

Research Article Analysis of Multiinterface Autonomous Moral Learning Platform Based on Intelligent Computing

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In order to realize the self-learning of the platform, an improved RBF neural network model is adopted, and a similarity matching algorithm is added, which improves the comfort of platform users and reduces redundant knowledge links. Based on constructivism, platform moral education constructs an intelligent computing learning platform with autonomous learning function through the construction mode. Based on the relatively perfect database, the moral learning platform extracts relevant resources for the platform teaching mode and basic services respectively, so as to optimize the platform design. Rely on computer technology to establish educational resource database, extract or collect teaching resources from all aspects, and form a database group with complete information. After the platform content design is completed, different interfaces are used to link to different end users. The establishment of multi-interface can make the system online at different terminals, fully consider the user's moral learning environment, and let users learn online anytime and anywhere. Compared with the traditional algorithm, the improved algorithm adds the similar matching function on the basis of RBF algorithm. It reduces the phenomenon of repeated push in students' autonomous learning system. The similarity matching algorithm is added to improve the comfort of platform users and reduce the redundant knowledge chain. The construction of moral learning teaching mode not only increases the interaction of the platform, but also improves the efficiency of user education and learning, and enhances the user's awareness of intelligent computing.

1. Introduction

Around the world, intelligent computing education is a long-standing research topic in various countries. Different countries and scholars have different ways of patriotism education. In fact, most of the intelligent computing education still stays in the oral or behavioral teaching [1]. In 2019, by exploring a series of core issues of patriotism, Nylan and his team examined the differences between the early Chinese and world intelligent computing values, and concluded that the appropriate limits of early Chinese patriotism are still effective in today's society [2]. Kakadij [3] proposed that youth patriotism education is a part of the human value system, which can prevent the spread of negative trends in the youth environment. Through the analysis of the role of foreign language learning in cultivating students' intelligent computing emotion and quality, the existing problems of

intelligent computing education are solved [4]. Toleubekova et al. [5] have studied the patriotism and people's traditional culture of the Kazakh Society, which provides a theoretical basis for the entity and value of patriotism education. Faz and Avci [6] believe that patriotism means loving the motherland, being able to make sacrifices for the motherland, and having the function of uniting and integrating people, which is the basic condition for becoming an excellent teacher. Lisica [7] presents the perception of contemporary Polish education on patriotism education and puts forward terms such as patriotism, so as to promote people's scientific reflection and inspire others to create patriotism education projects. On the issue of intelligent computing education for Russian youth, Zinenko [8] put forward the primary task of ensuring national security in citizen intelligent computing education in 2019 and showed that intelligent computing education can promote national economic development.

Wei and his team combined intelligent chat robot and information technology, proposed a method of autonomous learning intelligent platform, built an autonomous learning intelligent platform with voice chat, stimulated students' interest in learning, and improved students' autonomous learning effect [9]. Yungaicela Uzhca et al. [10] have developed a virtual experimental platform to train college students' entrepreneurial ability through role playing to simulate daily dynamics in order to strengthen university entrepreneurial activities. Raoufi et al. [11] have provided a set of tools to support the constructivist learning environment and integrated the three learning modules into the developed network environment, providing a learning platform for education work. Based on cloud computing technology, Zhang and Min [12] explored the future college physical education teaching mode, established a personalized physical education teaching system, solved the problems of shortage of teachers and contradiction between learning and training, and improved the utilization rate of resources. In order to solve the problems of single multimedia teaching mode, fuzzy teaching objectives and low efficiency of ecological economics course, Liu and Wang [13] designed a new multimedia teaching platform, which provided more vivid teaching content for teaching, stimulated students' learning autonomy and improved teaching quality. Li [14] combines the five-dimensional evaluation model of blended learning and multimedia resource storage technology to build the MOOC platform of modern educational technology, realizes the distance teaching of education, and promotes students' learning. Zhang [15] constructed a new multimedia teaching platform from the establishment of three-dimensional interactive model in teaching resources and applied it to community nursing multimedia teaching, which effectively improved students' interest in learning and optimized the teaching effect.

To sum up, scholars all over the world attach great importance to the study of intelligent computing education, but most of the intelligent computing education does not have a complete curriculum model, only relying on simple ideological indoctrination to achieve the purpose of education. With the development of online teaching mode, more and more courses help students learn anytime and anywhere by establishing online courses. Therefore, this study will carry out online teaching of patriotism education, build an intelligent computing learning platform through constructivism mode, realize students' autonomous learning, so as to widely spread the spirit of patriotism, and improve students' intelligent computing consciousness.

2. Improve the Self-Learning Mode of RBF Algorithm

2.1. Constructive Teaching Mode. Constructivism is one of the main theories of modern educational psychology, which emphasizes learning and takes students' learning as the main body to actively accept and construct knowledge. Constructivist teaching mode is based on students' intelligent adaptive learning, mainly from the two perspectives of teaching and learning, using science and technology and computer network technology to realize the comprehensive development of students' skill learning ability [16].

The teaching plan is mainly from the two aspects of building a suitable learning environment and enhancing users' autonomous learning ability. On this basis, three teaching design objects are designed, namely learning environment, learning activities, and media delivery. Learning activities are mainly reflected in the design of learning tasks, which stipulates that learners need to complete a certain amount of browsing and learning and then complete the relevant questions and answers to achieve the learning objectives. They can also participate in the planning of relevant activities to achieve the learning objectives. Through learning activities to improve learners' cognitive quality and thinking ability. At the same time, the psychological function of learners is developed through this activity. The design of learning environment is the combination of learning tools and learning resources. The design of media delivery is mainly to customize the media form and organization form, and deliver information to learners in a certain order of presentation [17].

