



Research on the Design and Implementation of Web Pages with Integrated Information

Yanmei Dai^{1,2}, Yongsheng Xie³ (Corresponding Author)

¹Faculty of Education, Shaanxi Normal University, Xi'an Shanxi, 710062, China;

²Office of Academic Affairs, Guangxi Science & Technology Normal University, Laibin, Guangxi, 545004, China;

³Faculty of Mathematics and Computer Science, Guangxi Science & Technology Normal University, Laibin, Guangxi, 545004, China.

First Author's E-mail: daiyanmei.1988@163.com; Phone Number: 13788675187

Corresponding Author's E-mail: 551907834@qq.com

Abstract: Currently, numerous industries exhibit close interconnections. Nevertheless, the information asymmetry prevailing among various industries leads to the operational inefficiency of related industries. To tackle this issue, web pages with integrated information are designed by utilizing Linux, Apache, MySQL, and PHP (LAMP) as the development environment, with MySQL5.6 serving as the back-end database and HTML5 serving as the front-end framework. As a whole, this approach is beneficial to integrate diverse related industrial information, thereby offering effective solutions for the challenges posed by information asymmetry.

Keywords: Integrated Information; Web Pages; Design; Implementation

1 Introduction

In the report of the 20th National Congress of the Communist Party of China, it is proposed to speed up the construction of a network power, which is the requirement of a new round of scientific and technological revolution^[1]. With the rapid development of the Internet, the information on the Internet presents an explosive growth^[2]. With the arrival of a new round of scientific and technological revolution, network digital technology has been closely integrated with the development of economy, trade, transportation, medical care, agriculture, language processing and other industries, profoundly affecting the development of various industries and fields, and affecting the pace of national modernization^[3]. At present, the industries are closely connected, but there is often information asymmetry between different industries and industries, which leads to the problem of low work efficiency. In order to make each industry and industry can better mutual understanding and cooperation, the design and implementation of integrated information web page is inevitable. At present, the design and implementation of industry and industry integration web pages

are mainly reflected in the design and implementation of industry-education integration information web pages, but the research is still in the exploratory stage. There are national production-education integration web pages, provincial production-education integration web pages, enterprise production-education integration web pages, and school production-education integration web pages. Many columns are still under construction, to be improved, the existing design of the web page, the method is relatively single, the function is not complete. Therefore, design a fusion information web page, using LAMP (Linux, Apache, MySQL and PHP) as the development environment, MySQL5.6 as the database, HTML5 as the front-end framework, to establish a fully functional web page, the related industry information together, effectively solve the problem of information asymmetry. It is of great significance.

2 Design Principles

Given that overall design acts as a crucial foundation for the design and implementation of web pages with integrated information, this research aims to illustrate the foregoing principle by virtue of designing and implementing a web page with integrated information in the context of production and education. Typically, the production-education involves diverse user categories, encompassing school administrators, teachers, students, enterprise personnel, government personnel, etc. To uphold the standards of perfection and orderliness in terms of web design, it is imperative to adhere to several specific principles as shown below.

The first principle that needs to be adhered to is the principle characterized by the accountability of principal leaders^[4]. Given the diversity of cooperative subjects involved in the production-education integration, coupled with the dispersion of information, how to effectively centralize and share information poses a severe challenge. In this regard, the design of web pages with production-education integration should adhere to the principle characterized by the accountability of principal leaders, with a view to mobilizing the necessary resources and funds and coordinating the design of web pages as well as the subsequent updating work.

The second principle that needs to be adhered to is the principle of unified design^[5]. Specifically, this principle is convenient for bringing various contents of the system, such as the overall functional architecture and data storage structure, into comprehensive consideration, facilitating a unified design conducive to ensuring the integrity and non-repeatability of the functions of each block.

The third principle that needs to be adhered to is the people-oriented principle. During the design of web pages with integrated information from production and education, it is imperative to adjust and improve the program design from the perspectives of diversified users, encompassing school administrators, teachers, students, enterprise personnel, and government personnel. Such a design principle is beneficial to ensure a clear and perfect workflow applicable to the design and updating of web pages, thus popularizing the operation of web pages and reducing the difficulty of specific operations.

The fourth principle that needs to be adhered to is the principle of practicality^[6]. Related to this, a key to the design and development of web pages lies in the adherence to the configuration aimed at giving priority to the core functions as well as the reasonable allocation of corresponding auxiliary functions according to actual demands, intending to ensure the practicality of the entire web page.

