Research on the Mixed Teaching Mode of Computer Basics Based on "SPOC+Moodle"

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Abstract: With the advancement of education informatization, the globalization of educational resources, individualized teaching, and autonomous learning have become inevitable trends. However, there are still many shortcomings in the current research on the SPOC model in universities. For example, theoretical research lags behind practical education. Combining the above issues, this article will propose and demonstrate the "SPOC+Moodle" teaching mode, which is a combination of SPOC teaching mode and moodle platform. By constructing the "SPOC+Moodle" education model, it aims to promote the effective combination of college students' participation, interaction and depth of learning. Through research and experimentation, the "SPOC+Moodle" teaching model can effectively improve students' academic performance and reduce the proportion of students in the low score range. It can be seen from the figure of the number of students in different grades that the proportion of students who scored 80 points or more increased by 8.2%. It not only transforms the educational resources of high-quality resources from pure supply to services, but also improves the learning methods, educational models and credit management mechanisms of universities under the Internet environment, which has a certain reference effect on the reform.

1. Introduction

1.1 Background

SPOC is short for small private online course, which means small-scale restricted online course. It is a new teaching mode based on the cold thinking of the MOOC boom. It organically combines the traditional classroom teaching with the MOOC learning mode, makes full use of the high-quality video resources of the MOOC course, and reverses the order of classroom teaching, that is, it implements the flipped classroom.

Moodle is a curriculum management system developed based on constructivist education theory. It has the characteristics of open source and modular object-oriented design. It includes a web management platform of powerful resource management, comprehensive learning record tracking, online homework and tests, score management, interactive Q & A and practical mutual evaluation system. It is an ideal development tool for constructing a network curriculum management platform. SPOC teaching mode pays attention to the construction and transmission of teaching resources, while Moodle platform is conducive to localizing the network MOOC curriculum resources, making it more suitable for the actual needs of college teaching.

Computer Basics is a public basic course for college students. It is of great significance to cultivate students' good information literacy and information application ability. The limited time of 50 minutes in the traditional classroom is difficult to solve the relevant problems in the course teaching process, can not meet the knowledge needs of students, and is not conducive to cultivating students' ability to use computers to solve practical problems. Therefore, it is very important to reconstruct and innovate the teaching process of the course. Combined with the most popular online course learning mode, our team believes that constructing SPOC teaching mode based on Moodle platform is a more effective solution.

1.2 Significance

In the context of digitalization and networking of education and teaching, it is particularly important to effectively use Moodle resources to optimize traditional courses. Under this trend, SPOC can integrate MOOC and campus courses to take advantage of the dual advantages of Moodle and blended learning, such as high-quality teaching videos, project-oriented or problem-oriented design, accurate self-test questions, and teachers who focus on high-value activities.

1.3 Related Work

A model of mixed education for the majority of learning and management systems. Recordable number / point-of-sale can be solved. A student's expression, a cause, a scholarship, a scholarship, a scholarship, a scholarship, a scholarship, a scholarship, a scholarship, and a scholarship. In addition to this, the first step of the problematic problem is the actual solution to the students. It is very important to have a model for the construction of a project. Special expedition to the students, the student's activities, the training, the training, and the training of the students. Kaplan AM Opposite line learning and progress analysis. The history of the history of the leader of the company, and then the main concept of the program. General scholarship Theological student Japanese teacher's best target colony, parallel submission sympathetic frame, this general student's unique motivation Japanese successful line teacher's choice [2].

1.4 Innovation

The innovations of this research are: 1) Discover the current development trend of higher education, adapt to the trend of education development, based on the shortcomings of the existing SPOC education model research, combine the Moodle model with the traditional university education model and construction, and build a computer A new SPOC teaching model based on a basic hybrid teaching model; 2) This research has conducted a relatively long-term practical research on the

constructed model, and made various visual and teaching discoveries using learning analysis methods such as social network analysis.

