

Evaluation of Teaching Effect in Higher Educational Institutions and Identification of Its Influencing Factors

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Abstract—For higher educational institutions, teaching effect evaluation is necessary for improving teaching quality and reforming teaching mode. The evaluation has a long-lasting effect on the growth of students, and a close correlation with the immediate interests of every teacher. This paper evaluates the teaching effect and its influencing factors for the undergraduate education in ordinary colleges. It was found that the teaching effect is mainly affected by factors in four dimensions: teacher, student, teaching method, and teaching environment. Then, the authors reformed the teaching method, and tested its performance. The results show that the reformed teaching method improved the professional English ability of students more significantly than the ordinary teaching method. Therefore, higher educational schools are suggested to establish a set of scientific, reasonable, and practical evaluation methods for teaching effect, reflecting the teaching requirements, policies, faculty, and capital investment. The research findings lay the foundation for the long-term healthy development of higher education.

Keywords—teaching effect, evaluation method, teaching method, teaching environment, higher education

1 Introduction

Achieving high-quality teaching is the primary task of higher education and a country's most basic requirement for higher education [1, 2]. Innovation and reform are the key to achieving good teaching results and providing technical support for realizing the strategic goal of building a powerful and innovative country with outstanding human resources [3]. At present, with the implementation of quality education, colleges and universities are attaching greater importance to the quality of undergraduate education, gradually raising the quality standards, optimizing the structure of the specialized subjects, and finding new breakthrough points for overcoming weak links in higher education [4, 5]. With the gradual implementation of the teaching evaluation works of undergraduate education in ordinary colleges and universities in China, the evaluation and analysis of teaching effect have received more attention [6, 7].

Regarding the evaluation of teaching effect in ordinary higher educational schools, field scholars found through surveys that existing studies mostly concern about the theoretical basis, evaluation principles and methods, evaluation index systems, and problems and shortcomings in the evaluation works [8-10], and few of them give in-depth analysis on the results and effect of the teaching works in ordinary colleges and universities, or propose evaluation directions and influencing factors of teaching evaluation in ordinary higher educational schools [11, 12]. As the teaching level of ordinary colleges and universities is being improved continuously, the evaluation of teaching effect has obtained great achievement, which has well promoted the development of higher educational schools [13, 14].

The evaluation of teaching effect is affected by many factors, and there are a few problems with current teaching effect evaluation [15, 16]. First, there are problems with the evaluation index systems, these existing systems cannot guide the evaluation works effectively, and the main manifestation is that these systems are not diversified, targeted guidance hasn't been well reflected, and the connotations of some indexes overlap with each other [17]. Second, the evaluation theories and methods are not scientific enough and need to be further optimized, in China, the theoretical and practical research on teaching effect evaluation only has a short history, and actual operations of teaching effect evaluation and analysis haven't been truly formed in Chinese colleges and universities [18, 19]. At last, the behindhand construction works of teaching effect evaluation and analysis systems fail to give actual and normative guidance to teaching effect analysis, and it's difficult to achieve the evaluation goals successfully [20]. This paper took the undergraduate education works of ordinary colleges and universities as the research foundation to analyze and discuss the teaching effect and its influencing factors.

2 Teaching effect evaluation of higher educational schools

2.1 The value of teaching effect evaluation

The evaluation of teaching effect of higher educational schools needs to conform to the theoretical basis of the corresponding subject [21]. Teaching evaluation is a complex system with various items and overlapping levels. The integral, hierarchical, dynamic, and optimized principles in the systems science will inevitably become important ideas for the evaluation of higher educational schools [22, 23]. The teaching evaluation of ordinary colleges and universities should follow the oriented principle, developmental principle, and dynamic principle, etc. [24]. And the teaching evaluation should focus on “promoting construction, reform, and management through evaluation, combining evaluation with construction, and emphasizing construction”, and the course reform in schools should be strengthened [25].

