The Construction of Wisdom Classroom Teaching Mode in Colleges and Universities under the Background of "Internet Plus"

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Abstract. With the rapid development of new technologies, the "Internet Plus" makes the education industry facing great challenges and opportunities. University education should make full use of information technologies to change classic classroom teaching mode and develop wisdom classroom. The demands of informational teaching in colleges and universities are considered under the background of "Internet Plus". The concept and characteristics of the wisdom classroom are analyzed based on analyzing the disadvantages of the traditional classroom teaching. The methods for constructing the teaching mode of wisdom classroom are given. Some suggestions are given to promote the development of the wisdom classroom in colleges and universities.

Introduction

With the rapid development of various emerging technologies, the integration of "Internet Plus" and traditional industries has become more and more in-depth. The education industry is also facing great challenges. In January 2017, the 13th Five-Year plan for national education development of China pointed out that: "All efforts should be made to promote the deep integration of information technology, education and teaching. The network learning space for everyone should be further promoted. The new network-based ubiquitous learning model that integrates online and offline organically should be formed. The big data technology should be encouraged to collecting, analyzing and feeding back the data. All of those works can support the individual studying and targeted teaching. [1]" Under this background, how to make full use of information technologies to change the classroom teaching mode is a subject which educators need to explore and practice in the new era.

The Challenges of Traditional Teaching with "Internet Plus". The cross boundary integration and innovation drive of "Internet Plus" not only promotes the continuous changes of the economic form, but also drives the reform and innovation of the social economic entities. At the same time, it also has a huge driving force on the university education. Its openness, connectivity and intelligence bring greater challenges and opportunities to the traditional classroom teaching. Firstly, knowledge comes from a wide range of sources. With the development of the Internet, people can get all kinds of knowledge in almost all fields, such as e-books, operating manuals, courseware, videos and so on. Secondly, knowledge acquisition is fast. In recent years, with the popularity of smart phones and the convenience of mobile networks, students can acquire knowledge through mobile terminals at anytime and anywhere, which is several times faster than the traditional access to information. Thirdly, there are many high-quality resources. The MOOC (Massive Open Online Courses) platform, Khan College, excellent courses, quality curriculums, micro-courses, light classroom, etc., can provide excellent resources for teachers and students.

The Demand for Information Teaching in Universities Under the Background of "Internet Plus". As an important channel for personal training, colleges and universities have abundant educational resources through long-term accumulation. However, under the background of "Internet plus", universities still face many problems and challenges. There is an urgent need for advanced

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intelligent teaching methods to improve teaching level and teaching quality. In the era of knowledge explosion, the university classroom which decides the quality of talents should be more responsive and wise. The teachers should make full use of the Internet, adopt more reasonable and close-to-the-times teaching means and methods, play the role of guiding, answering questions and solving puzzles, and truly cultivate the innovative and practical abilities of college students [2].

Definition of Intelligent Classroom

The rapid development of new technologies such as artificial intelligence, big data, Internet of Things, cloud computing and block chain has profoundly changed the social demand for talents and the form of education. Intelligent environment not only changes people's living environment, but also has a profound impact on traditional classroom teaching. Educational concepts, campus culture and humanistic ecology have changed to digital and intelligent. In order to adapt to the development of intelligent environment and promote the specific implementation of "Internet Plus education", the Ministry of Education issued the "2.0 plan of action for education informatization" in April 13, 2018 [3]. The limitation of time and space, quickly reproducing and propagating can be break out. The modernization and information development of Chinese education can be promoted. The quality and fairness of education can be guaranteed.

The Concept of Intelligent Classroom. Many scholars have different opinions on the definition of wisdom classroom and different perspectives of understanding. Some are based on the environment of wisdom education; others are based on personalized learning. In order to achieve intelligent and efficient wisdom classroom, its connotation can be summarized as new technology support, education theory guidance, wisdom education concept, classroom scope expansion, rich media resources and wisdom generation ability [4]. Wisdom classroom takes students as the center, regards students as the main body of cognition. Wisdom classroom can urge students to explore and discover knowledge actively, and combines the knowledge they have learned with the ability to solve problems in practice.

Characteristics of Intelligence Classroom. The characteristics of wisdom classroom can be summarized as follows [5].

