# Construction of Business Administration Teaching Resource Sharing Platform under the Background of Internet+Education

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**Abstract.** With the advent of the digital information age, the integration between the Internet and education has deepened, and the sharing and co-construction of online teaching resources has become a new trend in the construction of business administration disciplines. However, due to the professional characteristics of business administration itself, there are some problems in the process of implementation, such as lack of standards, difficulty in transmission and low utilization rate, which easily leads to unnecessary waste of resources. In this regard, with the help of internet technology and the advantages of online teaching, this paper will design and construct a network teaching resource sharing platform suitable for business administration majors, so as to promote the supply-side reform of network teaching resources in colleges and universities. The whole platform is B/S architecture, which is composed of front-end interactive interface and back-end server. Relying on SOA architecture, it combines data information with functional services to form a comprehensive Web application integrating remote login, resource upload, online application and data analysis. The actual operation test results show that the platform meets the requirements of relevant indicators of education and teaching, solves a series of problems existing in the current process of sharing and co-constructing teaching resources, and provides technical support for creating a flexible, interactive and sharing teaching environment.

**Keywords:** Internet+ education; business administration; teaching resource sharing platform; Javaweb; software application

## 1 Introduction

At present, China's economic and social form is in a transitional stage, and the digital economy represented by a series of new products, new formats and new models is developing rapidly. It shows great vitality and toughness, but also accelerates the reform of market environment and business model, promotes the change of talent demand structure in enterprises, and intensifies the contradiction between supply and demand of applied, compound and innovative business management talents. [1]

Facing the current situation, colleges and universities should actively seek the diversified channels of integration of modern education mode and digital information technology, promote the innovation of traditional education in terms of educational concept, teaching form, teaching content, management means and guarantee mechanism, and promote the organic connection between the development of business administration discipline and the demand for

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economic and social talents, and gradually form a comprehensive, systematic and professional talent training system. [2] In the practical application process, online teaching forms and online teaching resources are the most popular. They are closely related and complement each other, and are favored by teachers and students because of their high flexibility and wide coverage. However, the construction of online teaching resources in colleges and universities often lags behind the application of online teaching. On the one hand, the online teaching resources themselves are difficult to make, with long cycle and high cost; On the other hand, the business administration major itself involves a wide range and the subject content is updated frequently, so it is difficult to form a unified standard, and the content innovation and universality are not high, resulting in a lot of waste of teaching resources. [3] In view of this, this paper believes that colleges and universities should make good use of the "Internet+education" form to build a platform for sharing business administration teaching resources that meets the requirements of digital education, effectively solve many shortcomings in the integration, circulation, application and management of online teaching resources in colleges and universities, and be more conducive to the all-round and multi-level transformation and upgrading of the business administration education model.

## 2 Platform construction

The business administration network teaching resource sharing platform is designed and deployed in Java environment, and different development requirements are realized by relying on many advanced and mature development tools, application frameworks and functional class libraries under Javaweb technology system. [4] The whole platform belongs to the B/S architecture, and the platform is divided into four parts according to the standard MVC design pattern by SSM framework, including View layer, Controller layer, Service layer and Dao layer. Figure 1 shows the basic framework structure of the platform. [5] In addition, the platform will unify the business behavior and data information access with the SOA service system, further realize the effective integration of data information and application services, and reduce the dependence and coupling between them.

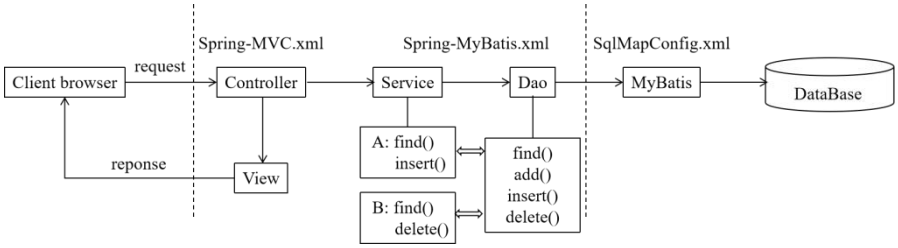


**Fig. 1.** The basic framework structure of the platform

In the whole development process, the basic development environment of the platform's server is Java, the underlying operating system is Linux CentOS 7-x86 64bit, the development kit JDK version is openjdk-1.8.0.131-11, the integrated development tool is MyEclipse CI 2018.8.0, the Web server is Apache Tomcat 6.0, and the database is MySQL 8.0. At the same time, the project object model (Maven) will be used to manage the project structure, so as to

quickly complete the integration and deployment of SSM framework, and the corresponding Java files in MVC mode will be created in the project directory, and the corresponding configuration will be completed in turn. [6] After all the configurations are completed, complete the configuration of Tomcat in the Preference option under MyEclipse, and then complete the integration and encapsulation of the whole system based on SSM architecture.

