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*Research Article*

## Design and Implementation of I & P Resource Sharing Platform Based on Excellent Curriculum Repository

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### Abstract

Excellent courses have a stake in the high education reform and in the improvement of instruction quality, so play a significant part in the curriculums of colleges and universities. This paper designs and implements an online Ideology and Political (I&P) learning sharing platform based on classic curriculum repository on the .NET platform in C# language and B/S infrastructure mode by combination with Web Service and SQL technologies. This platform effectively converges a string of I&P quality courses to independently construct an instruction repository for online excellent curriculums whereby to facilitate students to retrieve a variety of quality curriculums for independent online learning, effectively exchange and share the information about the I&P instructions, so as to boost the education cause march on toward informationization, improve the level of I&P education in colleges and universities. After running the test, the platform is stable and reliable with practical value.

### Keywords

NET Platform • Web SERVICE • Excellent Course • I&P • Online Sharing

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The construction of excellent courses has concern with the culture of talents in colleges and universities, especially the I&P classic courses play an important role in students' ideology morality level and political attainments (Li, 2011; Xie, Sheng, Li & Feng, 2014; Zhou & Huang, 2011). It is imperative for colleges and universities to converge some I&P classic courses which are advanced, exemplary, systematic, scientific and adaptive into a platform for students to share the high-quality instruction resources and exchange with instructors at zero distance recur to the state-of-the-art network information communication technology. The existing exquisite course Websites are mostly independent, lack the interactive mode, coupled with a complex construction and awkward development of site, so difficult can they achieve online communication between the I&P teachers and students. It is crucial to design and develop an I&P online sharing platform based on the excellent course repository, in order to facilitate the construction of I&P curriculum, and improve the sharing of instruction resources.

## Basic Theory for Platform Design

### NET Framework

NET, as a key Web-based platform, enables to associate with the Apps and operations in the system. The WEB framework consists of ADD.NET, base class libraries, active service pages, and common language runtime library, etc. (Hogan & Sinclair, 1996; Valentino, Traugott & Hutchings, 2002; Mizruchi, 1996). The common language runtime library features the memory management, security authentication, code compilation and running and so on. The .NET Framework Class Library stores multiple classes for developer. The .NET Framework is programmed in a fixed mode, compatible with multiple languages and platforms and can allocate all types of resources in an orderly manner to facilitate the overall operation (Sidanius & Bo, 1978; Li, Liu & Zhang, 2010; Han, Go, Min & Jang, 2015).

### B/S mode

B/S mode refers to the browser and the server, the former is a user-based interface, while on server side, some relevant transactions will be processed and some operation will be performed. The platform developed in B / S mode can make the access system more open, and never be blocked due to the number of users, the access location, the access interface and for other reasons, thus catering to the user demands for various browser interfaces (Song *et al.*, 2009; London, 2003; Engel, 1984). This platform can control the congestion within a minimum scope, allow users use the browser more smoothly, conveniently so as to provide users a better experience. It features more secure management authority and more rigorous service data, which makes sure that user privacy will not be compromised, the stability and user friendliness, good performance, simple background operation, easy to upgrade and maintain.

## Web Service

Web services enables the association with the various network systems to form a common network system where the diversity of information from different systems can be effectively collected for the commercial sites to save some development and maintenance costs (Schwamm,1980; Federico & Schneider,2007; Loss, 2004). Web services architecture is generally composed of service providers, service agents and service requesters, which differ in functions, namely, to provide binding, searching and releasing services as managers, respectively. It integrated XML, SOAP, WSDL, HTTP and so on. Users publish their requirements via UDDI. WSDL and SOAP parse the services and then use XML as a data exchange standard language, and in conjunction with SOAP, WSDL and UDDI, to complete the service operation.