(1) Informatization of teaching environment. The current emerging technology should be applied to classroom teaching. The intelligent classroom such as recording and broadcasting system, cloud service should be build. Then various terminal devices in the classroom can be connected seamlessly and intelligent application can be realized. The function of dynamic collection and analysis the data of learning process should be established.

(2) Diversification of teaching modes. According to the characteristics of different courses and students, various teaching modes should be adopted, such as flipping classroom, problem-driven teaching, case teaching, small-class teaching, etc. Information-based teaching methods should be combined to achieve teaching objectives.

(3) Intelligent resource push. Wisdom classroom can provide rich media resources for learners through a variety of channels, including electronic teaching plans, courseware, voice, web pages, video links, etc. It can also provide personalized learning materials to achieve targeted teaching guidance according to the needs of students.

(4) Real-time evaluation feedback. Dynamic evaluation of concomitant learning should include pre-class preview test, real-time classroom testing, and homework evaluation and so on. The students' periodic learning feedback on curriculum teaching should be collected. The students' learning situation can be evaluated in real time by means of informationization instead of the test at the end of the term.

(5) Three-dimensional interaction. The teaching process of wisdom classroom can achieve multi-dimensional communication between teachers and students. The interaction can be realized with the cloud platform, mobile terminal, etc., at anytime and anywhere.

(6) Data-based teaching decision. The data and information collected in the learning process can provide reference for teachers. Teachers should keep abreast of students' digestion and absorption of knowledge at anytime, then adjust the teaching progress and focus in a timely manner.

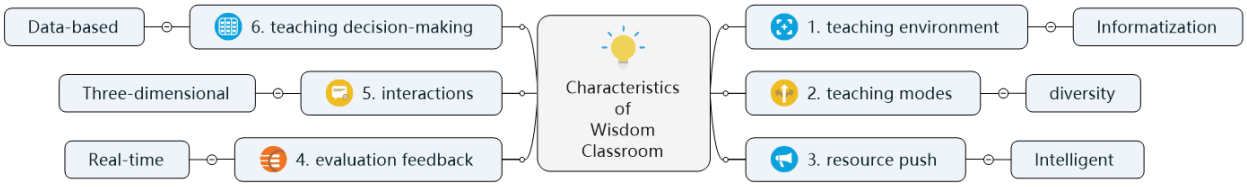

Fig. 1 Characteristics of Wisdom Classroom

Exploration of Wisdom classroom Teaching Model

Traditional Classroom Teaching Model. Generally, the teaching process can be divided into two stages: knowledge transfer and knowledge internalization. In the traditional classroom teaching mode, the main classroom teaching processes are teacher preparation, student preview, implementation of teaching, assignment, completion of homework, correction of homework, evaluation and feedback [6]. There are some disadvantages in the classic teaching mode. Teachers cannot control the completion of students' preview. In the course of teaching, students with poor preview are difficult to keep up with the teacher's thinking and progress, and teachers cannot grasp the effect of students' listening. After class homework is completed, they can correct and return. The timeliness is poor. In this process, the communication between teachers and students is not equal, and students' participation is not high.

Platform and Means of Wisdom classroom Teaching. In recent years, based on the development of MOOC platform, classroom breaks the limitation of time and space, so that high-quality education resources are allocated globally at the lowest cost [7]. In 2012, MOOC began to be popular in foreign universities; in 2013, the online MOOC platform of Tsinghua University was launched; in 2014, the online MOOC platform of China University was launched; and in the follow-up, the online course platform "SPOC" of "minority" for college students was launched. In addition, there is a smart teaching tool "Rain Classroom" developed by the School Online and Tsinghua University Online Education Office. It can link after-class and in-class well by using Wechat and PPT, and provide abundant teaching data support. These platforms and tools can provide strong support for the implementation of smart classroom.

Wisdom Classroom Teaching Model. According to the teaching characteristics of colleges and universities, using many suitable online course platforms and intelligent teaching tools, the teaching mode of Wisdom classroom can be realized by using mixed teaching and flipping classroom according to the different teaching contents and teaching objects. Before class, part of the course content can be previewed by video and other teaching resources, so that the process of teaching knowledge can be moved forward and internalized. This way can strengthen communication between teachers and students. Specifically, the process can be divided into three segments: pre-class, in-class and after-class.