Figure 1 lists the achievements in standardizing and promoting the development of higher education, which include: the national education policy has been better implemented in higher educational schools, and correct school-running guidelines have been established; higher educational schools have paid more attention to undergradu-

ate education and talent cultivation, and have effectively improved the teaching conditions; higher educational schools' teaching reform has been further deepened and the teaching works have been strengthened; higher educational schools have attached greater emphasis on promoting faculty construction. Figure 2 lists the experiences of teaching effect evaluation, including: the evaluation has obvious effect on helping higher educational schools to clarify school-running ideas and features; the evaluation can maximize the benefits of students; the evaluation has an obvious effect on determining the central position of undergraduate education; the evaluation doesn't have an obvious promotive effect on students; the evaluation has achieved different results in schools of different types in different regions.

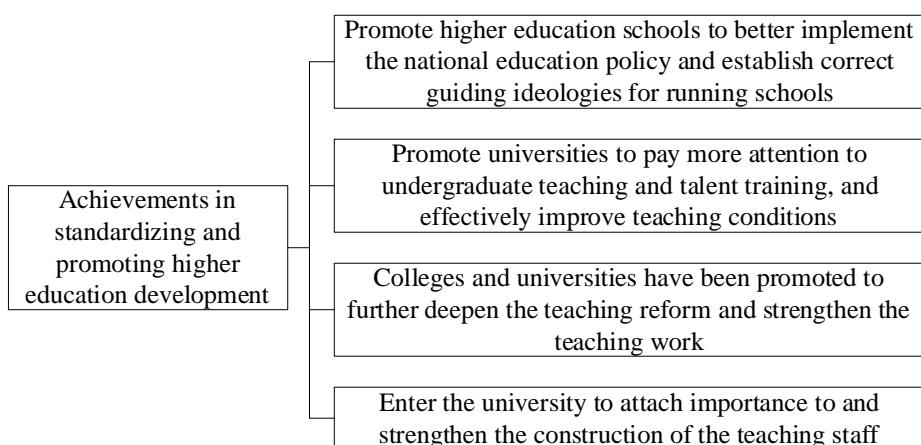


Fig. 1. Achievements in standardizing and promoting higher education development

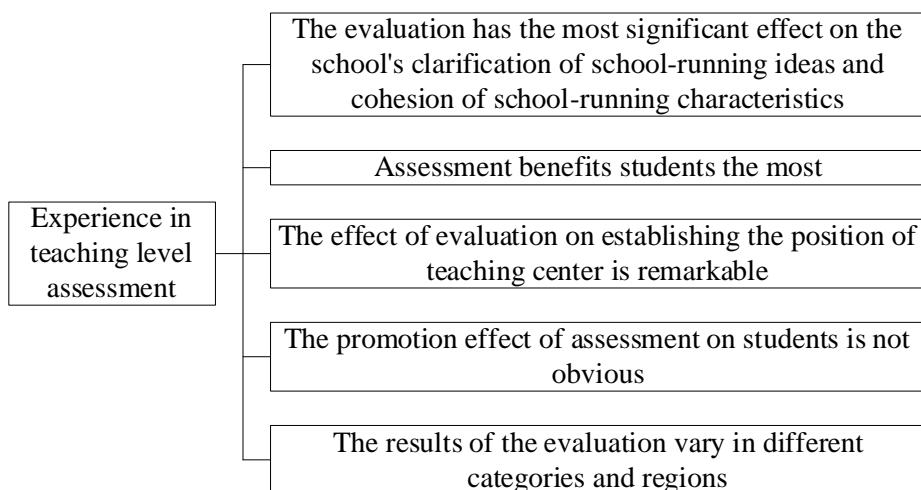


Fig. 2. Experiences in teaching effect evaluation

2.2 Analysis of teaching effect evaluation

Establishing a sound teaching effect evaluation system can ensure the quality of undergraduate education and the cultivation of high-quality college students [26]. Figure 3 shows the percentages of the teaching effect evaluation results of provincial and ministerial-level colleges and universities in China, 56.24% of the schools scored excellent in the evaluation, 40.98% scored good in the evaluation, and 2.79% scored pass in the evaluation. Overall, the provincial and ministerial-level colleges and universities have higher teaching level, an example is the Nanjing University of Aeronautics and Astronautics, the school has greatly improved from many aspects such as the central status of teaching, teaching conditions, faculty level, teaching reform, and teaching management, etc. [27, 28]. Figure 4 lists the main achievements of the teaching effect evaluation of colleges and universities in Jiangsu Province, including: the positioning of the school is accurate and the central position of teaching works is prominent; people's awareness of teaching quality has been enhanced; the teaching management level has been comprehensively improved; the faculty construction has been significantly strengthened; the education funding has been greatly increased; the teaching reform has deepened continuously.

