Retraction

Retraction: Development and Practice of the Course System of Embedded Technology Specialty in the Context of “Course Certificate Integration” Based on Big Data Analysis (J. Phys.: Conf. Ser. 1992 042009)

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The authors of the article have been given opportunity to present evidence that they were the original and genuine creators of the work, however at the time of publication of this notice, IOP Publishing has not received any response. IOP Publishing has analysed the article and agrees there are enough indicators to cause serious doubts over the legitimacy of the work and agree this article should be retracted. The authors are encouraged to contact IOP Publishing Limited if they have any comments on this retraction.

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Development and Practice of the Course System of Embedded Technology Specialty in the Context of "Course Certificate Integration" Based on Big Data Analysis

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Abstract. The construction of modern vocational education system is an important task in the field of vocational education in China at present and in the future. This paper mainly studies the development and practice of the curriculum system of embedded technology major under the background of "course and certificate integration" based on big data analysis. The basic route of this study is based on professional standards, analysis of national vocational qualification level standards and professional curriculum system, the relation between and based on enterprise actual job skills, aiming at vocational ability literacy training, introduce the professional standard in higher vocational embedded technology specialty construction, the establishment of embedded technology professional standard in higher vocational training, establish in the higher vocational curriculum system. Design a set of student-centered, give full play to the students' subjective initiative of a complete teaching process, and for a chapter given a complete teaching process. After the end of the experiment, SPSS was used to analyze the performance data of the two classes. It was found that after a period of learning, the two classes without significant differences began to show significant differences, including the performance of the experimental class was significantly improved compared with the control class, and the experimental class was also better than the control class in terms of pass rate and excellence rate.

Keywords: Big Data, Course Card Integration, Embedded Technology, Curriculum System

1. Introduction
At present, vocational education plays an increasingly important role in the development of national economy and social progress. People pay more and more attention to vocational education, and vocational education in China has entered a period of rapid rise. The problem of the construction of vocational education system becomes particularly prominent, which directly affects the further development of vocational education. Constructing a modern vocational education system is an urgent matter for the further development of vocational education at present, and the effective connection of
middle and higher vocational education is an important link in the construction of modern vocational education system. However, for a long time, the growth and training channels of professional talents are not smooth, and there are many disjunctions and faults between secondary vocational education and higher vocational education, and it is difficult for middle and higher vocational education to connect [1]. Therefore, it is necessary to construct a modern vocational education system to study the connection between middle and higher vocational education, and it has its own research significance and value. That is, according to the structural change and transformation direction of the local industry to adjust the school's specialty setting and personnel training specifications; further, it is necessary to deepen the course structure, update the teaching means, improve the students' quality, and expand the channels of talent training. It is necessary to reform the talent evaluation model with the professional ability as the core. We will promote the integration of industry and education and promote in-depth cooperation between schools and enterprises.

"Course-certificate integration" is a concept put forward in China, which has the same meaning as "dual-certificate integration". In foreign countries, it is more expressed by the mutual recognition between vocational qualification education and academic education. Lindell believes that British vocational education can provide a life-long education and training system for the majority of young people facing the future. National qualification certificates are in line with students' employment needs and can unify study and work, so students should be helped to obtain qualification certificates in various ways [2]. Masalimova gives a comprehensive introduction to the integration of vocational education and qualification in Western countries. For example, the integration of "academic certificate and vocational qualification certificate" in German vocational education has realized the effective communication between vocational education and vocational qualification system [3].

This research with national professional standards and embedded technology industry talent demand research as the basis, research to determine the embedded technology professional school, the ability of the two levels of higher vocational training target, and on the basis of the complete integration of embedded technology specialty in higher vocational courses related to the construction of curriculum system, the establishment of standards, implementation of the curriculum system for related research.

2. Curriculum System of Embedded Technology Specialty in the Context of Certificate Integration

2.1. An Overview of Occupational Standards Based on Class Certification

As the core problem of modern vocational education system, the connection of middle and higher vocational courses is essentially a problem of curriculum organization and order. Based on professional standards of higher vocational course in cohesion, is in the higher vocational college as a logical starting point for their work as a professional process professional analysis, clear in the higher vocational majors for professional jobs, defining the jobs required professional knowledge, professional skills, professional norms, and eventually use it as a different from the ordinary education, subject system of vocational education curriculum system [4].

