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Evaluation of Implementation Effect of Reform and Practice of Vocational Literacy Curriculum for Higher Vocational Computer Science Majors Based on C4.5 Model

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Abstract

INTRODUCTION: The cultivation of vocational literacy of higher vocational computer students is related to the employment prospects of graduates and has a significant impact on the computer talent market. The success or failure of curriculum reform will directly impact the effect of cultivating professionalism in higher vocational computer majors.
OBJECTIVES: This paper introduces the source and function of the C4.5 model, establishes model evaluation indexes to assess the application effect of the C4.5 model; the number of iterations and prediction accuracy are important indexes of the model's functioning and puts forward five measures suggestions for the reform of vocational literacy course of higher vocational computer majors.
METHODS: C4.5 model is applied to reform vocational literacy courses for higher vocational computer majors, and the effect of practical implementation is evaluated using a questionnaire.
RESULTS: By applying the C4.5 model to reform the vocational literacy course for senior computer majors, the graduates' vocational literacy has been significantly improved.
CONCLUSION: The research contributes to the realization of the goal of cultivating higher vocational computer talents and provides the market with computer talents with outstanding professionalism.

Keywords: vocational literacy, curriculum reform, C4.5 model, higher vocational computer science majors

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1. Introduction

In the new era, knowledge has led to the rapid development of the economy, and society's demand for knowledge-based talents has stepped up to a higher level. As a representative of important production technology in recent times, computer technology has shown great productivity in promoting the development of various industries in the country[1-3]. The total size of the domestic computer market is large and has shown a rapid development trend in recent years. As can be seen from the data in Figure 1, the scale of the domestic computer system integration market has been rising, and the scope of computer applications has been extended, so the demand for computer professionals in the market has been growing[4-6]. The country's attention to cultivating computer talents also promotes the education reform of domestic computer majors, and the curriculum reform of

computer professional vocational literacy has entered a period of rapid development[7-8].

Although the number of domestic computer talents shows a rising trend, there is a non-negligible gap compared with the high quantity demand of the market for computer talent teams. In particular, the shortage of high-quality computer talents and the market demand form a contradiction, which to a certain extent, hinders the development of computer technology and the creation of computer market value. The current situation of applying computer talents in the market is that the supply is less than the demand, and there is a large market gap. The demand for high quality and quantity of computer talent has set a wind indicator for reforming computer courses in higher vocational colleges and universities. The computer majors offered by higher vocational colleges and universities aim to cultivate a team of computer talents with professional literacy to adapt to and contribute to the social market demand. Meanwhile, higher vocational colleges and universities also face the challenge of reforming professional literacy courses in computers[9].

In the rapidly developed information society, various industries have put forward higher requirements on the ability of computer talents[10-14]. However, there is a contradiction between the reality of low quality and poor ability of students of computer science majors in higher vocational colleges and the market demand for the high-ability of computer talents. Moreover, in the perception of employing industries, there is a big gap between the quality of computer talents who graduated from higher vocational colleges and the expectation, and students who are already employed in computer companies are not satisfied with the knowledge they have acquired in college. In the education mode of higher vocational colleges and universities, students of almost all majors must learn some basic computer science knowledge. Compared with the computer majors, other students not only need to master some computer knowledge but also master the knowledge of their majors, which significantly influences the employment pressure of the computer majors[15-16].

The difficulties currently faced by computer science majors in higher vocational institutions are: computer science majors need clear training objectives and accurate professional orientation and need more reasonable training plans and specialties rich in characteristics. Due to the rapid updating of the knowledge system of computer science, the professional courses will be aging if they cannot catch up with the updating speed of the knowledge system. Therefore, this paper adopts the C4.5 model to apply to reform the vocational literacy curriculum of higher vocational computer majors and evaluates the implementation effect with practice to cultivate computer majors' strong vocational application ability to meet the market demand for high-quality computer professionals[17].

