

# Research on High Quality Construction Strategy of Curriculum in Higher Vocational Education from the Perspective of Supply Side Reform

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**Abstract.** Under the new situation that higher vocational education undertakes both education and training, this paper studies how to make higher vocational courses meet the demand side requirements from the perspective of supply side reform. Building the house of quality of higher vocational courses based on QFD theory can help curriculum developers formulate scientific and effective technical routes and strategies, and finally realize the construction of high-quality courses by analyzing the importance, relevance, competitiveness, quality planning and other technical requirements of curriculum development and construction.

**Keywords:** supply-side reform; high quality curriculum construction; quality function deployment.

## 1. Introduction

The supply side structural reform refers to promoting structural adjustment, correcting the distortion of factor allocation, expanding effective supply, improving the adaptability and flexibility of the supply structure to changes in demand, improving total factor productivity, better meeting the needs of the broad masses of the people, and promoting the sustainable and healthy development of the economy and society. Under the background of industrial transformation and upgrading, all walks of life have adopted a large number of new technologies, new processes and new models, and a large number of new jobs have been born. On the one hand, there is an urgent shortage of high-quality technical and skilled talents in all walks of life. On the other hand, a large number of low-end technicians are unemployed due to the reduction of traditional posts. In this new situation, higher vocational education, as a type of education, needs to undertake the important task of both education and training, provide learning channels and platforms for all types of learners, and transport high-quality technical talents for the society. The construction of high-quality courses is the key to improve the quality of personnel training.

From the perspective of supply side reform, higher vocational courses should fully consider the characteristics of all kinds of learners on the demand side, configure the elements of course construction, and realize the high-quality construction of courses. From the demand side, high-quality courses should meet the needs of multiple subjects, support higher vocational education to undertake the social responsibility of both education and training, and highlight the characteristics of vocational education types. From the supply side, the construction process of high-quality courses should be able to comprehensively drive the construction of teachers' team, teaching conditions, teaching reform, integration of industry and education and other links. At the same time, the curriculum construction should also maximize the benefits of resources.

## 2. Basic concepts of QFD theory

According to the definition of quality by the American National Institute of standards and the American quality association, that is, "the sum of the characteristics and characteristics characterizing the ability of a product or service to meet a given demand", in short, "quality is to meet or exceed customer expectations". Therefore, the core issue to ensure the quality of quality courses is how to ensure that the courses can meet or exceed the expectations of corresponding customers.

Quality Function Deployment (QFD) is a systematic quality assurance and improvement method that is customer-oriented and meets the needs of users to the greatest extent in the process of product development. It is a method that can systematically transform the needs of customers into the quality requirements of products or production service systems. The chart form of QFD theory is similar to house, so it is also called house of quality, as shown in Figure 1.

By constructing the house of curriculum quality, the specific requirements on the demand side of the curriculum can be effectively configured as the construction measures on the supply side. Further analysis of various indicators such as relevance and importance can help the curriculum builders to clarify and grasp the key points of quality.

