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# Research on the Construction and Practice of Curriculum Evaluation Standards Based on CDIO Model

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**Abstract:** Due to the intensification of the homogeneity of higher education personnel training, the school running of traditional universities is seriously out of touch with the local economy and society. Developing applied undergraduates and cultivating high-level applied talents has become the mission of higher education to meet the needs of economic and social development and promote student development. Regarding the construction of application-oriented undergraduate professional curriculum standards, the education authority has not yet made clear guiding opinions. In the construction of professional curriculum system for talent training, universities can often only refer to traditional subject-based education curriculum standards, resulting in unclear levels of school goals, and it is difficult to cultivate an international and competitive high-level that truly meets the needs of economic and social development. Applied Talents. For this reason, this thesis takes the course evaluation standard construction research as the topic, combined with the CDIO model, according to the logical structure of the teaching object itself, combined with the actual situation in the teaching practice, research and propose an applied engineering major that can be used for reference A systematic theoretical framework for the construction of curriculum evaluation standards, and based on this theoretical framework, provides a set of practical cases of professional curriculum standard construction, and conducts exploratory promotion and implementation in 5 majors. Analyze the evaluation scores of the curriculum construction of 5 majors, and give specific measures to improve the evaluation standards of informatization courses, and provide theoretical guidance and practical reference for the construction of relevant professional curriculum standards.

**Keywords:** Curriculum Construction, Evaluation Standard, Information Technology, Sensitivity, Empirical Analysis

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## 1. Introduction

The current evaluation form is relatively simple, such as the use of a single final exam score to judge the student's mastery of the course content, and use this to evaluate the quality of teaching. This evaluation method is too simple to truly reflect the learning effect and teaching quality of students. In order to effectively evaluate the quality of curriculum construction under the conditions of informatization, make full use of students' learning information in the curriculum to assist in the evaluation of professional-level talent training quality, and evaluate the knowledge, abilities and qualities that professional-level talents should achieve by collecting students' information in the curriculum The characteristics of this evaluation method

are mainly reflected in three aspects: one is that information can be obtained from the existing assessment design of the course; the other is information based on the performance of students' learning results (behavioral information); the third is that the information indicates the professional level Target attributes of talents. In the new engineering professional training plan, the general students should meet the knowledge, ability and quality requirements: master the basic theories, basic knowledge and strong experimental skills of chemistry, have a good professional ethics, a sense of social responsibility, team spirit, and have a social Senior applied professional with sense of responsibility and innovation, practical ability and entrepreneurial ability, simple and aggressive style.

When constructing curriculum evaluation standards, new evaluation standards are simultaneously incorporated. These

standards can better evaluate the value of teaching resources. According to the logical structure of the teaching evaluation object itself, the evaluation can be constructed by combining and arranging the evaluation indicators of teaching [1]. Evaluation of teacher evaluation, student evaluation, teaching design, teaching implementation and teaching environment design score sheet, each aspect can set a different score standard decomposition table, through each score can obtain relevant information about whether the training goal is up to standard. Through this evaluation system, instructors can grasp the learning situation of students in each teaching link in a timely manner, and can improve teaching methods and means in a targeted and timely manner for content that does not achieve the expected teaching effect. This kind of course performance evaluation method that emphasizes normal times and process effectively solves the difficult problem of course teaching evaluation, and is conducive to the continuous improvement of teaching quality. The construction of the evaluation standard of informatization curriculum can not only evaluate the effectiveness and scientific of curriculum construction and curriculum resources, but also greatly promote the improvement of teaching level.

## 2. The Status Quo of Evaluation Criteria for Information Courses in College

Some foreign scholars have little research on evaluation standards, but they usually start from the purpose, subject and applicability of teaching evaluation. In China, the evaluation standards used in evaluating curriculum resources and teaching quality have become the focus of research. However, at this stage, there are still many shortcomings in the evaluation standard system of informatization courses, which can be summarized as follows:

### 2.1. Subjective Experience Dominates the Evaluation Criteria, and It Is Impossible to Scientifically Evaluate Curriculum Construction

Scientific and reasonable evaluation standards can ensure the accuracy and scientificity of curriculum construction and resource value judgment [2]. The most serious problem at this stage is reflected in the design and evaluation of curriculum quality through subjective experience. Evaluation standards designed by so-called experienced teachers and experts lack the strict verification of empirical investigation methods. Curriculum evaluation standards include huge index factors. If the empirical investigation and verification are lacking, it will lead to overlap between the indicators, which will seriously affect the effectiveness of the curriculum evaluation indicators, and the effectiveness and scientificity of the standard system cannot be guaranteed.