2. Research Background

According to the development status of domestic vocational literacy education, there are still many things that could be improved in domestic vocational literacy education compared with some relatively mature cultivation concepts abroad. Under the background of the rapid development of the national economy, the importance of education has attracted more and more social attention, and the education system has become more and more perfect with the efforts of relevant national institutions. In 1996, the State Council promulgated the Law of the People's Republic of China on Vocational Education in response to the current situation of vocational literacy education in China, which opened a new chapter in developing vocational education in China. In 2005, the "Reform Program of the Ministry of Education on the Comprehensive Promotion of Vocational Literacy Education" was introduced, striving to achieve the goal of reforming the development of vocational education in the shortest possible time. Subsequently, after decades of development, vocational education enrollment in higher vocational colleges and universities has reached a particular scale, the conditions of vocational quality education have been improved, and the faculty has been developing and growing. In the recently formulated national "Outline on domestic medium and long-term education reform and development plan," more apparent requirements are made for the current stage of education philosophy[18]. In the new era, it is necessary to promote further the scientific development of the vocational literacy education business and cultivate high-quality, professional talents according to the needs of society and the market.

Under the change of social concept, a person's survival has shifted from the previous emphasis on education to a more critical ability, and various social industries expect higher requirements for the vocational ability of employed people. The reorganization and division of social occupations, the optimization and upgrading of occupational positions and the enhancement of personnel mobility have put forward higher requirements for graduates of vocational colleges[19-22]. In addition to fully adapting to the positions, graduates from higher vocational colleges should also have specific vocational literacy and lifelong learning ability, which is the new requirement for reforming the vocational literacy curriculum of higher vocational computer science in China. As a special school education, higher vocational education usually faces several related occupational groups. Students receiving education need to have not only proficient vocational skills but also the essential ability to change jobs and choose careers in related occupational groups and meet strict vocational qualification standards, and students should have excellent ability to accept vocational changes as well as innovative spirit and practical ability. The cultivation of vocational literacy of higher vocational computer majors should base the orientation goal on employment so that students can adapt to the workplace and solve the problem of difficult employment. To meet the employment goal

for higher vocational education, it is necessary to start from many aspects, figure out the connotation of vocational ability, what specific measures to adopt to enhance students' practical ability and the way of cultivation. Educators in higher vocational computer science have made active theoretical exploration in innovation and practice and have made compelling exploration for higher vocational education in China from different perspectives, but there are still some common difficulties. The level of students in higher vocational colleges and universities in different parts of China is different, and there are significant differences in grasping the connotation of vocational ability. There are significant differences in students' training ideas and cultivation methods among colleges and universities, and there needs to be a complete set of vocational ability training theories to guide the development of higher vocational education work.

In terms of domestic computer talent training, many scholars have made an in-depth understanding and analysis of the actual situation of computer talent training in higher vocational colleges and universities and elaborated the direction and suggestions of higher vocational computer curriculum reform from many angles. For example, Li Tianxiang, in his book Exploring the Cultivation Model of Chinese Computer Talents, discusses the problems in the cultivation structure of Chinese computer talents and makes a deep analysis of the reasons for the emergence of the imbalance between supply and demand in the Chinese computer talents market, to ensure the hierarchy of talents cultivation and the rationality of cultivation structure, and to cultivate a group of computer talents with a high degree of specialization. Ding Haichang, in his book "Cultivation Program and Countermeasures for Higher Vocational Computer Talents," summarizes the unreasonable aspects of cultivating computer talents in China's higher vocational education and proposes a program to reform the vocational literacy curriculum of higher vocational colleges and universities according to the market demand, to create a new teaching system and further deepen reform education. In his book "Discussing the Problems and curriculum reform of computer science majors in higher vocational colleges," Xu Lei mentions the need to have an accurate positioning of computer teaching cultivation goals, to have a complete planning plan and improvement measures for the reform of computer science professional literacy curriculum, starting from two aspects: teacher strength cultivation and teaching material reform. For the curriculum setting and the development of relevant teaching methods, some domestic scholars have studied and discussed this. Bai Xiaoxia, after comparing and analyzing the curricula of computer science majors in domestic and foreign higher vocational colleges and universities, finds that, compared with the curriculum of computer science majors in domestic higher vocational colleges and universities, foreign countries focus on the cultivation of students' communication ability and practical operation ability in the workplace, and adopt a different division of the curriculum according to the individual, and adopt different teaching modes with different difficulties for students of different level segments, which is what Chinese higher vocational computer science majors' curriculum This is what China's higher vocational computer science curriculum reform needs to learn from. Yue Jianbin proposes a systematic teaching program to reform the curriculum, cultivating students' ability to understand and diffuse their thinking. Li Yueping emphasizes the cultivation of students' practical operation ability so that students can adapt to the needs of the workplace as soon as possible after graduation and promote their rapid employment.

