



Research and Practice of Intelligent Classroom Teaching Mode in Colleges and Universities Under the Background of Education Informatization

Take the Linear Algebra Course as an Example

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Abstract. With the concept of wisdom education, under the background of education informatization discusses university wisdom classroom teaching mode, mainly based on linear algebra course, expounds the wisdom classroom information platform, Internet information technology fusion in the concrete practice of classroom teaching, to promote the reform and development of colleges and universities classroom teaching is of great significance.

Keywords: Wisdom classroom · Information technology · Teaching mode · Teaching practice

1 Introduction

Since the end of 1990s in China, with the rapid popularization of network technology, the relationship between the development of the whole society and information technology has become more and more close. People pay more and more attention to the impact of information technology on social development. With the progress of society, the slogan of rejuvenating the country by science and technology has been put forward, which has driven the reform and development of education. Various government documents have officially begun to use the concept of “education informatization”, and attaches great importance to the work of education informatization. On April 13, 2018, the Ministry of Education officially released the “Education Informatization 2.0 Action Plan”, the core content of education informatization is teaching informatization. Teaching is the central work in the field of education. Teaching informatization is to make teaching means scientific and technological, educational communication informatization, and teaching methods modernized. Educational informatization requires the comprehensive application of modern information technology based on computer, multimedia, Internet and mobile communication in the course of education to promote the reform of college education, so as to adapt to the new requirements of the information society in the new

era, and to deepen the reform of college classroom education, has great significance [1]. Therefore, with the in-depth development of the curriculum reform in colleges and universities, new intelligent teaching forms such as first-class undergraduate courses, teaching innovation competition, curriculum design innovation competition, curriculum virtual teaching and research room have appeared on the teaching information platform of colleges and universities. From schools to individuals, all teachers in colleges and universities are actively participating in this teaching reform. The current international situation is changeable, the new coronavirus outbreak still exists, China is in the critical period of realizing the goal of modernization strategy, and education reform and development of the improvement of comprehensive national strength level plays a vital role, more and more pay attention to cultivate with historical mission and social sense of responsibility, innovative spirit and practice ability of all kinds of talents.

The teaching mode of intelligent classroom is the core component of the whole intelligent education system. The Ministry of Education has proposed in the Outline of Basic Education Curriculum Reform: “vigorously promote the application of information technology in the teaching process, give full play to the advantages of information technology, and provide a rich and colorful educational environment and powerful learning tools for students’ learning and development”. It points out a clear direction for the comprehensive popularization of information technology, and opens up a broader future. From the perspective of modern educational technology integrated classroom teaching advocated by colleges and universities, digitalization, networking, intelligence and multi-media have been widely used in various colleges and universities. From the perspective of supporting teaching resources in colleges and universities, the multi-media teaching materials, educational information, automatic management and open system has been promoted and applied in the college teaching innovation competition, and the promotion of intelligent classroom teaching has become one of the main themes of the reform and development of classroom teaching in colleges and universities.

2 The Traditional Classroom Teaching Mode of Colleges and Universities Transforms to the Intelligent Classroom Teaching Mode

Intelligent classroom is produced in the process of promoting the integration of college teaching and modern information technology, and has become the inevitable product of educational informatization. It is very different from the traditional classroom teaching, so that the classroom has a fresh nature. In the process of course teaching, the traditional classroom teaching mode, teaching method is single, such as mathematics discipline, theoretical knowledge, flexible calculation method, multimedia and blackboard is commonly used teaching methods, multimedia courseware production is only present the basic form of teaching content, information technology application, classroom teaching mode is always given priority to with teachers ‘teaching, students’ complementary, mathematics teacher lesson about students’ learning initiative is not high.

In order to ensure the smooth progress of classroom teaching, teachers need to invest a lot of energy before class, do a good job in teaching content design, courseware display and other course content in advance, so as to give full play to the practical and diverse

teaching functions of intelligent classroom in classroom teaching, to achieve the maximum effect of teaching and learning. In the intelligent classroom teaching, Teaching function is flexible, various, Teachers are easy to operate, Its functions assist teachers to achieve teaching objectives in the classroom more efficiently, Such as roll-in, teaching resources procedures, homework collection, collective discussion, Classroom that also supports a variety of teaching strategies, Can use the functions of multimedia technology, Pass on your own courseware to the students, You can also have the students work together, While watching the teacher's demonstration and operating and learning, Teachers can also use the wisdom class "group discussion", "interactive answer" and so on, Let the students collaborate to complete a learning task, Enhanced the teaching function of many teachers to interact with students, All these fully guarantee the communication and sharing between students and teachers, Keep abreast of the students' learning situation in class.