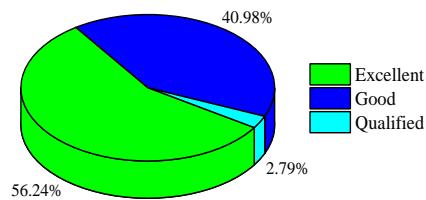


Fig. 3. Percentages of the teaching effect evaluation results of provincial and ministerial-level colleges and universities in China

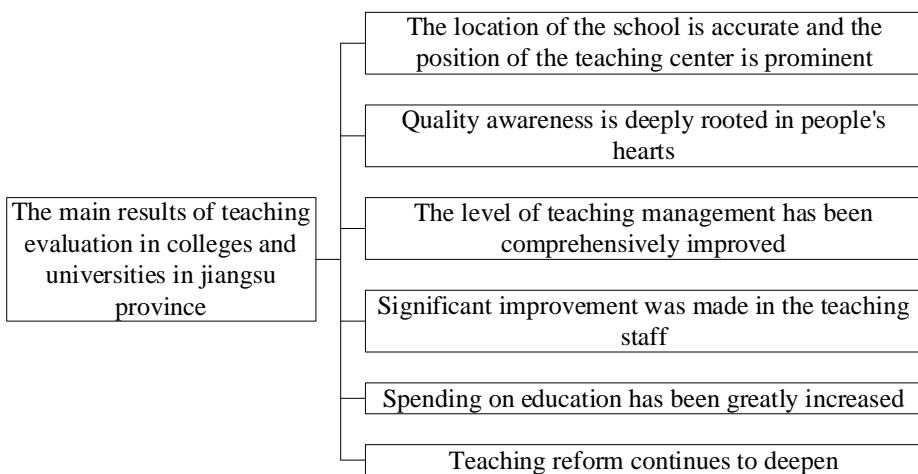


Fig. 4. Main achievements of the teaching effect evaluation of colleges and universities in Jiangsu Province

3 Theory of the influencing factor model of teaching effect evaluation of higher educational schools

3.1 The influencing factors

The teaching system in colleges and universities is a special system containing stable elements such as teachers, students, and various equipment and tools, these elements impact and interact with each other and together constitute an organic whole [29]. From macroscopic to microscopic scales, the teaching effect of higher educational schools is affected by many influencing factors, wherein the macroscopic factors mainly have two aspects, the society, and the school. The society factors mainly refer to the guidelines and policies of the state, and the direction of public opinion; the school factors mainly refer to teaching ideas, funding, infrastructure, and management and training systems, etc. [30]. Figure 5 shows the influencing factors of teaching effect evaluation, which include the teacher factors, student factors, teaching method factor, and teaching environment factor. First, teachers are the initiators of teaching activities, and their teaching attitude and teaching ability are affecting the quality of teaching [31]. Second, students are the subjects of learning, they are active throughout the learning process, and have a direct impact on teaching effect evaluation [32]. Also, in the teaching process, factors such as the students' learning ability, interest, and motivation, would influence the teaching effect evaluation [33]. Teaching method and teaching environment can affect students' mood, the well-designed teaching methods are the prerequisite for achieving good teaching results, and the teaching environment has a non-negligible impact on the implementation of the teaching process [34].