This paper adopts the C4.5 model to reform the vocational literacy curriculum of higher vocational computer majors and evaluate the practical implementation effect, which can enrich the theoretical level of higher vocational educators to a certain extent and have an explicit knowledge and understanding of the importance of vocational competence cultivation, which is conducive to the planning of development goals of higher vocational institutions and the reasonable allocation of resources for vocational competence development, strengthen the cultivation of higher vocational computer professional literacy. It is also conducive to the planning of the development goals of higher education institutions and the rational allocation of resources for the development of vocational ability, strengthening the cultivation of professional computer literacy in higher education, improving the practical operation ability of students and promoting their long-term employment.

3 Research Methods and Materials

3.1 C4.5 model

3.1.1 Introduction of the model

The C4.5 model is a decision tree algorithm model, which is developed from the ID3 algorithm. The C4.5 model has a unique advantage in studying classification problems as the most fundamental reference indicator for studying classification and analysis problems. As a type of decision tree model, the C4.5 model can perform model functions through tree construction like other decision tree models. When the tree is built, its branches are applied to each tuple in the database. Constructing the tree and applying the tree to the database, the application process takes less time and effort and focuses on the tree construction process. The C4.5 decision tree model can evaluate and analyze the study object based on prediction accuracy, rate, extensibility, and visibility and has a better evaluation effect, allowing for high-accuracy prediction and classifier model processing. The C4.5 model is an improved algorithmic model generated based on the shortcomings of the ID3 algorithm. The ID3 algorithm

model has a good application for speed and accuracy prediction but needs a better application for constructing a smaller tree. Suppose the ID3 algorithm uses a branching model with discrete attributes. In that case, the number of nodes generated by the branching and the number of values of discrete attributes differ significantly, and the ID3 algorithm suffers from irreversible fragmentation, i.e., the sample data in the branch is too small to be statistically significant. Such problems can adversely affect the effectiveness of the application of the decision tree model, affecting the fitting effect and the accuracy of the classification.

The C4.5 model improves on the deficiencies of the ID3 algorithm and is a decision tree improvement model with an excellent fitting effect. The C4.5 model then performs branching evolution, which will merge the values with higher dispersion and branch the values with lower dispersion, alleviating the fragmentation problem.

3.1.2 Model Evaluation Metrics

The C4.5 model has achieved good application results in the study of classification problems, and it is of particular significance for the study of the C4.5 model. In order to ensure the rationality of the C4.5 model application, it is necessary to select the corresponding evaluation indexes to evaluate the model. How to evaluate the model is inseparable from the motivation for improvement. According to the performance and characteristics of the C4.5 model, the following evaluation function is developed in this paper.

W represents the weight. After selecting the appropriate evaluation function, the scoring function needs to be formulated to ensure not only the accuracy of the prediction model but also to simplify the iterative process to the greatest extent. In the C4.5 model, the model's accuracy is related to the number of leaf nodes, and simplifying the number of leaf nodes in the model means the improvement of the model's accuracy. The improvement of the model is beneficial if the model's accuracy and the iterative process can be kept maximally simplified. In practical model operations, model accuracy and iteration process often cannot be guaranteed simultaneously, and the number of iterations has to be increased to ensure the accuracy of the model prediction. In contrast, the accuracy of model prediction must be sacrificed to simplify the number of iterations. For some managers, they would rather sacrifice more iterations to ensure the accuracy of the prediction model; for other managers, the simplification of the number of iterations is the critical concern of the model, and the number of iterations is minimized by sacrificing the accuracy of the model prediction, so the choice of the two is usually some subjectivity.

3.1.3 Application of model

C4.5 The model function is based on information theory, and the effectiveness of information is the guarantee of the model function. In the model, the information gain method is to be adopted to test the test attributes, which can impact the different category mixes of each sample subset so that the model can be successfully applied to the research object.