With the concept of education informatization to the university classroom teaching reform, colleges and universities gradually make the classroom teaching mode to information technology wisdom classroom transition, thus, to promote the teaching reform, the school whether from the hardware facilities, or software technology equipment, all covered all the Internet equipment, the classroom construction wisdom, the introduction of network teaching software platform, maximum support the school teachers to carry out the classroom teaching wisdom. Every semester, teachers use more and more smart classroom. In smart classroom teaching, teachers not only master the basic operation ability of information technology, but also stimulate their enthusiasm for classroom teaching, thus showing the flexible and diverse teaching functions of the teaching mode of smart classroom.

3 The Teaching Practice of Intelligent Classroom in the Linear Algebra Course

Based on the construction requirements of the university for the construction of first-class undergraduate courses under the new engineering background and the goal of the certification of engineering education major, Promote the school's professional curriculum system setting, teachers, teaching method reform, school conditions allocation and other teaching links to a new level, The school vigorously carries out the practice and exploration of college classroom teaching reform, Linear Algebra is a public basic course of mathematics for students of science, engineering, economics and management, Cultivate students' ability to discover, propose and solve discrete problems by using linear space theory and matrix modeling methods, Be able to provide students with subsequent professional courses and basic mathematics courses necessary to engage in scientific research. Therefore, The teaching content of Linear Algebra is constantly explored and innovated, The course team also invited famous teachers to build a virtual teaching and research section, Build resource sharing platforms such as: learning pass, rain classroom, etc., The integration of modern information technology in intelligent classroom not only makes students gradually change from passively accepting knowledge to actively learning knowledge, Improve the classroom teaching effect, enhance the interaction between teachers and students; And through information-based teaching, The teaching content is



Fig. 1. The teaching function of intelligent classroom

rich and colorful, More can stimulate students' enthusiasm for learning, students sense of historical mission and social responsibility, To ensure the quality of professional education and the sustainable development of professional education vitality in our school, So as to send to the society to adapt to the new era of qualified innovative talents (Fig. 1).

3.1 Abundant Teaching Content Design Promote Linear Algebra Classroom Teaching and Strengthen the Cultivation of Students' Innovation Ability

A good lesson cannot be taught without teachers' diligent preparation before class. According to the characteristics of wisdom classroom, teachers should construct a new curriculum system under the background of new engineering in the teaching process of linear algebra, so as to achieve theoretical, in-depth and effective teaching content optimization. Firstly, before class, teachers will send course materials to students through other network platforms such as Learpass and assign students to preview content. Secondly, in class, teachers should consider classroom teaching knowledge to achieve goals, fully combine classroom information technology means, teaching courseware and other means to design examples, exercises, tests and other rich teaching content forms of different levels of difficulty, and strengthen the content of students' independent learning. Appropriate consideration should be given to increasing the interaction between teachers and students in class, and appropriate situation should be selected to focus on student group discussion and teaching, which can not only reflect students' grasp of basic knowledge and skills, but also improve students' ability to think independently and solve problems and innovate thinking, comprehensively test students' comprehensive quality, and thus improve the classroom teaching effect. Finally, teachers need to consider the forms of exam questions and small papers assigned after class, and submit homework online through information platforms such as Learpass to realize paperless and efficient information transmission. Truly create a hybrid teaching model integrating online and offline; Online use of learning resources on the platform of learning Tong and Rain class, appropriate after class to give students certain task indicators, mobilize students' learning enthusiasm, and cultivate students' ability of independent innovation.

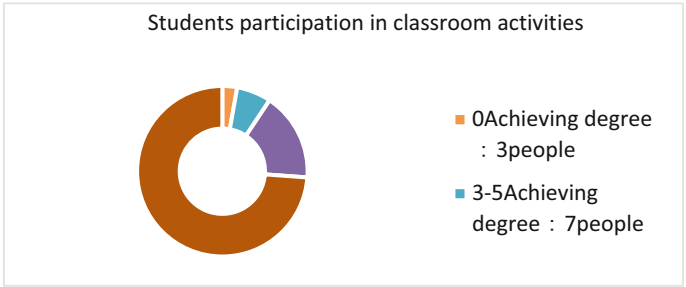


Fig. 2. Students participate in classroom activities

3.2 Various Teaching Methods Are Integrated into the Linear Algebra Class Teaching to Improve Students’ Course Cognitive Ability

In the intelligent classroom teaching, teachers can display the classroom teaching content of teachers on the teachers and the students through the multimedia equipment through the network technology platform, so as to facilitate students to receive and browse before, during and after class, and greatly improve the efficiency of students’ learning. In the process of implementation of classroom teaching, teachers through the wisdom of classroom random call, test answer, group discussion, network links and other diversity of teaching means, auxiliary course content, such as the linear algebra features, characteristic vector concept, students are not easy to understand, teachers through the Internet of knowledge resources information link to the classroom teaching courseware PPT, show to students, let students in the process of learning, using the Internet information better the abstract knowledge theory into specific geometric representation model, improve the students’ cognitive ability.

