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 DOI: 10.19601/j.cnki.issn1943 -9903.2020.05.016

Research on the Construction of a Fully-participatory Extracurricular Learning Platform with Multiple Linkage Effects

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Abstract In the existing research at home and abroad, the construction of extracurricular learning platform is still only focused on solving the problems of curriculum learning itself. At the same time, there are no cases of multiple linkage effects, including integrating alumni resources, promoting the construction of alumni association, promoting students' internship and employment, strengthening ties with enterprises and so on. On the basis of the original function of the alumni management system, this paper expands the sections and adds the main body of students to enrich the functions of the platform. This paper constructs a fully-participatory extracurricular learning platform with multiple linkage effect, which provides a reference for other majors inside and outside the school to establish extracurricular learning platform.

Key words Multiple linkage effect, Full participation, Construction of extracurricular learning platform

1 Introduction

With the advent of the "Internet +" era, profound changes have taken place in the drive of economic growth, the division of labor in the social system and the industrial structure, and the traditional education model is difficult to sustain. Colleges and universities need to set up new requirements and standards in order to cultivate high-quality talents who meet the requirements of social transformation. In order to meet the needs of society, colleges and universities have taken active measures to promote teaching reform. With the deepening of teaching reform in colleges and universities, the use of web-based learning platform has become a new bright spot of professional education in colleges and universities. The alumni management system is a service platform that provides alumni online registration, and alumni can know the news, keep in touch with their alma mater and retrieve alumni information after logging in to the system. It can promote effective communication between alumni and alma mater, between alumni, and between alumni and teachers. For colleges and universities, the construction of alumni management system can fully help to integrate alumni resources and provide power for the development of colleges and universities. But this is limited to the linkage between teachers and alumni, or between alumni. On the basis of the original communication function of the alumni management system, some sections are expanded and the main body of students is added to enrich the functions of the platform. This paper constructs a fully-participatory extracurricular learning platform with multiple linkage effects to achieve the purpose of using the web-based learning platform to enhance professional ability, reduce learning costs, optimize learning content and improve learning effect.

Received: March 8, 2020 Accepted: May 9, 2020

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2 Research status

For colleges and universities, extracurricular learning platform is a resource-based service platform for students to better carry out extracurricular professional learning, providing intelligent and personalized learning conditions and environment for each student.

As a resource-based service platform, the essence of extracurricular learning platform is the deep integration of learners, technical support, external environment and methods. Its goal is to promote the growth and development of users, to meet their multiple needs for cognition, skills, emotion and so on[2]. And the construction of web-based learning platform and its application in teaching have become the focus of the research on the construction of extracurricular learning platform and even the whole extracurricular teaching strategies, models, values and methods[3-5]. Specifically, considering the inefficiency of traditional classroom teaching due to the limitation of time and space, the blended learning model which combines traditional classroom and web-based learning platform has been put forward at home and abroad. According to the definition of American Society for Training and Development (ASTD) in 2002, blended learning is a solution that combines learning activities in different situations, that is, extracurricular learning platform as a supplement and extension of traditional classroom content.

In the process of carrying out the research and practice of web-based learning platform, scholars at home and abroad have proved that information technology can play a great role in supporting learning. Foreign scholars mainly study and design the learning environment based on Wiki and Web and use the learning tools and other technical means. In recent years, some domestic scholars have also carried out related research in this field, mainly focusing on the design of web-based learning platform, teaching model construction, operation and management and so on. Zheng Jing and Ge Jianhong (2017) studied the development method of

interconnected mobile terminal learning platform in embedded Linux root file system[6]. Li Chuangjin (2018) studied how to carry out online and offline teaching on the basis of Longman interactive English learning platform, and explore the mixed teaching mode, so as to achieve the purpose of improving students' English learning effect[7]. Fan Maowei (2018) explored the operation guarantee mechanism of the open and personalized comprehensive learning platform in colleges and universities[8]. Most studies show that the teaching content can be shared on the web-based learning platform, and learners can not only choose the learning content according to their own learning situation, but also participate in a variety of online tests, formal tests or experimental work through the network. After that, the system will automatically grade and rank the test results, and put forward some learning suggestions according to the shortcomings of the learners. The opening of blended learning indicates that the learning mode is gradually changing from single classroom learning to a combination of curriculum and extracurricular learning. Generally speaking, the construction of extracurricular learning platform under the new environment has realized the combination of online and offline learning mode, and gradually formed a new teacher-student relationship network with teachers as the leader and students as the main body. From this, it can be concluded that the new blended learning model formed by extracurricular learning platform is the most common learning model in the initial stage and even during the period of deep integration of "Internet + Education". It has sufficient demand and strong vitality.

However, in the existing research at home and abroad, the construction of extracurricular learning platform is still only focused on solving the problems of curriculum learning itself. The effect of extracurricular learning platform is too simple, there is no organic combination of learning platform with specific professional groups (such as college students, alumni and teachers of a major). At the same time, there are no cases of multiple linkage effects, including integrating alumni resources, promoting the construction of alumni association, promoting students' internship and employment, strengthening ties with enterprises and so on.

