

Research Article

Exploration of PBL Teaching Mode of Embedded Design Course Based on Network Teaching Platform

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With the rapid development of online courses and continuous development of online courses, the content, functions, and forms of its teaching platform are becoming more and more diversified. Problem-based learning (PBL) is a kind of “problem,” “learner,” and “cooperative learning” as the center, creating a problem-solving learning environment and allowing students to carry out problem-based learning activities. The teaching method based on PBL is also suitable for the network teaching environment. Embedded design refers to the design of embedded application systems with real-time, specificity, and limited resources through different methods. This article primarily presents the investigation of the PBL showing method of inserted plan courses in light of the organization showing stage and means to give a few thoughts and headings to the examination of the organization showing stage under the PBL mode. This study proposes an exploration method for the PBL teaching mode of embedded design courses based on the network teaching platform, including literature research method, survey research method, experience summary method, and embedded system-related algorithms, which are used to carry out the embedded design course PBL based on the network teaching platform teaching mode exploration experiment. The exploratory aftereffects of this study show that 90.18% of understudies like the PBL show stage for implanted plan courses.

1. Introduction

PBL alludes to issue-based learning. The showing strategy for PBL intends that in the showing system, educators guide instructing through issues to empower understudies to secure the vital information and abilities, the showing strategy for PBL are effective behaviors or activities to achieve teaching goals and adapt to students’ meaning construction. It should highlight the “student-centered,” situational, autonomous, cooperative learning environment, etc; issue-based learning empowers understudies to be in genuine circumstances and tackle issues. The method allows students to gradually refine the theoretical knowledge hidden in the problem, obtain and apply the experience of solving practical problems, improve their

ability to judge and summarize problems, promote the development of inquiry and critical thinking, and obtain solutions. Teach independent learning and collaboration skills.

The organization gaining stage has changed from the conventional course of information move to the course of information development, permitting understudies to take part in the development obviously happy, and extend the development of information during the time spent investment. The development of an organization learning stage with installed PBL showing mode, joined with versatile learning emotionally supportive network, emotional support is a form of social support, which refers to the use of listening, attention, emotional support, encouragement and other methods to give emotional care to

the other party, it can give students static assets, static assets are fixed assets, which refer to non-monetary assets that are held by enterprises for the production of products, provision of labor services, leases or business management, and which have been used for more than 12 months and whose value reaches a certain standard. In view of the improvement of innovation, the organization's learning stage will likewise keep on pushing ahead. The future development trend of education is to gradually realize the informatization of education. The Internet-led informatization teaching method is gradually developing and is recognized and accepted by the majority of frontline teachers and students. Networking in the classroom is the main position for advancing the informatization of education, and its advantages in actual teaching prove that using the network to carry out teaching is a teaching method worth promoting. Online classes are generally not limited by location, time, and space. Teachers and students can learn online no matter how far away they are. If time is inconvenient to watch the live broadcast, you can even watch the recorded broadcast. At the same time, it also caters to the needs of many staff members. With insufficient time and freedom at work, online classes can use the more fragmented time to study anytime, anywhere.

Taking the development of the far-reaching network showing the foundation of Northwest Agriculture and Forestry University, for instance, Wang and Zhang expounded on the ongoing status and existing issues of the extensive organization showing the foundation of Northwest Agriculture and Forestry University [1]. Zeng et al. accept that customary autonomous inserted frameworks presently have limits with regards to usefulness, adaptability, and versatility. The element of the haze figuring stage is to drive cloud administrations to the brink of the organization. Fog computing is an extension of cloud computing, in which data processing and applications are concentrated in devices at the edge of the network, rather than being stored almost entirely in the cloud. It is a promising answer for helping and upgrading customary inserted frameworks, self-insertion framework is a custom framework, that can be made according to the requirements of the personal framework, without constraints and strong compatibility. Asset the executives is generally a central point of contention for framework execution [2]. Yu K's examination observed that PBL showing mode is a showing strategy generally utilized in clinical schools today. Yu et al. summed up the advancement of PBL, as well as the execution of PBL showing mode in clinical schools and related applications in the PBL-based network education stage. This research is theoretically strong but lacks practical verification and is not persuasive [3].

