



Construction of Online Assistant Teaching System for Practical Writing Course Under Mixed Teaching Mode

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Abstract. With the continuous progress of digital information technology, the advantages of online teaching and traditional classroom teaching complement each other, which provides a new direction for the innovation of teaching mode in colleges and universities. In this regard, this paper aims at improving the effectiveness of practical writing course, and based on the problems existing in the current teaching practice, such as outdated mode, fixed content and single evaluation, builds an online assistant teaching system based on Web, which provides the necessary technical basis for the implementation of mixed mode teaching combining offline and online. The system consists of front-end interactive pages and back-end servers, and the overall development environment is deployed according to “LAMP” mode. The functions of the system will give full play to the characteristics of the system in remote application, resource storage and data processing, realize the network and digital transformation of teaching process, and reflect the feasibility of mixed teaching mode in practical writing course. After the simulation test, the system has improved the students’ mastery of knowledge, strengthened their practical application ability, and made a useful attempt for the reform of the teaching mode of practical writing course.

Keywords: mixed teaching · Practical writing · Online network-assisted teaching · Web technology · Computer software application

1 Introduction

As a common normative style, practical writing bears the whole process of information from production to application, and has the characteristics of authenticity, practicality, timeliness and instrumentality, and plays an important role in current social activities and interpersonal communication [1]. With the accelerated pace of social development, mastering practical writing skills can help us better deal with the information recording problem in the information society, and can also promote our own multi-dimensional development and better serve others and society. For contemporary college students, learning practical writing has become an inevitable requirement for talent training in colleges and universities in the new period, and it is also a reflection of students’ comprehensive quality and professional ability. However, in the current curriculum system

of colleges and universities, practical writing belongs to the category of public basic courses, and the traditional classroom teaching form of large class system is still adopted. The problems of single teaching means, fixed teaching materials, lack of practical opportunities and one-sided assessment seriously restrict the effectiveness of practical writing courses [2]. In view of this, this paper believes that colleges and universities should fully realize the importance of practical writing course, fundamentally eliminate the disadvantages of teaching marginalization, adhere to the innovation drive, introduce online teaching into daily teaching practice, form a mixed mode teaching mode combining offline and online, and promote the optimization and reform of practical writing teaching path [3]. Online teaching is realized by computer software system, and the following content will also put forward the construction scheme of online assistant teaching system based on Web, and verify the feasibility of mixed teaching mode in practical writing course from the aspect of functional application, which provides reference for promoting the deep integration of modern educational technology and classroom teaching.

2 Development Process

The overall development of online assistant teaching system for practical writing course involves two technical lines. One is to complete the design and development of front-end interactive pages based on VUE framework. VUE framework is different from native web development technologies such as HTML, CSS and JavaScript, and it is a lightweight, high-performance and componentized MVVM library [4]. As the core of visual presentation and functional connection of the system, the front-end interactive page is the key channel to establish communication with users. The second is the back-end development, which is mainly aimed at the Web Server of the system. The basic development environment will be deployed according to “LAMP” mode, that is, Linux CentOS 7.3 will be selected as the operating system, PHP will be selected as the basic development environment, version 8.1.9 will be selected, and PHPStorm 2020.1 will be selected as the integrated development tool. The Web server is Apache 2.4 and the database is MySQL 5.7. In the development process, it needs to be realized with the help of the ThinkPHP framework of “request/response” mode, and follow the MVC design pattern to connect the front-end interactive interface with the back-end server under a specific data interface [5]. Under PHPStorm, according to the application characteristics and system requirements of ThinkPHP framework, virtual machine configuration, MVC creation and single entry file configuration will be completed [6]. Through the introduction of the above key technical theories, the overall environment of system development, the configuration of related software and tools are determined, and the technical feasibility of the online assisted teaching system for practical writing courses is also clarified.

3 Functional Implementation

3.1 Student Side

a. Preview Before Class.

In the mixed teaching mode, student users can log in to the system to complete the preview of the content before the formal class. According to the progress of practical writing course, the system will publish PPT courseware, teaching key points, teaching objectives and curriculum arrangement in advance in the system, so that students and users can obtain course information in time and conveniently, and complete the course introduction by case-based and project-based teaching methods, which is beneficial to stimulate students' learning autonomy and provide help for classroom teaching [7].

b. After-School Practice.

The teaching emphasis of practical writing course focuses on practical application, while the traditional teaching process mostly follows the model of theory + example + practice, and the practice link can only be carried out after class, which often leads to the problem of weak pertinence and difficult to achieve good results [8]. Through this system, student users can log in to the system to see the practical homework or situational simulation exercises released by teachers after classroom teaching, and then finish them online with the help of the system, which breaks through the limitations of time and space in the traditional mode and greatly improves students' practical ability and innovation ability.

c. Expanding Resources.

The system will also make use of the advantages of network information technology to improve the abundance of teaching resources for practical writing and make up for the shortcomings of traditional teaching materials. Three-dimensional teaching resources can further refine the teaching content and improve the pertinence of teaching. Diversified forms such as video teaching, micro-lessons and electronic model essays are also conducive to stimulating students' interest in learning and promoting their personalized development.

