Development and Construction of the Multimedia Web-based Courses Based on ASP

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Abstract

With the quick development of internet and computer technology, more and more information acquirers begin to more depend on the network, and for the transmission route of knowledge, the advantageous state of web-based courses becomes more and more obvious. The support of modern education technology for the web-based courses would gradually replace the study and education mode in the traditional education to strengthen teaching interactivity and students' independency. Therefore, to combine the multimedia in the modern education technology with the web-based course would strengthen students' learning independence for the course content, and integrate the "teaching" and the "studying" in the web-based courses.

Keywords: ASP, Multimedia web-based courses, Development, Construction

1. Definition and Characteristics of Web-based Courses

Web-based courses mean those courses based on Web, guided by advanced education ideas, teaching theories, and study theories. By modern education technology, web-based courses could combine the study content with the operation system, browser, and server, to achieve the interaction of study and teaching.

Because the teaching content contains teaching materials, the web-based courses usually include teaching materials, and the web-based courses only including teaching materials are not ideal web-based courses. The basic mode of web-based courses is to adopt the B/S framework, i.e. the mode mixing browser with server, to realize the information sharing and interaction between server and remote host computer.

The basic characteristics of web-based courses include the interaction, the sharing, and the independence.

1.1 Interaction

In web-based courses, students' study is intersected with teachers' teaching, and students could feed back teachers' teaching in the study by many modes such as message and information issuance, and teachers would filter the information from students, design and arrange the teaching plan and content according to students' study, which could realize the interaction of information transfer in the network system of B/S framework.

1.2 Sharing

In web-based courses, students could put in the electric homework by unloading files to teachers, and check or fill some contents in the teaching, and study the teaching contents by checking information themselves, and at the same time, they can share information with teachers. In the same way, teachers could add information on the background to share information with students.

1.3 Independence

In web-based courses, students could fully embody self-studying and self-enhancement in the study. By interviewing the basic modules of the web-based courses, students can study and review different chapters of the course according to their own situations, to really achieve the independent study "from books to web".

2. Framework and Development of Web-based Courses Based on ASP

The development of the web-based courses with B/S framework needs the support of database and page development language, and the usual web-based course development mode is ASP+ACCESS, i.e. storing the data in the table of database, and realizing the page function of foreground by compiling the page of ASP, and developing the web-based course by the interaction of browser and server. The pages of web-based course include foreground and background, and the foreground provides the web study for students, and the background administrates information for administrator.

The basic modules of the web-based course foreground mainly include course study, online answer, online practice, and teaching video. These modules could be distributed according to different demands to realize the interaction of students' independent study and teaching process. The background mainly includes adding, modifying, and deleting of information, and the administration and maintenance of data.

2.1 Development of Main Modules on the Foreground

2.1.1 Module of course study

The module mainly includes the chapter, the content, the emphasis, and the difficulties of the teaching courses. The table of "chapter" could be constructed in the database to store the chapter, and the table of "content" could be constructed to store the content, and the checking of "check" is set in the field of "content", and the "check=0" denotes the emphasis and difficulty, and the "check=1" denotes non-emphasis and non-difficulty. The SQL sentences of ASP could associate three tables, and output pages with two-level classification according to corresponding content, emphasis, and difficulty of the chapters. The main sentences are

```
<%
set rs=server.createobject("adodb.recordset")
sql="select * from chapter order by chapter_id desc"
rs.open sql,conn,1,1
do while not rs.eof
%>
<%=rs("chapter")%>
<%
set rs1=server.createobject("adodb.recordset")
sql1="select * from content where chapter_name='"&rs("chapter_name")&"'"
rs1.open sql1,conn,1,1
do while not rs1.eof
%>
<%=rs1("content")%>
<%
rs1.movenext
loop
rs1.close
%>
<%
rs.movenext
loop
rs.close
%>
```

Through above sentences, following functions can be achieved. The chaining of various chapters are read and displayed by the database, and after the chaining is clicked, the page would display the teaching content, emphasis, and difficulty of the chapter, and students could study the chapter according to their own study degrees, and

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independently study the emphases and the non-emphases of the chapter.

2.1.2 Module of online answer

The interaction in web-based courses is mainly embodied in the feedback and answer of the questions, and the answer process is the unity of teaching and study, and the higher enhancement of information based on the study on the web-based study platform.

The biggest obstacle of traditional online answer is that the online times of quizmaster and answerer are different, and when students' questions are delayed, teachers' answers would lack in timeliness, and even after the question is answered, students have obtained right answers, so the traditional online answer mode would lose its meaning.

Therefore, the construction of the example base (case.mdb) and the answer base (answer.mdb) could effectively help students' independent questioning, and find their satisfactory answers in the example base and the answer base, which could not only save teachers' working capacity in the daily question answering, but also help students to analyze relative questions, and study relative questions when obtaining their needed answers, and finally enhance students' ability of independent study. If students could not find corresponding answers in the example base and the answer base, this question record will be filtered and put to the background, and teachers would answer the question, and write the answer and question into the example base and the answer base, so other students could use it for references.

At the same time, when constructing the example base and the answer base, the assistant mode of periodically answering could be opened at the regulated time to realize the online communication between teachers and students.

2.1.3 Module of online practice

The online practice mode in the web-based courses could test students' study effect, and by adding practices on the background, teachers could obtain students' online answers, and compare the answers with the answers in the database, and judge the result automatically to test students' online study effect. Because students' answers would be compared with the standard answers in the database, so the questions mainly include single choice, multiple-choice, judgment, and completion. Online practice includes the chapter practice and the comprehensive practice, and the former is the daily self-testing to match students' chapter study, and the latter could provide the practice of all knowledge points in the courses for students, and help students to test the knowledge points in the whole courses.

