

Research on Hybrid Teaching Practice of Dynamic Web Technology Course from the Perspective of Modern Information Technology

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ABSTRACT

With the continuous development of information technology, the application of information technology in the field of education is becoming more and more popular. This paper takes the effective integration of online rich teaching resources and offline classroom teaching as the starting point, takes the dynamic WEB technology course as an example, adjusts and improves online teaching resources, and strengthens classroom teaching of participatory learning. This paper discusses how to carry out online and offline hybrid classroom teaching reform based on the BOPPPS model. The teaching practice shows that the teaching effect has been improved obviously and the teaching objectives and tasks have been fulfilled well.

Keywords: Hybrid teaching; BOPPPS teaching mode; Online and offline

1. INTRODUCTION

As information technology, especially the development of mobile Internet technology, is rapidly changing the human production mode, life style and thinking mode, the teaching reform is facing great opportunities and challenges, puts forward higher requirements on the teaching reform of information, how to make full use of high quality teaching resources effective integration of online teaching platform offline classroom teaching, Is every educator should fully consider the problem [1]. Based on the "dynamic web technology" course as an example, based on the characteristics of college students, combined with the professional course content in teaching practice, actively explore BOPPPS model-based online hybrid teaching design, aiming to make the classroom more exciting, to maximize the learning effect, provide the experience for reference for teaching methods innovation.

2. ANALYSIS OF TEACHING

Dynamic WEB Technology is a professional course for the majors of computer science and technology, software engineering, information management and information systems of our university. The course requires students to understand the development process

and methods of PHP, master the syntax structure of PHP, master the object-oriented technology of PHP, and the interaction technology between PHP and MySQL database. As well as techniques for developing web applications. Through the teaching of the course, students can not only develop the basic skills of developing and designing websites through project practice, but also fully understand the ideas of the Web, which lays a solid foundation for further learning the framework technology of PHP and developing enterprise website projects.

2.1. Design concept

Against the background of the information age, there are new changes in national education needs, student development needs, student characteristics and teaching emphasis. Today's undergraduate student curiosity is strong, the organization, the depth of thinking and critical to strengthen, social participation consciousness is strong, the teaching should be given a heavier knowledge and skills into heavy emotional attitude values, teaching goal should be to shift from cultivating the students' values in order to improve the students' thinking ability, cultivate creative consciousness, innovation spirit and innovation ability of innovative talents [2].

Speed up the deep integration of information technology and teaching, promote the co-construction

and sharing of digital high-quality teaching resources, construct a digital resource pool and break through the time-space limitations of the hybrid classroom, effectively enhance students' learning excitement and classroom learning impact.

2.2 Students analysis

Student analysis predominantly judges students' learning characteristics and ability composition through pre-class preview, previous classroom quiz, online platform, and after-school communication.

The object of the course is a sophomore student. After the students have no dynamic website development related knowledge base, students in the freshman year have learned C language program design, basic programming ability, can let the students master relevant knowledge of website development, and inspire students' interest in learning website development and its subsequent courses are an important task. This course is a great responsibility and a long-term responsibility.

2.3. Analysis of teaching objectives

As a professional course, the main purpose of this course is to cultivate students' solid professional theoretical foundation and knowledge skills in the field of cognition through information teaching resources and various teaching links. Under the premise of mastering the concept of website development, the installation and configuration of the Web server, the writing of the dynamic script of the website, the design and access of the database and other aspects of the basic theoretical basis of learning and practical ability training; in the field of emotion, cultivate students' personality qualities of integrity, cooperation, selfless dedication and integration of knowledge and action, so as to make them become composite application-oriented innovative talents [3].

3. DESIGN OF TEACHING PROCESS

3.1. Teaching content design

This course in the case of the system on the basis of the analysis and decomposition, the web developers should possess the knowledge, ability and quality of organic fusion to the project case development, curriculum content and the section design USES progressive mode, according to the dynamic website development process, is divided into seven chapters, 72 points, based on the different needs of students and promoting the different stages of the course, Progressive teaching target, teaching design and evaluation system, and constantly optimized online teaching resources, including knowledge on courseware and video, knowledge test, case courseware and video operation, summary and unit, unit assignments, exams, and putted forward project 265 teaching resources, including video

resources 128, accounted for 48.30%, The total time is 726 minutes. The course resources are characterized by high degree of enterprise involvement, complete knowledge coverage and strong demonstration of case operation, which can effectively promote the construction of learners' knowledge system from interest awakening to independent exploration.