The innovations of this study are: (1) Propose the development of an organization showing stage under the PBL showing method of inserted plan courses; (2) Complete the equipment plan of the inserted educational program PBL instructing stage; (3) Design the embedded curriculum PBL teaching Platform module.

2. Exploring Method of PBL Teaching Mode of Embedded Design Course based on Network Teaching Platform

2.1. PBL Teaching Mode

2.1.1. Overview. PBL is a teaching method based on "problem." This "problem" is constantly changing in stages according to the content of learning. The problem-based learning model refers to placing learning in complex and meaningful problem situations, and by allowing students to solve problems together in the form of group cooperation, learn the knowledge hidden behind the problems, and form the ability to solve problems. It is not static. It gradually solves problems or solves new problems as the exploration of problems in the learning process deepens. The process of the problems that arise to achieve the purpose of learning [4]. PBL is issue-based learning. Such issue-based gaining is to some degree not quite the same as the customary issue-based educating. Conventional issues put together instructing centers more with respect to transforming troublesome information into issues for understudies to explore and have fixed deals with reference [5]. The problem of PBL teaching mode is open-ended and non-predetermined, and the problem is raised from the life and study of students. Students have their own feelings and interest in the problem. The teacher transforms the real situation into teaching problems and guides them step by step. Starting from their own life and learning, students solve problems by searching for materials, group discussions, and asking teachers for advice, so as to master new knowledge in the process of problem-solving [6].

2.1.2. Teaching Characteristics

- (1) Focus on the problem. The problem is the starting point and end point of PBL teaching, and it is the direction of the teaching process. PBL emphasizes that students' active learning is the main, problem-oriented, triggering students to learn, after solving a problem, causing students to think about new problems, and finally solving a big problem, so the problem is the starting point and end of PBL teaching. The process of problem-solving is the process of PBL teaching [7]. According to teaching content, student characteristics, educational environment, real life, organize resources and organize educational activities, propose and solve problems according to the problem situation, so as to cultivate students' abilities, learning methods, and process knowledge [8].
- (2) The conventional showing technique is an instructing strategy that instructors step up and educate and understudies inactively acknowledge, while the PBL showing mode is a showing strategy wherein educators assume a main part and understudies play the fundamental job under the direction of instructors [9]. PBL's helping mode expects

educators to direct understudies to find issues, break down issues, make arrangements, track down assets, manage assets, and lastly tackle and report the outcomes during the time spent critical thinking, and completely mirror the job of understudies as the principle assortment of learning capacity, accordingly motivating learning energy, Cultivate learning capacity, critical thinking capacity, progressed thinking capacity and advancement capacity [10].

- (3) Problem-based learning requires students to solve the problems in the situation through independent exploration, stimulate the enthusiasm for learning, and cultivate students' problem-solving ability and methods [11]. However, since the problem is a complex problem from real life, it is often difficult to solve the problem only by relying on the students' own efforts. The PBL teaching method requires the construction of a study group, and the group is constructed to solve problems together [12]. Therefore, PBL is a teaching process that combines independent learning and collaborative learning. Group members discuss problems, analyze problems, and solve problems together. At the same time, they have a division of labor. They do in-depth research on specific sub-problems and then summarize and discuss the problem-solving situation. Doing a good job of collaboration and division of labor is the guarantee for solving the PBL problem [13].

2.2. Research Method

2.2.1. Literature Research Method. Gather and read significant writing on the utilization of PBL showing mode in different trains, furthermore, sort out the force research status of PBL showing mode at home and abroad. Look up and peruse the relevant composition on the ebb and flow tutoring theory research at home and abroad, and in light of taking apart the composition and hypotheses, notice the early phase of this investigation and put forth research questions. In the process of research, refer to relevant research results, conduct a comprehensive analysis, select documents that are of reference to this research, and focus on reading and analysis to make the analysis of the problem more thorough [14].