3 Problems

3.1 How to promote effective communication between alumni and students Alumni can not only reflect the social value of the alma mater, provide social resources for colleges and universities, but also promote the learning and growth of students. On the one hand, alumni resources have a social nature, which is obviously different from other resources in colleges and universities in terms of function, ownership and utilization, and is an important supporting force for the survival and development of colleges and universities. Alumni provide support to colleges and universities and promote the development of students. For example, in the process of school curriculum reform and discipline construction, professional alumni provide important market research information[9], cooperate with colleges and universities to set up individual scholarships or enterprise training bases to encourage students to study hard and improve their professional level. On the other hand, by publicizing the advanced deeds and professional status of alumni, colleges and universities encourage students to follow the example of excellent alumni, establish professional self-confidence and cultivate the spirit of continuous progress.

Therefore, alumni play an important role for students both in material and spiritual level. However, there are differences in knowledge and ideas between alumni and students, and the contact between the two sides is insufficient, so it is difficult to communicate smoothly. In the process of building an extracurricular learning platform relying on the alumni management system, it is an urgent problem to promote effective communication between alumni and students.

3.2 How to promote the effective integration of learning resources The effective integration of learning resources is one of the important functions of extracurricular learning platform. So far, the basic concept of "learning resources" is not clear in the educational circle. The Association for Educational Communications and Technology (ATCT) believes that learning resources are anything that helps individuals learn effectively. In the definition of learning resources in the narrow sense and broad sense, Gao Limin believes that learning resources in the narrow sense are learning materials and content, while in the broad sense, learning resources are a general term of all things that provide support or improve learning, including human, media, planning, methods and environment and other sections[10]. Cai Zhifen believes that learning resources refer to the information, technology and environment that can help learners learn[11]. From the above Chinese and foreign scholars' definition of learning resources, we can see that learning resources include manpower, material resources, information resources and environment, and things and conditions related to learning are likely to become learning resources. From the relevant definition of the learning platform, we can see that the learning platform to provide learners with learning-related materials or conditions is the key to the integration of learning resources. As a bridge between alumni and teachers, or between alumni, the alumni management system can fully integrate alumni resources and give full play to alumni advantages, but it has shortcomings and disadvantages in integrating learning resources.

3.3 How to stimulate students' interest in a fully-participatory extracurricular learning platform Interest in learning can make learning more effective. Confucius once said, "People who know it are no better than those who love it; those who love it are no better than the ones who love to know it." Einstein once said, "Interest is the best teacher." In the existing research at home and abroad, the construction of extracurricular learning platform is still only focused on solving the problems of curriculum learning itself, and little consideration is given to whether students are interested in the learning platform or not. This is very easy to lead to the poor learning effect of the extracurricular learning platform and makes it fail to play its substantive role. Extracurricular learning

is a resource-based service platform. In the process of deep integration of content sections, how to enrich the functions of the learning platform and promote students' interest in extracurricular learning platform through section design, so as to achieve the purpose of improving learning efficiency, is worthy of our consideration and study.

4 The construction method of fully-participatory extracurricular learning platform

4.1 Preparation and construction ideas in the early stage

The construction of a fully-participatory extracurricular learning platform with multiple linkage effects needs to be prepared in advance. First of all, it is necessary to make a research plan, collect and review the literature and visit relevant experts and scholars, so as to get the construction theory and method. In the research and design stage, we need to comprehensively consider the design strategies about type, purpose, line of sight, scope and environment, design the collection of extracurricular learning resources, and modify the design. Through the combination of online and offline mode, we sort out the extracurricular learning resources and get the idea of constructing the extracurricular learning platform. The idea of construction is shown in Fig. 1.

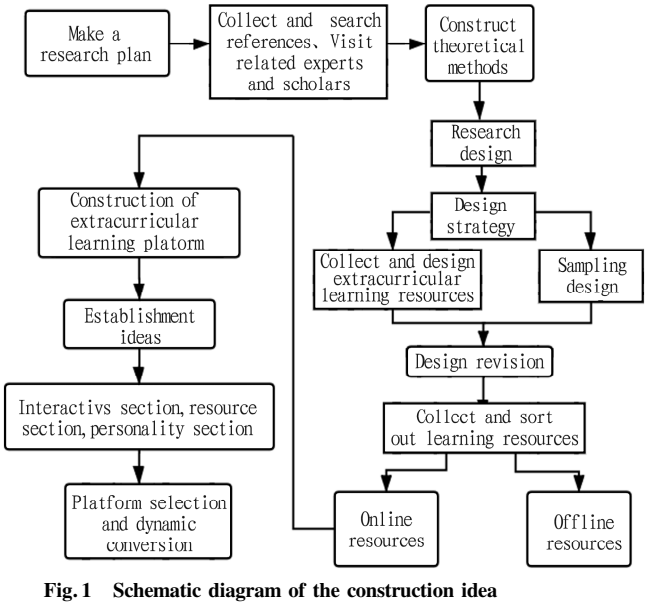

Fig. 1 Schematic diagram of the construction idea

4.2 Section design In order to effectively solve the problems of communication between alumni and students, integration of learning resources and arousing students' interest in learning platform, three sections of fully-participatory extracurricular learning platform with multiple linkage effects are constructed: interactive section, resource section and personality section. The three sections interact with each other, to enrich the function of the platform on the basis of the original function of the alumni management system. It realizes that college students use the web-based learning platform to improve their professional ability, to reduce the learning cost and to optimize the learning content, so as to improve the learning effect.

