Research on blended teaching model based on web-based autonomous learning—taking the course of Excel formula and function as an example

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Abstract

In view of the current teaching situation of many Excel functions, learning difficulties and individual differences, this paper constructs a blended teaching model based on Web-based Autonomous Learning. Before class, students study autonomously through the online learning manuals and micro-lectures. In class, teachers introduce teaching with the learning situation close to the students' life, and then use task driven, interactive discussion, evaluation and other ways to stimulate students' interest in learning, and give full play to students' subjective initiative, so as to achieve the teaching objectives.

Keywords: *autonomous learning; blended learning; Excel*

1 Introduction

The Excel formula and function is a highly practical course. The teaching objective of the course is to make students skilled in the use of Excel formula and function, and to analyze and collect all kinds of data and establish statistical charts to train students' autonomous learning ability and practical operation ability. In the teaching, aiming at the practical curriculum, it is of great significance to explore and construct the teaching mode with students as the center which conforms to the curriculum characteristics and teaching characteristics, which can cultivate the students' comprehensive ability, promote the teaching reform and improve the learning effect.

2 The teaching situation of Excel formula and function

2.1 There are many excel functions, learning and understanding is difficult

Excel has a lot of built-in functions, such as the date and time functions, statistical functions, logic functions, and lookup and reference functions and so on. An error occurred when the function parameter was slightly mistake. For example, relative address and absolute address reference error, symbol format error and so on. It's difficult for students to learn.

2.2 The Teaching methods are single and the learning effect is not good enough

Usually the teacher teaches the function, format and usage of the function first, and then demonstrates the operation of the function with examples, and the students practice. Students passively accept knowledge in the course of teaching, and the initiative and enthusiasm of learning are not fully exploited.

2.3 The individual differences of students are large

Students have great individual differences in theoretical learning and practical ability. Teachers in the classroom should not only consider the individual differences in all students, but also to all the students all the development, so that it is very difficult to teach students in accordance with their aptitude. There is polarization phenomenon in learning, learning fast "do not eat enough", learning slowly cannot keep up the rhythm.

3 Theoretical basis

3.1 The meaning of autonomous learning

Autonomous learning originated in 1960s. The establishment of the student centered teaching view make the focus of teaching research shift from "how to teach" to "how students learn". Autonomous learning is relative to passive learning, which is a kind of internal mechanism that leads to learning through the combination of learners' attitudes, abilities and learning strategies. Autonomous learning is a self-directed, self-motivated, self-monitoring learning ¹.

3.2 Blended learning

Blended learning is to combine the advantages of traditional learning methods with the advantages of Networked Learning. Blended learning should not only play a leading role in teacher guidance, inspiration and monitoring of teaching process, but also fully reflect the initiative, enthusiasm and creativity of students as the subject of learning process ².

4 Construction of teaching model based on network autonomous learning

The present situation of the Excel formula and function course is that there are many Excel functions, the teaching methods are single, and the individual differences of students are large. In order to arouse the students' learning enthusiasm and initiative, improve the teaching effect, we make full use of modern educational technology and adopt diversified teaching methods. According to the requirements and characteristics of personnel training programs, combining network platform and classroom teaching, this paper constructs a blended teaching model based on the network self-learning platform: setting learning goals, determining learning contents, autonomous learning on the network, interactive learning in class and summary evaluation, as shown in Fig.1. This kind of teaching mode adopts the students' autonomous learning, teacher guidance, task-driven, interactive discussion, Q & A and other ways to carry out teaching activities, which can not only play the advantages of traditional classroom teaching, but also train students' independent learning ability by means of network platform. Taking the use of Excel function as an example, the following briefly describes the process of teaching model based on web-based autonomous learning.

4.1 Setting learning goals

Setting learning goals is required to be students-centered, and then decompose the learning goals into several sub-targets, which according to the differences of the students, provide a variety of different levels of learning needs and learning objectives to meet the personalized learning needs of the students. For example, the learning objectives of making use of Excel functions are as follows: know the definition of the function; understand the format and writing rules of the function; master the use of methods and techniques.