Pre-class Segment. a) Analyzing the learning situation and setting up goals: By analyzing the completion of the course assignments submitted by students on the intelligent platform and the feedback of the preview materials, teachers can understand the degree of students' mastery of knowledge points and the status of their preview, grasp the learning situation in time, and establish the teaching objectives and teaching methods combined with the teaching content of this course.

b) Selecting resources and pushing materials: When using the flipping classroom teaching mode, teachers select the video and courseware of the same type of courses on the MOOC platform according to the teaching objectives, and combine the characteristics of the students in the school to graft and internalize, and select the important content to push to the students as a supplement to this course. The preview content that teachers push to students through the platform can be micro-lessons, videos, pictures, preview courseware, questions and so on. If the teachers use rain classroom, they can also send voice explanations while sending preview courseware, so that students can clear up the key points in preview. When adopting group cooperation teaching mode, students should be grouped in advance according to certain rules, and tasks and division of labor should be clearly defined so as to ensure that students can participate in the preparation before class.

c) Self-study and self-test, asking questions: after receiving the preview task assigned by the teacher, the students learn the background, source and other preparatory knowledge of the course, and complete the pre-class self-test exercises. After self-study or group discussion, you can ask questions to the teacher on the platform. At the same time, they can see the questions raised by other students. The teacher guides the students to consult the data, analyze the reasons for the problems and discuss them.

In-class Segment. a) Teach in class and solve problems. Through the pre-class preparation, the students understand the knowledge background and other related content. The teachers focus on theoretical analysis, case explanations and so on, and heuristically guide students to solve problems.

b) Real-time evaluation, explanation and analysis. In the course of teaching, to avoid students' absence of mind, we can take stage tests to real-time detect students' understanding of the problems. The rain classroom can add test questions to the courseware according to the course schedule and send them in class. The types of questions include singles, multiple choices, filling in the blanks, voting, questions and answers, etc. They can collect papers in time, overtime or in advance to meet the basic needs of classroom testing. The teachers can explore and practice the in-class test function of rain classroom, and timely adjust the teaching progress through real-time acquisition of answer data. If the correct rate of answer is high, students who answered the wrong questions can be tutored separately after class to improve the efficiency of the classroom; if the correct rate is low, they can explain and analyze in time in class, so as to avoid the accumulation of difficult questions leading to the subsequent content not understood. In addition, students can always mark "do not understand" or collection of slides they do not understand in the rain classroom. The teachers can learn the difficulties of students according to data feedback after class.

c) Display and share, cooperation and inquiry. In group discussion teaching, students can display the results in class. For example, in the course "Computer Network", if the students will learn about the data transmission process, a group of students can be pre-selected to complete the data packet grabbing work before class, and the grabbing data can be analyzed. In class, the students will show the process of picking up bags and explain the connotation of the data on the spot, and then the teachers will explain the transmission principle and protocol. This way can cultivate students' practical ability to solve problems, and also can more intuitively feel and understand the working principle of the network.

After-class Segment. a) Customized homework, summarizing and answering questions. The teachers push personalized homework to the students through the platform. The teachers give targeted guidance to the students who fail to understand the knowledge points according to the teaching data feedback of the platform. The students complete their homework and submit it to the platform before the deadline. The teachers correct and summarize their comments. For all the doubts, the teachers can set up a centralized question-answering time, and the students can discuss together online. If the students cannot participate due to time conflict, they can also browse the discussion after the event.

b) Theme discussion, teacher alliance. After one stage of learning, teachers can set some themes, and invite teachers from relevant fields or corresponding basic courses to participate in the formation of basic courses linkage, guide students to further remedy the knowledge they failed to grasp earlier, and attract students to participate in discussion online. This way can not only deepen students' rationality of knowledge points, but also generate new ideas and write essays, which can improve the students' ability of academic innovation, provide teaching materials for teachers, and promote their further improvement in teaching.

c) Export data and evaluate the effect. In the wisdom platform and wisdom teaching tools, students' formative evaluation can be output, and a lot of teaching data can be generated at the same time, such as learning progress monitoring, interactive hot spot analysis, learning habits analysis, learning difficulties positioning, etc. Compared with the data that the traditional classroom relies on the analysis of teachers themselves, these data are real, reliable and convenient. In addition, students' final scores can be composed of pre-class questions, in-class questions, after-class exercises and mid-term and final examination scores; each part occupies a certain proportion, which is more scientific and fair.