Assuming that the set S contains s sample data, the category attributes contain m values, corresponding to each different class (i=1, 2, ..., m), and assuming that the number of samples of category Ci is si, the amount of information applied to the classification of the sample data set S can be expressed in equation (1).

$$I\left(s1,s2,...,sm\right)=\sum_{i=1}^{m}P_i\log_2\left(P_i\right) \tag{1}$$

In equation (1), Pi represents the probability that any sample belongs to category Ci, Pi = Si/S. According to the information quantity database, it can play a complete role in preserving the sample information, ensuring the model prediction ability, reducing the possibility of lacking statistically significant sample analysis occurring, and finding a balance between the number of iterations and model prediction accuracy, which is conducive to the improvement of model application ability.

3.2 Theories related to professionalism

3.2.1. Meaning of professionalism

Professional literacy, an essential inner quality possessed by practitioners in their work, is formed by workers based on education, self-cultivation and practical training based on life learning. Professionalism is an essential indicator of the comprehensive ability of workers, which can reflect the level of comprehensive ability of workers to a certain extent. Practitioners with strong professionalism are more able to adapt to their work, have a stronger sense of professional responsibility and are more likely to succeed in their positions. A person's practical ability, surrounding environment, and work experience will all impact or constrain professionalism.

3.2.2. Importance of strengthening vocational literacy education

According to the syllabus requirements, universities have treated academic literacy education as a critical cultivation project. Strengthening students' vocational literacy education helps students become more proficient in the business of vocational positions, facilitates the improvement of student's professional skills and vocational abilities, and can cultivate a high-quality talent team with high moral cultivation. Therefore, the vocational literacy education conducted by institutions will affect students' workplace adaptability and profoundly impact their social adaptability and long-term

development ability. Students exposed to good career literacy education can perform critical jobs in the workplace and have high professional competencies that benefit their career success. In conclusion, career literacy education for students is a fundamental education that students must receive and has a prominent place in career planning. Students' vocational literacy level depends on whether they can adapt to social work quickly and succeed in their professional positions. It is the key to whether students can get out of school life and adapt to social life as soon as possible.

It has always been the ultimate goal of Chinese education to cultivate qualified successors for the socialist cause, i.e., the ultimate purpose of education is to serve society. In the talent cultivation program of higher education institutions, the cultivation of high-quality talent teams is a prominent focus, and it is the mission of higher education institutions to cultivate a group of professional literacy talents with a sense of responsibility. The level of professionalism of the students cultivated by the institutions will be directly related to the output of excellent talents of the institutions. It will significantly impact the development and progress of society and scientific research. Therefore, vocational literacy education bears the critical mission of the strategy of developing the country through science and education and the construction of high-quality talents.

3.2.3 Composition of professional literacy

Different scholars have given different answers about the Composition of vocational literacy. Li Qianchi, an educationalist, believes that vocational literacy is mainly composed of three parts: basic, professional, and creative. Basic literacy is the literacy that students must have to adapt to the social workplace, mainly including knowledge reserve, practical ability, professional moral cultivation, and professional personality characteristics, which are students' essential cultivation as primary workers. Professional cultivation is necessary for graduating students to engage in work, which mainly includes professional skills, theoretical knowledge and operational skills. The level of professionalism depends on whether the employed person can achieve significant success in the workplace and is a crucial factor affecting the success or failure of employment. Creative literacy is a vital reference indicator of the job development potential of the employed person, mainly including lifelong learning ability, personal charisma, job adaptability, and innovative, creative thinking. Innovative and creative thinking is related to the ability of long-term development and the ability to adapt to the needs of different jobs. It is a necessary quality for the employed's future independent innovation and entrepreneurship. The above three qualities are interdependent and constitute an indispensable part of the complete professional literacy structure. As shown in Figure 1.