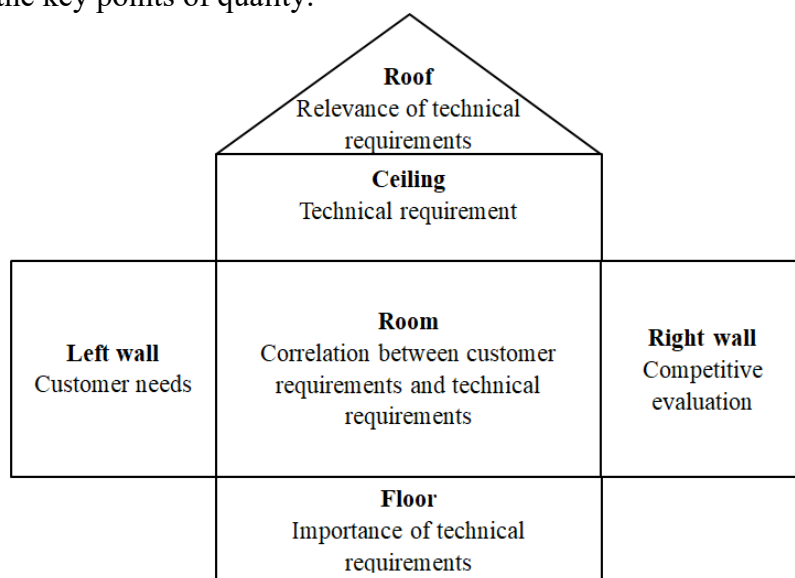


Fig. 1 House of quality model

### 3. Construction and analysis of the house of quality of curriculum based on QFD

#### 3.1 Course demand side analysis

The main users of higher vocational education courses include the needs of enterprises, students, teachers and social trainers.

The enterprise recruits the graduates who have completed the course or the employees who participate in the course training to become the indirect users of the course, but they are also the end users. Therefore, the enterprise's demand fulfillment degree reflects the most important to the quality of the course construction. After investigation and cluster analysis, the needs of enterprises can be summarized into three major items. First, there is a strong relationship between courses and posts. Second, the curriculum has good timeliness. Third, the course has strong operability.

Students are direct learners of the course, and their needs reflect the requirements for the course value and sense of experience. The needs of students can be summarized into three major items. First, the course can stimulate learning motivation and interest. Second, the curriculum is conducive to employment and career development. Third, the course learning can be deeply involved.

Teachers are the main implementers of curriculum teaching. From the perspective of relevance, they are also a special kind of users. Therefore, their needs also need to be focused. First, it is convenient to carry out teaching for different students. Second, there are abundant teaching resources. Third, it is convenient to give students scientific evaluation.

Social training is a new responsibility of higher vocational education, so high-quality courses should also provide good support for technical training of relevant enterprises. From the perspective of training, there are three main needs. First, it is convenient for employees to carry out learning at

any time. Second, design for different stages of post development. Third, scientific and reasonable evaluation and assessment can be obtained.

### 3.2 Course supply side analysis

The curriculum construction is mainly implemented from the following six aspects.

In terms of course team building, there are mainly the following three measures. First, organize teachers to take temporary posts in enterprises to participate in post work. Second, invite senior enterprise experts to participate in the course construction. Third, organize teachers to carry out research on education and teaching reform.

In terms of course content construction, there are mainly the following four measures. First, introduce post specific projects as teaching carriers. Second, absorb new industry technologies into the curriculum. Third, develop special training packages for specific posts. Fourth, collect enterprise cases and build a resource base.

In the construction of curriculum resources, there are mainly the following three measures. First, build an information-based curriculum platform and various resources. Second, build a targeted practical teaching base integrating industry and education. Third, introduce virtual simulation technology to develop training projects.

In the construction of teaching implementation, there are mainly the following two measures. First, differentiated teaching for different types of learners. Second, it can break through the limitations of space and time to carry out teaching.

In the construction of curriculum management, there are mainly the following two measures. First, specify the daily construction and management system of the course. Second, regularly review the course content and update it.

In terms of evaluation and assessment construction, there are mainly the following two measures. First, different types of learners are evaluated differently. Second, build an online assessment platform to implement process evaluation.

### 3.3 Correlation analysis between demand side and supply side

The implementation of correlation analysis between demand side projects and supply side measures is to determine the degree of correlation between each of the two projects, and help curriculum developers analyze and clarify the technical requirements that need to be guaranteed to meet a certain demand.

The specific analysis and marking methods are as follows: take out the items in the left wall and ceiling of the house of quality one by one for analysis, and experts can determine the degree of correlation between them, and mark different symbols in the corresponding rooms of the house of quality. Specifically, it can be divided into four cases, that is, if the two projects are strongly related, it shall be marked with "●"; If the correlation is strong, mark "○"; If the correlation is weak, mark "△"; Blank if there is no correlation.

