Overall Scheme Design of Teaching Quality Evaluation Index for Mining Major in Higher Vocational Education

Feng Song[1,*], Zhou Quan[1], She Huijuan[2]

[1]*Department of Resources and Environment, Hunan Nonferrous Metals Vocational and Technical College, Yunlong Demonstration Area, Zhuzhou, China*
[2]*Department of Resources and Environment, Hunan Nonferrous Metals Vocational and Technical College, Zhuzhou, China*

Abstract: As an important part of higher vocational education, teacher evaluation plays an important role in feedback of teaching effect, evaluation of learning effect, measurement of talent training quality and so on. Teaching evaluation not only reflects teachers' teaching ability, but also reflects students' learning effect. This paper will focus on the research on the teaching quality evaluation index system of mining specialty courses in higher vocational education, and establish a relatively complete and applicable teaching quality evaluation index system for mining specialty courses in higher vocational education.

1. Introduction

According to China's education policies and regulations in recent years, the education administrative department hopes to establish a long-term mechanism of industry university cooperation dominated by the government, participated by enterprises and dominated by higher vocational colleges. In addition to the supervision and inspection of educational administrative departments and the evaluation of school education quality, the education quality of higher vocational colleges should also take into account the evaluation of enterprises. Because students are the carrier of education quality, they will eventually accept the evaluation of enterprises. With the deepening of cooperation and the improvement of the level, enterprises have the ability and need to participate in the education quality evaluation activities of higher vocational colleges. The purpose of studying the evaluation index of curriculum teaching quality in higher vocational colleges is to establish a teaching quality evaluation system according to a new teaching method that can meet the evaluation needs of various teaching environments and teaching methods [1]. In order to improve the reliability, authenticity and adaptability of the Hybrid Teaching Quality Evaluation Guided by the overall plan for deepening the reform of education evaluation in the new era, it is of great significance to establish the teaching quality evaluation index system of colleges and universities on the basis of relevant research results and extensive research [2].

2. Overall scheme design of teaching quality evaluation index of mining specialty

2.1. Theoretical construction of teaching quality evaluation index of mining specialty in Higher Vocational Education

In view of the fact that the teaching evaluation results are oriented to the teaching objectives and effects, and reflect the teachers' work achievements with quantitative data, which has a great impact on the teachers' teaching enthusiasm, this paper attempts to optimize the teaching evaluation indicators in consideration of the relevant problems existing in the current teaching evaluation methods of a college in Hunan [3].

Based on the research of multiple intelligences theory and stakeholder theory, it is used in the construction of teaching evaluation index, and a "four element three-dimensional" teaching evaluation index is established. "Four elements and three dimensions" refers to the "four elements" with "teachers, students, supervisors and enterprises" as the evaluation subject, and the "three dimensions" of the teaching quality evaluation system with "professional quality, teaching process and teaching effect" as the main teaching evaluation content [4].

2.2. Construction of teaching quality evaluation index system for mining specialty

Combined with the characteristics of the combination of theory and practice of mining specialty in a higher vocational college in Hunan, and based on the above "four element three-dimensional" hypothesis, a set of effective evaluation indicators for mining specialty curriculum education is established. The following is constructed according to the evaluation index of "four dimensions and three elements". See table 1

Table 1: "Teacher meta" and "supervisor meta" teaching quality evaluation indicators

Primary index	Secondary indicators	Evaluation criterion
Professional quality	Teachers' morality and style	1.Observe school discipline
		2.Respect and care for students
	Teaching preparation	3.Take classes seriously and make adequate preparation for teaching
	Professional knowledge	4.Understand professional frontier information and update knowledge in Teaching
Teaching process	Content of courses	5.clear teaching ideas
		6.The teaching content meets the requirements of the school
	Instructional design	7.Clear teaching
		8.Novel teaching
	Teaching management	9.Able to control teaching
	Teaching method	10.Teaching methods attract students
		11.Arouse students' enthusiasm
Teaching effectiveness	Knowledge transfer	12.Solve students' doubts
		13.Improve students' skills
	Practical experience	14.Iimprove students' ability to find, analyze and solve problems
		15.Pay attention to cultivating students' team consciousness and cooperate to complete practical tasks