## Platform Requirement Analysis and Platform Design

### Platform Requirement Analysis

- Development requirements**
- (1) Security; it sets up a certain authority to ensure a security;
  - (2) Fault tolerance; it prompts user when an error occurs;
  - (3) Interaction; it allows an effective communication between students and teachers;
  - (4) Easy to maintain; it facilitates the background operation to make it easy to use, and streamlines the upgrading and maintenance of the excellent course repository.
  - (5) It is advanced, comprehensive, adaptive to changes in the times, will not lead the platform to be unused due to time supersession.

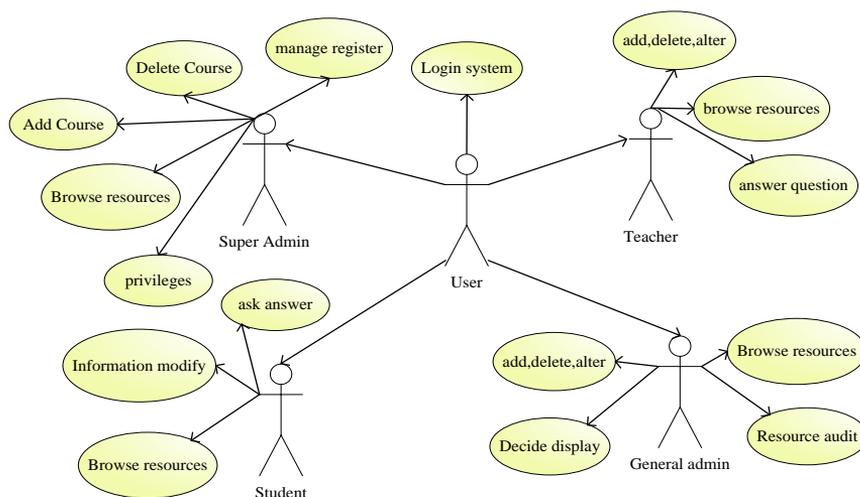


Figure 1. Use case of Ideological and political online learning platform.

**Platform case analysis:** In the process of platform case analysis, UML is adopted for modeling in order to study what the user requirements are and make clear how to develop the platform. This paper designs a platform for classic courses: here are the platform administrator, the general manager, I&P teachers, students, common users. This platform can interact users with several identities who perform their own responsibilities. The exhaustive description of case study is shown as below:

The I&P Resource Sharing Platform Based on Excellent Curriculum Repository builds up a bridge between teachers and students, by which teachers can set up, change and supplement to the relevant curriculums; students can learn relevant knowledge, interact with teachers and ask some questions; General administrators have the right to manipulate curriculum resources and set up the courses, including the change of learning resources, delete and publish curriculum resources and other permissions; system administrators can be decentralized to browse resources, publish and cancel the courses and process registration and its relevant issues; common users, I&P teachers, general administrators, system administrators have all played an indispensable role in the platform.

**Non-functional requirements analysis (1) Software environment**

It uses the commonly used client system IE, which support for Windows95 / 98, Windows2000 / XP system.

Application server adopts Windows2000 / XP, Internet Information Server (IIS) 5.0 or above.

Database server is Windows2000 / XP, Internet Information Server (IIS) 5.0 or above.

**(2) Hardware environment**

Server CPU: PIII 500 above, RAM: 256M or above.