3.2 Teacher Side

On the one hand, the functional authority of teacher users lies in the uploading and management of various teaching information and teaching resources, on the other hand, it is necessary to evaluate the teaching effect of students. The system can combine the summative evaluation under the traditional classroom teaching mode with the process evaluation under the online teaching mode, construct a comprehensive evaluation system of learning effect, and complete the automatic grading [9]. As shown in Table 1, the teaching effect evaluation system. Five teachers were selected as the evaluation subjects in the simulation test, and a student's learning effect was simulated and scored. The scoring results are shown in Table 2.

According to the scoring results, the system uses standard deviation algorithm to determine the weight value of each index, and finally completes the final score. The calculation formula of standard deviation algorithm is shown in Formula 1, where A_j is the standardized mean, S_j standard deviation and λ is the weight value [10]. The

Table 1. Teaching effect evaluation system

| Primary index | Secondary indicators | Grading standards |
|----------------------------------|--|--|
| Learning attitude A ₁ | Study duration A ₁₁ , classroom performance A ₁₂ | Excellent: 5 points Good: 3 points Poor: 1 point |
| Learning process A ₂ | Practice completion rate A ₂₁ , esource utilization rate A ₂₂ | |
| Learning outcome A ₃ | Examination performance A ₃₁ , usual performance A ₃₂ , practice results A ₃₃ | |

Table 2. Teaching effect evaluation results

| | A ₁₁ | A ₁₂ | A ₂₁ | A ₂₂ | A ₃₁ | A ₃₂ | A ₃₃ |
|------------------------------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| Teacher 1 | 3 | 5 | 3 | 3 | 5 | 3 | 3 |
| Teacher 2 | 5 | 5 | 3 | 1 | 3 | 1 | 3 |
| Teacher 3 | 3 | 1 | 1 | 1 | 5 | 3 | 3 |
| Teacher 4 | 1 | 1 | 3 | 1 | 3 | 3 | 1 |
| Teacher 5 | 5 | 5 | 3 | 1 | 3 | 3 | 3 |
| Standardized mean | 0.6 | 0.6 | 0.8 | 0.2 | 0.4 | 0.8 | 0.8 |
| Standardized mean square deviation | 0.418 | 0.547 | 0.591 | 0.447 | 0.547 | 0.447 | 0.447 |
| Weighted value | 0.121 | 0.158 | 0.171 | 0.129 | 0.158 | 0.121 | 0.121 |

test results show that the system functions normally and can meet the needs of teaching effect evaluation. The results show that the system can complete the evaluation of teaching effect conveniently and quickly, and correct the one-sidedness of the traditional evaluation method.

$$S_j = \sqrt{\frac{\sum_{j=1}^n (r - A_j)^2}{n - 1}}, \quad \lambda = \frac{S_j}{\sum_{j=1}^n S_j} \quad (1)$$

4 Conclusion

In order to improve the effectiveness of practical writing course, this paper puts forward a set of online assistant teaching system construction scheme in view of many problems faced by traditional teaching mode. The system can be used as the basis of online teaching, and form a hybrid teaching combining online and offline with classroom teaching, thus promoting the reform of teaching mode and creating a new ecology of practical writing education. In the follow-up research, the system should further enrich

the construction of teaching resources, improve the application of the system in other teaching fields, and make contributions to the construction of educational informatization in colleges and universities.

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References

1. Liang Shuhui. Research on the Problems and Countermeasures of Practical Writing Teaching in Colleges and Universities[J]. Science & Technology Information.2022.10.
2. Huo Ran. Research on the Present Situation and Countermeasures of Practical Writing Teaching[J]. MOTTO.2022.08.
3. Ma Li. A Probe into the Ways to Improve the Teaching Effect of Practical Writing in the New Period[J]. Journal of Suzhou Education Institute.2019.10.
4. Liu Yaru, Zhang Jun. Research on Vue.js Framework in Website Front-end Development[J]. Computer Programming Skills & Maintenance.2022.01.
5. Yang Yi, Li Lan et al. Research on University Network Teaching Platform Based on ThinkPHP Architecture[J]. Microcomputer Applications.2020.02.
6. Li Xiuzhen. Research on ThinkPHP5 Framework Based on MVC[J]. Modern Information Technology.2020.07.
7. Li Shuliang. Design and Implementation of Online Teaching Resource Platform[J]. Electronic Technology & Software Engineering.2022.07.
8. Cui Xiulan, Wei Tingting. A Preliminary Study on the Teaching Strategy of High-efficiency Practical Writing[J]. Knowledge Window.2023.01.
9. Wang Yuyu, Liu Shaojun. An Empirical Analysis of the Evaluation of Blended Learning Effect in Colleges and Universities[J]. Microcomputer Applications.2019.06.
10. Qian Xiaohui, Jiang Qibo, et al. Application of Coefficient of Variation Method Based on Combination Weighting in Quality Evaluation[J]. Journal of Nanjing Normal University.2020.02.

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