The index composition in Table 1 is based on the concept of "quaternion and three-dimensional", taking "quaternion" students as the evaluation object, and the teaching quality evaluation index applied in the curriculum of mining specialty. Students are the objects of educational work, the recipients and Experiencers of educational content, and the direct performers of educational effects. Students are the direct audiences who receive lectures and participate in classroom teaching activities throughout the course, and have the greatest right to evaluate the teaching activities of the whole course. The teacher evaluation index of student component focuses on the perception and experience of the teaching effect of a course from the perspective of student teaching.

The index composition in Table 1 is based on the concept of "quaternion and three-dimensional", using the "quaternion" to evaluate teachers and tutors, and applying the education quality evaluation index to professional mining courses. As the peer teachers have the working experience of front-line teachers and can make professional evaluation on the teaching methods and teaching contents of the course, the evaluation indicators of teacher meta focus on the professional knowledge of evaluators. The supervision experts are uniformly placed in the supervision department. Generally, the experts of various disciplines are required to have at least senior teacher titles and rich front-line teaching experience. The two elements of the teaching evaluation subject can have a more professional understanding of the teaching process, so the two elements of the teaching evaluation index can be applied together.

2.3. Application of AHP

Step 1: establish the analytic hierarchy process (AHP) structure model.

Based on the above "quaternion three-dimensional" concept, the factors to be evaluated are set according to different standards, the analytic hierarchy process model is established, and the four-dimensional three-dimensional analytic hierarchy process table is established, as shown in Table 4.

Step 2: determine the importance of each factor through pairwise comparison. Starting from the target layer, the data is compared with the next layer in pairs, and the data is from the expert questionnaire survey. This part requires high experience and expert judgment. Table 1 shows the corresponding scale values and their meanings in the paired comparison process.

When the expert questionnaire is distributed, the pairwise comparison matrix of the four elements and the three dimensions of each element will be given. A total of 25 questionnaires were distributed, 25 were recovered and 25 were valid. Experts include 7 teachers, 7 student representatives, 5 tutors and 6 business personnel. By analyzing the results provided by experts, the paired comparison matrix of standard level 1 and standard level 2 is obtained through integral comparison, as shown in tables 6 to 7. The weight ratio of each index is calculated by analytic hierarchy process, and the indexes of two standard levels in three-dimensional quaternion are calculated.

Through the questionnaire, the experts give the weight ratio of each secondary indicator in the four element three-dimensional indicator system, as shown in table 10. A total of 9 questionnaires were distributed, 7 were recovered and 7 were valid. In Table 9, the final weight of the secondary indicators under three dimensions is obtained by averaging the corresponding weight values given by seven experts. Finally, the secondary indicators under each dollar and one dimension together form a 100% weight.

Correctly handle the contradiction between students' interests, personality development and knowledge systematization, modularize or serialize the practical courses, organically integrate all practical training and experiment links, innovation and entrepreneurship education and scientific research training, guide students to systematically complete practical training step by step, and ensure the rationality of students' knowledge structure[5-9].

3. Conclusions

Through multi-dimensional theory, stakeholder theory and AHP analytic hierarchy process, this paper constructs the teaching evaluation index system of mining specialty in a university in Hunan Province. Considering the relevant interest groups related to teaching quality, the system mainly takes "teachers, students, tutors and companies" as the main evaluation subjects, and "professional quality, teaching process and teaching effect" as the main evaluation objects. As the primary index of evaluation, construct the corresponding secondary index. Combined with analytic hierarchy process and expert scoring method, the weight of relevant indicators is determined, and the curriculum teaching evaluation index system of "three middle schools and four" is constructed.

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