



The Construction of Blended Teaching Mode in Higher Vocational Colleges Based on “Internet+”

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Abstract: In view of a series of problems such as lack of educational resources, imperfect teaching system and outdated teaching mode in China's higher vocational colleges, this platform selects Visual Studio 2019 as the bottom development tool, selects IIS 11.0 version of the web server, uses C# as the programming language, and sets up an aspx function page under the function module to improve the detailed functions of the system module. The SQL server database is selected for data storage management, and then the hierarchical design of the system is completed according to MVC mode, and Windows version 10.0 is selected as the operating system, so as to ensure that the platform can be used more safely and smoothly. The platform aims to combine traditional classroom teaching with emerging online learning, change the outdated teaching system, pay more attention to the actual effect of teaching, improve students' learning efficiency, and meet their individualized learning needs, thus opening up a brand-new road for blended teaching mode.


1 INTRODUCTION

With the development of science and technology and the advent of the Internet age, people have more ways to obtain resources, but the traditional teaching mode still uses books as the main tool for imparting knowledge. At present, single book knowledge can no longer meet the individualized learning needs of students. To some extent, the classroom teaching mode with teachers as the main part and books as the auxiliary part ignores the students' cognitive dominant position, and the simple indoctrination education cannot attract students' attention. The update speed of teaching contents in books is slow, and the teaching resources are outdated, so it is difficult to meet the knowledge needs of students. But most higher vocational colleges still use the traditional "classroom+book" teaching mode, which is not conducive to arousing students' interest in learning and will affect students' learning effect in the long run. The single teaching mode still has some shortcomings. First of all, in the traditional classroom teaching, teachers take lecturing as the

main teaching mode, which plays a leading role in the classroom. However, simple lecturing does not reserve space for students to think, which is not conducive to students' thinking activities and easily leads to students' "false knowledge". Secondly, the single classroom teaching mode pays more attention to theoretical teaching and neglects the role of practice, which is likely to lead to students. Finally, teaching is a bilateral interactive activity between teachers and students. The purpose of teaching is to combine teachers' "teaching" "learning" with students' "learning" organically. However, the traditional teaching mode fails to take this into account, resulting in students passively accepting knowledge and lacking learning process. In the face of these problems, the traditional teaching mode should be changed accordingly. (Yang, 2020)

In view of the above problems, this paper constructs a blended teaching mode in higher vocational colleges based on "internet+". The online and offline hybrid teaching mode is used to solve practical teaching problems. The online teaching platform mentioned in this article mainly uses C# as

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the programming language, the bottom development tool is Visual Studio 2019 version, and an aspx function page is set under the function module, so as to improve the detailed functions of the system module. Then, according to MVC pattern, the hierarchical design of the system is completed, and the data storage is managed by SQL server database, so as to save the query time and improve the operation efficiency. The Windows version 10.0 is selected as the operating system, and IIS version 11.0 is selected as the web server, which makes the construction of the platform more efficient and secure. This platform puts forward the "internet +" blended teaching mode, which is not to mechanically put online teaching and traditional teaching together, but to fundamentally change the teaching mode and improve the teaching effectiveness. Through a series of processes, such as online preview, offline learning practice, online communication and sharing, and online examination, the platform will carry out teaching practice, so that students can explore themselves and learn independently in the teaching process, thus cultivating students' comprehensive practical ability and making them practical talents needed by the society.

2 INTRODUCTION OF KEY TECHNOLOGIES

2.1 Asp.Net

The ASP.NET is a kind of Web development platform, which provides an overall programming framework for the subsequent development of the platform, is the infrastructure used for development, and also provides various required services for web programs. (Ren, 2017) The ASP.NET relies on HTTP protocol, and uses HTTP commands to set up two-way communication between browser and server. The ASP. NET can also realize caching, which updates the performance of some applications, and then caches frequently used pages of users and stores them in temporary locations, which can retrieve these pages more quickly and give better feedback to users.

2.2 SQL Sever Database

The SQL Server is a database management system. Using SQL Server 2019, database users can easily publish the required information and data to the

Web, and users can view the data stored in SQL Server through common browsers, which saves the query time and improves the operation efficiency. It can be seen that the storage logic of SQL Sever database is more concise and clear, and the data processing can be carried out more efficiently.