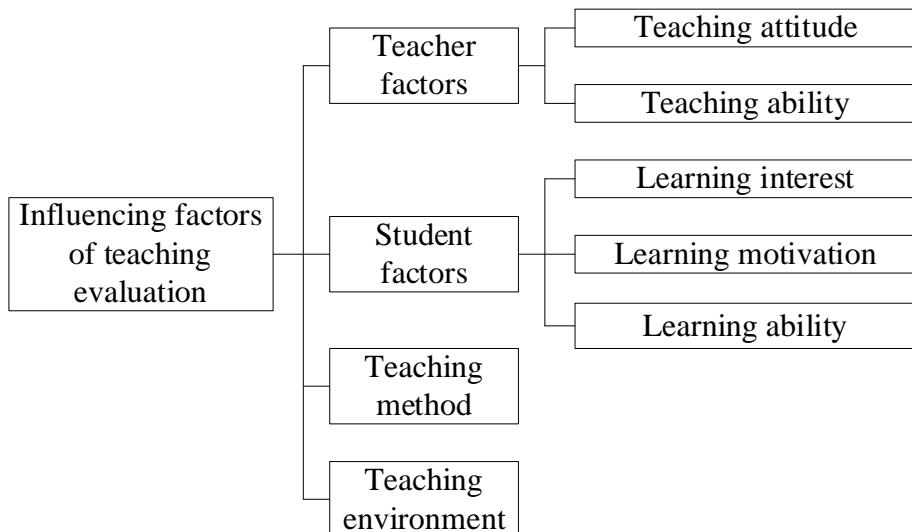


Fig. 5. Influencing factors of teaching effect evaluation

3.2 Empirical study on the influencing factor model of teaching effect evaluation of colleges and universities

As mentioned above, potential factors that can affect the teaching quality include teacher factors, student factors, teaching method factor, and teaching environment factor. To figure out the situation of these influencing factors, a questionnaire survey was conducted in 11 colleges and universities in Jiangsu Province, all respondents were sophomores, a total of 500 questionnaires were issued and 402 valid questionnaires were returned. Figure 6 shows the proportion of each influencing factor, according to the figure, the proportions of teaching attitude, teaching ability, and teaching method are the highest, followed by learning motivation, and the proportion of teaching environment is the least.

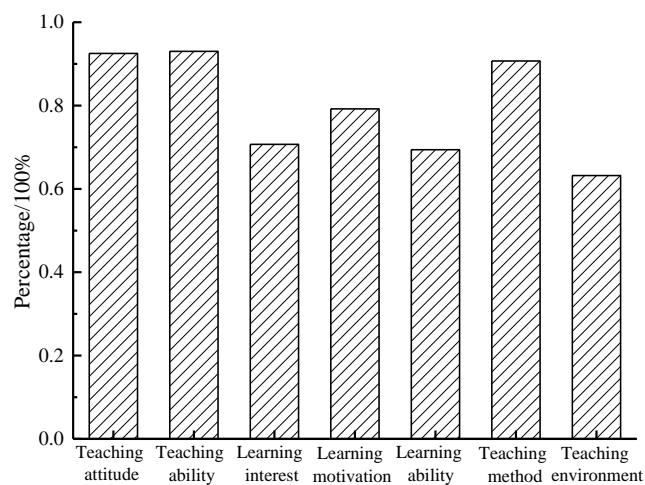


Fig. 6. Proportion of each influencing factor

4 Case of teaching effect analysis

4.1 Teaching effect of professional English course of civil engineering major

The teaching work of professional English is usually undertaken by teachers from the relevant major, not teachers from foreign language major. In the civil engineering major of Nanjing University of Aeronautics and Astronautics, the three teachers in charge of the professional English course and the teaching practice of the classes were taken as the research objects, and the three teachers adopted different lecturing methods. Figure 7 shows the teaching process of the reformed professional English teaching method. The adopted professional English teaching method is: Chinese and English multimedia courseware is used for lecturing, first, the teacher explains the vocabulary, then, the teacher uses the multimedia system to explain the difficult language points, afterwards, students search for relevant learning materials by themselves and

answer the questions proposed by the teacher. Table 1 shows the statistics of survey questionnaire distribution and recovery. Table 2 analyzes the teaching effect of professional English course of civil engineering major (student response), according to the survey results, more than 85% of the students expressed that they are not interested in the civil engineering professional English course in the curriculum plan; only less 10% of the students would preview the new words before class; most students believe that the teaching of professional English course shouldn't be scripted and the teaching method should be diversified; students can master most of the professional English vocabulary, but they cannot comprehend or absorb the sentences well; the examination process is not diversified and cannot examine the students' real professional English ability; more than 95% of the students hope that the course could be taught by civil engineering major teachers.