2. Deep Learning Technology

Then the interest similarity of u and v can be simply described by the following formula:

$$s_{u,v} = \frac{|N(u) \cap N(v)|}{|N(u) \cup N(v)|} \tag{1}$$

Suppose now we want to predict the rating $r'_{u,i}$ of user u for item i, and let S be a set of users with a relatively high similarity to user u. Then the functional form of predicting $r'_{u,i}$ is:

$$r'_{u,i} = \frac{1}{N} \sum_{u^i \in S} r_{u',i} \tag{2}$$

$$r'_{u,i} = k \sum_{v \in S} sim(u,v) r_{u',i} \tag{3}$$

The recommendation algorithm usually uses the normalized aggregation formula:

$$r'_{c,s} = k \sum_{s \in S} sim(s', S) \cdot r_{c,s} \tag{4}$$

Among them, the coefficient k is the normalization factor, in general, $k = 1/\sum_{s \in S} sim(s', S)$.

3. Construction of SPOC Teaching Mode

Through practical analysis and theoretical discussion, this article believes that the SPOC teaching model is the general trend of college teaching reform under the Internet + education environment, and it is imperative to construct a reasonable, feasible and effective SPOC teaching model.

3.1 Functional Objectives of the SPOC Teaching Model

The current trend of university teaching mode transformation has determined the macro-direction of SPOC teaching mode, and its specific goals still need to be positioned according to the characteristics of SPOC itself [3-4]. The goal of SPOC is to integrate MOOC with the traditional teaching mode of universities. By comparing the MOOC teaching mode with the traditional teaching mode of universities, it is possible to understand the function positioning of SPOC in the process of merging these two modes [5].

3.2 Learning Analysis Based on Online Learning Data

Learning analysis technology is to interpret and analyze a large amount of data generated by students to evaluate students' learning progress, predict future performance and discover potential problems [6-7]. In the vigorous development of online education, scholars and teachers in the field of education pay more and more attention to learning analysis technology. They regard it as a breakthrough to achieve personalized teaching and an important driving force to promote the reform of teaching methods [8-9]. Figure 1 is a system architecture diagram.
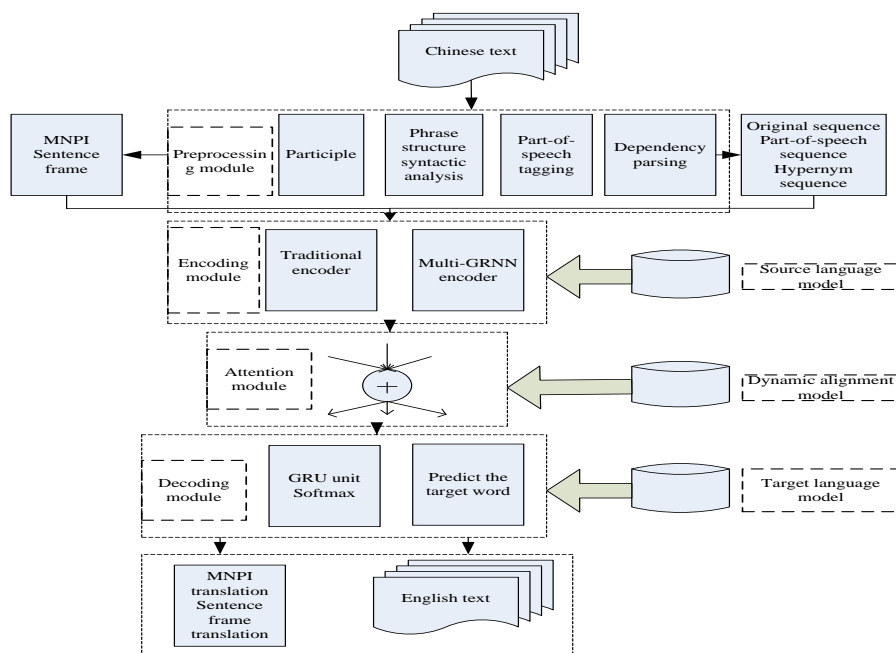
Figure 1: System architecture diagram

As shown in Figure 1, learning analysis mainly reflects the collection and analysis of various data recorded by the platform by teachers. Through the analysis of these data, on this basis, according to the students' difficult knowledge, the students' learning effect and learning style, and at the same time according to the construction the hierarchical model of learning evaluation realizes an online learning evaluation system that combines quantitative and non-quantitative [10].

