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Linear Algebra Online and Offline Mixed Course Teaching Reform

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Abstract: As one of the required courses for science and engineering students, linear algebra has a new educational reform direction in the post-epidemic stage, that is, the most popular online and offline mixed classroom teaching mode. In the process of research, this paper first clarified the value of teaching reform of linear algebra online and offline mixed courses; Then, it puts forward some optimization measures for the teaching reform of linear algebra online and offline mixed courses, aiming at promoting the teaching effect of linear algebra in the future development education of private colleges and universities.

Keywords: Linear algebra; Mixed teaching; Education reform; Assessment index

Introduction

With the development of The Times and the progress of society, the development of information technology has tended to be perfect. As the main institution of personnel training, the teaching mode of private colleges and universities also needs to adapt to the needs of the development of The Times and continue to innovate and develop. The student-centered, teacher-led online and offline mixed education model has gradually replaced the traditional teaching model, and has become the most popular and highly anticipated new teaching means in private colleges and universities. The research of this paper has practical significance for the improvement of linear algebra teaching quality in private colleges and universities, and has theoretical significance for the development of online and offline mixed classroom teaching reform.

1. The value of teaching reform of linear algebra online and offline mixed courses

First of all, it is helpful to the innovation and development of linear algebra courses in private universities. In the education of private colleges and universities, linear algebra is a very basic and important subject content, which can not only affect the efficiency of students' learning professional courses and their ability to solve practical problems, but also effectively cultivate and strengthen students' rigorous logical thinking and rigorous academic attitude. Therefore, it is of great value to innovate and develop the teaching mode of linear algebra course for the overall development of students' comprehensive quality and professional ability. Secondly, it provides reference for private universities to implement the online and offline mixed classroom teaching model^[1]. In the education of private colleges and universities, linear algebra has a very wide professional coverage. Compared with disciplines with a narrow audience, a large number of students come into contact with and learn linear algebra. The application of online and offline mixed teaching mode in the linear algebra courses of private colleges and universities can not only expand the choice of practice and pilot. It can also provide rich implementation experience for other courses to apply the blended teaching mode, so as to promote the overall improvement of education quality in private colleges and universities; Finally, help students learn linear algebra efficiently. Among the many courses in private colleges and universities, linear algebra is quite difficult, featuring a large amount of computational content, strong skills and abstract concepts. Many students in private colleges and universities are discouraged from learning linear algebra because of the difficulty. If online courses or MOOCs are applied in the traditional teaching mode, students can have access to more teachers and diversified teaching and explanation methods, so as to have a deeper understanding and impression of concepts or problem-solving methods^[2].

2. Optimization measures of linear algebra online and offline mixed course teaching reform

2.1 Select the appropriate online education resources according to the actual situation of colleges and majors

In order to produce high-quality MOOCs that better meet the development needs of colleges and universities, private colleges and universities can encourage internal teachers or teaching and research department teams to record online teaching resources. However, if you decide to use existing online teaching resources to assist students in completing linear algebra courses, it is necessary to pay attention to the rich

and diversified teaching contents of online education resources, including but not limited to a large number of high-quality MOOCs, online courses and exercise explanations. It is necessary to select the online teaching resources that are most suitable for the needs of private universities and majors, and can meet the objectives and plans of talent training^[3]. In the specific operation, the selected online courses or other online teaching resources should be as close as possible to their existing teaching plans and syllabuses. After a period of practical application of the online, online and offline mixed teaching mode, the teaching plan and teaching syllabus are optimized based on teachers' teaching effects, students' learning status and achievements, and the online and offline mixed classroom teaching mode that meets the needs of linear algebra in private colleges and universities is explored through repeated practice and optimization. To maximize the learning efficiency and quality of students^[4].

2.2 Innovate educational ideas and methods to promote the deep development of online and offline mixed teaching mode

Before the implementation of online teaching, students can be required to use network resources to complete the independent preview in advance, and use the network platform to set up online tests, so as to effectively test the actual preview effect of students. In addition, teachers also need to establish timely and effective communication with students, formulate corresponding teaching plans based on students' personalized qualification characteristics, and prepare targeted homework content and case courses for them.

In the course of online education, teachers can use MATLAB, Python and other mathematical software to show the content of numerical calculation and formula deduction in the textbook in a more intuitive and visual way, which can not only stimulate students' interest in learning linear algebra, but also make students easily understand difficult problems in the classroom. In addition, teachers can also establish links with students' professional courses and integrate diversified engineering application cases into them, so that students can master how to apply abstract mathematical knowledge in practice, and also mobilize and stimulate students' enthusiasm for independent learning at another level. Not only that, in education, teachers in private colleges and universities can also explore and demonstrate the philosophy of mathematics from a more profound perspective, so as to achieve the teaching goal of universal and modern.

2.3 The starting point is the preview before class and the explanation of exercises after class

In the course of the implementation of curriculum reform, there are often problems such as inadequate handling methods and endless difficulties, which is an inevitable law of innovative development. Of course, in the current education work of private colleges and universities, many teachers are not optimistic about the mixed teaching mode of online and offline, especially linear algebra and other disciplines with mature and rich experience^[5]. Therefore, in the process of applying the online and offline mixed classroom teaching mode in linear algebra courses, we should gradually explore new ways and methods in the slow innovation road, and fully tap the advantages of mixed teaching, so as to complete the ideological transformation in essence.

As is well known to the public, linear algebra is very difficult for many students, and one of the tricks to properly learn this course is to preview before class and consolidate after class. In view of this, teachers can take this as a starting point and record micro-class videos in advance to meet the needs of course preview and consolidate after class, so that students can achieve the purpose of independent learning after class. It can not only improve the efficiency of classroom teaching, but also deepen students' memory and understanding of knowledge points, which provides multiple guarantees for the teaching quality of linear algebra.

2.4 Combine the characteristics of linear algebra curriculum to optimize and reform the examination methods

With the help of intelligent teaching methods, teachers can more effectively detect and evaluate the final learning effect of students, and further strengthen the process learning experience of students, so that students can have a continuous rather than a sudden, appropriate learning process. In the process of acceptance of learning results, it is necessary to effectively avoid the phenomenon that traditional teaching concepts pay too much attention to the scores of final papers, but to effectively and comprehensively investigate the abilities of students in mastering linear algebra from multiple perspectives^[6]. In addition, in the actual investigation, the proportion of grades should be set in a reasonable way, such as normal grades, class status and final grades, so that students can strengthen their own initiative and enthusiasm in daily learning in a reasonable assessment mode.

3. Conclusion

For the education of private colleges and universities, linear algebra is an extremely important and indispensable subject. The application of the online and offline mixed teaching mode in the linear algebra course of private colleges and universities is of great value for the innovation of curriculum development, the optimization of the construction of basic disciplines in private colleges and universities and the improvement of teaching quality. It is hoped that the research in this paper can promote the promotion and application of the mixed teaching mode of linear algebra online and offline, and effectively improve the comprehensive quality of education in private universities.

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