2.2.2. Investigation and Research Method. This exploration utilizes a blend of poll review and interview strategy in the necessary investigation research division to comprehend the ebb and flow circumstance of PBL showing execution and stage development. The questionnaire survey is to collect and organize the data, to obtain the required information by filling out the questionnaire prepared in advance by the surveyed subjects, also, work out the fundamental state of understudies after class and the relationship coefficient when the fulfillment degree issued by SPSS 22.0 measurable programming, compared with other international authoritative software, SPSS can also be run through editing programs, but its most notable feature is the operation mode of

menus and dialog boxes. Most of the operation processes can be completed only by clicking the mouse [15]. This poll review utilizes the "Poll Star" survey overview stage. Poll Star is an expert web-based poll overview, measurements, and examination stage. The poll study utilizes an Internet-based arbitrary testing overview strategy [16].

The interview method is to make appointments with experts and teachers who are familiar with this research to talk face-to-face to obtain deeper information. This study sets up related questionnaires for the analysis of student platform resource needs and students' feedback on PBL hybrid classroom teaching trial teaching, and conducts interviews with teacher platform resource needs analysis. This article issues questionnaires, collects data, and finally collates survey information with a great reference value, which enriches the practicality of this research [17].

2.2.3. Experience Summary Method. After conducting questionnaire surveys of students and interviews with teachers, we will promptly sort out and analyze the remarkable results obtained in the research process, conduct collective discussions with experts and teachers, and form periodic reports, so that "practice" will rise to "theory." Furthermore, explore the problems and deficiencies in the research, carry out case design in time, and summarize and analyze teaching practice, so that "theory" guides "practice." Through continuous mutual verification of theory and practice, the research results are more mature [18, 19].

2.3. Embedded System Related Algorithms

2.3.1. Correlation Entropy. General non-second-order statistics can be defined as second-order statistics in the kernel space [20]. For example, the correlation entropy of two random variables X and Y is a measure of correlation in the kernel space, defined as follows:

$$V(X, Y) = E[\langle \varphi(X), \varphi(Y) \rangle_H] = \int \langle \varphi(X), \varphi(Y) \rangle_H dF_{XY}(x, y),$$

$$\varphi(x) = k(x, \cdot). \quad (1)$$

To plan x from the first space to the Hilbert practical space, Hilbert space is a generalization of Euclidean space, which is no longer limited to finite-dimensional cases. Similar to Euclidean space, Hilbert space is also an inner product space with the concepts of distance and angle on it, it requirements to satisfy

$$\langle \varphi(X), \varphi(Y) \rangle_H = k(x, y). \quad (2)$$

Therefore,

$$V(X, Y) = E[k(X, Y)]. \quad (3)$$

Generally speaking, the kernel function is the Gaussian kernel function:

$$k(x, y) = k_\sigma(x - y) = \exp\left(-\frac{(x - y)^2}{2\sigma^2}\right). \quad (4)$$

2.3.2. *LSMFS Model.* For the multi-label feature selection problem, the least squares regression method is

$$\min_W \|XW - Y\|_F^2 + \lambda R(W). \quad (5)$$

Solve the value of W according to this formula, then sort, and finally perform feature selection:

$$W = [w_1, w_2, \dots, w_d]^T \in R^{d \times m}. \quad (6)$$

Each row of w_i represents the contribution value of each feature to different categories [21, 22]. $\|\cdot\|_F^2$ is the square of the Frobenius norm, which is defined as a matrix M with n rows and m columns, which exists

$$\|M\|_F = \sqrt{\sum_{i=1}^n \sum_{j=1}^m |m_{ij}|^2}, \quad (7)$$

$$\|W\|_{2,1} = \sum_{i=1}^d \|w_i\|_2.$$

The objective function of the traditional LSMFS is

$$\min_W \|XW - Y\|_F^2 + \|W\|_{2,1}. \quad (8)$$

2.3.3. *Solving the LSMFS Model.* Since the Frobenius norm is not smooth, it is difficult to find its closed solution directly. In the case of

$$\frac{\partial \|W\|_{2,1}}{\partial W} = 2DW, \quad (9)$$

D is a diagonal matrix and exists

$$D_{ii} = \frac{1}{2\|w_i\|_2}, \quad (i = 1, 2, \dots, d). \quad (10)$$

It can be seen that the derivative of $\|W\|_{2,1}$ can be replaced by the derivative of $Tr(W^T DW)$ [23]. So the following formula:

$$R = Tr(XW - Y)^T (XW - Y) + \lambda Tr(W^T DW). \quad (11)$$

Taking the subordinate of equation (11) regarding W and setting the subsidiary to 0, we get

$$\frac{\partial R}{\partial W} = X^T XW - X^T Y + \lambda DW = 0. \quad (12)$$

Finally, get

$$W = (X^T X + \lambda D)^{-1} X^T Y. \quad (13)$$

The method part of this article adopts the above method to study the exploration of the PBL teaching mode of

embedded design courses based on the network teaching platform. The specific process is shown in Table 1.