### 2.2. The goal Deviation and Ambiguity of Evaluation Standards

Since the guidance function of the index has not been fully

demonstrated, neither the teacher nor the teaching management department can fully recognize the evaluation standard [3]. Should play the incentive function of the evaluation standard, and instead regard rewarding and punishing teachers as the main purpose of evaluation, it not only makes it only a formality, but also arouses the resistance of teachers, and even sub-teachers will use some special strategies to respond. In this way, the evaluation standard has deviated from the goal and orientation, and lost its function of improving the teaching level and promoting the communication between teachers and students.

### 2.3. The Incentive Function of Evaluation Standards Needs to Be Exerted

Teachers' teaching attitudes and skill composition have become the focus of the evaluation criteria, seriously ignoring the quality of classroom interaction and students' classroom learning. Through evaluation standards, the essence of teaching cannot be fully reflected through evaluation standards, so the quality of teaching can't be truly distinguished. The backward evaluation standard not only restricts advanced teaching modes such as case teaching, enlightening teaching and learning-guided teaching [4], but also greatly impacts the enthusiasm of teachers' work and affects the quality of curriculum construction.

## 3. The Principles of Constructing Quality Evaluation Standards for Information Courses

### 3.1. Strengthen the Internal Connection of Teaching Links

Strengthen the correlation between teaching links [5]. When designing the quality evaluation standards of informatization courses, we should not only define the items and assign weights, but also pay more attention to the relevance of the items. Starting from the entire classroom teaching process, a comprehensive consideration of student participation, teaching ideas, teaching methods, and teaching methods are made to ensure the rationality of the standard system.

### 3.2. Dynamic Adaptation Principle of Evaluation Standard

The evaluation subject and the differentiated evaluation index system establish a one-to-one correspondence to achieve the optimization of the evaluation effect. For example: if the subject of evaluation is students, then the indicators related to direct performance in the classroom should be selected, such as the content, attitude and methods of teaching. In addition, in order to facilitate feedback and operation, diagnostic, behavioral and operational language should be used to express each decomposition index; if the subject of evaluation is an expert, those factors that have an impact on classroom teaching performance should be selected, for example Talk about the teacher's academic level, teaching organization and research attitude [6].

### 3.3. The Evaluation Standard Is Based on the Principle of Curriculum Construction Quality

Evaluation standards are the ultimate goal of improving the quality of curriculum construction. First of all, based on the law of classroom teaching, to ensure that the evaluation standards can accurately reflect the essence of classroom teaching; second, the evaluation standards can be used as the requirements and norms of classroom teaching, and can also be the basis for evaluating the teaching level.

### 3.4. The Evaluation Criteria are Oriented to the Principles of Process Control

Pay attention to the control of the evaluation process to ensure that every teacher can fully understand the ultimate goal of the evaluation activity, guide them to accurately understand their own strengths and weaknesses, and help teachers better improve the quality of curriculum construction and ensure that students better master the theory Knowledge and professional skills [7].

### 3.5. Principles for the Operability of Evaluation Standards

Design the evaluation standard index system under the guidance of the principles of practicality and objectivity. When designing an indicator system for evaluating teaching quality, we should be as detailed as possible, and we should meet the requirements of accuracy and unambiguity when expressing each indicator system to ensure that the evaluation of each specific indicator can rely on actual Measurements and observations can be used to obtain accurate conclusions, so that the operability of the indicators can be fully guaranteed [8].

## 4. The Innovation of Curriculum Evaluation Standards under the Condition of Informationization

Evaluation standards guide the goal orientation of curriculum construction. The transition from index as the dominant evaluation standard to the application of information technology in teaching and curriculum construction as the dominant transition. Although authoritative and universally applicable information-based curriculum evaluation standards have not yet appeared, under the background of highly developed network information technology applications, online learning can be considered and explored.

The teaching design and application professional committee evaluates from three aspects: friendliness, technicality and teaching. The friendliness reflects the ease of operation of the learning platform, such as the visual and auditory quality of resource navigation, operation interface, help, prompt information, and teaching resources; technicality is reflected in the technical indicators of the learning platform during installation and operation; teaching is from teaching. From the perspective of teacher evaluation, student evaluation,

teaching design, teaching implementation, and teaching environment.

