoring that vocational education needs skilled teachers with rich professional practice experience. With the expansion of enrollment and the continuous emergence of new technologies, finance and economics teachers in higher vocational colleges are facing heavy daily teaching work and teaching and scientific research work at the same time. In the long run, higher vocational college teachers' mastery of new technology and its teaching law will help to continuously improve their competitiveness. Teachers undertaking more daily teaching work can only increase a small amount of income, but it is not conducive to teaching research and scientific

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research. Therefore, finance and economics teachers in Higher Vocational Colleges expect virtual intelligent teachers to help improve the efficiency of daily teaching, so as to spare more time to study and master new technologies and teaching methods.

The performance system and working environment of higher vocational colleges will have a certain impact on Teachers' behavior. If the performance orientation of Higher Vocational Colleges focuses on daily teaching, puts most of the performance salary on the daily teaching workload, and the incentives for teaching and research and scientific research are low, or the expenditure system of teaching and scientific research funds is unreasonable, teachers will be more willing to undertake daily teaching work. If the performance orientation of Higher Vocational Colleges focuses on rewarding teaching and scientific research achievements, and the expenditure system of teaching and scientific research funds is reasonable, teachers will be more willing to undertake teaching and scientific research work than more daily teaching work. In the long run, promoting teachers' teaching and scientific research in higher vocational colleges is conducive to seizing the leading position in technology and teaching reform. In the short term, higher vocational colleges promote teachers to complete daily teaching as much as possible, which is conducive to solving the problems such as the shortage of daily teaching teachers caused by enrollment expansion. Of course, higher vocational colleges can reduce teachers' daily teaching workload to a certain extent by giving full play to the role of virtual intelligent teachers, which will help to promote teachers to strengthen teaching and scientific research. This requires higher vocational colleges to establish a supporting performance system for teachers to use the new generation of information technology to carry out teaching.

From the current situation of Finance and economics industry and the development trend of vocational education, finance and economics teachers in Higher Vocational Colleges expect virtual intelligent teachers to undertake more daily teaching work, and the main work of virtual intelligent teachers in the field of higher vocational education is also daily teaching work. Of course, this does not mean that finance and economics teachers in higher vocational colleges cannot use the new generation of information technology to carry out teaching and scientific research. On the contrary, the integration of Finance and economics professional and technical work into the new generation of information technology means that finance and economics teachers in higher vocational colleges must rely on the new generation of information technology when carrying out teaching and scientific research. However, virtual intelligent teachers can play a major role in some daily teaching of Finance and Economics Majors in higher vocational colleges, and even become "keynote teachers" of some teaching contents of some courses. The virtual intelligent teachers composed of the new generation of information technology can complete most of the work in these teaching tasks, such as teaching design, teaching preparation, teaching plan preparation, classroom control, after-school homework

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correction, learning assessment and evaluation. On the contrary, the finance and economics teachers in higher vocational colleges play an auxiliary role in curriculum teaching control. This shows that the virtual intelligent teachers composed of a new generation of information technology "replace" the teachers' teaching work. In the teaching and research work of Finance and economics teachers in higher vocational colleges, the new generation of information technology is regarded as the research object or research tool, which is unlikely to replace teachers to carry out any teaching and research work. Therefore, it can be considered that the virtual intelligent teachers of Finance and Economics Majors in Higher Vocational Colleges with the help of the new generation of information technology mainly work in daily teaching.

