Research on the Construction of College Students' Information Literacy Education and Evaluation System

Jin-Yong LI¹,⁎ and Jian-Du CAI²

¹Huizhou University Library, Huizhou, Guangdong, China
²School of Mathematics, Huizhou University, Huizhou, Guangdong, China

⁎Corresponding author

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Abstract. Information literacy competency has an important impact on modern college students' entry into society after graduation. However, there still exist many problems on the cultivation of college students' information literacy competency at present. Many colleges cannot allocate fixed studying resources and lesson hours for the education of information literacy competency, which caused the information literacy of college students in China generally not very high. This paper studies from theory and practice: research on the problems that the existence and current circumstance of college students’ information literacy competency; for the problems that the existence and current circumstance of college students’ information literacy competency analyzed by the above, manage to construct an information literacy competency testing platform for college student, after plan and summarize to confirm the function construction of platform, which can be used as the extending and supplement of traditional lesson.

1. Introduction

The level of information literacy ability has an important impact on the growth, success and development of modern college students. The college students’ information literacy education and evaluation system aims at improving college students’ ability to process and apply information, cultivating college students’ learning ability, thinking mode and innovative ability. The research shows that there are many problems in the cultivation of information literacy of college students in China. Many colleges and universities do not allocate fixed teaching resources and class hours for information literacy education, and college students’ information literacy ability needs to be strengthened.

The college students’ information literacy education and evaluation system integrates the concept of MOOC and quantitative evaluation. On the one hand, the information literacy test sub-module is used to realize the pre-evaluation or post-test of college students’ information literacy ability, with the main form of online examination; on the other hand, the information literacy online class module is used as an effective supplement to the traditional classroom, aiming at improving the information literacy of modern college students, improving their information retrieval, processing and identification ability, enhancing college students’ information moral awareness, and mastering the basic methods and norms of information acquisition and dissemination. [1]

2. Current Situation and Analysis of College Students’ Information Literacy

With CNKI as the data source, the key word “college students” and “information literacy” were used to search the abstracts from January 2001 to March 2019. A total of 2024 results were retrieved. The following conclusions can be drawn after the analysis and study of the results in descending order of relevance.
2.1. Overall Trend Analysis

From 2001 to 2010, the number of related literatures showed an upward trend. The number of literatures increased from 10 in 2003 to 182 in 2010, and has stabilized at 150-200 per year since 2010. From the change of the number of literatures, it can be seen that college students’ information literacy has attracted more and more attention since 2003, and the research results are rich and the amount is increasing. After 2010, the study on college students’ information literacy has gradually become stable and declined slightly. The number of relevant researchers has reached a certain number, reflecting the current lack of stamina of research and development.

From the distribution of the theme of related literatures, it can be found that after excluding the two search keywords of “information literacy “ and “college students’ information literacy”, the top five were “university libraries”, “school libraries”, “information literacy education”, “libraries” and “buildings”, ranked by number of related topics, which accounted for 80.17% of the total of college students’ information literacy. On the one hand, the concept of information literacy is derived from the skills of book retrieval. On the other hand, university libraries are important sources of information and knowledge for teachers and students on campus, where there are not only a wealth of professional books, but also various network courses, special lectures, book database and skill training courses. The university libraries have concentrated the literature resources of the university, and own rich information resources, abundant faculty and perfect equipment facility. These resources have the very positive function to the enhancement of information literacy of students on the campus. Therefore, university libraries play a very important role in the information literacy education of college students.

2.2. Analysis of Information Demand

On the one hand, the college students’ information literacy education and evaluation system provides an Internet extended learning platform for improving college students’ ability to process and apply information, cultivating college students’ learning methods, thinking methods and innovative capabilities; on the other hand, the college students’ information literacy education and evaluation system provides a learning and exchange platform for the outreach services of colleges’ information literacy in the society, and helps to improve the utilization rate of information resources and socialized service of university libraries.

The college students’ information literacy education and evaluation system is positioned as an extension and supplement of the traditional education subject. It is the complementary state of the traditional classroom, which can provide an interactive and open second classroom for the participants of the traditional classroom. It aims at improving the information literacy of modern college students, improving their information retrieval, processing and identification ability, enhancing college students’ information moral awareness, mastering the basic methods and norms of information acquisition and dissemination, and providing corresponding test and evaluation methods.

3. Platform Design

3.1. Overall Functional Requirements

This paper gives a study to the construction of college students’ information literacy education and evaluation system. In order to achieve the purpose of educational evaluation, improve college students’ information literacy and increase the utilization rate of information resources of university libraries, this paper is divided into two parts: the front end and the back end. It provides functions such as user login, user information modification, learning courses, examinations on the front end. On the back end, the managers and various teachers manage the resources, including course resources, question bank for test papers, knowledge entries, examination management and other functions. (Figure 1)
3.1.1. System User Requirements
There are mainly three roles in this system, namely, the administrators, teachers and students. For students, their functional requirements mainly include logging in and logging out, learning of course, taking an examination and browsing and editing knowledge entries; for teachers, there are functions such as course resources, question bank for test papers, examination, batch import and export; for administrators, it should have the function of website user management, arrangement of overall module, course classification and test room arrangement.