3. Exploring Experiment of PBL Teaching Mode of Embedded Design Course based on Network Teaching Platform

3.1. Hardware Design of PBL Teaching Platform for Embedded Courses

3.1.1. *Overall Design.* The plan of the PBL showing stage for inserted courses takes on the strategy for extending modules from the back to the front. To begin with, complete the plan of the essential module of the framework, and afterward steadily complete the plan of the area extension module of the littlest framework. The module is separated into three levels. The first layer is the core platform of the teaching system, namely the embedded teaching experiment learning board. The learning board is mainly equipped with other functional modules on the basis of the smallest system. The second layer is the software platform of the teaching system, which is mainly used for the registration and debugging of theme drivers, experimental sample programs, and operating system programs in the development and training environment. The third level is the teaching experiment, which mainly combines the knowledge points of the procedures used for experimental verification and one-to-three practice.

3.1.2. *Microprocessor Design.* Cortex-M3 takes on ARMV7 design and supports the Thumb-2 guidance set and other new capacities. Contrasted and ARM7TDMI, Cortex-M3 enjoys many benefits, for example, more impressive execution, higher code thickness, digit band activity, installed The set can be intruded, minimal expense, and low power utilization.

3.2. Development of PBL Teaching Platform for Embedded Courses

3.2.1. *Development Technology.* This article uses the Java EE development platform. Java EE is the abbreviation of Java 2 Enterprise Edition and is the enterprise version of Java technology. The version before Java EE 5 is called J2EE. The development of Java EE is closely related to distributed applications and Internet applications. Today, the distributed Java EE application system supports 87% of the world's new applications. For instance, Web layer system: Struts; business layer structure: Spring; ingenuity layer system: Hibernate. These frameworks are organically combined to provide a high-definition and durable Java EE application. Java EE uses distributed multi-level functions, and divides application logic into multiple components according to functions. These components have independent functions and interact with each other.

3.2.2. *Build a Development Environment.* The PBL-based embedded course network teaching platform teaching system adopts a lightweight Java Web development architecture

TABLE 1: Part of the technical process of this method.

Exploring method of PBL teaching mode of embedded design course based on a network teaching platform					
2.1	PBL teaching mode	2.2	Research method	2.3	Embedded system-related algorithms
1	Overview	1	Literature research	1	Correlation entropy
2	Teaching characteristics	2	Survey research method	2	LSMFS model
		3	Lessons learned	3	LSMFS model solving

integrated with SSH (Struts + Spring + Hibernate). The SSH architecture can be seen as a typical B/S (Browser/Server) three-tier architecture. Among them, Struts is based on the presentation layer, responsible for the display and logic control of the front page. Spring depends on the business rationale layer, used to isolate business rationale, with the goal that the viability and reusability of the framework are moved along. Sleep depends on the information constancy layer, through the lightweight exemplification of JDBC, utilizing an article arranged method for managing social data sets.

- (1) *MyEclipse Integrated SSH*. Eclipse is an open-source, Java-based scalable development platform. MyEclipse is integrated into the development environment of Java EE, with rich functions, such as complete coding, debugging, testing, and editing. Support HTML, Struts, Spring, Hibernate, SQL, etc.
- (2) *Application Server Tomcat*. Tomcat is developed by Apache, Sun, and other companies or individuals. Tomcat is very popular among developers, mainly because of its advanced technology, stable performance, limited running background, and good scalability. Tomcat has now turned into a well-known Java Web application server and is the best option for creating and investigating JSP programs.