3.2 Virtual Intelligent Teachers Undertake the Definition of Knowledge Points and Skill Teaching

Related jobs of Finance and Economics Majors in higher vocational colleges mainly deal with financial documents and materials. Financial professional jobs are different from engineering professional jobs such as machinery and Electronics: the former mainly works on financial documents and materials, and the latter mainly processes raw materials with mechanical and electronic equipment. In order to meet the needs of work, students majoring in finance and economics in higher vocational colleges must master the professional knowledge of Finance and economics, and identifying, applying and making financial documents and materials are the basic skills of relevant posts of Finance and economics. Similarly, in order to meet the needs of work, students majoring in machinery in higher vocational colleges must master technical skills such as machine design, use, maintenance, storage, handling and packaging of materials and products. Therefore, the teaching of Finance and economics cannot be required by the teaching method of engineering. For example, based on factors such as equipment, materials and power configuration, the mechanical specialty can divide the production and manufacturing process into several small and fixed operation steps as practical teaching projects; the working process of Finance and economics majors is more result oriented - to achieve business objectives efficiently - there are many different ways to achieve such business objectives. Therefore, the practical teaching projects of Finance and economics majors are relatively large and contain many small operation steps. The sequence of these operation steps is not strictly fixed and has certain flexibility. If we must divide the practical teaching of Finance and economics specialty into small operations according to the way of engineering specialty, it will lead to the low efficiency of Finance and economics specialty teaching. Their work contents, methods and environment are very different, but they are very important for social development. The main task of training financial professionals in higher vocational colleges is to train students' technical skills such as identifying, applying and making financial professional documents.

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Compared with engineering majors such as machinery, the basic working environment of students majoring in finance and economics in higher vocational colleges has many natural similarities with the teaching environment: first, most of the workplaces of Finance and economics majors are in office buildings, and they can work with seats, computers, office software, etc. The classroom and computer room of the school teaching building also have seats, computers and office software. Second, the professional work of Finance and economics needs high writing, listening, speaking, reading and writing ability and data logic analysis ability. The school not only has a library with rich books and digital materials connected through the network, but also can give students the opportunity to give full play to their abilities of listening, speaking, reading and writing and data logical analysis. Third, the professional work of Finance and economics is essentially the work of dealing with people. For example, financial audit not only needs to deal with various situations of various reimbursement personnel, but also needs to face the work arrangement of superior leaders. The school has various student groups and other organizations, which can provide various complex social relations and promote students to contact various types of social relations. However, the knowledge and skills required by students majoring in finance and economics in Higher Vocational Colleges to engage in frontier posts after graduation must be close to the practice of Finance and economics industry. No matter how complex the structure of these cutting-edge knowledge and skill points is, they must include financial expertise and document processing technology.

The identification, application and production of financial professional documents actually include two aspects: first, financial professional knowledge; Second, the technology of identifying, applying and making documents. The professional knowledge of Finance and economics here not only includes the knowledge of finance, taxation, accounting, auditing and many other fields needed for specialized work in finance and economics, but also includes the theoretical ideas, methods and habits related to economic activities accumulated by human society. The technology of identifying, applying and making documents is mainly the technology of processing text, tables, graphics and other document materials, such as identifying income, profit and other information from many economic activity materials, and making financial reports and other document materials. Of course, document processing technologies such as text and graphics not only adapt to the professional work of Finance and economics, but also adapt to many professional work such as management, secretary, library and history. They also need superb graphic data processing technology. From the development process of Finance and economics professional work technology, document processing technology plays a very important role. For example, in the 15th century, businessmen in Venice and other places used technologies such as double entry books to process data of economic activities, promoting the maturity of capital, market and other rules.