3.1.2. System Use Case Analysis
The college students’ information literacy education and evaluation system is a model that establishes functional requirements from the perspective of users. Its main users can be divided into students, teachers and administrator. Figure 14 is a diagram of a use case model established according to the general process of a system use case. For teachers, the system use case include the question bank management, course management, difficulty setting, test paper composition, test paper management, question bank export and grade export. For administrators, the system use case includes user management, course subject management, examination room management, content management, professional classification management, chapter management, data backup and recovery, etc.

3.2. Key Technology

3.2.1. Bootstrap Framework
Bootstrap is a currently popular Web framework. Based on HTML, CSS and JACASRIPT, it is simple, flexible and has many built-in components to help developers quickly build Web projects without having to struggle with miscellaneous and detailed work such as page layout, overall arrangement and interaction.

3.2.2. Object-Oriented Method
In this system, students, teachers, administrators and file resources are all treated as objects, and the analysis, design and programming of the system are easier to understand by describing the attribute and behaviors of the objects. For example, we only need to describe the role of students, and we set attributes such as student ID, name and gender as well as methods of attending class, learning and taking examinations. After that, when we add a new student, we can make him inherit the student role and automatically have students’ attributes and methods. The object-oriented method is more in line with people’s habitual perception of the real world.
3.2.3. Ajax Technology

Ajax is a JAVASCRIPT web browser development technology that combines a number of innovative techniques. This paper takes advantages of only a small part of the technology. In the traditional Web form interaction, users return to a new page after they submit forms and servers accept requests, which wastes a lot of network bandwidth. Many resources are duplicated between the first and second page, and every interaction depends on the server responding, which causes the user interface to respond much more slowly than the native browser. With Ajax, we only send and retrieve only a small amount of necessary data to the server, and respond the serve with a built-in JAVASCRIPT processor on the browser side. In this way, as the amount of data exchange is reduced, the response of serve is faster.

3.3. Design of Database

The design of database should follow certain specifications in order to improve the efficiency of calculation and reduce the probability of error. The scientific and reasonable data model can make the system development and maintenance more convenient, and running efficiency higher. This section will give a brief introduction to the design of several tables and fields in the colleges students’ information literacy education and evaluation system. [6]

(1) Student table: covering student ID, name, gender, birthday, department, major and email address.
(2) Teacher table: covering the teacher number, name, gender, birthday, department and email address.
(3) User table: covering the user number, password and role.
(4) Category table: covering title, name, cover, superior category and affiliated department.
(5) Course table: covering name, course number, cover, course introduction, attachment and study time.
(6) Exam table: covering the name of examination paper, questions on the examination paper, examination grade, state of examination paper, type of examination paper, author of examination paper and examination time.
(7) Paper table: covering the paper name, paper number, paper content, attachment and author.

3.4. Design of Function Model

The system analysis and database design is the basis of the college students’ information literacy education and evaluation system. This section will give an introduction to how to use the functional module of the system to meet the design requirements.

3.4.1. User Module

Previously, we introduced that this system can be divided into three main types of roles. In the user module, we see the user and the role separately. The user only has identifiers, passwords and personal information, and the specific permissions are determined by the role group to which the user belongs. We mentioned the object-oriented programming technology earlier. Here we can actually see that it is very convenient to switch roles when necessary after encapsulating the teacher and administrator as a class of objects. In addition, this system also provides the function of modifying object attributes. We can see some attributes in model management. The attribute such as name, gender and email address are all public fields, and some are proprietary to this model. The system itself has defined three roles: ordinary user, teacher and administrator. The user can also add or delete roles or edit and sort roles according to his own needs.

3.4.2. Course Module

The course module includes course classification and course management. The course classification management facilitates the classification of various courses by the content of the course, which provides convenience for future use and management. The course management facilitates the creation of new course under the existing classification and edit of the personnel and content of the existing courses.
3.4.3. Exam Module
The exam module has a wide range of options that can be customized, including test room setting (setting different exam rooms according to the regions, secondary colleges and subjects), setting of questions, test base management, and setting of test paper composition. The exam module can help users test their own learning effects and conduct targeted learning.

3.4.4. Entry and Document Module
This module is similar to an encyclopedia, and is mainly used to explain some of the proprietary terminology and teach the process and method for solving problems. This module takes an open setting, and anyone with new knowledge can share it with others by editing the entries.

4. Summary
This paper is aimed at improving college students’ ability to process and apply information through the college students’ information literacy education and evaluation system, and providing an Internet extended learning platform for cultivating college students’ learning methods, ways of thinking and innovative ability; on the other hand, it provides a learning and exchange platform for the outreach services of colleges’ information literacy in the society, and helps to improve the utilization rate of information resources and socialized service of university libraries.[7]

Although this paper tries its best to develop an educational evaluation platform to meet the need of modern college students, but it is undeniable that due to the limitation of technical capability, there are many problems in this paper and the system developed in this paper. The first is the limitation of time and manpower, and the preliminary preparation for the system development is insufficient. Due to the personal technical level of the author, the code quality in this paper is not high, the content of the system is not rich enough and the coordination of the modules is insufficient. It is hoped that this study can provide some reference for the cultivation of information literacy of college students in the future, especially in the use of computer network teaching. It is hoped that the platform developed in this study can be applied in the future teaching or used as the reference to the development of other network platforms, and that colleges and scholars in various colleges can put forward more efficient ways to cultivate college students’ information literacy in the future.

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