The last principle that needs to be adhered to is the principle of elegance. In this connection, the insistence on the principle of elegance regarding the plate and color of web pages is conducive to endowing users with a comfortable browsing experience, thereby avoiding visual fatigue.

3 Design Structure and Principal Techniques

3.1 Design Structure

Prior to the development of web pages, this research first conducted a systematic investigation on teachers and students, school administrators, enterprises with production-education integration, the local government where the school is located, and industry organizations to establish a comprehensive understanding of the demands of diverse users, with the aim of improving the functional structure of web pages and enhancing users' satisfaction with the use of web pages. In this foundation, this research further designed the functional modules of web pages and built prototypes based on the demands of each user. The functional structure of the web page is shown in Figure 1 below:

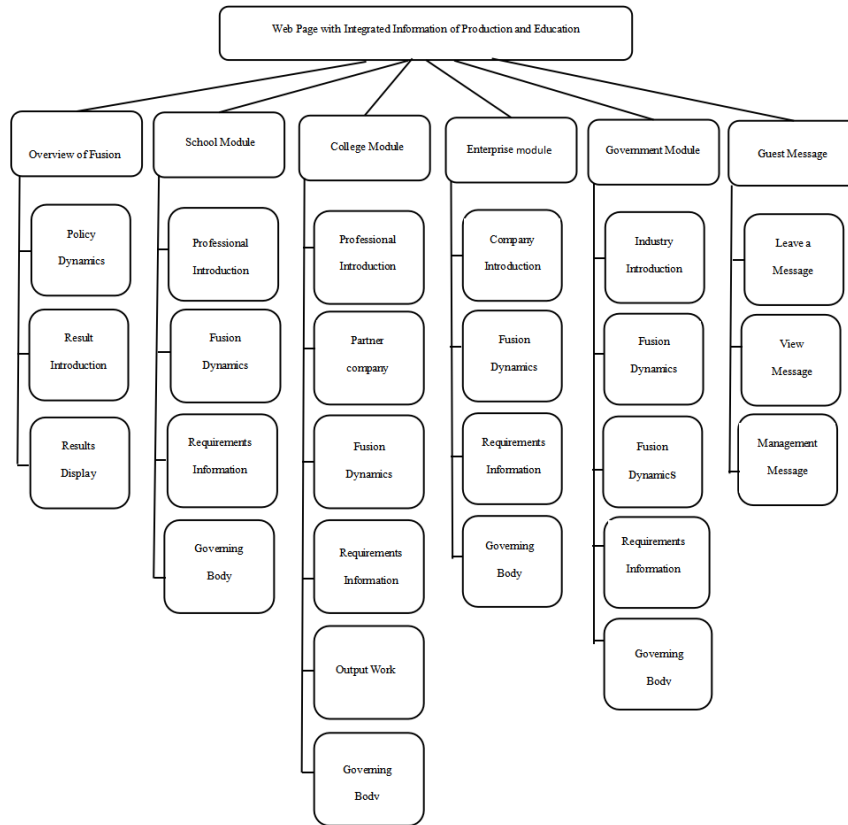


Fig. 1. Functional Structure of the Web Page with Integrated Information from Production and Education

As a whole, the main function of the web page with integrated information from production and education is grouped into 6 modules, encompassing the integration overview module, school module, college module, enterprise module, government module, and visitor message module.

More precisely, first and foremost, the integration overview module encompasses the policy documents of the higher authorities and the unit, the introduction of integration results, and the display of integration results. Among them, the display of integration results can be both the integration results of the school or excellent integration results outside the school. Secondly, the school module encompasses the introduction of the school's existing majors, integration dynamics, information needs, management organization, etc. Among them, the integration dynamics encompass a series of aspects such as curriculum construction, specialty construction, teacher team construction, student practice, student works display, etc., whereas the management organization is employed to present numerous factors such as the school's management organization and its functions, personnel, contact information, and location. Thirdly, the college module encompasses a variety of information, such as

the introduction of the college's existing specialties, the introduction of cooperative enterprises, integration dynamics, demand information, teachers' and students' output works, and management organization, etc. Among them, the integration dynamics encompass a series of aspects such as curriculum construction, professional construction, teacher team construction, student practice, etc., whereas the management organization is employed to present numerous factors such as the departments and staff within the college that are responsible for managing the production-education integration, their job responsibilities, contact information and contact locations. Likewise, the enterprise module encompasses diverse information such as enterprise introduction, dynamics of enterprises' production-education integration, cooperation information needs, management organization, etc. Among them, the integration dynamics encompass a host of aspects such as curriculum construction, professional construction, teacher team construction, student practice, student work display, etc., whereas the management organization is employed to present numerous factors such as the departments and staff within enterprises that are responsible for managing the production-education integration, their job responsibilities, contact information, and contact locations. Fifthly, the government module encompasses various information such as industry introduction, government policy dynamics, integration dynamics, demand information, and management organization, among which the management organization is employed to present numerous factors such as the departments and staff within the government that are responsible for managing the production-education integration, their job responsibilities, contact information, and contact locations. At last, the visitor message module encompasses diverse functions such as sending messages, viewing messages, and managing messages, among which the function of managing messages can solely be operated by the administrator.