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From the perspective of teaching activities of Finance and Economics Majors in higher vocational colleges, relevant professional courses integrate financial and economics expertise and document processing technology. For example, the basic accounting course not only introduces knowledge such as debit and credit bookkeeping rules, but also introduces document processing technologies such as bookkeeping vouchers and account book registration. The teaching content of Finance and Economics Majors in Higher Vocational Colleges usually includes not only the basic knowledge and basic skills of Finance and economics, but also the comprehensive knowledge and complex skills needed to complete specific finance and economics. These knowledge and skills are usually in different courses. For example, the teaching content of basic accounting course is mainly the basic knowledge and skills of accounting work, the teaching content of financial accounting course is mainly to complete the comprehensive knowledge and complex skills such as cashier and financial statement preparation, and the teaching content of audit course includes the comprehensive use of financial accounting, tax law, Securities Law and other knowledge to evaluate the risk of the audited unit Issue audit recommendations and audit reports. Obviously, basic accounting courses provide basic knowledge and skills for all kinds of financial professional work. Financial accounting courses mainly correspond to cashier, financial supervisor and other positions, and audit courses mainly correspond to audit positions. Of course, this does not mean that there are no complex skills and comprehensive knowledge (such as inventory taking) in basic accounting courses, but the proportion of basic knowledge and basic skills is greater in these courses; In audit and other courses, there are also basic knowledge and skills (for example, preparing bank deposit balance reconciliation), but the proportion of comprehensive knowledge and complex skills is higher. The basic knowledge and skills in these courses have fixed questions and answers, mature skills and operation processes. The comprehensive knowledge and complex skills in these courses are often targeted at specific jobs, and the specific jobs are often dynamically optimized with the development of financial industry and technological progress, and there is no exact answer.

From the current work situation that virtual intelligent teachers are good at, the teaching scene is relatively fixed, and the universally recognized knowledge and operation skills are more suitable for virtual intelligent teachers to lead the teaching process. On the contrary, when faced with the situation that the teaching scene often changes and there is no universally recognized knowledge and operation skills, it will be difficult for virtual intelligent teachers to give full play to their due effect. If the teaching scene is relatively fixed, the virtual intelligent teacher can simulate all the key points of the classroom teaching scene, record and observe all the behaviors of students entering the teaching scene, and then reasonably judge the learning effect of students. If the teaching scene is unstable (often changing), it is difficult for virtual

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intelligent teachers to simulate all the key points of the classroom teaching scene, and the knowledge and skills acquired by students are not in line with the actual situation of financial professional posts, nor can they reasonably judge the learning effect of students.

In the teaching of Finance and economics, the teaching scene of basic accounting knowledge and skills such as counting money, taking inventory and preparing bookkeeping vouchers is very stable. The questions and answers of each knowledge have recognized standards, and each operation step is reasonable and legal. In the teaching of Finance and economics majors, the teaching scenes of judging audit risks and preparing financial reports are ever-changing. Subtle changes in environmental conditions can change the final professional judgment. In reality, the specific situation of relevant posts is more complex and varied. In the teaching process of basic knowledge and basic skills of Finance and Economics Majors in higher vocational colleges, virtual intelligent teachers can play the role of keynote teachers. It is similar to experienced teachers who can observe students' performance in class and then judge students' learning status and effect. However, in the process of teaching comprehensive knowledge and complex skills, the current new generation of information technology can not track and judge the latest technology of the post and its due effect, it is difficult to build a teaching scenario covering all key knowledge and operation points, and it is more difficult to judge the learning effect of students in it. Therefore, the knowledge points and skill points that the virtual intelligent teachers constructed by the new generation of information technology can lead have these conditions: first, they belong to the basic knowledge points and basic skill points of Finance and economics. Secondly, we can build a relatively fixed teaching scene through the new generation of information technology. Third, the evaluation of students' learning effect and efficiency through the new generation of information technology can meet the actual teaching law of post knowledge points and skill points in financial and economic industries, that is, its learning evaluation meets the law of talent training.

From the perspective of teaching appearance, for the knowledge points and skill points that usually meet these conditions, the new generation of information technology should be able to build appropriate teaching scenes and make appropriate teaching evaluation. From the work that virtual intelligent teachers can complete, if all the problems and achievements involved in knowledge points and skill points are recognized by the industry, virtual intelligent teachers can preset all the questions and answers of these knowledge points and skill points in the teaching scene, and the students' learning effect can also be properly evaluated by virtual intelligent teachers. If the questions involved in these knowledge points and skill points have not been recognized by the industry, or the answers to these questions have not been recognized by the industry, these knowledge points and skill points are difficult to meet the above three conditions. From the perspective of the work that virtual intelligent teachers can complete, if

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there are questions and answers that have not been recognized by the industry, they are generally unlikely to belong to basic knowledge and basic skills, while virtual intelligent teachers are unlikely to build their teaching environment and make appropriate teaching evaluation. Therefore, in teaching practice, whether the questions and answers of knowledge points and skill points are recognized by the industry can be used to judge whether the knowledge points and skill points are suitable for the construction of virtual intelligent teacher led teaching process by the new generation of information technology.

