

Construction and Empirical Research of Evaluation Index System of Classroom Teaching Quality in Secondary Vocational Schools

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Abstract: Classroom teaching quality evaluation is an important way to reflect teachers' teaching and an important link to strengthen school teaching management. Based on the actual data of secondary vocational school students' evaluation of classroom teaching quality, this paper first uses factor analysis to classify the indicators into six dimensions: teaching content, teaching effect, professional quality, teaching environment, learning motivation and learning behavior, with a total of 22 items. Then, the structural equation model (SEM) technology is used to establish a teaching quality evaluation model for testing and quantitative analysis, aiming at providing reference for classroom teaching quality evaluation in secondary vocational schools.

Keywords: Secondary vocational classroom; Evaluation of teaching quality; Evaluation index system.

1. Introduction

Teaching quality is the standard to measure school teaching work, and classroom teaching quality is the concentrated embodiment of school teaching quality, scientific and reasonable evaluation and improvement of teacher teaching quality, help teachers timely adjust the teaching content, achieve the expected teaching effect, strengthen the school teaching management, so as to promote the common development of teachers and students. The General Plan for Deepening the Reform of Educational Evaluation in the New Era puts forward five key tasks of reforming the evaluation of educational work of Party committees and governments, reforming the evaluation of schools, reforming the evaluation of teachers, reforming the evaluation of students and reforming the evaluation of personnel, and puts forward policy guidance for carrying out the evaluation of classroom teaching scientifically and effectively. The content of classroom teaching quality evaluation is not only the classroom teaching content, teaching effect, but also includes the professional quality of teachers, students' learning motivation, learning behavior, school teaching environment and so on.

Through consulting relevant literature, it is found that there are a lot of materials on the evaluation of classroom teaching quality. However, in the field of the construction of the evaluation index system of classroom teaching quality, the construction of the evaluation index system of classroom teaching quality in higher education is mainly focused on the construction of the evaluation index system of classroom teaching quality, which mainly starts from the evaluation of college students and focuses on the evaluation of teachers. There are few literatures on the evaluation index system of classroom teaching quality in secondary vocational schools, and more articles are based on the theory of teaching quality evaluation, mostly starting from the evaluation problems and countermeasures or suggestions. However, as the country attaches more and more importance to the development of vocational education in recent years and the promulgation of the Opinions on Promoting the High-quality Development of Modern Vocational Education, it is particularly important to

improve the teaching quality level of vocational education, especially the classroom teaching quality level of secondary vocational schools plays a key role in vigorously promoting the high-quality development of vocational education. The existing classroom teaching quality evaluation of secondary vocational schools is mostly made with teachers as the center, ignoring the concept of student-centered education and failing to fundamentally change the traditional concept of classroom teaching evaluation. Therefore, it has both urgent and important practical guiding significance to establish a set of classroom teaching quality evaluation system suitable for secondary vocational schools, promote teaching reform through classroom evaluation, improve teaching quality and achieve the goal of talent training.

2. Literature review

2.1. Teaching quality

About the definition of teaching quality, domestic and foreign scholars have carried out a lot of research on this concept, among which the most cited concept of teaching quality is put forward by Xu Xiangyun. Starting from the definition of quality, he takes teaching quality from the concept of "quality" and regards it as the "quality" of teaching as a thing (activity). The "teaching quality" is defined as the degree to which the teaching organization and all its teaching activities meet people's needs [1]. From the perspective of research value subjects, Jiang Shihui and Zheng Huimin believe that "teaching quality" refers to the promotion degree of teachers-student communication practice to teachers' professional development and students' all-round development, and such practice activities are usually conditional, purposefully planned and organized, and the level of teaching quality is mainly determined by teachers' and students' completion of teaching objectives [2]. Currently, there is also a popular view to define teaching quality from the perspective of "satisfying needs". For example, teaching quality is a characteristic needed in teaching activities or phenomena, which can coordinate and satisfy the development of society and people [3].

2.2. Classroom teaching quality

As the embodiment of teaching quality, classroom teaching quality has attracted the attention of many scholars. By referring to relevant researches on classroom teaching quality, it is found that the concept of classroom teaching quality is divided between scientific and human culture, and presents two different value orientations in the historical process of evolution, one is the tool concept oriented by efficiency, the other is the value pursuit oriented by life [4]. For example, in the pursuit of improving teaching efficiency and teaching effect, effective classroom, quality classroom and efficient classroom lead to the efficiency of teaching objectives, knowledge and skill of teaching content, ignoring the true demands of students for the value of classroom teaching as a complete and all-round development. Ecological classroom, life classroom and life-based classroom aim to realize the transformation of classroom teaching quality concept and pursue classroom teaching culture, humanism and humanization, that is, from the one-sided pursuit of classroom teaching quality and effectiveness to focus on the development of each individual's complete life [5].

