



# Construction of Network-aided Teaching Platform for Economic Management Specialty Based on Web Technology

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**Abstract.** In the era of educational informationization 2.0, the advantages of online teaching on the Internet have become more and more prominent, and it has become the core element to promote educational innovation and reform in colleges and universities. In this regard, this paper will build a Web-based network-aided teaching system for economic management specialty based on its own characteristics and the application advantages of network information technology, database management technology and computer application technology, and put forward a set of practical solutions to solve many problems faced by the traditional teaching mode. The whole system is B/S architecture, the front-end interactive interface is designed and developed with Blazor framework as the core, and the back-end Web Server is built with ASP.NET Core framework, and Mysql database is used as the system support. The function of the platform will fully cover the teaching needs of economic management specialty, and the network and digital transformation of teaching activities will be completed with multi-dimensional service application modules. Practice has proved that the platform online learning, question bank test, scenario simulation, data analysis and other functional modules are running normally, which not only makes up for the shortcomings of the traditional teaching mode, but also strengthens students' practical application ability and makes a beneficial attempt to create a new teaching ecology for economic management specialty.

**Keywords:** ASP.NET; Economic management; Network online teaching; Web application

## 1 Introduction

With the rapid development of digital information technology, the degree of global informatization is getting higher and higher, which has prompted great changes in China's political, economic and cultural fields. While promoting the development of the whole society, it also intensifies the market competition among enterprises, thus expanding the contradiction between supply and demand of economic management professionals. [1] In this context, colleges and universities, as the output positions of economic management professionals, strengthen the training of economic manage-

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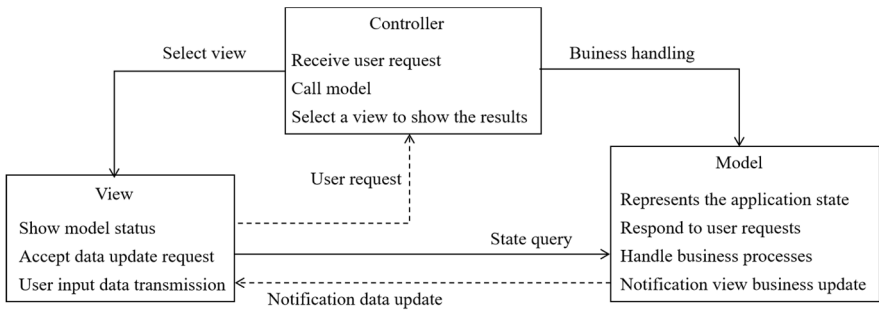
ment professionals in the new economic form and promote the reform of teaching mode of economic management majors in colleges and universities is the key to achieve high-quality development of economic management disciplines. On the other hand, there are some problems in the current education and teaching process of economic management major in colleges and universities, such as students' low interest in learning, weak application ability and poor teaching effect. The fundamental reason is that the traditional teaching mode can't meet the demand of compound talents in the new era, and the shortcomings of single teaching content, inherent teaching form and lack of practice have seriously affected students' learning ability and application level. [2] In view of this, this paper believes that colleges and universities should actively adjust the training objectives of economic management professionals, strengthen the organic integration of network information technology and teaching practice, reshape the teaching environment and teaching process, and fully reflect the characteristics of humanized teaching concept, scientific teaching evaluation and collaborative teaching management. [3] The network-aided teaching platform can combine data information with functional application, give full play to the application advantages of digital information technology in practical teaching practice, reshape the teaching process of economic management specialty, promote the improvement of economic management teaching system, and promote the process of modernization and intelligent construction of current higher education.

## 2 Development process

The development process of network-aided teaching platform for economic management major mainly involves two parts: the construction of structural framework and the realization of application functions. For the structural framework of the platform, the standard model of B/S architecture will be built with Web technology as the core and Internet communication protocol. [4] For the realization of application functions, according to the actual needs of the platform, we need to sort out the business logic of remote login, online application of multimedia digital resources, item bank testing, scenario simulation, data analysis and processing and other functional services according to MVC mode, and complete the task definition of three core modules: Model, View and Controller. It can realize the separation of data display, data processing and process control, effectively reduce the coupling between various functional services, and improve the overall adaptability and expansibility of the platform. [5] Figure 1 shows the operation mode of MVC architecture.

The overall development of the platform is based on Windows10.0 operating system, the basic development environment is ASP.NET's supporting. net framework 4.7.1, the development language is C#, and the integrated development tool is Visual Studio Code. The Web server is Windows IIS 10.0, and the database is SQL Server 2019. After the platform is fully developed, it will be packaged and published in the cloud server. After configuring the corresponding ports, users can log in from the client browser. [6] Through the introduction of the above key technical theories, the overall environment of platform development, the running process of related software

and tools are determined, and the technical feasibility of the overall project of network-assisted teaching platform for economic management specialty is also clarified.