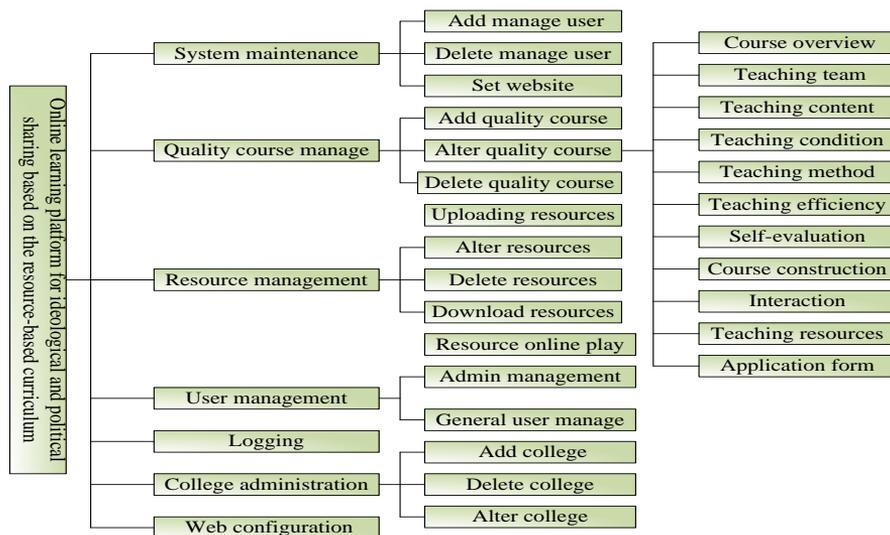


Figure 2. Architectonics of Ideological and political online learning platform.

**General design**

**Principle** The platform, as a user-based efficient, high-quality I&P learning platform, is designed to meet the needs of customers. On this basis, its excellent curriculum learning resources should have the following principles: modularity, openness, the universality of curriculum modules, applicability, scalability, security, easy to maintain.

**Platform framework design** Functional partition: the system enables excellent course management, online survey management, Website configuration, resource management, Website copyright, user management, user log, the specific functions are shown in Fig. 2.

Excellent Course Management: it serves for preparation of excellent courses, publishing and management of courses.

Online survey management: it can be used for online survey of relevant information, such as student learning demands, resource types and so on.

Website configuration: it mainly displays the information relevant to the website.

Resource management: it refers to setting of relevant resources. The related resources can be added.

Website copyright: it manages the copyright issues about website course materials and technology.

User management: it manages users, including registration, maintenance and so on.

User log: it records user's operation information and personal profile of user in the platform.

**System modules:** This platform supports release, query, correction, deletion and download of the I&P instruction resources, forums and resource statistics; also allows user rights management, adding, deleting and modifying users, as shown in Fig. 3.

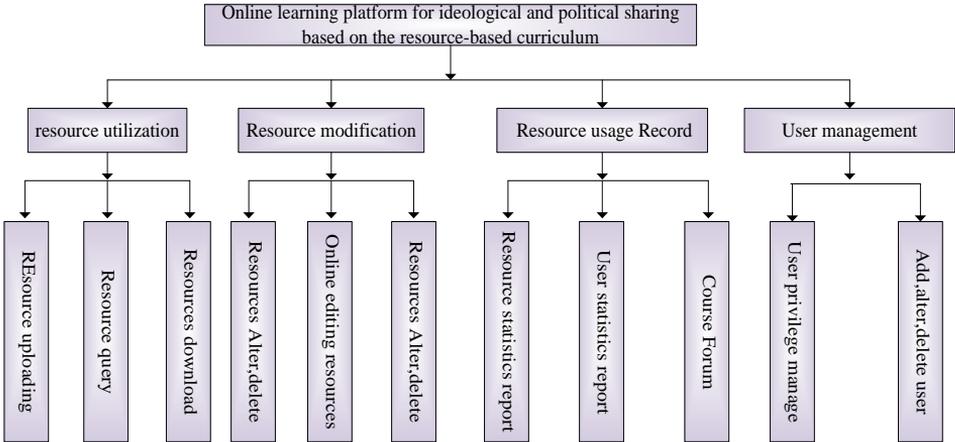


Figure 3. System function module diagram.

The platform has three major function modules, i.e. system management, student learning and online communication and excellent curriculum resource management.

The system management module serves to manage the relevant information in the platform, including users, the system resources and the display of many announcements.

Platform resource management module mainly manage some learning resources in the platform. The core content of platform is just the I&P instruction resources, so particularly important is this module. It is required to ensure that it can effectively display and download the resources with adding, searching, downloading, evaluation, statistics and deleting functions enabled.

Student learning module is to help students learn some relevant knowledge. Students can retrieve and download the resources they expect in this module. As the main service object of this platform is just students, the platform requires sufficient network instruction resources for students and provides them with more quality courses to help them achieve their learning objectives.