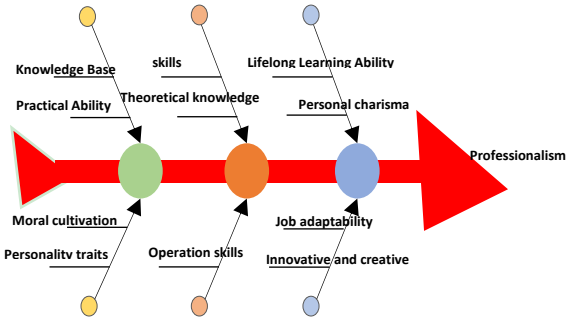

Figure 1: Composition of professional literacy

Zeng Tianhao proposed a triangular model structure of professionalism, the same as Li Qianchi's view that professionalism is also composed of three main parts; the difference is that these three parts are the guarantee, support, and expansion elements. The safeguarding element mainly includes positive spirit, stable emotion and interpersonal interaction, which play an essential role in safeguarding the everyday work of the employed person in the professional position. The support element consists of two parts: theoretical knowledge and practical ability, which play a fundamental role in supporting the worker's literacy to adapt to the position. The extension element consists of learning potential, organizational cooperation, creative thinking and communication ability, which is related to whether the practitioner can continuously start work in the workplace and is an essential indicator of the practitioner's working ability. The triangle model structure of vocational literacy is a model structure that meets the reform goal of vocational literacy curriculum of computer science in higher education institutions, which plays a vital role in developing students' vocational quality level in higher education institutions, enhancing students' employability and personal comprehensive vocational literacy, and has a clear guiding role for the realization of teaching objectives of institutions. The structure of the vocational literacy triangle model is shown in Figure 2.

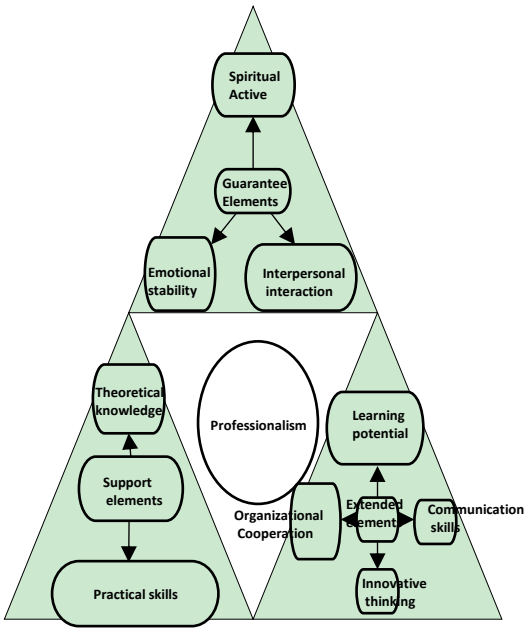

Figure 2: Structure of the triangular model of vocational literacy

4 Results and Discussion

4.1 Reform of vocational literacy curriculum for higher vocational computer science majors

4.1.1 Combine with market demand to carry out tracking service for graduates

Cultivating computer talents in higher vocational colleges and universities ultimately provides a professional talent team for society and meets the market demand. Therefore, the actual demand situation of the market is a vital reference content for higher vocational colleges to carry out curriculum reform. To accurately understand the market demand situation, the employment situation of previous graduates is a good reference indicator. Institutions should strengthen the understanding of the employment situation of previous graduates in the market, not only have an accurate understanding of the employment quantity, but also have an explicit knowledge of the employment quality, and do an excellent job of tracking the employment of previous graduates in computer science so that the students' professionalism and working ability can be better aligned with the market demand. At the same time, institutions should also strengthen communication with employers and collect the problems of graduates in their work in order to provide a reference for curriculum reform. In order to carry out investigation and tracking of graduates, first of all, we should improve the supervision of students and have a comprehensive understanding of their study and life in school. Secondly, communication and exchange work with graduates should be carried out frequently, focusing on the exchange of difficulties and work perceptions encountered by graduates during their work and long-term career planning to enhance interactive feedback of information and readjust the program according to the exchange of experience and changes in the direction of market demand. Then, regular return visits to graduates are carried out, mainly to employers, to understand the working environment, work content and work status of graduates, and to be good at listening to suggestions and criticisms of graduates' work to the unit.