To integrate Tomcat into MyEclipse, select the “Window Suggestion.” menu item. In the pop-up window, select “MyEclipse Application Server Tomcat 6.” In the dialog box, select the wireless power button, and then click the “Browse” button behind the Tomcat Home directory input box, select the Tomcat root directory, and then click the “Apply” button to complete the operation.

3.3. Design of PBL Teaching Platform Module for Embedded Course

3.3.1. Teacher Module

- (1) *Information Management*. Teachers can publish course announcements, syllabus, teaching schedule, course standards, etc. in the course.
- (2) *Teaching Resource Management*. Teachers can manage teaching resources such as courseware, teaching-related documents, pictures, audio materials, video materials, and test question banks.
- (3) *Job Management*. Teachers can arrange related homework according to the teaching arrangement through the teaching platform. The homework can

be completed by students in class, or it can set the final deadline for handing in homework. Students’ grades can be automatically evaluated by the system.

- (4) *Question Bank Management*. Teachers can establish and improve the test question bank in the course, such as adding test questions, modifying test questions, deleting test questions, etc. That is to say, teachers can add test questions according to the needs of course teaching, or form a team with the teaching and research section as a unit to establish a complete test database, or modify and update the existing test database, and some unsuitable test questions can also be deleted to optimize the quality of the question bank.
- (5) *Test Management*. Teachers can organize students to conduct tests according to classroom teaching. Test design, question editing, question type selection, etc. can all be completed in this module.
- (6) *Q&A, Online Discussion Management*. Using the Q&A and online discussion management module, teachers can create online chat rooms or discussion areas with a certain topic in a certain chapter, students can discuss and communicate in the chat rooms or discussion areas, and teachers can manage chat rooms and discussion areas.
- (7) *Student Management*. Teachers can manually select courses for students, add students to the course by manual addition, or open the self-selection method, and students can join the course through the selection password provided by the teacher. Teachers can group and manage students who choose courses and set related permissions.

3.3.2. Student Module

- (1) *Information Query*. Students can view the relevant information of the selected course through information query, such as the teaching schedule, course notices, announcements, news, etc., and can also view the information of the teacher and the learning materials of the course.
- (2) *Course Learning*. After understudies join the course, they can realize all the showing materials in the course. Such as viewing the syllabus, teaching schedule, course standards, teaching courseware, related learning documents, pictures, audio, video, etc.
- (3) *Coursework*. During the course of learning, students need to complete the homework assigned by the

TABLE 2: Some steps of this experiment.

Exploring experiment of PBL teaching mode of embedded design course based on a network teaching platform					
3.1	Hardware design of PBL teaching platform for embedded courses	3.2	Development of PBL teaching platform for embedded courses	3.3	Plan of PBL showing stage module for the implanted course
1	Overall design	1	Development technology	1	Teacher module
2	Microprocessor design	2	Build a development environment	2	Student module

teacher online or offline according to the teaching task, and submit it to the teaching platform.

- (4) *Course Test.* Teachers generally set up some questions to form a test question bank according to the teaching arrangement. After completing certain chapters of the teaching activities, or in the mid-term, final, and other time periods, let the students take the relevant tests of the course and give the student scores to comprehensively evaluate the students' mastery of the course. After completing certain chapters, students can master and consolidate knowledge points through test exercises to help them better master the knowledge points of the course.
- (5) *Discussion and Exchange.* At the point when understudies experience troublesome information issues in the educational experience, they can distribute the issues they experience through talk rooms or conversation regions, and obtain answers through communication with other students or teachers, thereby improving their learning efficiency.
- (6) *Personal Management.* Students can manage personal information in the personal center, such as perfecting the information of the department, major, class, etc., and can also modify their personal password, e-mail address, and set personal profile information.

This piece of the investigation recommends that the above advances are utilized to investigate the PBL showing method of the inserted plan course founded on the organization instructing stage. The specific process is shown in Table 2.

4. Exploration and Analysis of PBL Teaching Mode of Embedded Design Course based on Network Teaching Platform

4.1. Questionnaire Analysis

- (1) There are 1,000 surveys altogether, and the creation of the poll is dissected genuinely and brought into a factual graph, as displayed in Table 3 and Figure 1. It tends to be seen from the diagram that 967 substantial polls and 33 invalid surveys were recuperated, and the poll success rate was 96.7%. The surveys were all profoundly successful and could be alluded to
- (2) Sort out the accumulated genuine review results, and inspect the running levels of the model universities.