3. Questionnaire preparation

3.1. Principles for the construction of evaluation index system

3.1.1. Scientific principle

The evaluation of teaching quality in secondary vocational classrooms has guiding significance to strengthen teaching management and promote the high-quality development of vocational education. Therefore, in the process of constructing the index system, it is necessary to comprehensively consider the influencing factors of students, teachers, schools and other aspects, select the evaluation indicators scientifically and reasonably, and ensure the authenticity of data filling. To prevent the unreasonable setting of evaluation indicators or the unreasonable distribution of weights from causing the output data to fail to reflect the real level of teaching quality, misleading the direction of teaching reform, and thus hindering the development of secondary vocational schools [6].

3.1.2. Systematic principle

When constructing the evaluation index system, attention should be paid to the internal correlation among all indicators of the same index system. For example, effective learning methods in students' learning behavior can enable students to reasonably arrange their learning time. It is clear that the hierarchical relationship between each indicator system is clear. In the evaluation of classroom teaching quality, the scope of the indicator system is school, teacher and student in order from large to small, and the principal position of students is fully respected. It is also necessary to clarify the connotation and significance of each index, and construct multiple evaluation index systems that are easy to understand and operate, with distinct hierarchical structure and close connections from multiple perspectives [7].

3.1.3. Dynamic principle

School-enterprise cooperation promotes the coordinated development of vocational education. As a secondary vocational school developing vocational education, the integration of production and education is a win-win model. With the development of economy and society to knowledge and technology driven transformation, the teaching concept

and education mode of secondary vocational colleges are also changing dynamically. Therefore, when constructing the evaluation index system, we should not only consider students' theoretical knowledge and ability to analyze problems, but also consider students' hands-on ability, and make dynamic changes to the evaluation index system with the development of The Times.

3.2. Data collection

The author designed a questionnaire survey with 22 test items in 6 dimensions that may have an impact on teaching quality, and selected the students in grade one, grade two and grade three of domestic secondary vocational schools as the survey objects. The questionnaire consists of two parts. The first part is the background information of the object, including gender and grade. The second part is based on the teaching quality evaluation test items of secondary vocational classes, a total of 22 items, each of which adopts the Likert five-point scale, from "completely inconsistent" to "completely consistent", assigning values of 1, 2, 3, 4, 5 respectively. During the formal investigation, a total of 110 electronic questionnaires were sent out, and 103 valid questionnaires were recovered, with an effective rate of 93.64%. The index system is shown in Table 1.

4. Empirical research

Firstly, exploratory factor analysis is used to extract the main factors affecting the classroom teaching quality, and then structural equation model is used to quantitatively simulate the influence of each major factor on the classroom teaching quality.

4.1. Exploratory factor analysis

Exploratory factor analysis was used to test whether the sample data met the conditions of factor analysis. The internal consistency reliability of indicators is usually measured by the Cronbach's Alpha value of the variable, and the coefficient value is usually greater than 0.7 [8]. SPSS26.0 software was used to calculate the standardized reliability Alpha of all measurement indicators in this survey as 0.939, which is very high, indicating that this data has good internal consistency. See Table 2 for the calculation results.

SPSS 26.0 software was used to conduct Bartlett sphericity test for sample data. When the significance was less than 0.05, KMO was used for factor analysis. KMO factor analysis is the best choice to evaluate the validity test of index system, and the relationship between indicators can be shown through the result of factor analysis. Factor analysis was made on the sample data, and the results were shown in Table 3. Bartlett spherical test $p=0.000 < 0.05$ and KMO value was 0.834, indicating that the structure validity of the classroom teaching quality evaluation system constructed by this research is good, and the data is suitable for exploratory factor analysis.

4.2. Confirmatory factor analysis

The six common factors of teaching content (F1), professional accomplishment (F2), teaching effect (F3), teaching environment (F4), learning motivation (F5) and learning behavior (F6) are taken as the four latent variables of the structural equation model, and the second-level index contained in each common factor is taken as the observation variable of the potential variable. After repeated attempts, the standardized structural equation model of classroom teaching quality evaluation in secondary vocational schools was finally

established. Confirmatory factor analysis was conducted on the sample data through AMOS26.0, and the fitting test results of the model were shown in Table 4. $c2/df = 1.66$ less than 5, RMSEA = 0.052 less than 0.1, CFI, GFI, NFI above

0.9, comparative fit index, goodness of fit index, specification fit index and other indicators are within the prescribed range, indicating that the structural validity of the questionnaire is good.