Take the project analysis of strong correlation between courses and positions in enterprise demand as an example. The demand project requires that the courses can closely connect with the professional ability requirements of the posts. Among the various measures of curriculum construction, the following four are strongly related. First, organize teachers' enterprises to participate in post work on a temporary basis, so that teachers can directly experience the work content of relevant posts, which helps them truly understand the professional ability requirements of posts, so that they can more reasonably formulate course objectives and select course content. Second, senior enterprise experts are invited to participate in the course construction. The significant advantage of enterprise experts over school teachers is that they have a strong grasp of the development status and trends of industry technology. Their participation in the course construction helps to accurately grasp the dynamic changes of industry technology and talent demand. Third, introduce post specific projects as the teaching carrier. This measure is mainly to organize the course teaching content in the form of projects, so as to realize the docking of the teaching process and the working process. Fourth, develop special

training packages for specific posts, and develop a series of training course modules that can be freely selected and matched in a special way for the specific ability requirements of specific posts. This measure is a new requirement for vocational education to achieve both education and training. By analogy, the project analysis is completed as shown in Figure 2.

### 3.4 Analysis on importance of supply side measures

The purpose of implementing the importance analysis of the curriculum supply side measures is to help the curriculum developers to clarify which of the numerous technical requirements are the main contradictions that have a significant impact on the curriculum quality, so as to ensure the curriculum quality by giving priority to the main contradictions.