The particular circumstance is displayed in Table 4 and Figure 2.

It can be seen from the chart data that the "211 Project" universities and undergraduate colleges participating in the survey in this questionnaire are the most, followed by "double first-class" universities, and vocational colleges are the least. The outline results show that the model universities have a particular degree of representativeness. The survey audit results procured can reflect the rhythmic movement situation of students' learning status somewhat, and the information got can meet the necessities of examination and investigation.

- (3) The subjects of this poll are understudies arbitrarily chosen on the web. A sum of 967 understudies took an interest in the viable overview. Among them, from youngsters to senior year, young fellows to girls, all participated in the survey study. The particular dissemination is displayed in Table 5 and Figure 3.

It might be seen from the blueprint that the assurance of investigation objects is by and large ordinary, the opening between irrefutably the number of students decided for green beans, sophomores, and young people is close to nothing, and the total number of seniors it is fairly little to participate in the audit; the quantity of male and female understudies in the four grades The hole between them is likewise little, which makes the trial information seriously persuading and the exploratory ends more delegate.

- (4) Inquiries concerning understudies' input subsequent to utilizing the PBL network showing the foundation of the inserted plan course were set up in the survey, and the outcomes were genuinely arranged and brought into outlines, as displayed in Table 6 and Figure 4.

It can be clearly seen from the chart that most students like the PBL teaching platform for embedded design courses, accounting for 90.18%; most students think that applying the PBL teaching platform for embedded design courses can greatly promote learning and make it easier Understand and grasp the key points and difficulties in the knowledge learning process, and can maximize the students' initiative in learning, thereby enhancing students' confidence in learning.

- (5) Perform statistical analysis on the data obtained by students on the PBL teaching platform resources of the embedded design course, as shown in Table 7 and Figure 5.

TABLE 3: Questionnaire composition.

Heading	Quantity	Percentage (%)
Total number of questionnaires	1000	100
Total number of valid questionnaires	967	96.7
Total invalid questionnaires	33	3.3

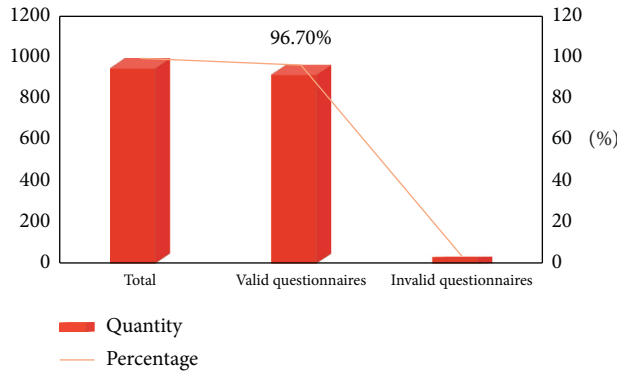


FIGURE 1: Questionnaire composition.

TABLE 4: School-running levels of sample universities.

School level	Number of schools	Percentage (%)
“985 Project” colleges	6	20.00
“211 Project” colleges	8	26.67
“Double First-Class” university project	7	23.33
Undergraduate colleges	8	26.67
Provincial undergraduate colleges	5	16.67
Vocational colleges	4	13.33

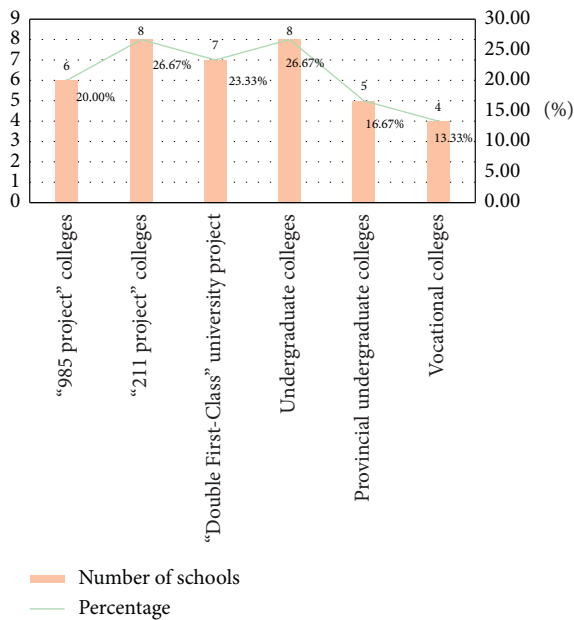


FIGURE 2: The level of running the sample universities.