2.3 MVC

The MVC is one of the programming modes in ASP.NET, and it is a special mode for creating Web applications. The MVC layering helps to manage complicated program applications, and programmers can pay attention to one aspect for a long time. Besides, MVC layering can also focus on view design without relying on logical business, making it easier to test program applications. The construction of this platform takes MVC pattern as the whole framework structure, and the development and creation are based on component-based layered development technology. Distributed multi-layer technology is an important development technology to create this platform. Using this technology can effectively realize the functions of the traditional pattern, and it has certain advantages in scalability and maintainability of the platform.

2.4 Ajax

The essence of Ajax is the engine tool between client and server. In the client, the server will not receive all the information input, but Ajax will filter the information and send it to the server when there is a request for related data. And Ajax can dynamically respond to data, which improves the user's interactive experience. Among them, Ajax engine is between the program and the server, and it is mainly used to process some requests of users. In this platform, courseware uploading and online learning are frequently used functions. In order to ensure the synchronization between the use of the client and the operation of the server, Ajax engine is introduced into the system. When the teacher submits courseware, it is not necessary to load the page again, and the submitted content can be displayed only by partial refreshing, so that the user can feel that the system and operation are immediately responsive.

2.5 Development Process

According to the introduction of the above-mentioned related technical contents, the configuration and deployment of online teaching

platform development process of blended teaching mode in higher vocational colleges are completed. In order to improve the system function of the hybrid teaching platform in higher vocational colleges, the platform will be constructed by ASP.NET and other related technologies. The bottom development tool is Visual Studio 2019, and the operating system is based on Windows 10.0. In the aspect of web server, choose IIS version 10.0 to improve the operation ability of the server. And select SQL server 2019 as the data storage tool.

During the development of the platform, first, choose Visual Studio 2019 tool in the menu, create the required project in the File section under the file, select ASP.NET Web in the application program, and then preset the configuration attributes and paths of the newly created project, click Next, select MVC in the pop-up window and name it, then you can

create the ASP.NET MVC project and carry out the follow-up writing of the online teaching platform of blended teaching mode in higher vocational colleges. After the specific functional modules are configured, the simulation test is carried out. After that, publish the generated website to IIS, then create a new website project in IIS, select the advanced settings in the Manage Website page, and select the physical path. After the basic configuration is completed, the online teaching platform can be built. With the description of the above key technologies, the overall framework of online learning platform is roughly planned, and the feasibility of establishing online teaching platform of blended teaching mode in higher vocational colleges is clarified. The specific flow chart of the system is shown in Figure 1. (Ding, 2005)