Talents training objectives are the orientation and specification of vocational education training quality, and the training objectives at different levels are the primary symbol to distinguish and define different levels of vocational education, as well as the starting point and the primary starting point for the connection of different levels of vocational education. As for vocational education, it usually cultivates skilled and technical talents. However, if the above classification is used to locate the respective training objectives of middle and higher vocational schools, the result will certainly lead to the cross similarity of the training objectives of middle and higher vocational schools.

Based on the above analysis, we cannot abstract and idealize the level of talent cultivation, and then label it as skilled talent and technical talent. Some people say that skilled personnel are mainly engaged in hands-on operation, while technical personnel are mainly engaged in brain-using design. Such a distinction logic is difficult to hold water, and it is impossible to completely distinguish
between hands-on and brain-using in modern professional work. Even a front-line machine tool operator must master certain theoretical knowledge and logical thinking ability [5, 6]. Moreover, the above classification is basically only applicable to manufacturing industry, and it is difficult for service talents to be so distinguished. Therefore, only in accordance with the actual job posts and their ability requirements of a profession, can the talent training objectives be hierarchical and reasonable gradient, and the professional standards and their job requirements are the best job ability norms, and the differences in talent training between middle and higher vocational schools can be clarified according to the professional standards [7].

2.2. Embedded Technology Course System

(1) Scientific Division and Creation of Teams

Scientific group division is the premise of the teaching method of curriculum and certificate integration. Before dividing the group, the teacher needs to know the basic situation of the whole class in the course. Secondly, the teacher should also know the character of the students. On this basis, the division was conducted according to the principle of intra-group heterogeneity and inter-group homogeneity, and at the same time, there were more than 2 students with lively personalities in each group, so as to drive the whole group to participate in the discussion. The selection of group leaders can be based on the wishes of students. Students can choose the group leaders by themselves. The group leader selected in this way has a certain prestige among the group members, which is convenient for the group leader to manage the internal management of the group members, thus alleviating the pressure on teachers to maintain stability in the classroom.

(2) Create a Situation and Ask Questions

The design of the questions should first of all be novel and arouse students' interest. Only the questions that students are interested in can improve the quality of the discussion. In the specific design process, we can combine the current hot spots, or discuss with the group leader before class, so that students can participate in the design of the problems. Secondly, the problem should come from real life and should have practical application. Based on the real situation problem, on the one hand, students have certain life experience, on this basis, it is convenient for students to carry out the discussion, so that they will not be helpless at the beginning of the discussion; on the other hand, problems based on real situations will leave a deep impression on students after they are solved, so that students can quickly extract knowledge to solve problems when they encounter similar problems in real life. In addition, when setting questions, we should also consider the poorly constructed questions, that is, the questions that cannot be found in the textbook and have no fixed answers. Such questions can better cultivate students' divergent thinking and ability to analyze and solve problems [8].

(3) Group Discussion, Division of Labor and Cooperation

In this link, each group searches for the relevant information they need through the materials provided by the teacher and other sources, and simply sorts it out. Then, the discussion and exploration are carried out among the groups. Finally, the group members process and integrate the information to form the exploration results.

(4) Achievement Display, Exchange and Sharing

After solving the problems, each group will make a summary and select a representative to directly explain or report the discussion results of the group by means of PPT, video, scene interpretation and other forms [9]. In the report, the students mainly explained the group's ideas of solving problems, the difficulties encountered and the solutions, as well as the final harvest and feelings. After the group representative finishes the report, members of other groups can also ask questions about the unclear places. The report group will give answers, and the teacher will give appropriate comments. This link can better show the students' cognitive level and learning ability. If time is sufficient and the group is competent, it can classify, refine and expand the problems based on the questions raised by the teacher, design the unique problem situation of the group and put forward reasonable solutions. After
the presentation of each group, the group can communicate with each other, summarize the way to solve the problem, further consolidate the knowledge, and improve the ability.

(5) Evaluation Summary, Question Reflection
Evaluation summary link is an important part of teaching method, including students' self-evaluation, intra-group evaluation, inter-group evaluation, teacher evaluation, which is an important way for students to summarize experience and improve their ability. In the evaluation of teachers, the performance of students and groups should be evaluated on the basis of the first three evaluations, and problems existing in the whole teaching activities should be summarized and reflected, countermeasures should be discussed with students, good opinions should be listened to more by students, and excellent groups or individuals should be praised [10].