## 5. An Empirical Analysis of the Evaluation Index System of Evaluation Standards

### 5.1. Analysis of the Status Quo of the Classroom Teaching Evaluation System

The evaluation criteria for informatization courses were launched in Zhejiang Yuexiu Foreign Languages Institute in 2012, and the survey evaluation form was the main method at that time. First, the survey and evaluation forms are issued to the students of the colleges, and then the evaluation department will send special personnel to collect and analyze the data. The timeliness of this method is very poor, and there is a lag in the filling of the evaluation form in the course construction and teaching time, which leads to the lack of scientificity of the evaluation results and weak persuasiveness. In recent years, with the continuous expansion of the scale of running schools, the number of students has approached 20,000. The school's curriculum settings involving various majors are becoming more and more complete. The indicator system used to evaluate the quality of classroom teaching in the past and the current teaching situation and the curriculum construction under the background of new technologies are no longer suitable [9]. To give full play to the positive and scientific guidance of curriculum evaluation standards to curriculum construction and to improve teaching quality, it is necessary to adjust the index system of curriculum evaluation standards.

### 5.2. Construction of Curriculum Standard Index System

The design of the survey and evaluation form mainly involves five aspects: teacher evaluation, student evaluation, teaching design, teaching implementation and teaching environment [10].

#### 5.2.1. Distribution of Teaching Evaluation Questionnaire

According to the classification of general education and professional courses, 8600 survey evaluation forms were issued to teachers and students of various teaching units, and a total of 6150 copies were effectively recovered, with an effective rate of 71.5%.

#### 5.2.2. Index Scoring Order of the Evaluation Index System

Single index scoring method: divide the accumulated scores by the effective number of people to get the average value of the individual items. The calculation formula:

$$\bar{S}_i = \frac{1}{N} \sum_{k=1}^N S_i \quad (1)$$

For an index evaluation item, the higher the score, the better the evaluation (Table 1)

Table 1. Curriculum Evaluation Standard Index Average.

| First indicators           | Secondary indicators         | Average of secondary indicators |
|----------------------------|------------------------------|---------------------------------|
| 1 Student Evaluation       | 1.1 Information awareness    | 4.25                            |
|                            | 1.2 Information capabilities | 5.32                            |
|                            | 1.3 Information skills       | 4.89                            |
| 2 Teacher evaluation       | 2.1 Educational concepts     | 4.77                            |
|                            | 2.2 Information awareness    | 4.56                            |
|                            | 2.3 Information capabilities | 4.68                            |
|                            | 2.4 Information skills       | 4.95                            |
|                            | 2.5 Information integration  | 4.15                            |
| 3 Instructional design     | 3.1 Teaching analysis        | 4.88                            |
|                            | 3.2 Teaching objectives      | 5.69                            |
|                            | 3.3 Ability development      | 4.99                            |
|                            | 3.4 Teaching activities      | 9.12                            |
|                            | 3.5 In-depth design          | 4.97                            |
|                            | 3.6 Teaching platform        | 9.36                            |
| 4 Classroom implementation | 4.1 Teaching role            | 8.56                            |
|                            | 4.2 Teaching objectives      | 9.72                            |
|                            | 4.3 Emotional experience     | 9.02                            |
|                            | 4.4 Classroom control        | 9.81                            |
|                            | 4.5 Learning effect          | 9.91                            |
|                            | 4.6 Classroom assessment     | 9.05                            |
| 5 Teaching environment     | 5.1 Teaching Courseware      | 8.76                            |
|                            | 5.2 Teaching resources       | 8.32                            |
|                            | 5.3 Teaching atmosphere      | 8.18                            |

5.2.3. The Setting of the Index Weight of the Evaluation Standard

When assigning project weights, we use the benchmark-to-standard-superior method to compare all indicators and focus on assessing operability and irreplaceability. Through multiple communications and demonstrations with teacher and student representatives and evaluation experts, the weight of each indicator is finally determined. As shown in table 2:

Table 2. Evaluation standard index weight.