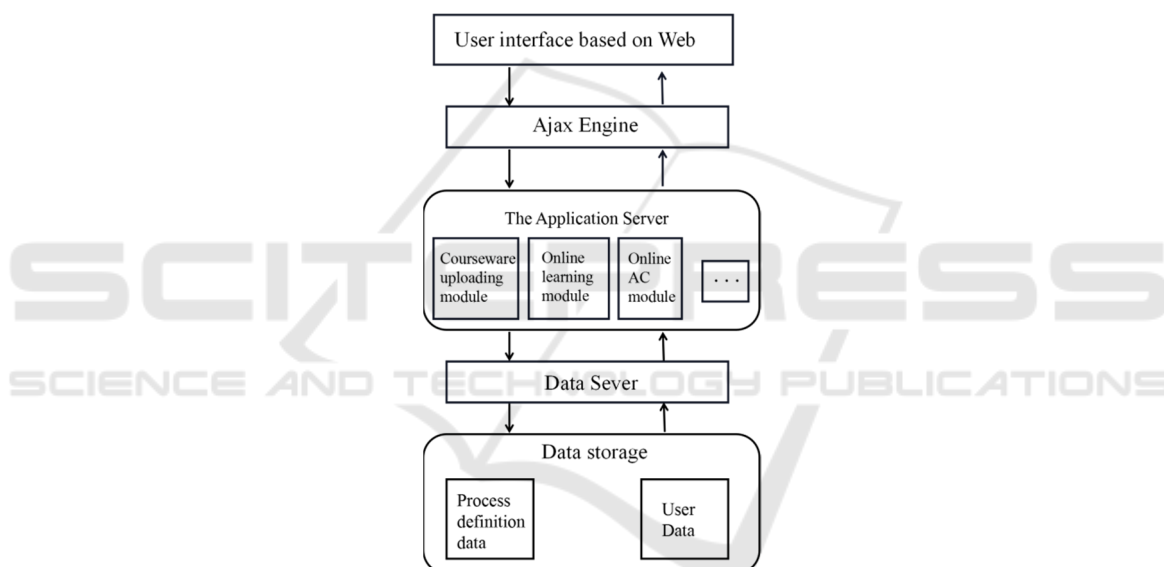


Figure 1: Flow chart of system structure (original)

3 FUNCTION REALIZATION

3.1 Student Side

3.1.1 Online Learning Module

The users who use this system for the first time need to register, and they can log in after completing the user registration according to the relevant prompts of the system. In the main page, click the subject option, and select the subject required by the individual for self-study, as shown in Figure 2.

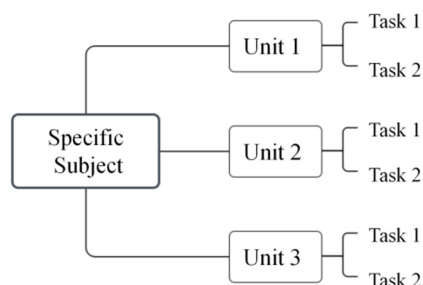


Figure 2: Self-regulated learning process (original)

The online learning module is mainly divided into two parts: basic course preview and video course learning. In the preview part of basic courses, students can learn according to the preview materials uploaded by teachers, and mark out the doubts and difficulties, and then use the online communication function to communicate with teachers in a timely manner. In the offline classroom teaching, teachers will focus on explaining this part so that students can understand it. The online preview conducted by students in advance is helpful to the follow-up offline classroom teaching, and makes the knowledge they have learned easier to be understood by students. The video course learning can be divided into three parts: high-quality open class, offline teaching recording and broadcasting class and micro-course video. The high-quality open classes mainly include the open classes of famous schools. Students can choose their favorite content to study, thus enriching students' thinking and training their ability. (Hao, 2021) The video recording and broadcasting class is mainly composed of the recorded and broadcasted videos of offline teaching uploaded by teachers. Students can adjust the video progress according to their own learning efficiency, and they can watch it over and over again until they master it. If you don't understand, you can ask the teacher questions in real time with the help of online communication function, which speeds up the efficiency of problem solving. The micro-lesson video is a targeted explanation video made by teachers to students' shortcomings. This kind of video is relatively concise and generally consists of one or two contents, so students can watch and learn according to their own needs. The students' autonomous preview code is shown in Figure 3.

```
function show - div(menu)
{ var Imgname;
if(documnant.all.item(menu).style.display = 'none')
{ documnt.all.item(menu).style.display = 'block' ;
Imgname = "images/Img"+menu+".gif"
D ocument.all.item("Img"+menu).src = Imgname;
else .
{ document.all.item(menu).style}display = 'none " ;
Imgname = " images/Img"+menu+"-1. gif"
documuent.all. ietm("Img"+menu).src = Imgname; .
< script language = " JavaScript">
</ scripts
```

Figure 3: Students' autonomous preview code (original)

3.1.2 Online Communication Module

In this module, students are required to upload the results of group practice assignments assigned by teachers online to the personal center, and they can also share their own feelings and learning while uploading. In this page, students can also see the homework results uploaded by others and evaluate them. The uploading of the homework results supports the following formats such as pdf, txt, video or audio. At the same time, students can publish their own problems in practice, and teachers and other students can discuss solutions together. In this pleasant learning environment, the distance between teachers and students can be narrowed, and students' learning enthusiasm can be mobilized, thus improving the teaching effectiveness.

3.1.3 Online Test Module

This system also has a question bank function, in which students can choose chapters and knowledge points according to the self-examination and self-test module in the question bank, and adjust the difficulty of the test paper according to their own learning level. After the selection, the system will automatically generate a self-test paper. Students can use this system to improve themselves and have a clearer understanding of their learning level. After submitting the test paper, the system will automatically correct it, mark the wrong questions and feed them back to the students' personal center to generate a collection. Students' self-test scores will also be automatically ranked, and the score curve will be generated. Each self-test will be analyzed, so that students can know their own shortcomings in time and make corrections. The students are required to take the exam issued by the teacher on time, and will not be allowed to take the exam after the deadline.