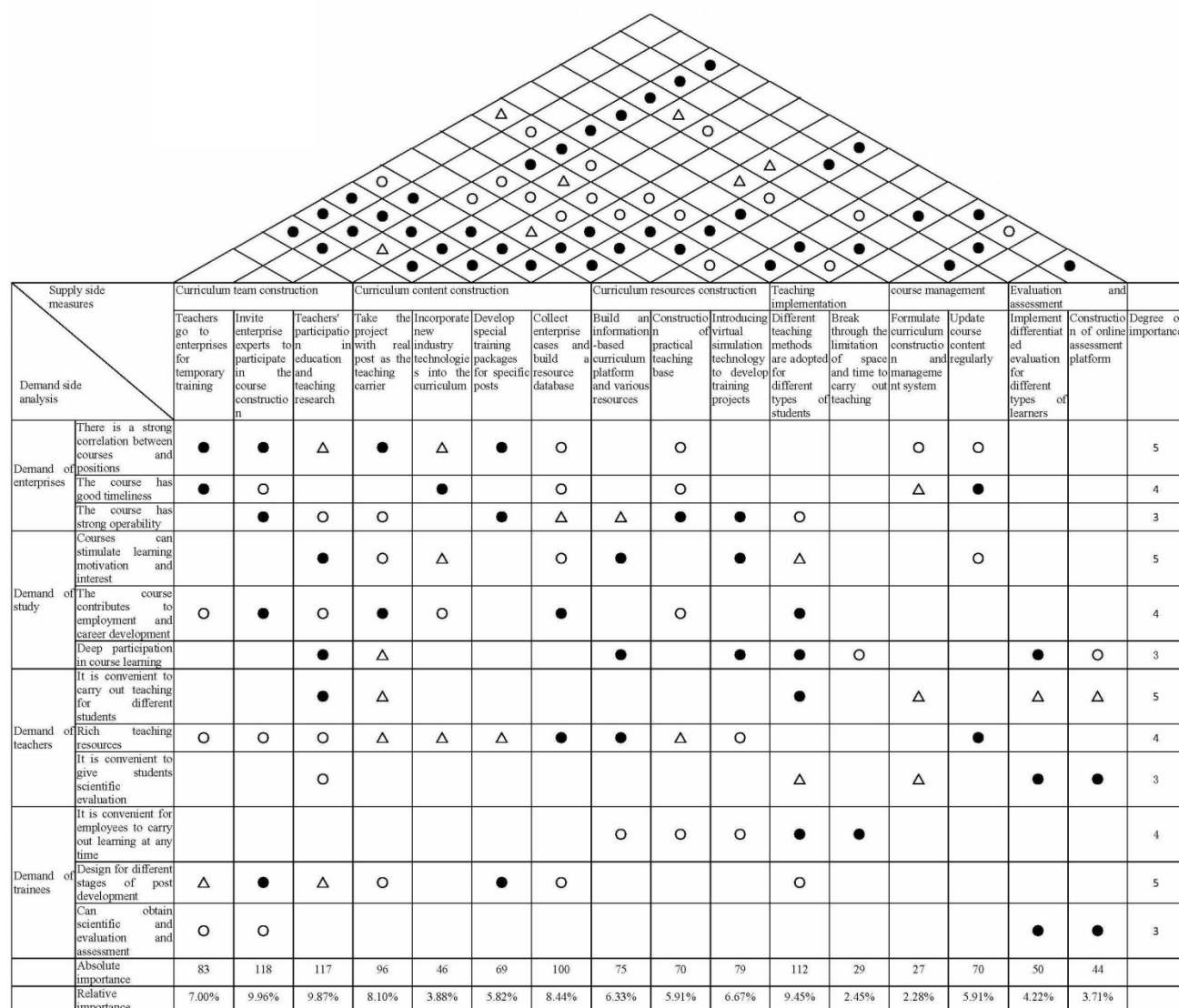


Fig. 2 Curriculum construction strategy based on house of quality model

First, determine the importance of each project on the demand side, and adopt the expert consultation method. Experts will evaluate each demand item according to the importance of each demand item according to the five point system, and a score of 5 means the most important. Each expert and representative will score each indicator respectively, and then calculate the average value to obtain the weight vector  $w$  of the course demand project.

Then the correlation analysis results are converted into decision matrix. That is, the correlation judgment matrix  $A$  can be obtained by calculating the four different degrees of correlation according to 5, 3, 1 and 0 points respectively.

Finally, by combining  $W$  and  $a$ , the absolute importance  $K$  of each project in the technical link of curriculum construction can be calculated.

$$K = A^T \cdot W \quad (1)$$

The absolute importance can be further calculated to obtain the relative importance, which is directly presented in the form of percentage. The calculation results are shown in the bottom two rows of Figure 2

The top five measures in terms of importance are: inviting senior enterprise experts to participate in curriculum construction, organizing teachers to carry out research on education and teaching reform, implementing differentiated teaching for different types of learners, collecting enterprise cases to build a resource base, and introducing post specific projects as teaching carriers.

### 3.5 Correlation analysis of supply side measures

The implementation of correlation analysis of curriculum supply side measures can help curriculum developers implement relevant construction projects in a collaborative manner and help to make full use of resources. The correlation analysis and marking method of curriculum supply side measures are similar to those described above, except that the analysis results are filled in the "roof" of the house of quality.

Taking the organization of temporary training for teachers in enterprises as an example, the following three measures are strongly related to this measure. First, this measure helps teachers to comprehensively understand and experience the real working situation of relevant posts, so as to introduce post specific projects as teaching carriers. Second, teachers' temporary training, specifically engaging in relevant technical work, will also help them deeply understand the application of new technologies in the industry, thus helping to absorb new technologies in the industry into the curriculum. Third, teachers' comprehensive experience in the enterprise is helpful to understand the different work contents and professional requirements of different types and levels of posts, so as to help develop special training packages for specific posts and improve the quality of technical training.

## 4. Summary

Building the house of quality of higher vocational courses based on QFD theory can help curriculum developers formulate scientific and effective strategies to realize the construction of high-quality courses through technical analysis such as the importance analysis, correlation analysis, competitiveness analysis and quality planning analysis of curriculum development and construction technical requirements.

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