Online communication module meets the requirements of online communication between the platform and students, between students and students. If students get in a jam, they can use the platform's online communication function to consult their teachers and students. I&P teachers may choose to answer the students publicly in the forums or privately and may also launch discussions on a certain issue.

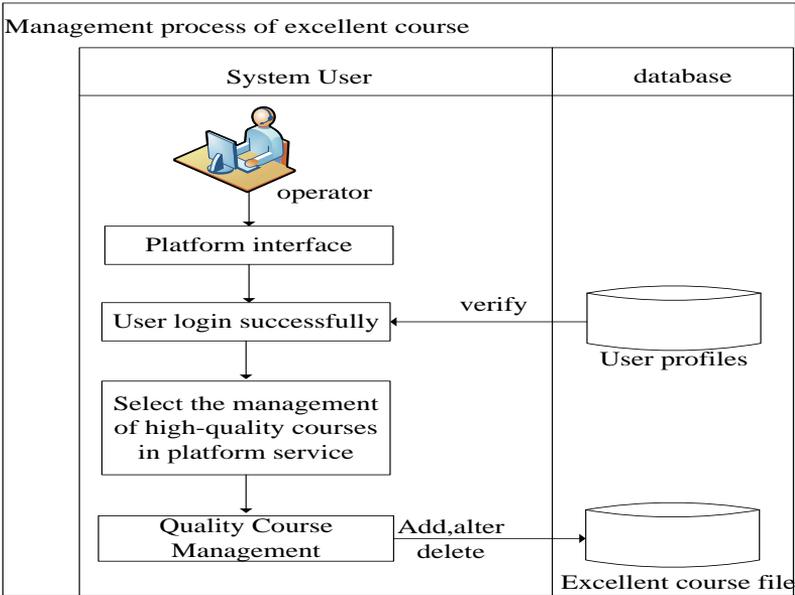


Figure 4. Ideological and political quality course management process.

**Detail design of platform**

**Running process.** Access rights of different users diversify in the platform. After logging in the platform, the system first identifies the user's rights. User manages the platform within the scope of the rights, mainly reflecting the management of the excellent curriculum modules, exhaustive to the management of learning resources, subject management and online survey management. Excellent curriculum management process is shown in Fig. 4.

**DB design.** The database ER in the I&P resource sharing platform covers a wide range of contents such as physical quality curriculums, quality curriculum levels, instruction conditions and effects, curriculum self-evaluation, exchange between teachers and students, curriculum resources, faculty team, instruction contents and methods, see Fig. 5.

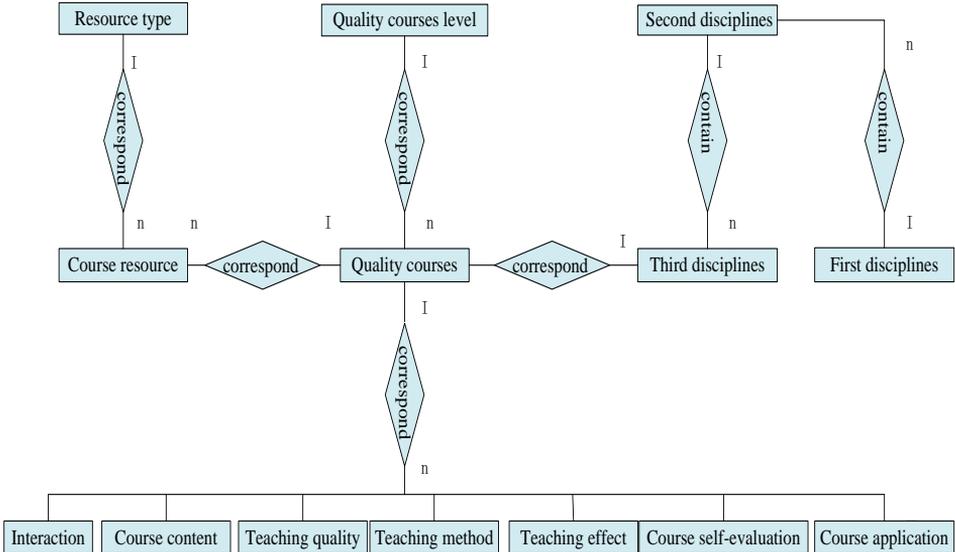


Figure 5. Database ER diagram of Ideological and political online learning platform.