Table 1. Statistics of survey questionnaire distribution and recovery

Questionnaire type	questionnaires issued	Questionnaire survey returns quantity	Effective number	Efficient rate
Teacher	6	6	6	100%
Student	174	172	167	96%

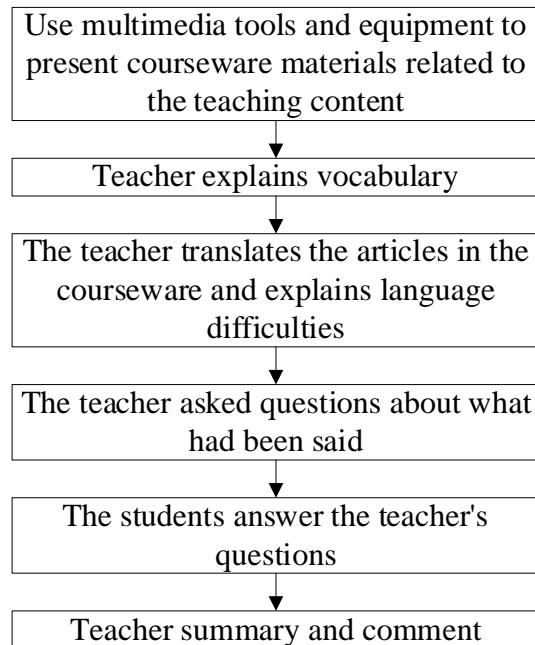


Fig. 7. Teaching process of the reformed professional English teaching method

Figure 8 shows the comparison of the teaching effect of civil engineering English course before and after adopting the reformed teaching method. According to the figure, after the ordinary teaching method had been adopted for the lecturing of the

civil engineering English course, students' mastery of terminology and professional expression had been improved to a certain extent; while after adopting the reformed teaching method, such improvement was far greater than that of ordinary teaching method. Moreover, after the reformed teaching method had been applied, students' learning initiative had been greatly improved, and their active memory ability had been enhanced. The traditional teaching method is a mechanical learning method, which is not conducive to enhancing the students' autonomous learning efficiency. Figure 9 shows the comparison of the teaching results of civil engineering English course before and after adopting the reformed teaching method. After the reformed teaching method had been adopted, students' ability in task simulation and professional English program had been greatly improved, and their CET-4 pass rate had been greatly increased as well.

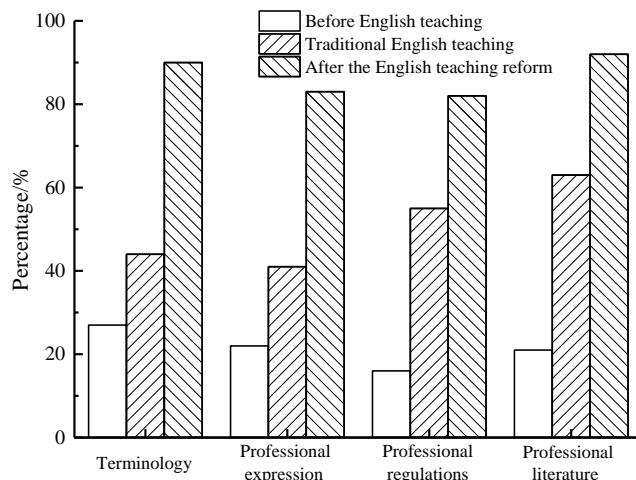


Fig. 8. Comparison of teaching effect of civil engineering English course before and after adopting the reformed teaching method

Table 2. Teaching effect of professional English course of civil engineering major

