

## Exploration and Practice of the Separation of Teaching and Testing in Mechanics Course

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**Keywords:** Separation of teaching and testing; Mechanics course; Test item bank.

**Abstract.** The separation of teaching and testing is a modern teaching management method and an inevitable trend of college examination reform. This paper analyzes and summarizes the implementation of the separation of teaching and testing in the mechanics course of our university, and puts forward suggestions for improvement in view of the problems in the implementation of the separation of teaching and testing. The analysis results show that the separation of teaching and testing can effectively avoid the randomness of teachers' teaching and the subjectivity of students' examination results, increase the comparability of students' scores, correct the style of examination and study of students, improve students' motivation, help students develop good study habits, and improve learning autonomy.

### Introduction

The integration of teaching and testing means that both teaching and examination are undertaken by the same teacher, and there is no restriction between teaching and testing. For a long time, we haven't fully explored and utilized the function of examination [1]. Many colleges and universities are carrying out the traditional mode of the integration of teaching and testing, which makes the examination more arbitrary and subjective, and can not reflect the level of teaching and learning. With the extensive implementation of the integration of teaching and testing, the authenticity of the evaluation results is difficult to guarantee, and students are hard to develop the habit of autonomous learning. These disadvantages are gradually prominent, which undoubtedly affects the further improvement of the quality of higher education [2].

With the gradual popularization of higher education, further improvement of education quality has become a major task, and a sound education management system is the key to achieving this goal. Therefore, the separation of teaching and testing is imperative. In order to monitor and improve the quality of teaching, it is necessary to establish a unified examination standard and make the examination mode unified and standardized. It is one of the important steps to deepen the teaching reform and establish a high-efficiency and high-quality teacher team [3, 4]. The separation of teaching and testing refers to the teaching and testing mechanism that separates the teaching process from the examination. This means that the teacher must thoroughly understand the syllabus and teaching materials, and can not freely choose to increase or decrease the teaching content during the lecture. Students must fully understand and grasp the connotation and context of the syllabus and teaching materials, and truly master the knowledge. This mode can effectively avoid the arbitrariness of teachers' teaching and the subjectivity of students' test results, increase the comparability of students' performance, correct the style of examination and study, improve students' learning motivation, and help students develop good study habits. This mode overcomes some disadvantages of the integration of teaching and testing, and is being adopted by more and more universities [5].

### Implementation of the Separation of Teaching and Testing

When implementing the separation of teaching and research in the mechanics course, we first start with the revision of the course standard, and the course standard is revised to meet the requirements of professional certification and national quality standards, and then implement a unified teaching schedule and jointly study the teaching content. It guarantees the unity of teaching content and avoids the phenomenon that teachers teach for exams. Secondly, when establishing the test item bank, the combination of introduction and self-construction is adopted, and a set of test questions that can be randomly selected is established, which lays a foundation for the realization of separation of teaching and testing. Firstly, we have revised the course standard. In 2017, we made the first revision, which was revised according to the characteristics of the profession and the number of teaching hours. In 2018, we carried out the second revision. This revision is based on the requirements of professional certification and national quality standards. Secondly, we have implemented a unified teaching schedule for mechanics courses. Due to the unification of the schedule, the consistency of the teaching requirements and the consistency of the teaching content are ensured, thus ensuring the feasibility of the unified assessment requirements. Thirdly, starting from 2017, we have conducted a random assessment of the test questions from the test item bank in accordance with the course standard and teaching requirements. So far, we have tried the separation of teaching and learning for three semesters. Fourth, when reviewing the test papers, we adopted a collective streamlined assessment method, which ensured the unification of the review criteria and the fairness, fairness, and openness of the review.

The separation of teaching and testing is carried out at the two levels of management. The college and the department jointly set up a leading group, which is responsible for the leadership of the separation of teaching and testing, the determination of the examination scope, the examination management, and the analysis and summary. At the same time, a course group consisting of the mechanics teaching and research section as the basic unit was established, which was responsible for the implementation of specific propositions, scoring and other work. All teachers and related personnel who participate in the separation of teaching and testing are strictly disciplined in the examination, strictly guard against the leakage of test questions, and ensure the seriousness, objectivity and impartiality of the separation of teaching and testing. According to the actual situation of the students, we designed the gradient of the difficulty of the topic to 60 points (easy), 25 points (medium difficulty), and 15 points (improvement questions). The following is an analysis of the implementation of the separation of teaching and testing in the mechanics course.