Table 1  
Excellent course

Order	Field name	Field type	Explain
1	Good Course ID	int	Number
2	Good Course name	Varchar (20)	Name of boutique courses
3	Good Course person	Varchar (10)	Responsible person
4	CourseIntro dev	Ntext (16)	Course developing history
5	CourseIntro intro	Ntext (16)	Course introduction
6	CourseBuildPlan obj	Ntext (16)	Building goals and planning

The database holds a set of data sheets, including excellent curriculum, list of administrators, background log, curriculum self-assessment schedule, lists of the excellent course levels, the instruction contents and methods, curriculum resources, the titles option, Web-based survey topics, and users, website configuration

information schedule, declaration form, college schedule, website copyright, faculty teams, instruction effects, teacher-student communications, instruction conditions and teams. Excellent curriculum is described in Table 1.

### Platform Implementation and Test

The platform mainly consists of server and browser. The operating system is Microsoft Windows 2003 Server and the client operating system is Windows XP or Windows 2000. The server and the browser collaborate with each other to implement the function of the module. The excellent curriculum management module is taken as an example for detail description.

#### Compilation for base class library

A platform-based class library is required for the implementation of platform functions. Two classes are generally required, i.e. database basis and input legitimacy test. The database basis class connects, closes and logs out the database, return to the database set, and execute SQL on the platform. The test input legitimacy is built in order to ensure the legitimacy and the integrity of the user input data.

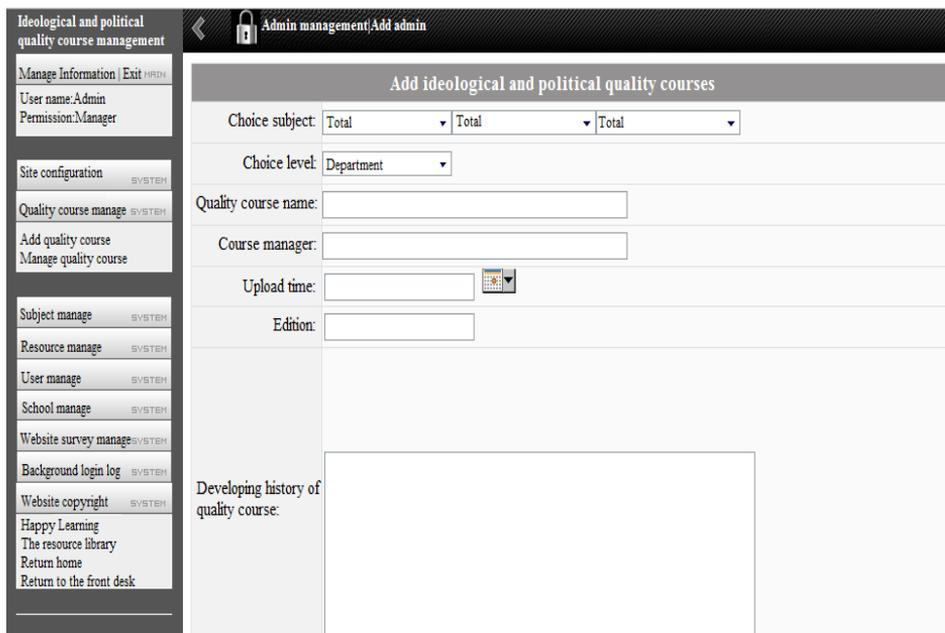


Figure 6. The interface of quality course management module.

Base class library covers Class1.cs, AdminCs.cs, Md5Pw.cs, randomCode.cs, SqlProvider.cs. The Class1.cs enables the database connection, closure, command execution, storage functions, return database and other functions, to support for user management of databases. The AdminCs.cs authenticates and supervises users

who log in the background and ensures the legitimacy of the input data. The Md5Pw.cs ensures the security of user's passwords on the platform. The randomCode.cs generates validation data randomly. The SqlProvider.cs allows users display basic information on the frontend of system.