Table 1. Evaluation index system of classroom teaching quality

First-order index	Secondary index
Teaching content (F1)	A1: The teacher lecture concept is accurate, the important and difficult points are prominent, the demonstration is rigorous, the expression is accurate
	A2: Teaching schedule is moderate and class hours are allocated reasonably
	A3: Appropriate selection, timely update of teaching content, reflecting the frontier of the subject
Professional quality (F2)	B1: Teachers continue to strengthen their own learning, a wide range of knowledge
	B2: Teachers love their work, cheerful personality, approachable, care about students
	B3: Teachers are positive, always set an example for students, never bring negative emotions to students
	B4: In the classroom is a teacher, after class when the students as friends, is the student's true mentor
Teaching effect (F3)	C1: My independent learning ability has been significantly improved
	C2: I have mastered basic theoretical knowledge and the ability to analyze problems
	C3: My access to information and other hands-on ability has been significantly improved
	C4: My language skills have been improved
Teaching environment (F4)	D1: The experimental equipment is in good condition
	D2: Teaching use of advanced multimedia equipment, chalk, blackboard brush and other teaching AIDS at any time
	D3: The curriculum is rich and colorful with reasonable arrangement and remarkable professional characteristics
	D4: Classrooms have good ventilation and lighting. Classrooms, libraries and other learning places have necessary heating and cooling facilities
Learning motivation (F5)	G1: Taking the course is to lay the foundation for getting a good job
	G2: Learning this course is to improve their ability and cultivate their quality
	G3: Learning this course is to adapt to the needs of current social development
Learning behavior (F6)	H1: I can arrange my study time reasonably around the learning content
	H2: I can find effective ways to learn what I have learned
	H3: I was able to concentrate in class
	H4: I can be diligent and inquisitive

Table 2. Reliability statistics

Cronbach's Alpha	Number of terms
.939	22

Table 3. KMO and Bartlett tests

KMO Sample appropriateness measure.		.834
Bartlett's sphericity test	Approximate chi-square	2081.842
	Degree of freedom	231
	significance	.000

Table 4. Fitting degree of classroom teaching quality evaluation model

Fitting index	c2/df	RMSEA	CFI	GFI	NFI
Criterion of judgment	<5	<0.1	>0.9	>0.9	>0.9
Numerical value	1.66	0.052	1.012	1.038	0.998

5. Empirical conclusion

The secondary vocational classroom teaching quality evaluation questionnaire compiled in this paper includes 22 test items from 6 dimensions including teaching content (F1), professional quality (F2), teaching effect (F3), teaching environment (F4), learning motivation (F5) and learning behavior (F6). The questionnaire has good reliability and validity, so it can be used as a reliable measurement tool to further study the quality of secondary vocational classroom teaching and its influencing factors. Due to the limitations of time, conditions and other factors, this paper only constructs an evaluation index system for the teaching quality of secondary vocational classes from the three aspects of school, teachers and students, but there are still some limitations. For example, the number of samples is too small to determine whether it can truly reflect the level of classroom teaching quality. After the evaluation index is determined, the weight of each evaluation index is assigned reasonably, so that it can carry out reasonable evaluation according to the importance of the index. These problems will be further studied in the future work.

6. Implementation of classroom teaching quality evaluation in secondary vocational schools

6.1. Give play to the important role of students in the evaluation of classroom teaching quality

As the guide of teaching quality evaluation, teachers should encourage students to actively participate in the evaluation of classroom teaching quality, emphasize the participation of the subject, participate in the formulation of the evaluation program, the implementation of the evaluation process, the feedback of the evaluation results and the diagnosis and reform [9].

6.2. Change the form of classroom teaching quality evaluation

In addition to the traditional offline way, the teaching quality evaluation of secondary vocational classes can also be carried out in a combination of online and offline way. The specific implementation can be completed by looking up the design of teaching plans uploaded by teachers after class and evaluation reflection. When students participate in the evaluation, a certain number of students should be selected by the school's education management department for evaluation after the end of the class and the evaluation results [10]. In the era of rapid development of information technology, the evaluation system can be implemented scientifically and efficiently by making full use of information technology.

6.3. Integrating teaching management and quality evaluation

Based on the collected quality evaluation data, secondary vocational schools further refine the teaching management system and put forward specific operational requirements and normative measures for classroom teaching. Through the analysis of scientific and effective evaluation data, teachers' work enthusiasm is aroused, classroom teaching reform is carried out, and teachers' professional quality is improved [11]. By evaluating teachers' classroom teaching quality, teaching management departments can understand the demands of students of different majors on classroom teaching content and whether teaching arrangements are reasonable, so as to make corresponding adjustments in time. At the same time, I can master the shortcomings of teachers in classroom teaching, help them find out and analyze the reasons, and promote the improvement of their teaching level [12].

7. Conclusion

The construction of teaching quality evaluation system needs the participation and long-term interaction of students, teachers and schools. There must be differences in the construction of teaching quality evaluation system for different levels of education such as compulsory education and higher education, and different subjects such as politics and mathematics. In view of the secondary vocational class

which fails to fully display the vocational characteristics, we should actively explore and constantly try to reform the teaching quality evaluation system of secondary vocational class, constantly highlight the characteristics of the school-enterprise cooperation and the integration of production and education, and "take the essence and discard the dross" of the existing evaluation system, and constantly innovate on the basis of the traditional evaluation system.

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