

Research on the Construction and Application of College Smart Classroom Based on Education Informationization

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Abstract—Information technology is continuously applied to education and teaching, which promotes the transformation and innovation of a new round of teaching classrooms. With the development of the concept of wisdom education, the construction of smart classrooms under the new technology environment has become a research hotspot that is paying more and more attention. Through the analysis of the connotation and technical characteristics of the smart classroom, according to the influence of the educational informationization on the classroom, this paper attempts to construct a smart classroom teaching model that conforms to the development of the times, and is used to guide the basic course of tourism management, "Introduction to Tourism". The purpose of this study is to explore whether the new teaching model can stimulate students' interest in learning and improve their ability to learn intelligently, also to provide reference for the construction and application of smart classrooms in colleges and universities.

Keywords—Education informationization, Smart classroom, Teaching mode

I. INTRODUCTION

With the continuous transformation of information technology to promote education, how to change classroom teaching in the new technology environment and promote the cultivation of students' wisdom has gradually become a research hotspot. The "National Medium- and Long-Term Education Reform and Development Plan (2010-2020)" clearly states: "To accelerate the process of education informationization. Information technology has a revolutionary impact on education development" [1], we can see that China's information technology The issue of promoting educational reform has become more and more important. In the Ministry of Education's "Key Points of Education Informationization in 2017", it is emphasized: "To fully give full play to the support and leading role of educational informatization in education modernization. Effectively promote the deep integration of information technology and teaching. "[2] How information technology can be effectively integrated with teaching, how to promote classroom changes, and thus promote the cultivation of students' wisdom, which will become the research focus that we are paying more and more attention to.

Smart classroom is the product of the deep integration of new technology and education. The smart classroom created by the new generation of information technology can track the whole process before, during and after class. It is also the inevitable result of school education informatization focusing on classroom teaching, focusing on teacher and student activities, and focusing on wisdom generation. This paper attempts to construct a smart classroom teaching model that is in line with the development of the times, and is used to guide the teaching practice of the basic course of Tourism Management, "Introduction to Tourism". The purpose of this study is to explore whether the new teaching model can stimulate students' interest in learning and improve their ability to learn intelligently, also providing reference for the construction and application of smart classrooms in colleges and universities.

II. THE CONNOTATION OF THE WISDOM CLASSROOM

The wisdom classroom is the product of education informationization focusing on learning and classroom, and it is also the hotspot of classroom teaching reform under the condition of information technology [3]. The understanding and grasp of the essence of the wisdom classroom should be considered from the perspective of the integration of information technology and classroom teaching, teaching and learning, and the focus is on the description of the connotation.

On the basis of summarizing and summarizing the current concepts and components of various smart classrooms, we propose a clear definition of "smart classroom" from the perspective of informatization: based on constructivist learning theory, using big data, cloud computing, and internet of things. Intelligent and efficient classrooms created in the whole process of pre-course, in-class and after-school, created by a new generation of information technology such as mobile Internet[4]. The concept of intelligent classroom based on informational perspective has rich connotation, and its core connotation includes five aspects [5]: intelligent classroom theory design based on "constructivism"; using the new generation of information technology to construct an ideal smart learning environment; with the help of new technology Solve the problems in traditional teaching such as classroom interaction, instant evaluation, and resource push; implement smart teaching based on the whole process of classroom teaching and normalized application; promote the constructive construction and independent development of learners through intelligent teaching and learning.

III. THE TECHNICAL CHARACTERISTICS OF THE SMART CLASSROOM

A. Real-time Content Push.

For learning needs, through group or individual form, active, real-time, personalized to push learning content to students, the knowledge content and learning needs are closely combined, the learning environment and learning time are associated, flexible sharing of distributed resources, multi-dimensional expansion and Effective reuse[6].

B. Intelligent Learning Analysis.

Relying on clustering, data mining, machine learning and other technologies, comprehensively manage the whole data in the student learning process, record the whole process of teacher and student classroom activities, practice scores and network connection, and carry out comprehensive calculation, comparison and diagnosis to achieve classroom-oriented Learn big data tracking, analysis, and assist teaching decisions throughout the process.