3.2 Main Techniques of Design

In this research, web pages with integrated information from production and education are designed by utilizing the LAMP as the development environment, with MySQL5.6 serving as the back-end database and HTML5 serving as the front-end framework. Particularly, it can be leveraged not only to describe the structural and functional design of the system but also to realize a plurality of functions, such as the block display of each module, the optimal dynamic display, click monitoring, search, message, etc.

Given the background language using PHP as an interpreted language, the written program is prone to be embedded in HTML. Consequently, the description language of PHP cross-platform server-side script is employed to install PHP on the Windows platform, aiming at cooperating with the Web server to provide corresponding services. Notably, PHP is utilized to write programs and subsequently embedded in HTML.

4 Web Page Design and Implementation

4.1 Database Design

In accordance with the specifications for the function design of web pages with integrated information from production and education, the web page incorporates a guest message module, which is crafted utilizing a MySQL database called "message.frm" comprising two data tables, outlined as follows:

Table 1. Field Definition of the Administrator Account Information Table

Field Name	Data Types	Index	Remarks
ad_id	varchar	Major Key	The default value of the administrator login name is ad_id.
password	varchar		The default value of the administrator login password is 123456.

Table 2. Field Definition of the Guest Message Information Table

Field Name	Data Types	Index	Remarks
guest_name	varchar	Major Key	Name of message users
conten_message	varchar		Message

As shown in Table 1, which illustrates the field definitions and related details, the administrator account information table is employed to store the administrator account and password.

Likewise, as depicted in Table 2, which illustrates the field definitions involved, the guest message information table is employed to store the guest message information and personal information.

4.2 Implementation of Database Access

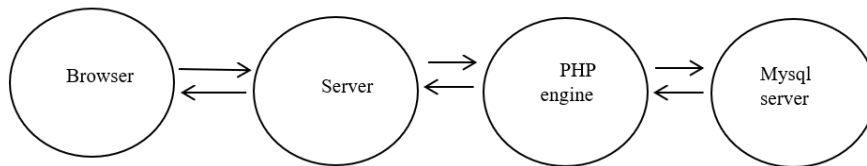


Fig. 2. Web Database Architecture

Figure 2 illustrates the overall architecture of the web database. In this foundation, the process of querying the database through the web involves several sequential steps: initially, scrutinizing and filtering data from diverse users; subsequently, establishing a connection to the database; then, implementing the database query;

following this, acquiring the query results, and ultimately, presenting the query results obtained^[7].

Additionally, the LAMP is leveraged as the development environment of web pages. In other words, Apache, MySQL, and PHP are installed on the Linux system. Upon initiating the server, a database connection can be established through the following statements. More specifically, first of all, "mysql-connect" can be used to open a link to the MySQL server. Secondly, "resource mysql-connect" (host, username, password) can be used to determine the syntax format. Lastly, "mysql-select-db" (database name [link identifier]) can be used to select the database, with "mysql-close ()" being employed to terminate the database^[8].

4.3 Overall Page Element Control Code

The relevant CSS code employed to regulate the comprehensive element attributes of web pages with integrated information from production and education is presented below:

```
Body
{
padding:0;
margin:0;
background:url
(images/header.jpg)
no-repeat center 0 #020100;
color:#581B05;
font:normal 12px
Calibri, Helvetica,
sans-serif;
}
```

4.4 Implementation of Website Page

4.4.1 Main Page.

The primary objective of developing web pages with integrated information from production and education is to establish an information and exchange platform for university administrators, teachers, students, enterprise personnel, and government officials. Upon logging in with their respective account credentials, users will be directed to the homepage, where users can click on the corresponding module according to their actual needs to understand the required information. It can be seen that the construction of web pages with integrated information from production and education is beneficial to solving a series of challenges such as wrong decision-making and low work efficiency caused by information irresolution among diverse cooperative subjects, thereby improving the quality of production-education integration. Website design decisions consider visual stimuli that have a significant impact on user behavior^[9]. A unique and individualised emotional/expressive style of

a website will impress web users deeply, initiate web users to click/tick sharply/promptly^[10]. Use comfortable colors for Main Page.