4.2 Determining learning contents

Learning contents should reflect how to learn, not how to teach. Teachers can divide learning contents into several learning situations, each of which has several learning tasks. It cannot be too difficult in the design and can support the learning goals, so that students complete tasks at the same time to achieve learning goals. For example, introduce student achievement by learning situation, ask students to calculate the highest points, lowest points and failure numbers for each course and total score, average score and rank of each student, and finally determine the level. By calculation, let the students learn the operations of max (), min (), countif (), sum (), average () and rank () functions. See in Fig. 1

Fig. 1 – Flow Chart of Teaching Model Based on Web-based Autonomous Learning

4.3 Autonomous learning on the network

The network autonomous learning platform should be attractive, provide learning manuals, micro-lectures, courseware, exercises and other teaching resources and arrange learning contents orderly, which is convenient for students to download study and discuss. The learning manuals should give a detailed list of learning tasks. By means of investigation, interview or research on books and documents, combine learning goals and learning contents to set up learning tasks that students are interested in. The micro-lectures should be in the form of outstanding topics, short and pithy, well-targeted and vivid. It uses problem-based or task-driven type to set up the difficult points carefully, which can not only reflect the main points of knowledge, but also stimulate students' interest in learning and improve their learning initiative. For example, after the teachers introducing student achievement table, students watch and study micro-lecture made by task-driven method that demonstrates the use of functions of highest points, lowest points and failure numbers in a course and explains the operation and notices of relevant functions. After that, the teachers arrange the exercises and let students draw inferences about the use of functions to complete the total score, average score and ranking calculations.

On the network learning platform, according to their learning needs and learning tasks, students watch the learning manuals, micro-lectures, courseware and other materials uploaded by teacher and complete the exercises before class, which lay the foundation for classroom learning. At the same time, they can exchange and interact with teachers or students by means of learning and communication platform, and discuss or give feedback in time, so as to accomplish the task of autonomous learning.

4.4 Interactive learning in class

The main task of teachers is to coordinate the collaborative learning between teachers and students. Teachers grasp the students' autonomous learning in time, evaluate the students' pre-class exercises, take the reserved task as the breakthrough point to carry on the teaching introduction, answer the general questions in the class, and then carry out a variety of group collaborative learning according to the different learning needs and different levels. For example, on the interactive network platform, teachers found the problems that calculating the number of failed students and ranking are relatively large. Therefore, they need to focus on the operation and use of the countif () and rank () functions in class, put the knowledge into the learning situation and the task, explain the input mode of function, the setting of function parameters, the differences between relative reference and absolute reference from the shallower to the deeper, and enable students to truly understand the function and use of functions. In the interactive teaching process, teachers divide the students into groups, each group calculates the average score, the highest score, the lowest score, the number of failed and ranking according to the requirements of teachers, edits and beautifies the results of the table. Finally, teachers score each group and select the excellent works to show them.

4.5 Summary and evaluation

After the end of autonomous learning on the network platform and interactive learning in class, teachers should sum up the main points of study in time, analyze the homework with typical problems and summarize ideas and techniques. After class, teachers should choose appropriate evaluation mechanism based on teaching contents, determine the corresponding evaluation contents ³, and combine students' self-evaluation, students' mutual evaluation and teacher evaluation to summarize the students' learning situation. On this basis, teachers put forward the new task to expand knowledge and stimulate students' innovation ability.

5 Conclusions

This paper constructs a blended teaching model based on web-based autonomous learning, which consists of setting learning goals, determining learning contents, autonomous learning on the network, interactive learning in class and summary and evaluation. Taking the use of Excel function as an example, this paper briefly describes the process of teaching model based on web-based autonomous learning. This model can not only play the advantages of traditional classroom teaching, but also train students' independent learning ability by means

of network platform. In the future teaching process, we should emphasize the self-learning awareness, pay attention to hierarchical teaching, and continuously improve the function of autonomous learning in Excel teaching, improve students' computer skills and professionalism.

References

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