The main implementation mode of online practice is to compare the results in the database by the single-choice button, the multiple-choice button, and the textbox of the elements in the table, supporting by the tables, and judge the answers according to corresponding questions. When adding questions, teachers should explain their questions, i.e. providing right answers with the explanations about the answers and questions. After putting in answers and comparing with standard answers, students could obtain the explanations about these questions, and more understand and utilize all knowledge points by the online testing.

2.1.4 Module of teaching video

The application of streaming media in web-based courses could bring the most direct video teaching mode to students, so the teaching video module is very important in web-based courses. Traditional teaching video mainly means teachers' teaching videos, and students could play them by loading, and this mode is the reproduction of the teaching classroom, lacking in the interaction between teacher and students, i.e. in the whole playing process of the teaching video, students could not participate in the teaching.

The application of streaming media realized the change of traditional teaching video mode, and it adopts the online playing of the streaming video in the page, the playing of Flash video, and the chatting of AJAX control without refreshing to enrich the content of the teaching video. Because of the transmission speed of the web, the buffering time of the online video may be longer, i.e. students could not watch the teaching video in the regulated time. Therefore, when editing the video, the small file formats should be adopted as more as possible, and by the playing of plug-in units such as "realplay" and "wmv", the online playing could be realized in the page, so many formats such as "avi", "rm", and "flv" should be adopted as more as possible.

At the same time, the practical teaching video should be added, and the practical videos and locale operation videos should be added in the web-based courses to strengthen students' understanding for the practical operations. Other peripheral equipments such as camera also could be used to implement the online teaching periodically, i.e. teachers and students all adopt the online-video teaching, with chatting of AJAX controls without refreshing. In the online teaching, students could put forward questions by the mode of message, and teachers answer these questions at proper time on line, and by the simulation of real classroom, the teaching interactivity could be really realized, and the video teaching of streaming video could be organically combined with the web answering system.

2.2 Development of the Background Management Module

The background of the web-based courses is the necessary platform in the daily information management, and according the operations on the background, the data in above basic modules could be added, modified, and deleted, and the bad information could be filtered periodically, and the student information, the course content, the exam content, and the message content could be managed.

2.2.1 Management of course content

By managing the content, the emphases, the difficulties, and the practice of the chapters in the course, the refreshing and modifying of the course content could be realized in time to ensure the linkage between the course content and the front theory of the subject.

2.2.2 Management of online testing

By managing students' daily testing achievements and results, with the analysis of report tables, the error ratio, and right ratio of the knowledge points in the chapter, the emphases and difficulties in the teaching could be arranged, and those knowledge points where students easily make mistakes should be explained mainly, and with the daily training of mating exercises, students study ability could be enhanced.

2.2.3 Management of messages and answers

When managing students' daily messages and questions, bad information should be filtered, and the example base and the answer base could be managed to establish the student self-answering system to help replying the messages.

2.2.4 Management of teaching video

By uploading the teaching video of remote study and the practical video through the mode of FTP, teachers could answer students' questions in the online explanation.

3. Maintenance and Management of Web-based Courses

The daily maintenance and management of web-based course are same important with the construction, so following aspects should be emphasized to maintain the web-based courses.

3.1 Background Level-to-level Administration

According to administrator's responsibility, the multiple-layer administration system should be established, i.e. teacher and administration. The teacher users are responsible for adding, modifying, and deleting student information, course information, and test question information, and replaying daily message information, and refreshing the answering system, and enriching the example base and the answer base. The administrator manages the module design and location on the foreground, and plans the web-based courses as a whole, and updates the system or adds new module.

By the multiple-level setting of the background management, the basic functions of various management layers could be defined, which could effectively ensure the normal running the web-based courses.

3.2 Encryption of Logging Interface and Streaming Media

Both the background management logging and the student study logging many leave backdoors for hackers' attacking, and at the same time, if the playing address of streaming media is exposed, users would load the video directly by the loading tool, which would add the pressure of the server. Therefore, to ensure the security of information and the normal running of the web-based course, the user information of the logging interface should be encrypted by "MD5" to hide the physical path of the database, and the playing address of the streaming information should be hidden to reduce the pressure of the server and ensure t the security of the web information.

According to the streaming media file provided by the server, the client end should select one content section at least, and send the authority request to the server, and one streaming media file should include one content section at least. According to the authority request received, the server would generate the playing permission information, and send the playing permission information to the client end. And the client end sends the playing request to the server according to the received playing permission information. And the server would encrypt one content section at least according to the received playing request, and send it to the client end. This method could enhance the playing flexibility and the playing efficiency of the streaming media, and avoid the slow speed because of too much use of the memory space, and quicken the processing speed of the server.

3.3 Strengthening the Safety of FTP

The new user group (ftpuser) should be established in the users of windows, and all accounts using ftp should be put into this group, and the NTFS authority limit of the file is to allocate proper NTFS authority for the FTP website

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catalog on the FTP server, and set up the authority in detail. Without the running authority, the independent account system with "serv-u." and "windows" is recommended to establish the FTP server.

To sum up, the construction of the multi-media web-based course based on ASP is to further develop the web-based course, and it applies the dynamic page technology and the streaming media technology into the construction of the web-based course, which could strengthen the information sharing and interaction in the teaching, with the support of the traditional multi-medial teaching mode.

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