TABLE 5: Distribution of students participating in the questionnaire.

Sex	Freshman	Sophomore	Junior	Senior
Boys	132	126	124	105
Girls	119	129	123	109
Total	251	255	247	214

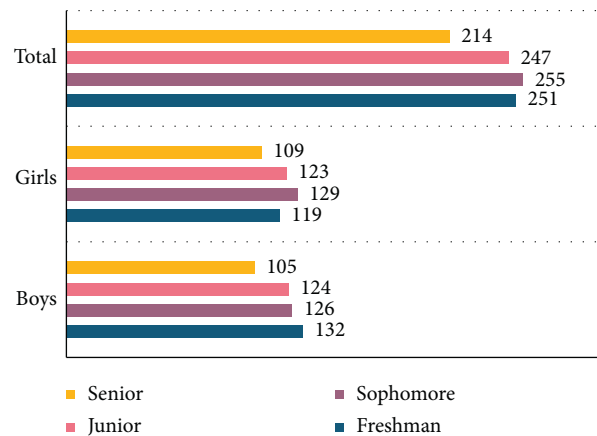


FIGURE 3: Distribution of students participating in the questionnaire.

TABLE 6: Student feedback.

Serial number	Survey content	Yes	Yes-percentage (%)	No	No-percentage (%)
1	Do you like embedded design course PBL teaching platform?	872	90.18	95	9.82
2	Whether the embedded design course PBL teaching platform can stimulate your interest in learning?	794	82.11	173	17.89
3	Does the embedded design course PBL teaching platform enhance your enthusiasm?	841	86.97	126	13.03
4	Is the embedded design course PBL teaching platform conducive to understanding and grasping the important and difficult points in learning?	816	84.38	151	15.62
5	Does the embedded design course PBL teaching platform make teaching and training more convenient?	907	93.79	60	6.21
6	Does the embedded design course PBL teaching platform enhance your confidence in learning?	673	69.59	294	30.41

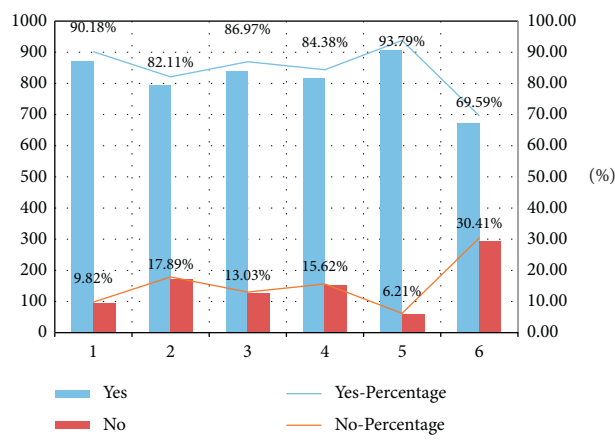


FIGURE 4: Student feedback.

TABLE 7: Statistics on student resource acquisition.

	Grade	Match options (%)	Uncertain (%)	Non-compliant options (%)
Able to collect the relevant resources needed in a variety of ways	1 Freshman	84.54	6.73	8.73
	2 Sophomore	90.12	4.81	5.07
	3 Junior	89.63	4.06	6.31
	4 Senior	92.67	2.14	5.19
Frequently retrieve relevant information online when encountering problems	5 Freshman	90.46	3.17	6.37
	6 Sophomore	92.72	1.89	5.39
	7 Junior	93.65	1.12	5.23
	8 Senior	94.53	3.95	1.52