C. Immediate Feedback Evaluation.

Through efficient and real-time two-way communication, the system can realize visual feedback and real-time evaluation between teachers and students, let students know their current learning situation in real time, adjust learning status in time, stimulate learning enthusiasm, and let teachers understand the situation of students, and guide and adjust teaching content in time.

D. Collaborative Interaction.

Dynamically realize the diversification of communication time, place, object and form by using smart terminal devices (such as tablet, notebook and electronic whiteboard, and software communication platform, etc.), such as: one-to-many or one-to-one multi-dimensional, Multi-factor grouped collaborative learning to enhance learning interactivity.

IV. THE DESIGN OF COLLEGE INTELLIGENT CLASSROOM TEACHING MODE BASED ON EDUCATIONAL INFORMATIONIZATION

Based on the research on the connotation and characteristics of the smart classroom, combined with the technical characteristics of the rain classroom, the intelligent classroom teaching model based on the whole process learning data analysis is designed (Figure 1 Shown). Before the class, through the pre-study materials, statistical analysis and testing of the pre-study situation will be carried out.

Deep chemical analysis, optimize teaching design; through the news broadcast, task learning, send barrage, quizzes, conduct real-time learning data analysis and feedback, adjust teaching strategies and teaching process; after class, through job statistics , carry out targeted guidance, push and expand learning materials and achieve personalized learning. The technical support of the rain classroom provides real-time dynamic learning data collection, analysis and intelligent push for the pre-course-course-after-school learning process[7].



Figure 1. Design of the teaching mode of college wisdom curriculum

V. THE APPLICATION OF SMART CLASSROOM TEACHING MODE IN COLLEGES AND UNIVERSITIES—TAKING “INTRODUCTION TO TOURISM SCIENCE” AS AN EXAMPLE

The preparation of smart teaching using the rain classroom is very simple. Teachers only need to install the rain classroom plug-in, and then pay attention to the rain classroom in the mobile phone WeChat, enter the course page and click “I want to start the class” to create the course and class[8]. The class corresponds to a unique QR code and invitation code. The teacher can

inform the students through the class QQ group or WeChat group. The student scans the code or enters the invitation code to enter the class, thus quickly completing the deployment of the smart classroom.

The following is an example of the “tourist” in the basic course of tourism management in colleges and universities, which is an example of the implementation of the smart classroom teaching supported by the rain classroom.

VI. PRE-COURSE.

A. Preset Teaching Objectives and Content.

Based on the previous analysis of the course content and the student's situation, the teacher presets the teaching objectives of the course and determines the teaching content (as shown in Table I).

TABLE I "TOURISTS" TEACHING OBJECTIVES AND CONTENT

Teaching objectives	Master the concept of tourists Master the objective and subjective factors affecting individual travel needs and their significance Familiar with the similarities and differences of domestic and international tourism statistics Familiar with the needs of different types of tourists Understand the purpose and method of the classification of tourists
Teaching content	Conceptual definition of tourists Objective conditions for realizing personal travel needs Subjective conditions for realizing personal travel needs Type of tourist

B. Release Preview Materials and Preview Feedback.

Teachers use the Rain Class plug-in in Power Point to quickly convert the PPT courseware into a micro-course course that can be pushed at any time. At the same time, it can easily insert MOOC videos (such as computer network MOOC video) and network video (such as LAN group). At the end of the content, objective questions were added as pre-school predictions. After the micro-course is completed, the teacher will prepare and push the courseware to the mobile phone, preview the courseware after the push of the mobile phone WeChat endpoint, and add a voice explanation to each page, and finally release it to the class[9]. After receiving the courseware, the whole class will carry out mobile learning, complete predictions and get automatic scores anytime and anywhere. In addition, students can “report the teacher” to ask questions or ideas in the preview. Teachers can also view the number of students who have been previewed, the questions of the questions in the forecast questions, browse the student feedback and interact with them before class.