3.2 Class schedule

According to the actual situation of the school, the school curriculum is reformed, and 20% ~ 50% of the teaching time is organized to implement online independent learning for students, and hybrid teaching is organically combined with offline in-person teaching. This course has 36 class hours of theoretical teaching and 12 class hours of computer experiment. The 36 class hours of theory course are divided into 17 class hours of intensive teaching and 7 class hours of extended classroom discussion, which are mainly based on the actual project of dynamic website development. In addition, 12 class hours of online learning content are organized appropriately. Students can gain their teaching objectives through online self-study or in-class conversation.

3.3. Selection of an online teaching platform

Combined with the current situation, the teaching process is optimized in the actual teaching process, and the QQ group, the wisdom tree platform and the online education platform on campus are deployed to give full play to the advantages of each platform and complement each other. According to the teaching characteristics, the BOPPPS teaching model is used to design the curriculum implementation plan and a coherent, effective and complete teaching process is established.

3.3.1. Wisdom tree platform

The course "Dynamic WEB Technology" has completed the construction of a university-level online open course in December 2019. All course resources have been uploaded to the Wisdom Tree website platform and are fully prepared for online teaching.

This course will be fragmented integration of teaching content, the curriculum content is divided into 72 points, each teaching video time control within 5 ~ 15 minutes, 1 ~ 2 points, although each teaching video covers only one or two points, but the video contains introduction, explain and summarize each link, so as to ensure the integrity of each knowledge point, We strive to present the content of each section to all online students from simple to profound, which is also one of the important links to complete the online and offline hybrid teaching of the course. The teaching content, including teaching cases, practical operation recording screens and so on, comprehensively extends the breadth

and depth of the course. Based on the online teaching of the shared class on the wisdom tree platform, students can learn independently through the Internet at any time after class without time limitations.

3.3.2. QQ group round-the-clock online Q&A

Establish a QQ group to interact with students online answering questions, of course the difficulty focusing on the part of knowledge, at the same time, combined with the wisdom tree classes recorded course team sharing platform, strengthen and consolidate students' mastery of relevant knowledge, to answer online tutoring in the teaching process, students all-weather and interaction with the exchange of teachers at any time, the teacher can timely grasp the students of different study basis of doubt, And timely answer and dispel doubts.

3.3.3. Online education platform for schools

Homework is published on the online education platform, which can be divided into two forms: individual homework and group homework according to the difficulty. Individual homework requires each student to complete it independently to cultivate the spirit of independent thinking and research. There are certain difficulties, and there are multiple solutions in the form of homework issued in the form of group work, cultivate students' all-round thinking, team spirit and good quality of helping others. I will review the homework submitted by students in time, and reflect the concentrated problems through the homework. I will explain them in class, solve the problems existing in the learning process of students in time, and push the learning content to students with weak foundation through the online platform, so as to realize personalized teaching.

4. CLASSROOM TEACHING IMPLEMENTATION BASED ON BOPPPS MODEL

4.1. Import BOPPPS teaching model

Teaching implementation process In practice teaching, teaching should be organized with BOPPPS mode, teaching content should be introduced vividly and interestingly, learning objectives should be clarified, interactive links should be active, pre and post tests should be designed reasonably, and students' learning enthusiasm can be fully aroused [4]. The following takes the personal information collection and verification module as an example to illustrate how to teach process control based on BOPPPS mode, and complete the import, target and pre-test of BOPPPS mode in the pre-class stage. Participative learning, post-test and summary are completed in class. After class, students are guided to learn the knowledge twice independently according to

classroom knowledge, and complete the platform homework and chapter tests to understand their own learning situation.

Before class

Students can preview independently by sharing video resources and case resources on the wisdom tree platform, electronic teaching materials, electronic teaching plans, PPT and other materials on the online education platform.

Bridge-in: The introduction of problems and actual site development cases.

Objective: Let students know what kind of learning effect they want to achieve through content learning. In order to facilitate the effective implementation of students, the description of the goal should be specific and clear. Be quantifiable, observable and operable.

In the class

Pre-assessment: a test is taken before formal learning. The purpose of the test is to understand students' interests, abilities and current knowledge structure. Based on this, the depth and progress of the content can be appropriately adjusted. This can take the form of quizzes, formal exams, assignments, informal questions, or even discussions and brainstorming.

Participatory learning: detailed learning steps, including participatory learning between teachers and students as well as between teachers and students. It can be a group discussion of the problems in the textbook or the teacher's explanation, and appropriate pause in the lecture to reflect on the students or individual or group presentation; or case studies.

Post-assessment: to understand the students' grasp of the situation, whether to achieve the teaching objectives. Knowledge comprehension can be in the form of multiple choice questions and short answer questions; hands-on classes can take the form of demonstrations, operations, and so on.