Performance indicators of professional English in civil engineering	Student response level
Learning plan	More than 85% of the students are not interested in the required English courses in the curriculum
Learning methods	Less than 10% of the students can do the preparation before class, most of the students in the state of passive listening to the class
Learning link	Most of the students' task of English teaching cannot be scripted, teaching should be diversified
Professional content	Students can master most of the professional English vocabulary, but they can't understand and absorb the sentences well
Test way	The examination process is single, unable to really examine the students' professional English ability
Teacher level	95% want to be taught by professional teachers

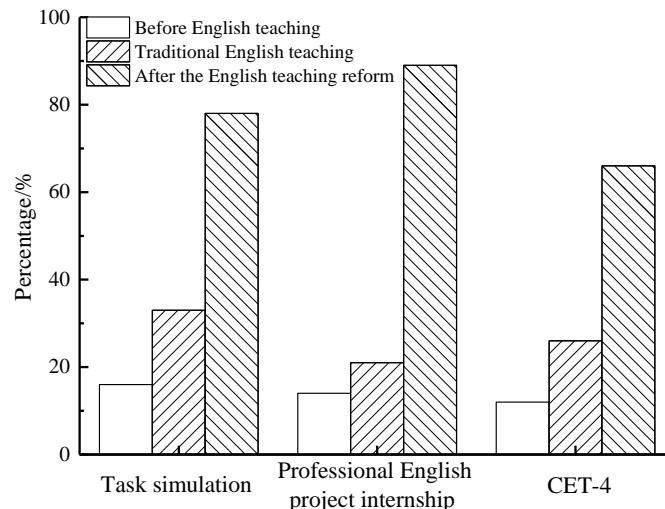


Fig. 9. Comparison of teaching results of civil engineering English course before and after adopting the reformed teaching method

4.2 Problems in the teaching of civil engineering English course and countermeasures

Through a survey on the teaching of civil engineering English course in 6 colleges and universities in Jiangsu province, we found that the professional English course of civil engineering major only scripted the textbooks according to the requirements specified by the ministry of education, the schools never surveyed what are the real needs of students. Figure 10 shows the problems in current civil engineering English course. First, in terms of the setting of the professional English course, the requirement analysis work is insufficient; second, students have incomplete understanding of the purpose of professional English course and have obstacles in various language abilities, and most students have difficulties in writing and hearing. The faculty of professional English course is weak, in provincial and ministerial-level colleges and universities, most teachers in charge of professional English course have oversea study experience, so the teaching quality and effect might be good; however, for ordinary colleges and universities, the teachers in charge of civil engineering English course are of different levels, and some have poor English teaching experience. Moreover, the teaching method is not as varied, the teaching materials, supplementary teaching materials, and teaching resources are not abundant, many students haven't purchased the professional English textbooks specified by the school, so their only learning resource is the teachers' PPT documents. The teaching effect of civil engineering English course is questionable, the teaching effect evaluation and tests are mere formalities, and the policy support and encouragement are insufficient.