4.1.3. Implementing career planning tutor system

The structure of higher vocational education contains several institutions and departments, each of which has its duties and is interrelated at the same time. Many people need clarification about students' employment issues and career planning; these tasks are done under the planning of counselors and career guidance centers, so employment issues and career planning should be paid attention to. When students study in school, the most frequent communication is with teachers, so subject teachers have a significant say in students' employment and career planning and bear a specific educational responsibility, which is an integral part of whether students' career literacy can be improved. Therefore, to improve the career literacy of computer science students, we should implement the career planning mentorship system and form a mentorship planning system between counselors and class teachers. They work together to double-guide students' professional knowledge and skills. The career planning mentor system focuses on selecting qualified class mentors. The selected mentors should understand the computer science curriculum and have a sound knowledge base and rich teaching experience. Besides, the school should pay attention to the training of students' career courses. The training instructors should understand career planning, its primary connotation and guidance methods and conduct a practical evaluation based on students' career literacy performance. Institutions should also hire experienced career guidance experts to conduct seminars with school leaders and allow student representatives to participate in thematic seminars to develop students' horizons and cultivate their innovative thinking so that students can have a deeper understanding of their own career abilities and personality characteristics and thus be fully prepared for future career entry.

4.1.4 Establishing a perfect curriculum system for computer professional vocational literacy

Culturing high-quality professional talents has always been the critical content of vocational literacy education in higher vocational colleges. The high quality of the

computer profession not only refers to the computer level of the practitioners but also should be reflected in their comprehensive professional literacy. In constructing a computer professional vocational literacy curriculum system, we should focus on cultivating students' sustainable ability and building a complete vocational literacy education system from the concept of career development. First of all, we should take students' practical computer operation ability as the primary goal to cultivate, create more opportunities for students to practice and participate in practice, provide convenient channels for students to acquire computer knowledge and skills, increase the number of hours of practical teaching, encourage students to put into the practical operation of computers, and avoid limiting to theoretical knowledge and lack of hands-on ability. Secondly, the diversity of computer courses should be expanded, the selectivity of courses should be enhanced, and the credit system should be introduced. Students are the main body of learning, and the curriculum should be set up with students' wishes in mind, and the diversity of the curriculum should be enriched so that students can have more possibilities to choose the curriculum and perfect their skills through the choice of different courses. The Introduction of a credit system gives students full knowledge of the learning experience and promotes the integration of technical and cultural courses. Finally, relevant measures should be taken to promote a perfect fit between academic education courses and vocational qualification courses. Curriculum integration should be reflected in the curriculum, clearing the threshold between school and work as much as possible, achieving a seamless connection between school and work, and establishing a complete and unified vocational qualification certificate system.

4.1.5. Strengthen the construction of a computer professional literacy training base

In the cultivation of professional literacy in computer science in higher vocational colleges, it is necessary to make students have cognition of the actual working environment by simulating the social environment, promote the in-depth understanding of computer professional knowledge, promote the improvement of graduation workplace literacy and form excellent working thinking. The process of simulation internship can give students an immersive sensory experience, allow them to choose to simulate various roles with differentiation, create an employment environment with realism based on reality, give students a deep knowledge of the future occupation they will engage in, and improve their business analysis and processing ability. The construction of the computer professional literacy training base focuses on creating a diversified practical environment for students, seeking a balance between vocational education and professional literacy cultivation, building a reasonable platform to expand students' theoretical knowledge and develop practical ability, extending students' professional strengths, stimulating students' innovative thinking ability and employment competition consciousness, enabling students to expand their practical platform based on ensuring the completion of the essential practical work of the curriculum, enabling students to experience the actual employment and entrepreneurial environment, and completing the transformation from learners to professionals as quickly as possible. The practical platform of the course will enable students to feel the actual employment and entrepreneurial environment and complete the transformation of the role of learners to professionals at the fastest speed.

4.2 Evaluation of practice implementation effect

In order to have a strong and credible evaluation result on the practical implementation effect of the reform of vocational literacy courses in higher vocational computer science, this paper adopts a survey questionnaire to evaluate the practical implementation effect. The respondents of this survey are mainly the companies and enterprises that employ the computer science majors of the same higher vocational college. The professionalism shown by the fresh graduates in the employment process before and after the curriculum reform is investigated, respectively. The employers of the companies and enterprises mainly give the evaluation scores of the survey. The variables related to professionalism in this survey questionnaire are theoretical knowledge, professional skills, practical ability, teamwork ability, learning ability, and moral cultivation. The details are shown in Figure 3.