Summary: Summarize the content of the class to help students integrate the learning and forecast the content of the next class. Can be content review, review activities; or praise students for their academic achievements; or evaluate student presentations.

After class

Students can re-learn the knowledge independently according to the operation of the knowledge in class, with homework, students can understand their own learning situation through self-testing.

4.2 Teaching implementation process

The specific teaching implementation process is shown in Table 1:

Table 1. Classroom implementation based on BOPPPS model

| BOPPPS link | The teaching goal | The teaching design |
|-----------------------------|--|--|
| Bridge in B | Cut into the theme, arouse students' interest in learning, stimulate patriotism | The teacher first narrative of "personal information collection" related to the subject matter in real life experiences, such as during the current outbreak, we need daily report the information in time, we should actively cooperate with the teacher, cooperate with the community, thus cause the resonance of the students, attract their "eye", let them know what learn knowledge to solve practical problems. Use the teaching platform to release learning task lists, search keywords, trigger discussion among students, and introduce new lessons. |
| Objective O | Let the students know what kind of learning effect they want to achieve through content learning | List the learning objectives that students should achieve in this class from the three levels of cognition, skills and emotion to ensure that the objectives are specific and measurable. At the cognitive level, the three basic control structures used in common programming can be identified. At the skill level, you can realize the automatic verification of personal information through PHP programming language; at the emotional level, they can recognize the role of process control statements in the verification of personal information, and have exploration interest in the verification of personal information such as mobile phone number and email address. |
| Pretest P | Understand students' interests, abilities and current knowledge structure | Before learning process control, students are required to be familiar with the concepts of PHP constants and variables, set up a pre-test link, test students' understanding of the leading knowledge, and ask questions and discuss the weak links of the pre-test students in class, so as to deepen their understanding of the leading knowledge. |
| Participatory learning P | Improve students' participation, inspire students' thinking, enhance students' cognition, teachers and students participate in the learning process together | Combined with case groups to discuss, each group to come up with design solutions; Organize students to show the explanation plan, guide students to conduct independent exploration, and summarize and refine the results; The teacher aims at the identification number format verification problem for the students to use the knowledge to solve the programming, and gives the technical tips; Through the online lottery of the platform, a group was selected to share the running results of the PHP program written by the group on the screen through the QQ platform. |
| Post-assessment P | Assess learning effectiveness | Set up a program analysis problem. For E-mail format verification procedures, there are three blanks for each group of students to fill in the code according to the corresponding notes; Each group was given 5 minutes to complete the procedure and fill in the blanks. Teachers focus on commenting and correcting the answers published by each group, and give the correct answers and demonstrate the operation effect on the spot. |

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|--------------|----------------------|---|
| Summary S | Summary and feedback | First of all, the main line of this class will be sorted out around the learning objectives, and interactive questions will be added to deepen the impression of the learned content; Teachers assign homework, that is, to design a complete personal information collection and verification module; Finally, when teachers verify information, they can integrate codes with the same functions into functions, so as to improve the development efficiency of the program, and then lead to the content to be learned next time :PHP functions. |
|--------------|----------------------|---|

5. TEACHING EFFECT UNDER BOPPPS MODE

In order to compare the changes of students' learning effects after the teaching reform of BOPPPS mode, the 2018 and 2019 teaching of information Management and Information System major in our college were selected for comparison. The students of 2018 chose offline traditional classes, and the students of 2019 chose reformed blended teaching classes. After the final examination, a questionnaire survey was conducted for the students of 2018 and 2019. The survey results showed that the overall satisfaction evaluation of the blended courses increased by 25%, and the recognition of the teaching methods increased by 38%. The classroom experience is more pleasant and rich (32.7%), the degree of students' participation is higher (50.5%), and the knowledge is inspired by teaching (28.5%), which helps students to master more knowledge in class (60%). After the teaching reform with BOPPPS model, the classroom teaching atmosphere is active, the students' participation in class is greatly improved, and the average score of the final exam is significantly improved.

6. CONCLUSIONS

All in all, based on the teaching mode of BOPPPS, students have achieved the dominant position in the participatory teaching process, and teachers have gradually become the leader to guide students to participate in all aspects of learning -- to realize the change of education concept; Fully considering the characteristics of students, is conducive to the realization of interactive classroom between teachers and students, improving students' learning state and learning effect - realizing the change of teaching effect, with strong operability. In the implementation of hybrid teaching, there are still many shortcomings that need to be improved. Therefore, in the future teaching, the author will explore more teaching methods and methods to let more students participate in the classroom, maintain students' attention and improve the teaching effect.

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