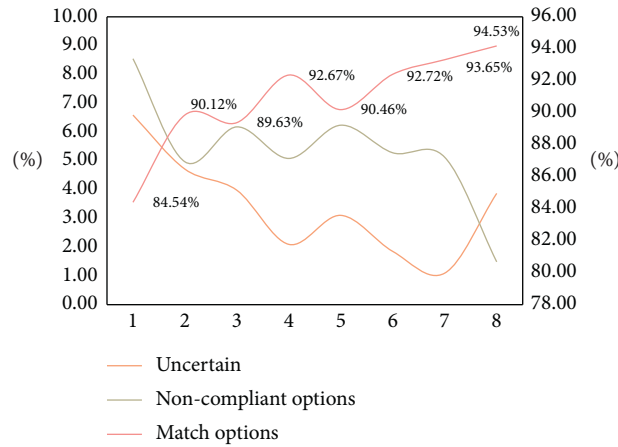


FIGURE 5: Statistics table of student resource acquisition.

TABLE 8: Teacher opinions.

Opinion	Number of teachers	Percentage (%)
1 Can improve student motivation	26	86.67
2 Can develop understudies' autonomous innovative capacity	29	96.67
3 Can stimulate students' passion for learning	25	83.33
4 Can take care of every student	27	90.00
5 Advance correspondence among instructors and understudies	28	93.33

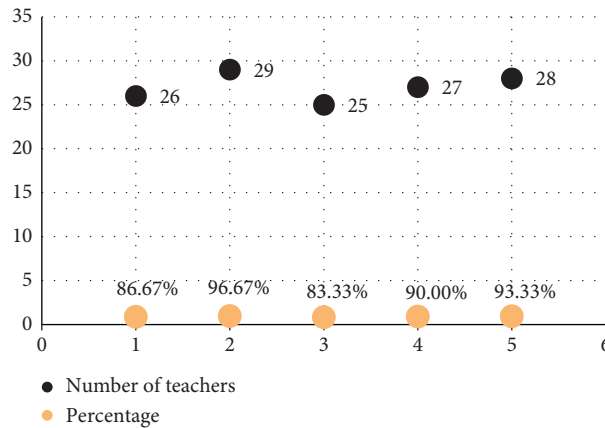


FIGURE 6: Teacher opinion.

From the statistical analysis of the data in the resource acquisition part of the questionnaire survey, the experimental class students' ability in resource acquisition and information processing is obviously stronger. Therefore, in the application of PBL teaching mode in the network environment, students can obtain diversified ways of obtaining resources, and they can quickly obtain useful learning resources.

4.2. Interview Analysis

- (1) During the meeting, this examination asked 30 college instructors, specialists and teachers, and so on, about their perspectives and sentiments on the instructive model of the PBL Internet showing stage for implanted plan courses, as displayed in Table 8 and Figure 6.

University teachers, experts, and professors generally hold positive opinions on the educational model reform of the PBL online teaching platform for embedded design courses. They believe that the educational model of the PBL online teaching platform for embedded design courses is conducive to better learning and improving learning efficiency.

5. Conclusions

With the improvement of PBL in the homegrown training field and the promotion of the Internet, lately, the examination of PBL online courses has turned into a focal point of consideration and exploration by specialists and researchers in the homegrown schooling field. An ever-increasing number of researchers have given themselves to hypothetical

examination and functional investigation of related points, and an enormous number of exploration results have arisen.

This study analyzes the problems in PBL online courses, proposes the design plan of the PBL online teaching platform from three aspects of teaching mode design, architecture design, and functional module design, develops and puts it into use in the course, and communicates with learners and teachers, Feedback the existing problems in the design, find out the solutions to the problems, make modifications, etc., continuously adjust the design plan to achieve the best results.

High-quality online courses are usually designed by experts with a solid theoretical foundation and rich teaching experience, first-line teachers, and designers with high levels of experience, technology, and theory. Although the design of the PBL network teaching platform in this article involves the participation of relevant teachers, due to the author's own lack of teaching practice, there are inevitably deficiencies in the design. It still needs to be used by users including teachers, learning the feedback opinions of managers and managers, etc., are constantly adjusted and modified, and the design of the platform is improved in order to achieve better teaching results.

Data Availability

Data sharing does not apply to this article as no new data were created or analyzed in this study.

Conflicts of Interest

The authors state that this article has no conflicts of interest.

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