### Implementation of I&P quality curriculum management module page

The I&P quality curriculum management module page also includes many sub-modules that can help achieve a number of functions such as curriculum addition, curriculum information modification, page creation, deletion, query and so on. New page is a welcome one for quality curriculum, where curriculum name, content, subject, principal, objectives, policy implementation, curriculum level and so on are included. The detailed page is displayed in Fig. 6.

The Calendar module covered by VISUAL STUDIO2005 enables the "upload time". Users can directly select the date instead of manually input when searching, so as to improve user's operation simplicity. Main function codes come here:

```
<tr>
<td height = "32" align = "right" bgcolor = "#F2F2F2"> upload time: </td>
<td bgcolor = "#F2F2F2" ><asp:TextBox ID = "TextBox2" runat = "server"
MaxLength = "20" ReadOnly = "True"></asp:TextBox>
<div id = "calendarDateAndTimeContainer" style = "width: 100px; height: 60px;
z-index: 1999; position: absolute; top: 0px; left:400px" runat = "server">&nbsp;
<asp:Calendar ID = "calendar" runat = "server" BackColor = "#FFCC66"
BorderColor = "#FFCC66" BorderWidth = "1px" DayNameFormat = "shortest"
Font-Names = "Verdana" Font-Size = "8pt" ForeColor = "#663399" Height = "200px"
OnSelectionChanged = "calendar_SelectionChanged" Width = "220px" Visible =
"False" ShowGridLines = "True">
<SelectedDayStyle BackColor = "#CCCCFF" Font-Bold = "True"/>
<TodayDayStyle BackColor = "#FFCC66" ForeColor = "White"/>
<SelectorStyle BackColor = "#FFCC66"/>
<OtherMonthDayStyle ForeColor = "CC9966">
<NextPrevStyle Font-Size = "9pt" ForeColor = "#FFFFCC">
<DayHeaderStyle BackColor = "#FFCC66" Height = "1px" Font-Bold = "True"/>
<TitleStyle BackColor = "#990000" Font-Bold = "True" Font-Size = "9pt" ForeColor
```

```
= "#FFFCC"/>  
</asp:Calendar>  
</div>  
<asp:ImageButton ID = "imgCalendar" runat = "server" ImageUrl =  
"img/calendar.gif" OnClick = "imgCalendar_Click"/>  
</td>  
</tr>
```

### Test on quality curriculum management module

Before going live, a White-box and Black-Box Tests are used to test the functions of the platform. They will not be put into service until they have been successfully implemented on the platform after test.

Quality curriculum management consists of two contents, i.e. course addition and management, which shall be tested separately:

**Quality curriculum addition.** When this function is tested, it is found that the image is too large to be pasted. This problem has a little effect on this function yet and the function still works normally.

**Quality curriculum management.** This function is mainly to test whether the key courses to be tested can be added, modified and deleted. Although some errors appear occasionally when dealing with large images during the test, it does not matter for the implementation of the excellent curriculum management functions and basically reaches the expected standard.

## Conclusion

(1) This paper takes .NET as a basic platform, adopts B/S infrastructure mode and uses C# programming language to implement the I&P Resource Sharing Platform based on the classic curriculum repository by combination with Web Service and SQL database technologies.

(2) Making full use of information network technology and relying on the network resource sharing platform, the various resources related to I&P education in colleges and universities are strategically reorganized and systematically optimized to achieve the perfect match of I&P disciplines and information technology,

(3) The learning platform designed in this paper enables an auto construction of network high-quality curriculum repository, which facilitates students to retrieve all types of I&P curriculums for independent online learning, effectively exchange and share I&P instruction information, thus boost the I&P education march on toward the informationalization, improve the level of ideological and political education in the colleges and universities.

(4) After running the test, the platform is stable and reliable with a practical value.

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