## 3 Functional implementation

### 3.1 Resource upload

The platform has a unified operation interface and supports users to log in through the client browser. Teacher users have the right to use this function module, and can upload, maintain and delete the classification standards of online teaching resources for business administration majors according to the platform. When a teacher user initiates resource uploading online, the Web Uploader component in the interactive interface will declare the storage path of the file and the information of the file receiving server after initialization. [7] The following is part of the code for creating a Web Uploader instance for Javascript.

```
var uploader = WebUploader.create({
 auto: true,
 swf: BASE_URL + '/js/Uploader.swf',
 server: 'http://webuploader.duapp.com/server/fileupload.php',
 pick: '#filePicker',
 accept: {  title: 'Images'  extensions: 'gif,jpg,jpeg,bmp,png',
  mimeTypes: 'image/*' }
```

When the online teaching resources are uploaded successfully, the platform stores the instantiated objects of the resource files in the database. Table 1 shows the data table of server-side network teaching resources.

**Table 1.** Data table of online teaching resources

| Field name | Data type | Constraint | Description |
|---|---|---|---|
| ID | int | PRIMARYKEY,AUTO_INCREMENT | Major key |
| Course title | varchar(10) | NOT NULL | |
| Resource title | varchar(2) | NULL | |
| Resource classification | int | NOT NULL | |
| Resource type | varchar(10) | NOT NULL | |
| Front cover | varchar(50) | NOT NULL | |
| Teacher information | int | NOT NULL | |
| Upload time | datetime | NOT NULL | |
| Resource state | varchar(10) | NOT NULL | |
| Synopsis | varchar(200) | NULL | |

### 3.2 Retrieval and application

As the core function of the online teaching resource sharing platform for business administration majors, retrieval and application can greatly improve the use process of online teaching resources by teachers and student users, and enhance the actual utilization rate of online teaching resources. In the page, users can directly search for keywords or key sentences to quickly obtain the corresponding online teaching resources. Figure 2 shows the basic logic diagram of the platform search service. Among them, the Query parsing service can perform operations such as cleaning, word segmentation and synonym expansion on the keywords input by users, and then construct sorting clauses according to the preset sorting expression settings through the query statements under the search engine OpenSearch, so as to complete the search of the online teaching resource index database and obtain the corresponding search results, and finally return the search results to the front-end interface to complete the display of the search results. [8]

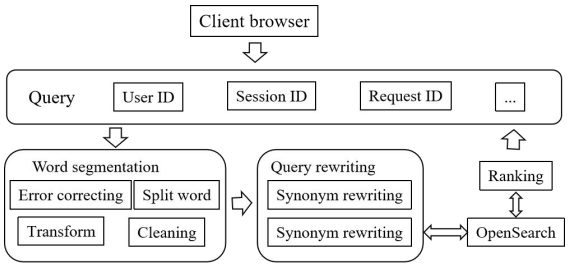


**Fig. 2.** Keyword search business architecture

The realization of the search function will depend on BM25 correlation algorithm to calculate the correlation scores of input keywords, key sentences and indexed texts in the database, and complete the sorting. The scoring formula used in this system is shown in Formula 1. Among them, $S$ stands for relevance score, $R$ stands for relevance, $Q$ stands for the input keyword sentence, $q_i$ stands for the result of word segmentation, $n$ stands for the number of words generated after word segmentation, $d$ stands for the text content in the index library, and $W_i$ stands for the weight value of words, usually the inverse document frequency (IDF value). [9] In the simulation experiment, BM25 correlation algorithm is compared with cosine similarity algorithm to form a summary of practical effects, as shown in Table 2. The results show that BM25 algorithm performs well in single run time, accuracy and consistency, and has the lowest degree of confusion, so the retrieval effect is better.

$$S(Q,d)=\sum_{i}^{n}W_i\cdot R(q_i,d) \quad W_i=\log\left(\frac{N-n(q_i)+0.5}{n(q_i)+0.5}\right) \tag{1}$$