3.3 Technical Design of Virtual Intelligent Teacher

How can virtual intelligent teachers based on the new generation of information technology play a leading role in the teaching of basic knowledge and basic skills of Finance and Economics Specialty in Higher Vocational Colleges? According to the above teaching contents of Finance and economics majors, we need to use the new generation of information technology to build the teaching scene of Finance and economics majors, form the teaching resources of Finance and economics majors, manage the classroom teaching process and evaluate the learning effect of students.

Big data technology can be the basis of the whole teaching scene. As a common information tool, big data technology has been widely used in the business field. If we regard the teaching process of basic knowledge and basic skills of Finance and Economics Majors in Higher Vocational Colleges as a combination of various data, all links such as teaching design, teaching data collection and sorting, teaching content arrangement, teaching key analysis, teaching problem induction, teaching evaluation and so on can be regarded as the generation, storage and utilization of data. With the help of big data technology, virtual intelligent teachers can build professional questions and answers of Finance and economics in higher vocational colleges, record the learning process of all students in the teaching scene and judge the teaching effect. Big data technology can compare and analyze massive data. It can not only give corresponding scores according to students' preset question answers or operations in the teaching scene, but also horizontally compare the performance of all students in the teaching scene, so as to judge a student's learning effect more accurately. Of course, from the perspective of applying big data technology to build teaching scenarios, it is necessary to deconstruct the basic teaching knowledge and basic skills of Finance and Economics Majors in higher vocational colleges, decompose various materials, questions and answers of relevant knowledge points and skill points into data, and then reorganize them into flexible teaching scenarios. These flexible teaching scenarios can meet the learning needs of all kinds of students, and even provide different learning arrangements for each student: they can provide fast-paced learning plans in a short time, or slow-paced learning plans in a long time.

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Higher vocational colleges need a long time to accumulate and dynamically adjust various data of basic knowledge and basic skills of Finance and economics, so as to finally form big data suitable for the whole teaching scene. These data exist in the computer network world in electronic form. From the perspective of professional work of Finance and economics, the electronic data stored in the computer network can be identified and processed through the computer. However, from the perspective of teaching, these data need to be presented vividly in front of students and interactive teaching. Therefore, virtual intelligent teachers must vividly present the big data of basic knowledge and basic skills of Finance and Economics Majors in Higher Vocational Colleges in the teaching places composed of 5g and other communication technologies, Internet of things technology and AR/VR technology.

With 5g and other communication technologies, Internet of things technology and AR / VR technology, virtual intelligent teachers can break through the limitation of space and provide course teaching services. Higher vocational colleges can use the Internet of things technology to build a teaching place for basic knowledge and basic skills of Finance and economics, and capture students' learning behavior in the teaching place by means of cameras, mobile phone signals, motion sensors, electronic document processing technology analyzers and so on. Higher vocational colleges can use 5g communication technology to transmit and record the teaching status of each teaching place in real time, conduct comprehensive analysis and form a real-time report. This is particularly important for Higher Vocational Colleges with multiple campuses. Of course, higher vocational colleges can also provide different types of teaching places according to their own financial resources and teaching needs. The simplest teaching place is based on the computer room or smart classroom, using big data technology and configured with corresponding professional knowledge and operation software. The virtual smart classroom carries out Q & A in students' learning professional knowledge and operation actions, records students' learning behavior and interaction process, and gives corresponding learning evaluation suggestions. At present, relatively complete teaching places include: first, the Internet of things has built students' important physical operation records and learning evaluation in the teaching place, such as cash inventory, sorting and preservation of accounting paper archives and other skills. Second, use electronic display screen, camera, speaker, recording and other equipment to transmit learning instructions and learning materials to students, answer students' questions, record students' learning behavior, answer preset questions and apply financial electronic materials. Thirdly, AR / VR technology is used to present the working situation of Finance and economics major, so as to give students an intuitive feeling of the financial and economics professional atmosphere. In this part of the learning and evaluation link, the problems can be preset in the working situation of Finance and economics major in the ways of leaving blank, preset errors and omissions, and require