4.4.2. Website Management Page.

The primary focus of the management page lies in various functions of the back-end management system, encompassing user information for universities, enterprises, and government entities, along with functionalities for uploading, updating, and managing both information and messages.

5 Conclusion

Currently, research on web pages with integrated information from production and education remains in the exploratory phase. In this context, there exist national, provincial, and enterprise-level web pages with production-education integration, with a comparatively limited number of web pages dedicated to school-level production-education integration. Moreover, within the field of national and provincial web pages with production-education integration, the construction of numerous columns is still in need of further improvement. In this regard, with adherence to the principle characterized by the accountability of principal leaders, the principle of unified design, the people-oriented principle, the principle of practicality as well as the principle of elegance, this research designs web pages with integrated information from production and education composed of six modules, encompassing integration overview module, school module, college module, enterprise module, government module, and visitor message module. Notably, relevant web pages in this research are designed by utilizing the LAMP as the development environment, with MySQL5.6 serving as the back-end database and HTML5 serving as the front-end framework. While providing relevant information for each cooperative subject, this method is beneficial to address the challenges brought by the information asymmetry, thus offering valuable inspiration for the design of other schools' web pages with integrated information from production and education. It should be pointed out that the design and research of school-level web pages with integrated information from production and education will be an important direction for future research.

About the Authors

Yanmei Dai, female, is a doctoral student in the Department of Education of Shaanxi Normal University and lecturer in the Department of Academic Affairs of Guangxi Science and Technology Normal University, with her research direction being computer and institutional research; Yongsheng Xie, male, is an associate professor of School of Mathematics and Computer Science, Guangxi Science and Technology Normal University, with his research direction being the computer science.

Fund Projects

Project 1. Key Self-financing Project of Guangxi Education Science Planning in 2021: Selection and Path Exploration of Guangxi Higher Education Modernization Transformation Mode in the Context of the Belt and Road Initiative (No.: 2021B135).

Project 2. Teaching Management Reform and Research Project of Guangxi Science and Technology Normal University: *Research and Practice of First-class Undergraduate Major Construction in Applied Undergraduate Universities* (No.: Science Teacher Teaching (2022) No. 2 10).

References

1. Full text of the report at the 20th National Congress of the Communist Party of China_China government network
<https://www.gov.cn/zhuanti/zggcddescqgdbdh/sybgqw.htm>
2. Deng Ran, Ni Taile. Information Visualization Design of Web under the Background of Big Data[J]. *Mathematical Problems in Engineering*, 2022, 2022
3. Key words in the report at the 20th National Congress of the Communist Party of China | Why should our country speed up the construction of network power
https://m.thepaper.cn/newsDetail_forward_20843657
4. Shao Y. J. *Computer Information and Network Security Technology* [M]. Hohai University Press, 2020:195.
5. Huo Y. Design and Implementation of "Internet +" Enterprise Education and Training System [J]. *Information Systems Engineering*, 2022, (08): 161-164.
6. Liu R., & Wang X. Design and Implementation of Training Management System for ATC Training Center [J]. *China New Communications*, 2023, 25(02): 59-61+93.
7. Zhu Z. F., & Zhang P, Ed. *Learning from Practice sqlmap Database Injection Test Version 1* [M]. China Machine Press, 2022:142-145.
8. Luo P. Y. *Game Development and Design Technology Series Millions of online large-scale game server development* [M]. China Machine Press, 2021:39-43.
9. Anika NissenRené Riedl,and Reinhard Schütte. "Users' reactions to website designs: A neuroimaging study based on evolutionary psychology with a focus on color and button shape." *Computers in Human Behavior* 155. (2024):
10. Bulli Babu RAKhil Reddy A,and Praveen Kumar G. "Analysis on visual design principles of a webpage." *International Journal of Engineering & Technology* 7. 2.7 (2018):

Open Access This chapter is licensed under the terms of the Creative Commons Attribution-NonCommercial 4.0 International License (<http://creativecommons.org/licenses/by-nc/4.0/>), which permits any noncommercial use, sharing, adaptation, distribution and reproduction in any medium or format, as long as you give appropriate credit to the original author(s) and the source, provide a link to the Creative Commons license and indicate if changes were made.

The images or other third party material in this chapter are included in the chapter's Creative Commons license, unless indicated otherwise in a credit line to the material. If material is not included in the chapter's Creative Commons license and your intended use is not permitted by statutory regulation or exceeds the permitted use, you will need to obtain permission directly from the copyright holder.