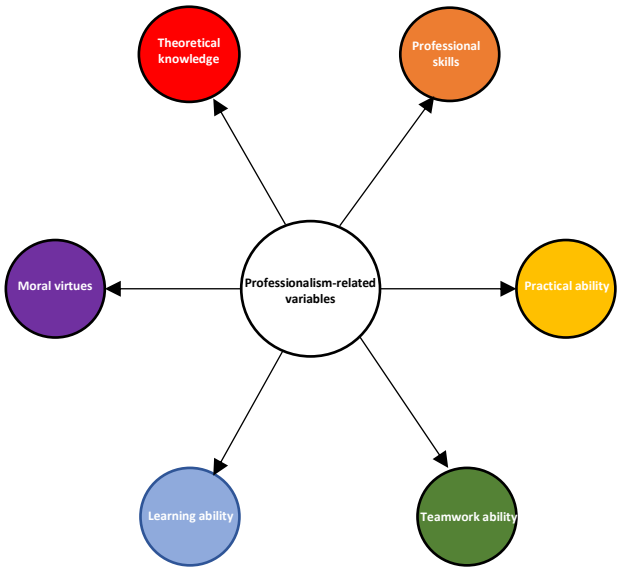

Figure 3: Variables related to professionalism

Twenty enterprises recruiting computer science graduates from the same higher education institution were selected

for this questionnaire survey, and each of the six variables related to professionalism had a total score of 10.

According to the results of the questionnaire survey, the statistical results were organized, the average score of each variable was calculated, and the vocational literacy scores of students before the reform of the vocational literacy course in higher vocational computer science were made into a statistical chart, as shown in Figure 4.

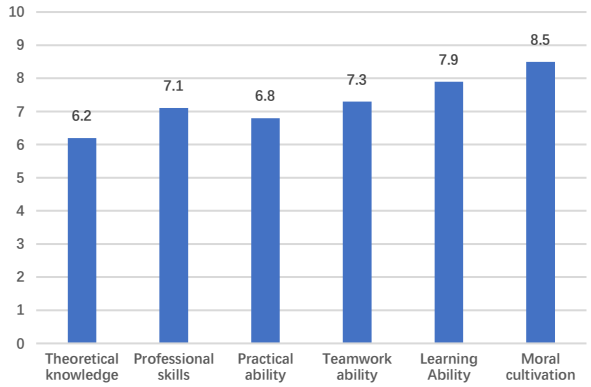

Figure 4: Vocational literacy of students before reform

According to the data in the Figure, before the curriculum reform, the evaluation results of the employers of the company enterprises on the professionalism shown by the fresh graduates in the employment process are the average score of 6.2 for theoretical knowledge, 7.1 for professional skills, 6.8 for practical ability, 7.3 for teamwork ability, 7.9 for learning ability, and 8.5 for moral cultivation. From the results, the theoretical knowledge of the graduates before the curriculum reform could be much better, except for moral cultivation; other professional cultivation is at a passing level.

The vocational literacy scores of students after the reform of the vocational literacy course in higher vocational computer science were made into a statistical chart, as shown in Figure 5.

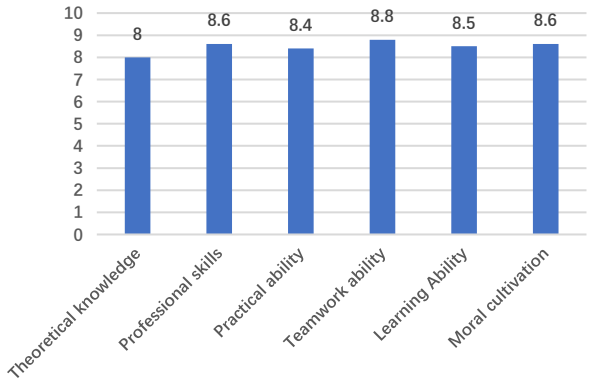

Figure 5: Students' vocational literacy after the reform

According to the data in the Figure, after the curriculum reform of vocational literacy in computer science, the evaluation results of the employers of the company enterprises on the vocational literacy demonstrated by the fresh graduates in employment are the average score of 8.0 for theoretical knowledge, 8.6 for professional skills, 8.4 for practical ability, 8.8 for teamwork ability, 8.5 for learning ability, and 8.6 for moral cultivation. The results show that after the professionalism curriculum reform, the professionalism demonstrated by the graduates has been improved to different degrees. A line graph comparing the professionalism of the graduates before and after the curriculum reform is shown in Figure 6.