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students to correct and make up mistakes in the evaluation. Fourth, schools and enterprises jointly build and operate some work scenarios of Finance and economics majors, and provide some basic business services of Finance and economics majors to industry enterprises. This part of learning evaluation can be based on students' completion of financial work. It should not only consider the economic and social benefits generated by students' completion of financial work, but also consider the effect of students' financial professional knowledge accumulation and skill training. Fifth, show virtual intelligent teachers in physical form to improve students' communication perception and image identity in the process of learning. When a virtual intelligent teacher with physical form appears in the classroom and enters the students to carry out teaching discussion, it can stimulate students' interest in learning and improve students' communication atmosphere. From the simplest teaching place that these technologies can build to the relatively complete teaching place at present, a physical environment dominated by virtual intelligent teachers can be formed to complete the teaching process of basic financial knowledge and basic skills. Of course, virtual intelligent teachers can provide higher quality teaching services in relatively complete teaching places. It can be seen that the current 5g communication technology, Internet of things technology and AR / VR technology have been able to build a teaching place where virtual intelligent teachers play a role. If we want to give better play to the role of virtual intelligent teachers, we need to use cloud service technology and AI technology to deeply analyze the academic situation and industrial development.

With the help of cloud service technology and AI technology, virtual intelligent teachers can appear in front of students in different teaching places at the same time. This can not only meet the learning needs of students with different training objectives, but also adapt to the learning methods of students with different foundations. Finance and Economics Majors in higher vocational colleges may need to train talents with a wide range of employment for future industrial development, or carry out targeted talent training for specific posts in specific enterprises. For example, the modern apprenticeship talent training carried out by higher vocational colleges in China is often to train urgently needed talents for some posts in an enterprise. These students also have the identity of enterprise employees. Obviously, compared with the students who have not determined the specific employment units and positions, the teaching objectives of these students focus more on the financial knowledge and technology of specific enterprises and specific positions. These specific knowledge and technologies may have a strong corporate color and may not be suitable for other students. Through cloud services and AI, we can quickly analyze the differences between this part of students' learning objectives and other students' learning objectives, and define the paths and teaching materials to improve this part of students' learning efficiency and effect. In this way, the virtual intelligent teacher can present the voice, text, graphics, video and physical objects more easily accepted by these students in the teaching place, so as to improve the learning effect of students.

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At present, the source of students in China's higher vocational colleges is diverse, including students from the enrollment examination of ordinary colleges and universities, students enrolled by academic level, and students entering secondary vocational schools. These students have great differences in cultural quality and skill level. Among them, secondary vocational students have a certain foundation of financial professional knowledge and skills, but their cultural quality is generally low; the students who pass the college entrance examination have high cultural quality, but almost have no financial professional knowledge and skills. Using cloud service technology and AI technology, we can quickly analyze the differences of students from different sources in knowledge and skills, form different talent training schemes, and provide personalized teaching resources. This is equivalent to those virtual intelligent teachers have customized the curriculum system, teaching methods, teaching materials and evaluation methods for financial and Economic Majors in Higher Vocational Colleges with different students, which can maximize students' learning enthusiasm and improve the quality of talent training.