3.2 Teacher Side

3.2.1 Resource Uploading Module

The teacher needs to upload the knowledge learned offline to the resource database in advance, and arrange preview tasks for students to preview independently. In the individual center, students' preview completion and questioning punctuation can be browsed, and teachers can write teaching designs aiming at these problems, so as to solve students' problems and improve teaching effectiveness. After the end of online classroom teaching, teachers also need to upload PPT courseware and course

recording videos used in class to the resource library, so that students can consolidate and review after class. In addition, the question bank will feed back the knowledge points with high error rate to teachers and users, and teachers can make targeted

micro-lesson videos based on these error questions to explain the knowledge points in detail, so as to achieve the fundamental teaching purpose that students can really master the knowledge points. The resource upload code is shown in Figure 4.

```
//The extracted number (iter) looks up the record in the database and writes it into the .txt file to generate the test paper:
hr =pDanXRecordset->Open("select * from SinTable",
    m_pConnection. GetInterfacePtr(),
    adOpenStatic,
    adLockOptimistic ,
    adCmdText);
while (!pDanXRecordset->adoEOF )
    if (curItem == *iter)
        var = pDanXRecordset->GetCollect("S_Content" );
        if (var.vt!=VT_NULL)
            strValue = (LPCSTR)_bstr_t(var);
            //Remove the following spaces
            strValue. TrimRight();
            //Write the title into the file
            pFile<< cont++;
            strValue=" ", "+strValue;
            pFile<< (LPCSTR)strValue;
            pFile<<' /n';
            var =
            pDanXRecordset->GetCollect("S_Answer");
            if (var.vt!=VT_NULL)
                strValue = (LPCSTR)_bstr_t(var);
                //Remove the following spaces
                strValue. TrimRight();
                //Write the answer into the file
                PFile << "The answer is:";
                pFile<< (LPCSTR)strValue;
                pFile<<' /n';
                if (iter != iSaveVect.end())
                    iter++;
```

Figure 4: Resource upload code (original)

3.2.2 Online Q&A Module

In this platform, the teacher's function is more inclined to organize, guide and supervise the learning activities. In traditional classroom teaching, students are shy and shy to ask questions to teachers, and there is a lack of communication between teachers and students, which makes it difficult to control the teaching effectiveness. This module can solve this problem well. Students can ask teachers for advice in time when they encounter problems in the learning process. Online communication shortens the distance between teachers and students and improves the actual teaching effect. The teachers should often browse the questions posted by students, actively participate in discussions, and answer questions for students. In this brisk communication and learning atmosphere, it is helpful to further improve students' grades.

3.2.3 Question Bank Management Module

In this module, it can be subdivided into three parts: test paper generating system, wrong question bank and thinking extension. The test paper generation system consists of two parts: systematic test paper generation and independent test paper generation. The systematic test paper generation system is mostly used in large-scale examinations. Teachers personally upload the written test paper content before students answer it, and the answer time is relatively strict. The self-generated test paper is used in ordinary tests at ordinary times. Users can choose subjects, chapters and knowledge points as test contents according to their own learning needs. After the selection, the system will automatically generate simulated test papers for users to use. The wrong question bank collects all the wrong questions of users in the test, and provides solutions. Users can mark them and carry out autonomous learning. The

extended thinking module contains a variety of classic questions, which are difficult. It is a vertical extension of basic knowledge and is mainly used to train students' thinking. This part of the content is not required for compulsory learning.

4 CONCLUSIONS

With the application and development of digital technology, a single teaching mode can no longer meet the needs of individuals and society, thus promoting the innovation of educational mode (Ye, 2017). The blended teaching mode in higher vocational colleges based on "internet+" constructed in this paper has alleviated the current educational problems to some extent, met the needs of students and improved the teaching system. In the follow-up research, this platform will continue to expand the depth and practicality of the system, and strive for a more appropriate integration of "internet plus" education and traditional classroom teaching, so as to contribute to the cultivation of comprehensive talents with all-round development.

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