Linear algebra is a subject containing large data matrix model, in the course content, always encounter a lot of data matrix model, teachers will through wisdom classroom projector, teaching software, and electronic whiteboard interaction mode, free writing, demonstration calculation process, realize the interaction between teachers and students teaching, achieve the purpose of knowledge presentation, deepen the understanding of knowledge, enhance the friendly relationship of interaction between teachers and students (Fig. 2).

3.3 Multiple Teaching Evaluation Contributes to the Classroom Teaching of Linear Algebra and Shows Students’ Comprehensive Quality and Ability

From the point of college curriculum evaluation system reform, the practice of students written test scores is difficult to today’s era development requirements and social talent demand, especially after the new crown outbreak, strengthen the Internet technology fusion in course teaching is increasingly important, at the same time the development of online and offline hybrid teaching mode, to examine the students’ comprehensive learning ability, provides a better evaluation data.

Linear algebra courses to establish a suitable diversified and process assessment and evaluation, Relying on teaching activities on multimedia information platforms such

Table 1. Evaluation and analysis of students ‘classroom activities’ learning

number	attendance	choice question	debate	vote	Explanation of exercises	classroom testing	Answer sharing	Course points
01	2	3	3	3	0	8	5	24
07	2	3	3	3	0	5	0	16
18	2	0	3	3	0	9	5	22
22	2	3	3	3	10	10	5	36

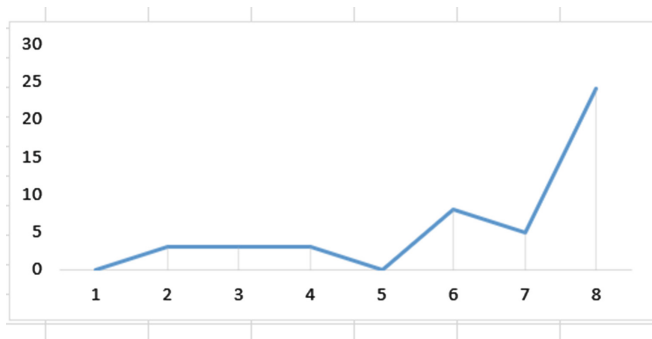


Fig. 3. Student 1 Class activity performance

as smart classroom and learning communication, From the teaching content setting, teaching classroom activities, student participation degree, teaching objectives, etc., to formulate the corresponding hierarchical evaluation indicators, Using big data analysis data to objectively record students’ independent learning activities before, during and after class, And give the students’ usual performance assessment, the final assessment and other assessment and evaluation methods, The statistical data in the process of intelligent classroom teaching, The learning process of the students accounts for 20–30% of the students’ usual grades, Including the classroom learning activity assessment, Sign-in, interactive learning times between teachers and students, students’ answer process, Group discussion and other forms of assessment, Fully present the students’ classroom learning process, Fully mobilize the enthusiasm of students in teaching, Also show the ability of the students’ comprehensive quality, Maximize the embodiment of students’ own value (Fig. 3 and Table 1).

4 The Teaching Mode of Intelligent Classroom is of Great Significance to the Reform of College Classroom Teaching

Wisdom classroom teaching mode, with computer, network platform as the medium, implements the modern information technology and the depth of college classroom teaching, promote the class in class, online organic integration of hybrid teaching, on the one hand, makes the teachers ‘professional quality significantly higher, in the face

of modern technology media, teachers can master teaching skills, maximize classroom teaching efficiency, on the other hand, students through multimedia information, classroom learning knowledge, richer knowledge structure, fully arouse the enthusiasm of students, improve the students' participation in classroom learning. Through the information exchange and transmission of the information technology platform, teachers enhance the communication and interaction between teachers and students, give accurate personalized guidance to students, and effectively promote the full staff, whole process and all-round teaching work of classroom teaching in colleges and universities.

5 Conclusion

Under the background of education information age, the teaching mode of intelligent classroom is of epoch-making significance to the innovation and reform of classroom teaching in colleges and universities. It not only enhances the sense of achievement of teachers to realize the teaching goal; for students, but also improves students' freshness and experience in classroom learning, so as to improve their thinking ability and innovation ability, so that they can better adapt to the needs of social development in the new era, and continue to strive for the high quality of classroom teaching development in colleges and universities.

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