Research on the Quality Evaluation of Teaching Reform Project in Colleges Based on Computer

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Abstract. With the rapid development and change of society, the teaching of colleges should continue to follow up the reform. In addition, with the deepening of teaching reform in colleges, there is an urgent need to develop a quality evaluation system suitable for teaching reform projects. This paper first introduces the theoretical basis of the quality evaluation of teaching reform projects in colleges, then analyzes the construction of the quality evaluation index system of teaching reform projects based on computer, and finally introduces the quality evaluation methods of teaching reform projects.

Keywords: Quality Evaluation, Teaching Reform Project, Colleges, Computer

1. Introduction
With the continuous promotion of the reform in colleges in China, many colleges and universities have set up teaching reform projects, which promote the teaching reform and improve the quality of teaching through project research, and have made great progress. On the other hand, with the continuous development of society, the society puts forward more requirements for practical talents, which requires colleges and universities to make corresponding adjustments according to social needs. Therefore, colleges and universities need to carry out targeted teaching reform, so as to cultivate the talents needed by the society [1]. As an important carrier to promote the in-depth development of teaching reform, the teaching reform in colleges includes teaching content, personnel training mode, curriculum system and other aspects, so it is more complex system engineering. As the internal guarantee mechanism of teaching quality in colleges, the evaluation of teaching quality in colleges plays an important role in improving the level of teaching reform, so it is of great practical significance to carry out the research on the evaluation of teaching reform project quality in colleges.

2. The theoretical basis of the quality evaluation of teaching reform projects in colleges

2.1. Quality evaluation index system
To establish the quality evaluation index system, it is necessary to have a perfect quality evaluation system, so as to effectively predict the quality development trend. As an important premise of the
quality evaluation system of teaching reform, the quality evaluation index system determines the direction of the university to a large extent, and plays a key role in the vane. The rationality and scientificity of quality evaluation index system directly affect the result of quality evaluation [2]. In order to ensure the objectivity and rationality of the quality evaluation index system, it is necessary to establish multiple strategies based on multiple index evaluation systems, so as to establish an objective and real talent training mechanism in Colleges and universities. Colleges and universities should design specialized quality evaluation index system based on their own orientation and specialty characteristics. Generally speaking, the quality evaluation index system of colleges should follow the principles shown in Figure 1.

![Figure 1. Principles of quality evaluation index system of colleges](image)

2.2. Overview of quality evaluation methods of teaching reform projects in colleges

Generally, there are two methods to evaluate the quality of teaching reform projects in colleges: AHP and fuzzy evaluation. The introduction and advantages of these two methods are shown in Table 1.

| Methods               | Introduction                                                                 | Advantages                                                                                                     |
|-----------------------|-----------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------|
| AHP                   | Represent complex system with a simple element hierarchy                     | Convenient to achieve work; convenient for the influence degree of high-level elements on low-level elements; it is easy to have macro understanding of the whole system |
| Fuzzy evaluation      | Make an overall evaluation of the things restricted by various factors based on comprehensive theory of fuzzy mathematics | It is helpful to solve the evaluation decision-making problem that is difficult to quantify; the price method is simple; the application scope is wide |

3. Construction of quality evaluation index system of teaching reform project

3.1. The framework of quality evaluation index system of teaching reform project

As a complex system engineering, the comprehensive evaluation index system of teaching reform project includes several aspects as shown in Figure 2.
The contents of each aspect shown in Fig 2 are shown in Table 2 below.

### Table 2. Introduction and advantages of quality evaluation methods

| Methods                        | Details contents                                                                 |
|--------------------------------|----------------------------------------------------------------------------------|
| Project application            | Project team members, project approval basis, project category, fund limit, project plan and expected results, Feasibility of project approval |
| Mid-term inspection            | Fund use indicators, phased results and fund use efficiency                        |
| Project closure review         | Expert evaluation indicators, application indicators of research results, completion of expected objectives, the extent of impact, and project scalability |
| Effect of teaching reform      | Innovation of teaching thought and content, innovation of talent training system, innovation of curriculum system, practice in school and promotion outside school |

3.2. Analysis on the quality evaluation index system of teaching reform project

First of all, the application of the teaching reform project in colleges needs to ensure the rationality of the project, such as the feasibility of the project, the practicality of the project, the urgency of the project, the scientific indicators of the project schedule and the results of the project. Secondly, the mid-term inspection of the project should evaluate the phased use indicators, phased results and the efficiency of the use of funds [3]. Third, the project closure review and evaluation should be evaluated in terms of the extent of the impact, the scalability of the project and the completion of the expected objectives. Finally, the effect of teaching reform should be evaluated on the basis of innovation and practicality. Among them, the former includes the evaluation of the innovation of teaching ideology, teaching content, personnel training system and curriculum system. The latter includes the evaluation of the practice and promotion outside the school.

4. Quality evaluation method of teaching reform project

4.1. Determination method of evaluation index weight

First of all, the weight reflects the different importance of the evaluation index, the more important the evaluation index, the greater its weight. Generally speaking, there are four expressions of weight: absolute number and relative number. There are many methods to determine the index weight, mainly as shown in Figure 3.
Figure 3. Methods to determine the index weight

Since Delphi method is used by experts based on their past experience, it has strong subjectivity, and principal component analysis method is not suitable for evaluating teaching reform projects, because the quantitative degree of its original data is not enough. In addition, the entropy weight method ignores the importance of the index itself. Sometimes the weight of the index determined is inconsistent with the expected, which will cause the instability of the weight. As a qualitative and quantitative weight determination method, AHP can be more scientific and reasonable, and better reflect the importance of various factors to the effect of teaching reform projects. Therefore, it is more scientific and reasonable to choose analytic hierarchy process to determine the weight value of each factor in the teaching reform project [4].

4.2. The implementation steps of analytic hierarchy process in teaching reform project
First of all, it is necessary to establish hierarchical structure, make the problem hierarchical and organized, and construct a structured model with clear organization. Secondly, the judgment matrix should be constructed. By comparing the importance degree of the two schemes, AHP can judge the importance degree of the two schemes. Thirdly, it need to calculate the weight vector, select the data from the judgment matrix, calculate the weight vector of the judgment matrix, and establish the results comparison matrix. Finally, the consistency test is carried out [5].

5. Conclusions
With the deepening of teaching reform in colleges, it is more and more urgent to find out the quality evaluation system suitable for teaching reform projects. This paper constructs a set of quality evaluation system of teaching reform project based on AHP. The quality evaluation system obtains the weight of each index through AHP to evaluate the quality of teaching reform projects. It could provide a good decision-making basis for the teaching reform project, and has an important guiding significance for the current teaching reform project in colleges.

References
[1] Xu qiongyi. Thinking on optimizing the management process of teaching reform projects in colleges[J]. Science and technology economy guide, 2017 (02): 293.
[2] Wang Shaogang, Wang Tao, Liang Wenping, et al. Teaching reform and practice of Engineering Materials Course Group [J]. Science, education and culture, 2016, (34): 53-55.
[3] Song Yabin. Reflections on the management of university level teaching reform projects [J]. New western China (theoretical Edition), 2016 (15): 127.
[4] Yu Hongjian., et al. Applied research on teaching method of classroom teaching reform project in colleges [J]. Journal of Zhejiang Vocational and Technical College of industry and commerce, 2017, 16 (1): 61-67.
[5] Wu Shuxia. Reflections on the cultivation mechanism of teaching reform achievements in higher vocational colleges under the background of combination of work and study [J]. Journal of Mudanjiang University, 2016,25 (1): 171-173.