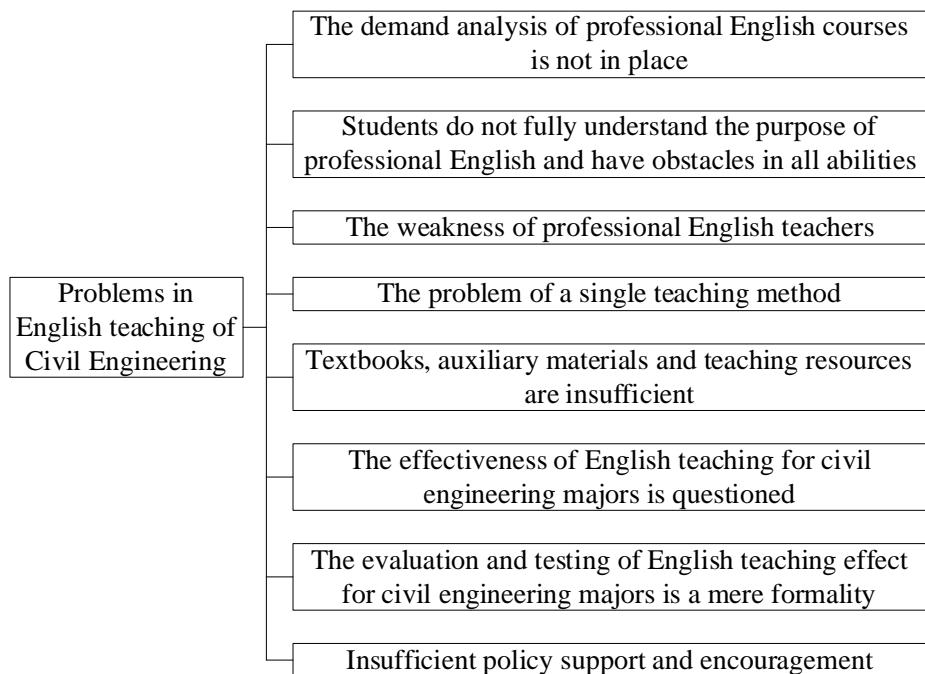


Fig. 10. Problems in current civil engineering English course

Figure 11 shows the countermeasures to improve the teaching of civil engineering English. First, the teaching goals of civil engineering English should be improved. Second, the faculty and teaching talent reserve of the civil engineering English course should be strengthened, and teachers with oversea study experience and rich professional knowledge should be encouraged to join the faculty. Third, schools and departments should support the improvement and research of civil engineering English teaching, promote the compilation of teaching materials, supplementary teaching materials, and teaching resources, and develop excellent textbooks for the civil engineering English course based on requirement analysis, moreover, the reformed teaching method should be adopted to enhance students' learning in the three stages of before-class, in-class, and after-class, and cultivate their self-learning ability.

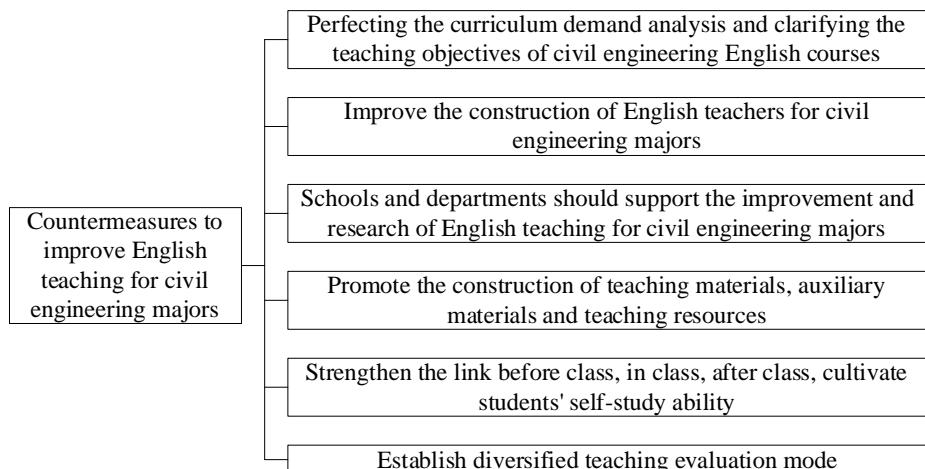


Fig. 11. Countermeasures to improve the teaching of civil engineering English

5 Conclusions

Based on the research of undergraduate education in ordinary colleges and universities, this paper analyzed the teaching effect and its influencing factors, and drew the following conclusions:

1. Teaching effect evaluation has obvious effect on helping higher educational schools to clarify school-running ideas and features; it can maximize the benefits of students, determine the central position of undergraduate education; however, it doesn't have an obvious promotive effect on students, and the obtained effect varies from region to region, and from school to school.
2. Two macroscopic factors have an impact on the teaching quality of higher educational schools, the society factors, and the school factors, besides, other factors such as teacher factor, student factor, and teaching environment factor can also affect the teaching quality of higher educational schools.
3. After the ordinary teaching method had been adopted for the lecturing of civil engineering English course, students' mastery of terminology and professional expression had been improved to a certain extent; while after adopting the reformed teaching method, such improvement was far greater than that of ordinary teaching method.

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