4. Teaching Practice and Teaching Effect Based on SPOC Teaching Mode

First, the researcher counted the proportion of students in different grades in the two test scores to understand the changes in the number of students in different grades. Secondly, the researcher uses SPSS statistical analysis software to conduct independent sample t-tests on the test scores of the two students to explore whether there is a significant difference between the two. The proportion of the number of students in different grades is shown in Figure 2.
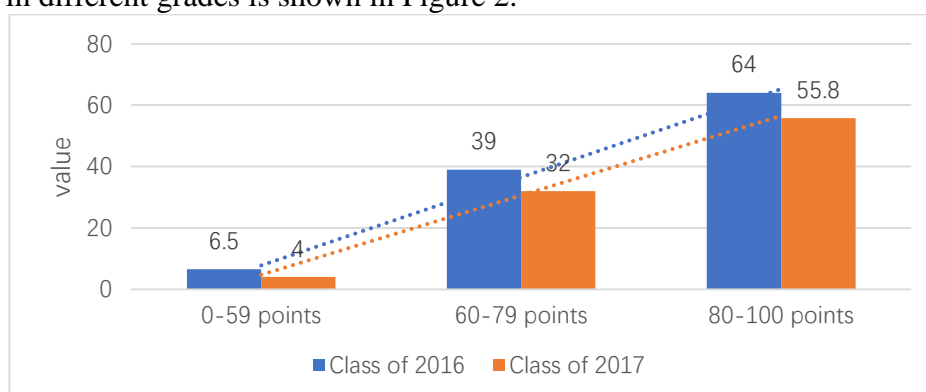

Figure 2: The proportion of the number of students in different grades

A comprehensive analysis of the results of the number of students in different grades can draw a conclusion: SPOC teaching mode can effectively improve students' academic performance and reduce the proportion of students in the low grades. First

of all, it can be seen from the figure of the number of students in different grades that the proportion of students who scored 80 points or more increased by 8.2%. Table 1 shows the independent sample t-test of the final grades of the two-term students.

Table 1: Independent sample t-test of the final grades of two-term students

	N	Mean	Std.Deviatio	t	df	Sig(2-tailed)
Class of 2016	77	78.013	11.102	2.050	150	0.042
Class of 2017	75	81.820	11.789			

From the independent sample t-test results, the independent sample t-test results show that the average score of the 2016 class of students is 78.013, while the average score of the current student is 81.820. Compared with the former, the average score of the final exam of this year is higher than that of the previous year. The student scores 3.807, and when t(150/2)=2.050, the P value is 0.042. It can be seen that there is a significant difference in the scores of the two students at the 0.05 level. From the data analysis, it can be seen that the student performance under the SPOC teaching mode is significantly higher than the student performance under the traditional teaching mode in the past.

5. Conclusions

SPOC teaching method is a scientific and feasible teaching method that combines Moodle teaching method with traditional teaching method. It not only benefits the students in school, but also has clear educational results in student participation, interaction and deep learning, and increases opportunities for communication and cooperation.

In short, in view of many problems existing in basic computer education in Colleges and universities, SPOC learning environment is constructed based on Moodle platform, the flipped classroom is completed by using the mixed teaching mode of classroom teaching and online teaching, and the reform of basic computer teaching mode in Colleges and universities is completed by using localized basic computer education resources and online evaluation of Moodle platform.

Acknowledgments

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