C. Optimize Instructional Design.

The teacher's overall pre-study statistics in real time on the mobile phone side can be used to grasp the pre-study situation of the students in the first time. At the same time, the teacher will also see the PPT format travel news uploaded by each group of students before the class, and prepare the relevant knowledge points. And explain. Record teaching design and memo at any time, according to pre-class feedback, deep chemical analysis, clear teaching focus and difficulty, optimize teaching design, so as to accurately teaching. For example, the statistics of the pre-class prediction questions have found that most students have a difficult understanding of the definition of the concept of tourists. They need to focus on solving these problems in the classroom. The reports of individual students to teachers reflect the purpose of students' classification of tourists. The understanding is only at the surface, which leads us to think about how to let students understand the purpose and meaning of the classification type in a deeper level[10]. At the same time, the teacher obtains the pre-study situation of each student before the class and the content of each group of news broadcasts by mail.

VII. LESSONS.

A. Start the Lecture and Enter the Classroom.

After the teacher starts the rain classroom, the mobile phone WeChat immediately receives the push and clicks the push information, waiting for the student to enter; the student uses the WeChat scan code or enters the invitation code to sign in to enter the classroom, the teacher can get the class statistics and detailed data to understand the student's class. Happening. After all the students have scanned the code, the teacher clicks to start the class, the mobile phone changes the remote control to control the playback of the courseware, and the student receives the courseware synchronously.

B. Course Introduction, Sharing and Display.

Share and show the student's travel news broadcast on this week, and the teacher will expand the relevant knowledge points prepared before class. It is doubtful that 67% of students found out based on the results of pre-class voting surveys have defined the concept of tourists. At the same time, the pre-study situation is fed back to the students, so that students have a comparison and positioning, so that they are psychologically prepared for classroom learning. Teachers asking from the "What is a tourist?", "What are the subjective and objective conditions for the realization of tourists?" these questions to ask questions, students share

ideas, show self-study results before class, through student mutual evaluation, teachers show this class The teaching content and goals, and then the deeper content learning.

C. Speaking and Expanding.

The teacher conducts targeted teaching according to the teaching objectives and based on the intuitive learning data. When the students find something that they do not understand, they can click “I don’t understand” at any time to give feedback to the teacher.

And adjust the teaching strategy. If you find in the lecture, you can explain the statistics of domestic and foreign tourists.

The teacher will explain the current statistics of the tourists in China, so that the students have a further understanding. During the class, the teacher opened the “barrage” function, allowing the students to play their ideas on the screen and share with everyone, realizing the classroom interaction between teachers and students, between students and students, and active classroom atmosphere. Finally, the teacher realizes the subjective and objective conditions of the tourists to expand, and issues new learning and inquiry tasks, such as the motivation of college students and other topics of interest, the teachers group students and design organizational learning activities, and students conduct group collaborative inquiry learning. Conduct an interactive discussion.

D. Real-time Evaluation and Feedback.

After the student completes the inquiry and inquiry task, the teacher pushes the quiz test to the mobile phone of the student. After the student completes and submits the sentence, he can immediately see the score and the answer, and the teacher will get the statistics immediately (such as the score and score of each student). Distribution, each question answer questions), you can also obtain detailed statistics of test questions by mail to accurately grasp the learning situation of each student, so as to personal guidance after class. In addition, the teacher publishes the score distribution to the big screen, so that students can clearly understand their level in the class and help to improve the review after class. This stage is an effective means of testing the efficiency of classroom teaching.

VIII. AFTER CLASS.

A. After Class Discussion and Voting, Expand Learning.

In order to allow students to combine their knowledge and connect with the actual thinking, the teacher publishes homework after class (understand the role of college students' travel motivation and travel needs in the development of the industry.) Students explain their ideas so that teachers can interact with students to discuss issues and individuality Guidance, so that students can deepen the study of knowledge and develop the ability to explore. At the same time, the teacher can also post a vote to investigate the students' opposition to the course content, teaching methods, and effects. In addition, teachers push post-school development materials through push and share links, such as annual travel statistics yearbooks, academic reports, travel notes, etc. Students choose to learn independently according to their own interests and abilities.

B. Summary Improvement.

The teacher reviews and summarizes the whole process of teaching according to the learning situation of the students' classroom, after-school discussion and voting, and records the teaching design to optimize the teaching plan and improve the teaching strategy.

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