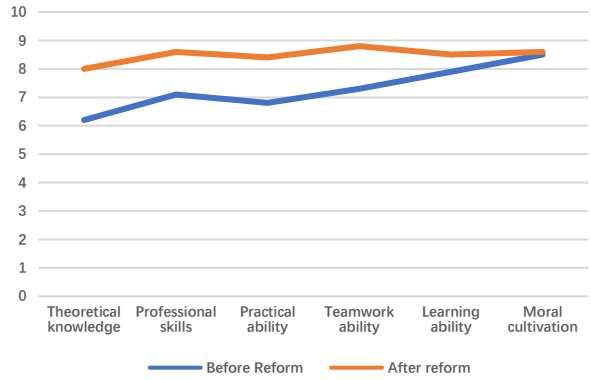

Figure 6: Comparison of students' vocational literacy before and after the curriculum reform

According to the results of the comparison in the Figure, the graduates' computer theoretical knowledge improved the most after the vocational literacy curriculum reform, followed by the teamwork ability, and the practical ability and professional skills also improved significantly. The gap between students' vocational literacy indicators was reduced after the curriculum reform, and the overall tendency was even. This proves that the curriculum reform and measures proposed in this paper are effective and can effectively improve students' computer professionalism, enhance graduates' employability, and provide a professional computer talent team for enterprises' employers.

5 Conclusion

This paper adopts the C4.5 model to propose a program for reforming the professional computer literacy curriculum in higher education and evaluate the practical implementation effect after the program's implementation. The results prove that the curriculum reform program has promoted the improvement of professional computer literacy in higher education.

In the introduction part of the article, the current gap in the domestic computer talent market is introduced, i.e., there is an oversupply of computer talent in the market, and higher vocational colleges and universities are facing the challenge of reforming the curriculum of professional literacy in computer science. Computer science majors need clear training objectives and accurate professional orientation, and the curriculum is challenging to adapt to the updating speed of the knowledge system. In the research background part of the article, the current development situation of domestic vocational literacy

education is first introduced, and the State Council has formulated various regulations to cultivate high-quality computer talents for society and the market. Many scholars in China have different research results in cultivating computer talents in higher vocational colleges and universities, providing directions and suggestions for reforming higher vocational computer curricula from multiple perspectives. In such a context, this paper adopts the C4.5 model to reform the vocational literacy curriculum of higher vocational computer majors and evaluate the implementation practice effect to improve the theoretical level of higher vocational educators and cultivate the solid vocational application ability of computer majors to meet the market needs for high-quality computer professionals.

In the article's research methods and materials section, the sources and functions of the C4.5 model are first introduced. Model evaluation indexes are established to evaluate the application effect of the C4.5 model, and the number of iterations and prediction accuracy is essential for the model to work. Then for the application of the model, information gain is taken to test the test attributes, which can ensure the model's predictive ability and find a balance between the number of iterations and predictive accuracy to enhance the model application. After an excellent introduction to the model, the theories related to professionalism are studied, and three aspects of professionalism are introduced, namely the Meaning, importance and Composition of professionalism. In the results and discussion part of the article, firstly, five measures are suggested for the reform of vocational literacy curriculum of higher vocational computer majors, namely, to carry out tracking services for graduates in combination with market demand; to expand career information exchange channels; to implement career planning mentor system; to establish a perfect vocational literacy curriculum system for computer majors; and to strengthen the construction of computer vocational literacy training base, which is the focus of this research. Finally, the practical implementation effect was evaluated, and the evaluation result was that after the vocational literacy curriculum reform, the graduates' vocational literacy, such as the level of computer theory knowledge, practical ability, professional skills, teamwork ability, learning ability and moral cultivation were improved to different degrees.

Given the limitation of research time and personal ability, this paper still needs to be completed. There are still many problems to be further explored and discovered in evaluating the implementation effect of the reform and practice of professional literacy curriculum based on the C4.5 model in higher vocational computer science.

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