**Fig. 1.** The operation mode of MVC architecture

### 3 Functional implementation

#### 3.1 Student side

##### A. Online learning

Under this function module, student users can choose the corresponding courses to study according to the teaching plan or personal preference. The learning resources of economic management courses in the platform include a large number of video courses, ppt courseware materials, micro-courses and other forms. When students learn video courses online, the educational Flash Player multimedia player supported in the platform page can automatically obtain the storage location of online educational resources and complete the instant play. Some functional codes are shown below. The online teaching form can further refine the teaching content and improve the pertinence of teaching. Rich online resources form a multi-dimensional and three-dimensional curriculum system, which is conducive to stimulating students' interest in learning and promoting their personalized development. [7]

```

var flashvars = {
  url:"http://www.example.com/example.mp4",
  autoPlay:true };
var params = {
  bgcolor:"#000000",
  allowFullScreen:"true",
  allowScriptAccess:"always"};
var attributes = {
  id:"flvPlayer",
  name:"flvPlayer" };
  
```

**B. Question bank and training**

There is a question bank subsystem in the platform, which contains all kinds of test questions, so that students can conduct online simulation tests conveniently. 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. [8] In addition, for the case analysis and simulation training in the teaching process of economic management specialty, the platform can also provide various types of situational and case-based virtual scenes, giving students the opportunity to practice online, so as to improve students' application ability of knowledge and skills.

**3.2 Teacher side**

In the platform, the functional authority of teacher users focuses on the maintenance of student users, the production and uploading of digital teaching resources, and data analysis and management. Table 1 shows the student user design table in the platform database. Teacher users can add, delete, modify and query the student user information according to the field attributes in the table, which is beneficial to improve the efficiency of teaching management.

**Table 1.** Student information sheet

Field name	Data type	Restrain	Description
ID	int	PRIMARYKEY,AUTO_INCREMENT	Unique identification
Name	varchar(50)		
Sex	varchar(10)		
Native place	varchar(20)		
Date of birth	int		
Department	varchar(50)		
Major	varchar(50)		
Contact information	int		
Student profile	varchar(100)		

Among them, the core of data analysis management is to complete the evaluation of economic management teaching based on the platform usage data of student users. The system will rely on the established comprehensive evaluation system to complete the automatic grading work, as shown in Table 2 for the teaching effect evaluation system. [9]

**Table 2.** Teaching effect evaluation system

Main indicators	Secondary indicators	Evaluation criteria
Learning ability C <sub>1</sub>	Subjective initiative, goal-oriented, and cognitive ability	Yes; No
Learning motivation C <sub>2</sub>	External motivation, and internal motivation	Internal motivation (N), external motivation (W),

		mixed motivation (H)
Learning support C <sub>3</sub>	Learning process, learning management, learning summary	Online learning behavior 0 no; 1 yes
Learning outcome C <sub>3</sub>	Student feedback, teacher evaluation, and participation in grading	Likert scale

The platform will build user portraits according to the online learning behavior of student users, and select autonomous learning ability, knowledge mastery, course effectiveness, interest, learning persistence and performance ranking as key characteristic indicators to build a decision tree to complete the evaluation of teaching effect. [10] The correlation coefficient analysis between key characteristic indicators is shown in Table 3. CART algorithm based on Gini index is selected as the decision tree model, and the expected output value is divided into four intervals: excellent, good, medium and poor, so as to complete the final teaching effect evaluation.

**Table 3.** Correlation coefficient of key characteristic indicators

	Autonomic learning	Knowledge mastery	Effectiveness	Interest degree	Sticking	Score ranking
Autonomic learning	1					
Knowledge mastery	0.3011	1				
Effectiveness	0.1948	0.6144	1			
Interest degree	0.2105	0.4203	0.4886	1		
Sticking	0.1815	0.3442	0.4415	0.6834	1	
Score ranking	0.0819	0.1847	0.1423	0.0316	0.0187	1

In order to verify the practicability of the platform for teaching effect evaluation, the simulated usage data of 300 students are selected for testing. Table 4 shows the test results of CART decision tree model, and the final test evaluation accuracy rate is 89.98%, which meets the platform design requirements.

**Table 4.** CART decision tree validation analysis results

	Sample number	Excellent	Good	Medium	Poor	Accuracy
Excellent	46	44	2	0	0	95.65%
Good	108	4	99	5	0	91.66%
Medium	140	0	9	125	6	89.28%
Poor	6	0	0	1	5	83.33%
Total	300	48	110	131	11	89.98%

As for the overall application effect of the platform, according to the survey results of 300 students after use, as shown in Figure 2. Student users evaluate the network-assisted teaching platform of economic management specialty from the following eight angles. The evaluation score is 1-5, and each score is greater than 3, which shows that users basically have a positive evaluation of the platform.

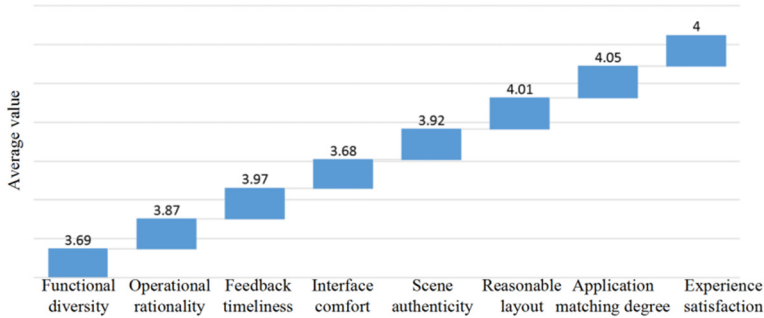


Fig. 2. Results of the platform use survey

## 4 Conclusions

Aiming at improving the effectiveness of economic management teaching, this paper puts forward a set of construction scheme of network-assisted teaching platform to promote the modernization of teaching mode and create a new ecology of economic management professional education. In the follow-up research, the platform should further enrich the construction of teaching resources, improve the adaptability of the platform to the interactive function in virtual training, and make contributions to the construction of educational informatization in colleges and universities.

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