4.2.1 Interactive section. The interactive section is mainly divided into three categories: "Short Message", "Information Release" and "Mentor Column". Short message consists of three parts: "Send Short Message", "Short Message Inbox" and "Sent Short Message". Students can send their ideas to alumni or teachers through the part "Send Short Message", and can check the short message they have sent in the part "Sent Short Message". Alumni or teachers quickly receive short messages from students and reply in time through the part "Short Message Inbox". Alumni, students and teachers can publish news, thoughts, industrial situation and other contents in the "Information Release", and the content of the post is public and can be commented on. That is, the content published by the publisher can be viewed and commented on by all members of the campus management system. In order to further promote the communication between students and alumni and improve students' understanding of the major, "Mentor Column" is set up in the system. The system will match each student with an excellent alumnus as an out-of-school mentor according to the student number, so that college students can make use of the extracurricular learning platform to facilitate communication with out-of-school mentors in the process of extracurricular learning, and keep abreast of the latest developments in the industry.

4.2.2 Resource section. The construction and use of learning resource database can not only reduce the burden of classroom teachers, enrich teaching content, but also effectively integrate professional learning resources. The resource section is the only way for students to enter the learning resource database of the extracurricular learning platform. The resources section is mainly divided into two columns: "Public Database" and "Public Database Query". For the "Public Database", the first-level classification is based on the major category, the second-level classification is based on the graduation direction, and the three-level classification is based on theoretical learning, software use, case sharing and related materials. Students can download or upload learning resources to achieve the sharing and further accumulation of resources. If students want to make it easier to find learning resources with determined file names, they can directly search and download them in the section "Public Database Query".

4.2.3 Personality section. In order to stimulate students' interest in extracurricular learning platform and improve students' learning efficiency in the learning platform, personality section is added on the platform. The personality section is mainly divided into two columns: "Member Information Editing" and "Public Photo Album". Students can enrich their personal information in the "Member Information Editing" column, such as personal photos, personal evaluations, interests and hobbies, and can also record personal developments and journals. And when students look at the member information of other alumni or classmates, they can see the corresponding content and find like-minded members. The "Public Photo Album" contains five parts: internship photos, graduation photos, alumni presence, university life and beautiful campus. Students and alumni can view and upload photos. Public photo albums can not only promote the interaction between the members of the extracurricular learning platform, but also bring fun for students in the process of using the extracurricular learning

platform.

5 Conclusion

To sum up, considering the existing problems of communication between alumni and students, the integration of learning resources and stimulating students' interest in the learning platform, the fully-participatory extracurricular learning platform with multiple linkage effect is constructed, relying on the alumni management system, with students as the main body, adding three major contents: interactive section, resource section and personality section. While enriching the functions of the platform, it can not only fully integrate alumni resources and give full play to alumni advantages, but also achieve effective interaction inside and outside the school, reduce school running costs and improve students' learning efficiency, so to provide reference for the establishment of extracurricular learning platforms for other majors inside and outside the school.

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with distant relationship between female and male parents and many polymorphic differences in the F_1 hybrid can even be identified accurately. Fig. 1 shows that sample 3 is a descendant of samples 1 and 2, that is, the F_1 hybrid Liangyou 336 is a descendant of C815S (♀) and R336 (♂). But for combination with close relationship and small molecular weight difference between male and female parents and small polymorphism difference with F_1 hybrid, a strong molecular biology foundation and experience are required to make accurate judgments. When identifying genetic relationship by comparing the DNA amplification products between sample and its parents, only the consistency of PCR products of several samples is compared, and the complementary band pattern of male and female parents does not need to be observed. Regardless of the genetic relationship between male and female parents and the difference in polymorphism of F_1 hybrids, the genetic relationship is judged accurately, and the intuitiveness is greatly enhanced. In addition, the sample size is reduced from 4 × 48 to 3 × 48. As shown in Fig. 2, samples 1 and 2 are the same variety, that is, the F_1 hybrid Liangyou 336 is a descendant of C815S and R336. Both the methods used in this study can accurately identify the kinship of the materials, but the method of comparing the PCR product of the parental mixed DNA with that of the DNA of control sample not only reduces the sample size but also has the advantages of clear band pattern and accurate, reliable and intuitive result. At the same time, it can be used for the genetic relationship identification of other crops and animals.

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