3. Practice Investigation on Teaching Curriculum System of Embedded Technology Specialty

3.1. Survey Objectives
Through reading and analyzing a large number of literature materials, this study will use the questionnaire method to investigate the current situation of embedded technology major teaching under the background of curriculum and certificate integration, and then analyze and compare the relationship among multiple dimensions through the collected data. In this paper, 50 students from two classes of computer major in a higher vocational school are selected as the experimental and investigation objects, and the embedded technology and mastery degree of the two groups of students are further compared, and the test papers are distributed to the two classes to carry out diagnostic evaluation.

3.2. Subjects
In order to ensure the accuracy of the research results and the uniformity of the subjects' grades and colleges, this study adopts random sampling method to select the subjects from embedded majors of different grades and departments, who are freshmen, sophomores, juniors and seniors respectively.

3.3. Data processing
Based on the questionnaire survey, the collected data were input into SPSS20.0 software for statistical analysis, including descriptive statistics, independent sample t-test, one-way analysis of variance (ANOVA) and other analytical methods. Finally, according to the data analysis results and interview results, the overall status quo of embedded technology specialty teaching and the reasons for its existence under the background of curriculum and certificate integration are deeply analyzed.

The t-test formula used in this paper is as follows:

\[ t = \frac{X - \mu}{\sigma_x} \]  
\[ t = \frac{X - \mu}{\sigma_x/\sqrt{n-1}} \]

4. Findings and Analysis

4.1. Students' Basic Tests before the Experiment
As shown in Table 1, the statistical value of F is 0.052, and the corresponding probability P value is 0.820. Since the probability P value is greater than 0.05, the two populations can be considered to have no significant difference in variances, that is, the variances are homogeneous. Under the assumption that variance under the condition of equal, independent sample t-test corresponding double tail detection probability in the table 0.870, in the case of a significant level of 0.05, T statistic probability P values greater than 0.05, therefore, should not reject the null hypothesis, it is proposed that the two general average are equal, the two classes of students there is no obvious difference in statistics.
Table 1. Independent sample T test results

| Results     | Levene test | T test for the mean value equation |
|-------------|-------------|------------------------------------|
|             | F          | Sig.                  | t      | df    | Sig. (Bilateral) | Mean difference | Standard error of mean difference | Floor | Ceiling |
| Variance equal | .052       | .820                  | -.163  | 98    | .870             | -26000        | 1.59054                  | -3.41637 | 2.89637 |
| Variance inequality | .052  | .820                  | -.163  | 97.819 | .870             | -26000        | 1.59054                  | -3.41644 | 2.89644 |

4.2. Comparison of Test Results

As shown in Table 1, the average score of the experimental class was 37.84, and that of the control class was 66.52. The number of students in the experimental class was 44, and the number in the control class was 36. The number of excellent students in the experimental class was 18, and the number of excellent students in the control class was 9. There were 6 students in the experimental class and 12 students in the control class. It can be seen that the pass rate and excellent rate of the experimental class are significantly higher than that of the control class, and the number of low scores in the experimental class is less.

Figure 1. Statistical results of the two classes

Figure 2. After the test result
As shown in Figure 2, the average score of the experimental class and the control class increased from 62.1 and 62.3 to 73.8 and 66.2 respectively, and the difference increased from -0.2 to 7.6, indicating that there was a certain gap between the two classes in the level of embedded technology ability.

5. Conclusions
It is a key step in the process of the modernization of vocational education system to construct the curriculum system of middle and higher vocational education based on vocational standards. This study takes the embedded technology major as the object, and studies the construction and implementation of the curriculum connection of this major based on the vocational standards. It is found that according to the professional standards, the professional objectives and curriculum are the most suitable for the talent needs of enterprises. According to vocational standards, the training objectives and course contents of middle and higher vocational education can be reasonably and effectively determined, and the integration of curriculum standards and vocational standards can be promoted, and the degree certificate and vocational qualification certificate can be connected. At the same time, we will promote the joint development of bridging curriculum system between middle and higher vocational colleges and industrial enterprises, and promote the co-construction and sharing of courses between schools and enterprises and between schools.

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