Design and Implementation of Online Intelligent Teaching Platform for Accounting Major in Colleges and Universities from the Perspective of Internet Plus

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Abstract. Under the vision of "Internet + Education", it is an important issue for all colleges and universities to promote the reform of accounting teaching mode and improve the level of education service. In this regard, this paper will comprehensively apply the specific advantages of network information technology, database technology and computer application technology to complete the construction of online intelligent teaching platform for accounting majors, and put forward comprehensive solutions to solve many problems faced in the current education and teaching process. The platform belongs to B/S architecture, and the design and development of the front-end interactive interface are completed with Bootstrap framework, and the Web Server is built with Django framework. The function setting of the platform will fully realize the network and digital transformation of teaching activities. Especially in the assessment of learning achievements, we will rely on AHP algorithm model to complete scientific and continuous data analysis and evaluation, which solves the difficult problem of online teaching evaluation and makes a positive attempt to improve teaching efficiency, improve teaching system and promote the reform of accounting professional education model.

Keywords: internet plus · accounting professional education · intelligent teaching · Python · computer application

1 Introduction

In the era of "internet plus", accounting, as a common business language, will run through the whole process and all aspects of daily production, operation and management of enterprises [1]. At the same time, accounting, as one of the departments with the highest degree of enterprise informatization, is bound to be affected in the era of industrial digital transformation and upgrading, which puts forward new requirements for the professional ability of accounting talents and accounting education model [2]. However, the enrollment of accounting majors in colleges and universities at all levels is huge, and the education and teaching mode is fixed, and the content and form are

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single, so that the goal of talent training is gradually out of touch with the needs of social development, resulting in the phenomenon that the supply of ordinary talents is in excess and the high-end talents are extremely scarce. In addition, although information education and teaching in colleges and universities are involved, they are often limited to the assistance of traditional classroom teaching, and their functions are more common in general data transmission or information sharing, and the reform of teaching mode and the improvement of educational service level have not been realized [3]. In view of this, this paper believes that colleges and universities should adhere to the concept of "three-round education", on the one hand, continue to improve the construction of basic education facilities and bridge the hardware defects, on the other hand, build an online intelligent teaching platform for accounting majors based on Web with the help of the specific advantages of network information technology, database technology and computer application technology. The platform gives consideration to the construction of digital educational resources and the development of network-based education and teaching practice, fully integrates various educational and teaching methods, innovates the service form of "Internet + Education", strengthens the evaluation and examination of online learning, and urges accounting majors to realize autonomous learning and personalized learning, and promotes the digital and intelligent development of higher education.

2 Development Process

First of all, for the construction of the online intelligent teaching platform for accounting majors in colleges and universities, the overall development environment is "LAMP" combination, that is, Linux + Apache + MySQL + Python mode [4]. Among them, the operating system is Linux Ubuntu18.04, the basic development language is Python, the version is 3.7.7, and the integrated development tool is Pycharm 2019. The Web server is Apache 2.4 and the database is MySQL 5.7.

Secondly, the analysis and processing of data generated by the platform depends on Python's own data processing class library [5]. As shown in Fig. 1, it is the key code for the realization of AHP algorithm model. When the students finish their studies, teachers can automatically call the students' learning data, platform usage data and evaluation data in the platform to complete the phased evaluation and assessment of learning effects.

Finally, the design and development of the front-end interactive interface of the platform need to be completed by using the Bootstrap framework with the help of Layoutit tools. As a Web-based development tool, Layoutit can support users to complete page layout and functional design with simple graphical operation [6]. After the Bootstrap frame page is designed, the code and files can be copied and imported into the file directory in Django application. For example, img and other picture files are directly copied to the css directory, and the HTML files in the Bootstrap framework are copied to the original templates folder of the project [7]. After the functional modules are designed, all the files are packaged and published on the server, which is convenient for users to log in and visit remotely. Through the introduction of the above key technical theories, the overall environment of system development, the configuration of related software and tools are determined, and the technical feasibility of the overall project of online

```
import numpy as np
class AHP:
  def __init__(self, array):
    self.array = array
    self.n = array.shape[0]
    self.RI_list = [0, 0, 0.52, 0.89, 1.12, 1.26, 1.36, 1.41, 1.46, 1.49, 1.52, 1.54, 1.56, 1.58]
    self.eig_val, self.eig_vector = np.linalg.eig(self.array)
    self.max_eig_val = np.max(self.eig_val)
    self.max_eig_vector = self.eig_vector[:, np.argmax(self.eig_val)].real
    self.CI_val = (self.max_eig_val - self.n) / (self.n - 1)
    self.CR_val = self.CI_val / (self.RI_list[self.n - 1])
```

Fig. 1. Key code for the realization of AHP algorithm model

intelligent teaching platform for accounting majors in colleges and universities is also clarified.