After the separation of teaching and testing in mechanics course, the average scores of students have improved, especially in the first semester of 2018-2019 academic year, which shows that the separation of teaching and examination is helpful to promote teachers' teaching and students' learning. Due to the relatively small difficulty coefficient of the final exam, some students who studied hard at ordinary times got relatively ideal results, and the excellent and good rate was high. Among them, the excellent and good rate in the first semester of the 2017-2018 academic year was 39.6%, the excellent and good rate in the first semester of the 2018-2019 academic year was 33.4%, and the excellent and good rate in the first semester of the 2019-2020 academic year was 58.3%. However, some students still failed the exam, among which, the failure rate in the first semester of the 2017-2018 academic year was 9.2%, the failure rate in the first semester of the 2018-2019 academic year was 13.8%, and the failure rate in the first semester of the 2019-2020 academic year was 5.7%. This reflects that although the teaching quality has been improved, the quality of teaching still largely depends on the subjective learning attitude of students, so we should strengthen the guidance and education in this aspect in the future.

Through the practice of separation of teaching and testing in these three semesters, we concluded that: Firstly, the separation of teaching and testing encourages teachers to study hard and actively improve teaching methods, so as to improve the teaching level. Therefore, the separation of teaching and testing is a necessary measure to guarantee and improve the teaching quality. Secondly, the separation of teaching and testing has exerted certain pressure on students' psychology, the enthusiasm for learning has generally improved, and the learning atmosphere has improved significantly. Thirdly, the separation of teaching and testing is conducive to strengthening

the core status of the syllabus, which not only tests whether the teachers implement teaching according to the curriculum standards, but also tests the students' mastery of knowledge and skills, which facilitates us to understand the situation of teaching and learning and work out measures to improve the teaching quality [3]. Fourth, under the system of the separation of teaching and testing, the examination score is in accordance with the unified standards, increasing openness and transparency, providing relatively objective and fair examination results, making the teaching inspection and evaluation materials more accurate and reliable, basically eliminating the breeding ground of "impression score," and maintaining the seriousness of the examination. If teachers don't teach and students don't study hard, it's very difficult for students to pass the examination. Thus, the separation of teaching and examination effectively promotes the construction of teaching style, learning style and examination style.

In the future, we will further summarize our experience, make this work more perfect, scientific and reasonable, and make our teaching quality greatly improved.

### **Existing Problems**

In the practice of separation of teaching and testing of mechanics courses, although some achievements have been made, there are still some problems. Firstly, this method of separation of teaching and testing is to implement a unified examination, a unified examination, over-emphasizing the evaluation of teachers' teaching level and the level of students' learning through examinations, so that teachers can not expand the knowledge of teaching well. To a certain extent, it affects students' interest in exploring new knowledge and reduces the training of students' innovative and entrepreneurial ability, which is not conducive to the sustainable development of students. Secondly, the separation model of teaching and testing limits the students' ability to create thinking to a certain extent, because this model tends to be more "standard" in the setting of reference answers when testing propositions. This may create a fixed mindset for students to think and solve problems. In the long run, students will only think and discuss in the direction of the "standard" answer when analyzing problems, resulting in low innovation consciousness. Thirdly, in the mode of separation of teaching and testing, the test papers are randomly selected by other personnel, and the difficulty coefficient of the test paper is difficult to grasp, and sometimes the test questions are too difficult.

### **Suggestions**

Although there are many advantages in the separation of teaching and testing, there are also some disadvantages. In view of the shortcomings, it is suggested to take appropriate strategies to make up for them. Firstly, in the examination of mechanics course, we can adopt the combination of "separation of teaching and testing" and "integration of teaching and testing," and a variety of examination methods in parallel, so as to comprehensively assess students' mastery of knowledge and skills and promote the transformation of knowledge to ability. Secondly, in the evaluation of the final results of mechanics courses, it is suggested to increase the proportion of students' usual results and give teachers more autonomy. Thirdly, the mechanics course can be tested many times in stages, and the final score of the course is the synthesis of the scores of multiple tests, so as to ensure the objective and fair assessment.

### **Conclusion**

The implementation of the separation of teaching and examination can improve students' initiative and enthusiasm in learning, improve students' ability to comprehensively use professional knowledge to analyze and solve practical problems, to a certain extent, promote the formation of a good teaching style and learning style, and help standardize the management of teachers and students.

## **Acknowledgements**

This work was supported by the education and teaching reform project of Shaoguan University (Grant No.SYJY20192033 and SYJY20161774).

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