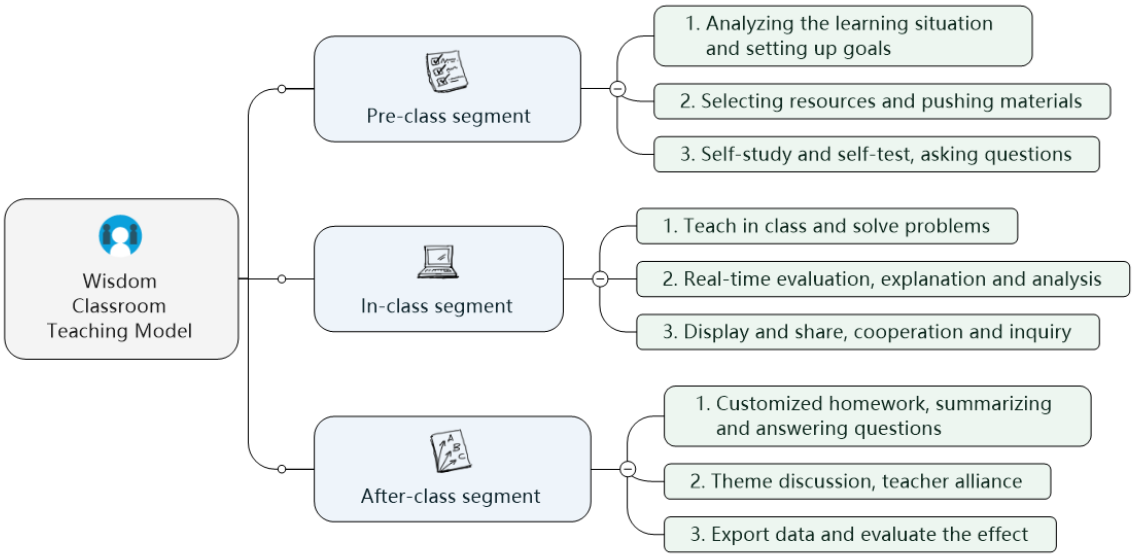

Fig. 2 Wisdom Classroom Teaching Model

Suggestions of Developing Wisdom classroom in Colleges and Universities

In the wisdom classroom, besides using the online teaching platform based on the Internet, the rain classroom, which need smart phones to participate in the wisdom teaching tools. For colleges and universities, due to the need of management, in some schools the students are not allowed to bring mobile phones into the classroom, which limit the practical of the wisdom classroom. It is suggested that colleges and universities should set up specialized classrooms, pilot courses and classes, and use rain classroom as interaction tools to examine the impact of intelligent teaching tools on teaching effectiveness. According to the feedback from most teachers who use the rain classroom as teaching tools, the rain classroom can improve the enthusiasm of the students who are in class, and can obtain first-hand data in real time, which provides an effective basis for the subsequent adjustment of teaching content.

Summary

The purpose of establishing Wisdom classroom is to "take students as the center", teach students in accordance with their aptitude and create an efficient classroom. The wisdom classroom is a classroom in which students fully study independently and think positively. It is a classroom in which all the teachers and students interact. It is also a classroom in which students integrate knowledge. The wisdom classroom breaks the time and space limitation of the traditional classroom, and makes teaching activities expand and extend more deeply. The teachers should have a correct understanding of their orientation in teaching activities, that is, the change from the imparter of knowledge to the guide of autonomous learning. Through the use of new technology and new methods, students can absorb knowledge internally; through real-time interactive teaching, students can realize their individualized learning needs [8]; through the teaching methods that fit in with the development of the times, the learning enthusiasm of the students can be stimulated. To realize the wisdom classroom in Colleges and universities, we need to pay more attention to the dynamics of new technologies, learn from the experience of other colleges and universities in wisdom classroom practice, overcome difficulties, explore a set of wisdom classroom teaching mode suitable for ourselves, and promote the further development of the university education.

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