3 Function Realization

3.1 Student Side

3.1.1 Online Course Learning

Under this function module, student users can choose the corresponding courses to study according to the teaching plan or personal preference. The course content setting in the platform is different from the traditional classroom teaching, which can refine the content of conventional teaching materials and further enhance the pertinence of courses, such as Company Law, Auditing and Money Banking [8]. Before the course teaching, students will get the learning tasks released by the platform and complete the corresponding course learning according to the task requirements, so as to improve students' learning efficiency.

3.1.2 Homework and Test

Under this function module, the platform supports online homework answering and submission. In addition, for the characteristics of accounting major, the platform will also provide a test question bank for accounting qualifications or accounting titles, that is, the platform can simulate questions, and students can answer them online to achieve the purpose of exercise and comprehensively improve the passing rate of professional examinations. The realization of this function mainly depends on the data interface between the front-end interactive page and the back-end function control of the platform, for example, self. single = singlehoicesubject (), and self. single list = self. single. getdata () represents the selection, publishing and answering of multiple-choice questions, and the declaration and definition of data recovery interfaces and methods [9].

3.2 Teacher Side

When teachers log in to the system, the main work includes three parts: student management, curriculum management and assessment. The assessment and evaluation will

Table 1. Statistical table of live course data

Target layer	Criterion layer	Sub-criterion layer
Evaluation of learning effect	Learning attitude C_1	Login time C_{11}, login times C_{12}, online timeC_{13}
	Learning process C_2	Course completion degree C_{21}, Job completion degreeC_{22}, study durationC_{23}
	Learning ability C_3	Score C_{31}, Within-group performanceC_{32}, question bank completion degreeC_{33}

analyze and process a large number of data generated by student users in the platform, and complete the phased evaluation of learning results.

Assessment and evaluation can be carried out at all stages of the learning process, based on the data of online learning of student users, combined with the established evaluation index system of learning achievements, and given corresponding scores. As shown in Table 1, it is an evaluation index system. Under this index system, teachers use the AHP algorithm model preset by the platform to determine the corresponding weight values of each index.

The platform compares each index value to determine its importance, and then completes the construction of judgment matrix by 9-level scale method, as shown in Formula 1. According to the judgment matrix, each row is averaged to get $\overline{C}$, and after standardization, the index value is converted into the ranking of importance in the criterion layer to get the corresponding weight, as shown in Formula 2 [10]. After the weight of each index value is determined, the teacher scores and calculates the students' learning effect score, as shown in Table 2.

$$C = \begin{bmatrix} c_{11} & c_{12} & c_{13} \\ c_{21} & c_{22} & c_{23} \\ c_{31} & c_{32} & c_{33} \end{bmatrix} \tag{1}$$

$$\tilde{C}_i = \frac{\overline{c}_i}{\sum_{j=1}^{n} \overline{C}_j} \tag{2}$$

Table 2. Evaluation results of students' online learning effect

Target layer	Criterion layer	Sub-criterion layer	Weighted value	Score	Final score
Learning effect score	Learning attitude C_1	Login time	$C_{11} = 0.063$	0.923	0.485
		Online time	$C_{12} = 0.137$	0.981	
	Learning process C_2	Degree of course completion	$C_{21} = 0.191$	1.034	
		Study duration	$C_{23} = 0.093$	1.021	
	…	…	…		

4 Conclusion

In order to promote the effectiveness of accounting education in colleges and universities, this paper starts from four aspects: course form, teaching resources, teaching process and assessment, and builds an online intelligent teaching platform for accounting majors in colleges and universities based on Web with the help of the application advantages of network information technology, database technology and computer application technology. This paper puts forward a set of practical comprehensive solutions to solve many problems faced in the teaching process of accounting specialty in colleges and universities.

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