In addition, virtual intelligent teachers can quickly compare the similarities and differences between teaching and technical work of Finance and economics majors with the help of cloud service technology and AI technology. The competitiveness of Finance and Economics Majors in Higher Vocational Colleges comes from being able to train talents suitable for the needs of Finance and economics majors. Higher vocational colleges need to help students master the new knowledge and technology of Finance and economics as soon as possible. Of course, the teaching of financial professional knowledge and skills that have not been recognized by the industry should be completed by teachers, and virtual intelligent teachers are not competent for these teaching tasks. Therefore, virtual intelligent teachers need to quickly identify the knowledge points and skills that have been recognized by the industry in the new professional knowledge and technology of Finance and economics, and transform them into teaching scenes and other data as soon as possible. This can enhance the ability of virtual intelligent teachers to track the development of financial professional knowledge and technology, and finally improve the quality of talent training.

IV. CONCLUSION

The new generation of information technology has profoundly changed the teaching of Finance and Economics Majors in Higher Vocational Colleges from many aspects such as teaching content and teaching organization. The accelerated upgrading of Finance and Economics Industrial Technology and the rapid enrollment expansion of Finance and Economics Majors in higher vocational colleges make the finance and economics teachers in higher vocational colleges face heavy teaching and scientific research tasks and daily

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teaching work, while it is difficult to introduce and train enough teachers for finance and Economics Majors in Higher Vocational Colleges in the short term. Human teachers majoring in finance and economics in Higher Vocational Colleges urgently need to spare more time and energy from their daily teaching and devote themselves to the teaching and scientific research work brought by the technical upgrading of Finance and economics majors. This plays a very important role in maintaining the competitive advantage of talent training in the field of Finance and economics in higher vocational colleges. With the help of the new generation of information technology, finance and Economics Majors in higher vocational colleges can build virtual intelligent teachers, and can undertake or even lead some teaching tasks in a certain. The teaching work that virtual intelligent teachers can lead is mainly the teaching task of basic knowledge and basic skills of Finance and economics. This is also the teaching task that higher vocational finance and economics teachers expect virtual intelligent teachers to undertake. In the teaching of cutting-edge knowledge and complex skills of Finance and Economics Majors in higher vocational colleges, virtual intelligent teachers have no better efficiency advantage than human teachers. The main reason is that the basic knowledge and skills of Finance and Economics Majors in higher vocational colleges can be sorted into structured data, while the frontier knowledge and complex skills of Finance and economics majors still belong to unstructured data. At present, the new generation of information technology has a strong ability to process structured data, which has far exceeded human beings; the processing ability of the new generation of information technology for unstructured data needs to be further improved. In most cases, the efficiency is not as efficient as human beings. From the perspective of teaching evaluation, if the questions and answers of a certain knowledge point or skill point are recognized by the industry, we can use the new generation of information technology to build the corresponding teaching scenes and teaching materials, and make the teaching evaluation in line with the cognitive law. This means that virtual intelligent teachers can lead the teaching tasks of basic knowledge and basic skills of Finance and economics in higher vocational colleges, while human teachers only need to supervise this process and results. Based on big data technology, higher vocational colleges can decompose the teaching scene and teaching process of Finance and Economics Majors in Higher Vocational Colleges into various data, and use these data to flexibly build a variety of virtual intelligent teachers for various teaching purposes and different basic students. Using 5g communication technology, Internet of things technology and AR/VR technology, higher vocational colleges can build different levels and types of virtual intelligent teacher images, and improve students' learning enthusiasm and sense of identity with the school. This can enable virtual intelligent teachers to break through the physical space and time constraints and carry out all-weather teaching, so as to meet the needs of students to learn at different times. By using cloud service technology and AI technology, higher vocational colleges can quickly analyze the situation

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of different types of students, the differences between financial industry teaching and industrial technology, and provide personalized learning paths and teaching resources, so as to improve the quality of talent training. Big data technology is the foundation of virtual intelligent teachers. 5g and other communication technologies, Internet of things technology and AR / VR technology are the image of virtual intelligent teachers, while cloud service technology and AI technology are the brain of virtual intelligent teachers. At present, these new generation of virtual intelligent teachers composed of information technology can lead the teaching of basic knowledge and basic skills of Finance and economics in higher vocational colleges.

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