**Table 2.** Summary of the simulation test effect

| No. | Classification | Simulation times | Single time | Quasi-precision | Consistency | Perplexity |
|---|---|---|---|---|---|---|
| 01 | BM25 | 100 | 2.5s | 58.51% | 0.69 | -0.94 |
| 02 | TF-IDF+Cosine similarity | 100 | 4.8s | 38.33% | 0.57 | -0.81 |

When users get the search results returned by the platform, they can open the corresponding teaching resources in the page for viewing and application. The platform not only includes the regular teaching resources of business administration courses in various professional disciplines, but also includes ideological and political, traditional culture, innovation and entrepreneurship, mental health and other contents into the teaching resource database. So as to form a multi-dimensional, three-dimensional network teaching resources supply service system in colleges and universities, fully integrate with the online teaching form, and promote the all-round and multi-level transformation and upgrading of the business administration education model.

### 3.3 Data statistics

Under this function module, teacher users can make statistical analysis on the usage of the platform by student users in a certain period of time. Common statistical analysis contents include platform usage time, course resource search volume, cumulative search volume, etc. Relevant data results will also be displayed in the form of charts to facilitate users' intuitive viewing and application. Figure 3 shows the recent ranking of online teaching resources, in which the ordinate is the name of online teaching resources and the abscissa is the total amount of search.

Relying on D3.js visual class library, the platform Select various forms of arrays and Json in the platform, and binds them with data method. When users initiate data query and visualization operations, D3.js will automatically complete data acquisition and chart drawing, and at the same time, it will also incorporate certain interactive operations, such as mouse hovering and highlight display. [10]

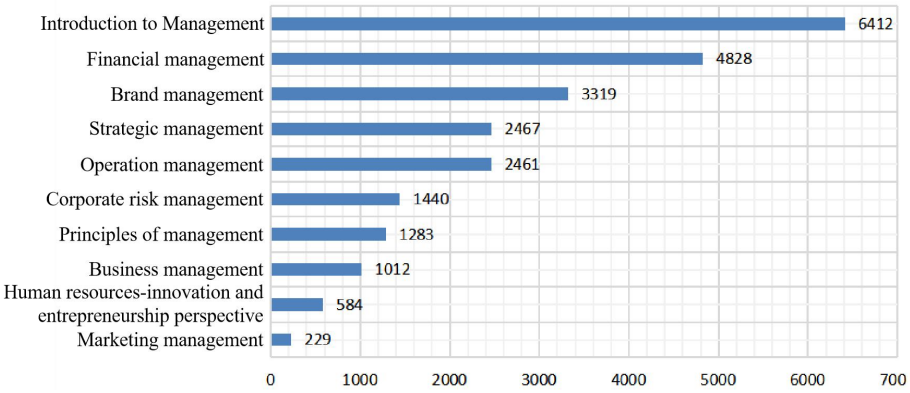


**Fig. 3.** Search popularity ranking of online teaching resources

In addition, the overall operating efficiency of the platform will also be evaluated accordingly. At the request of 2000 users, the test results of concurrency control performance of online teaching resource sharing platform are shown in Table 3. The results show that the platform has a good ability to deal with high concurrent requirements, and the average response time is below 100ms, and the performance meets the design specifications, ensuring the fluency of users.

**Table 3.** Platform performance test results

| No. | Search time | Thread | Tag | Connect time (ms) | Delay time (ms) |
|---|---|---|---|---|---|
| 1 | 11:50:03 | 1-1 | 2000 network requests | 17 | 66 |
| 2 | 12:08:21 | 1-2 | 2000 network requests | 12 | 79 |
| 3 | 13:33:59 | 1-3 | 2000 network requests | 13 | 91 |
| 4 | 14:13:15 | 1-4 | 2000 network requests | 15 | 46 |
| 5 | 15:03:39 | 1-5 | 2000 network requests | 19 | 58 |

## 4 Conclusions

In order to promote the reform of the supply service system of online teaching resources for business administration majors in colleges and universities, this paper aims at many shortcomings faced by the current online teaching resources in the practical application process, and constructs a platform for sharing online teaching resources. The platform effectively improves the utilization efficiency of online teaching resources and realizes the co-construction and sharing of online teaching resources and data in colleges and universities. In the follow-up research, the platform will further enhance the abundance of online teaching resources, optimize the search and recommendation algorithms of the platform, and promote the transformation and upgrading of the overall education and teaching model in colleges and universities.

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