| First indicators         | Secondary indicators     | Points | weights | Rating |    |    |
|--------------------------|--------------------------|--------|---------|--------|----|----|
|                          |                          |        |         | >=8    | <8 | <6 |
| Classroom implementation | 4.1 Teaching role        | 10     | 0.9     |        |    |    |
|                          | 4.2 Teaching objectives  | 10     | 1.1     |        |    |    |
|                          | 4.3 Emotional experience | 10     | 1       |        |    |    |
|                          | 4.4 Classroom control    | 10     | 1.2     |        |    |    |
|                          | 4.5 Learning effect      | 10     | 1.3     |        |    |    |
|                          | 4.6 Classroom assessment | 10     | 1.1     |        |    |    |

5.3. The Promotion Effect of the Evaluation Index of Informatization Course

The informatization evaluation [10] index was exploratorily implemented in some teaching units from 2013 to 2018, and the feedback results obtained vary according to the nature of the subject, as shown in Figure 1:

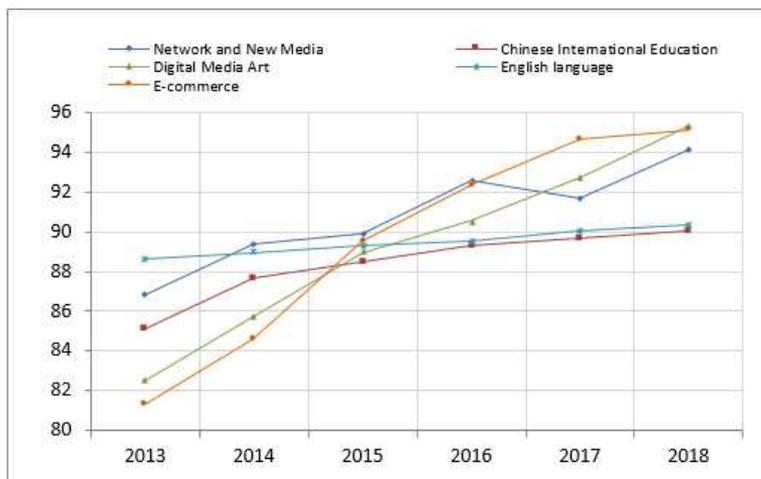


Figure 1. Evaluation index promotion effect map.

## 6. Conclusion

### 6.1. The Sensitivity of Each Profession to the Evaluation Criteria

Judging from the law reflected by the broken line data in Figure 1, the e-commerce major is the most sensitive, especially the e-commerce major. This major was established late in our school. It was just established in the early stage of the implementation of the curriculum standards [11]. Due to the dependence of the specific and strong information teaching platform of many professional courses in this major, the application of the information teaching platform and the big data thinking in teaching In the impact, the evaluation scores of e-commerce professional curriculum construction quality have increased from the lowest scores of the five majors in 2013, with a continuous higher degree of progress each year. As of 2018, the quality evaluation scores of e-commerce majors have leapt to the first place among the 5 pilot majors.

### 6.2. Informatization Curriculum Standards Are Not Yet Perfect

Due to their own characteristics, the two majors of English majors and Chinese international education have a flat curve of course construction quality evaluation scores from 2013 to 2018, with a small increase; while e-commerce and digital media arts majors have very ideal increases. The results show that the universality of information curriculum standards is not high, and the standard evaluation index system needs to be improved and adjusted.

## 7. Suggestions

Curriculum evaluation under the information environment should consider not only the integration of curriculum characteristics and information technology, but also how teaching design and teaching implementation can achieve the established goals of talent training [12]. Therefore, the evaluation system must embody multi-level and multi-dimensional evaluations, including qualitative evaluations, and combined with big data thinking to conduct questionnaires, interviews, certifications and other forms to evaluate the learning effects and teaching goals [13] of the course users, and make full use of Statistical software takes advantage of mathematical statistics and analytical models to form quantitative evaluations.

In terms of teaching, it must be able to integrate teaching platforms, teaching resources, and teaching interaction; learning content must reflect the knowledge system; teaching platforms must achieve precise management [14], friendly, safe and reliable; teaching resources must be rich and universal Strong; in terms of teaching interaction, to realize the interaction between man-machine and everyone, virtual simulation technology has been greatly applied. Conduct online Q&A and evaluate the effect of learning.

Through the construction, adjustment and improvement of the evaluation standards of informatization courses, not only can the quality of course construction and standardized teaching be improved from the perspective of teachers [15], but also the contributions of students to course construction can be brought into play, realizing the true meaning of teaching and learning, and achieving talent training Expectations.

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