With the help of network environment, multimedia teaching can be carried out to realize learners' autonomous learning. Teachers can use vivid audio-visual mode to show the boring classroom in front of students. The network communication environment can promote the communication between students and promote the mutual evaluation between teachers and students [18]. Therefore, on one hand, the constructivist teaching mode enhances the students' self-learning skills, on the other hand, it can integrate the educational resources to realize the comprehensive improvement of students' learning ability. The specific scheme of the constructivist teaching mode is shown in Figure 1.

Figure 1 shows that the constructivist teaching mode starts with the introduction of situation. The user conducts exploratory autonomous learning in the state of please import. Then in the knowledge discovery phase, the system will allocate resources according to the user's learning behavior and push the allocation form of teaching-knowledgepoints related resources to individual users at the same time. The learning module includes evaluation system, learning system, and analysis system. The user can feedback the learning evaluation of knowledge points through three systems, so as to consolidate the learned knowledge and finally realize the expansion of thinking.

2.2. Self-Learning Technology Based on Neural Network. It is particularly important to build a suitable environment to meet the user's autonomous learning. Using the current computer technology and multimedia technology combined with improved RBF algorithm to establish a constructive intelligent computing learning platform to realize personalized teaching can provide suitable teaching methods according to the learners' learning situation, and gradually improve people's intelligent computing consciousness [19]. The improved algorithm adds the functions of similarity matching on the basis of RBF algorithm. It reduces the phenomenon of repeated push in students' autonomous

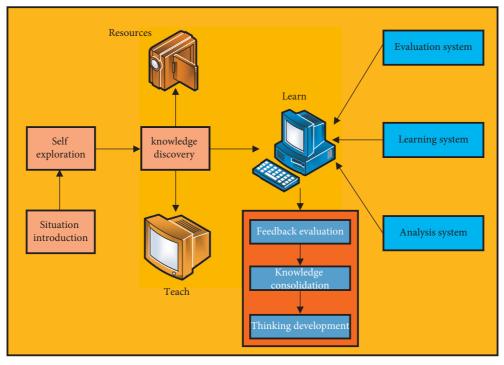


FIGURE 1: The scheme of constructive teaching mode.

learning system. The similarity matching algorithm is added to improve the comfort of platform users and reduce redundant knowledge links. The relationship between input and output of the specific algorithm is shown in equation (1).

$$y(k) = f(g(x(k), c, \sigma), \vec{w}).$$
(1)

In equation (1), x(k) is the external input vector, c is the sample vector, $g(\cdot)$ is the activation function of the middle layer, \vec{w} is the connection weight matrix, and the output activation function is $f(\cdot)$. By adding the idea of improved algorithm in the platform and combining with the constructive learning mode to achieve the purpose of personalized learning, the user autonomous learning model can be established, as shown in Figure 2.

Figure 2 shows that the learning model based on neural network autonomous technology takes intelligent computing songs, videos, and articles as input. The transformation function in the hidden layer is oriented to the three fields of individuals, the masses, and enterprises, in which the individuals include the younger people and the elderly, the masses include the villages and towns, and the participating enterprises are state-owned enterprises and private enterprises. The input songs will automatically push the appropriate categories according to the different participants. For the individual's age gap, they will be pushed in the form of children's songs or old red songs, as well as videos and articles. The platform will also push different songs, videos, and articles to people in rural and urban areas in the same way, and autonomous learning in enterprises will also be adapted to local conditions. The output layer evaluates the user's learning effect by participation, recognition, completion rate, and repeated click learning times. The system

will record the user's evaluation results. When the user participates in the next learning, you will match the results by similarity, optimize the user's learning mode and improve the user's learning efficiency.

3. Design of Self-Learning Platform for Intelligent Computing Education

3.1. Design of Intelligent Computing Education Information Database. The traditional teaching management information system has been unable to meet the needs of schools. The intelligent teaching management information system is particularly important for colleges and universities. Intelligent management information system is also an important research topic of education departments and colleges and universities. Intelligent teaching management information system can not only help the school teaching management department improve work efficiency, but also promote the construction of intelligent, information and digital campus. With the continuous in-depth study of computer technology, people have gradually introduced scientific calculation methods into the teaching management information system, among which the intelligent test paper generation algorithm is one of many algorithms.

The establishment of the platform depends on computer communication technology and multimedia technology. It is through information technology to transfer teaching resources to users in the form of computers or mobile devices and can organize and manage the user information of the platform [20]. Developers, uploaders, and recipients form a close relationship through the platform. Developers have the right to detect and maintain the content of the platform.

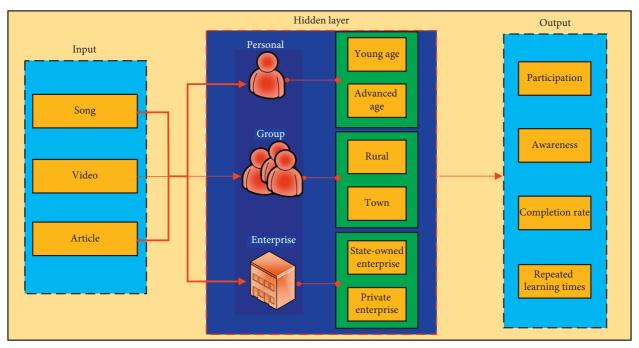


FIGURE 2: User autonomous learning model.

Uploaders get clicks by uploading their own works, and users can choose the plates they want to learn on the platform. Intelligent computing learning platform is not only applied to campus teaching, the ultimate goal is to ensure that all people can get good intelligent computing education, so the database should contain data from all walks of life [21]. In view of the aforementioned problems, the system forms a complete database through the data uploaded by different uploaders and the Big Data in the network, and its model can be shown in Figure 3.

As can be seen from Figure 3, the system database is constructed by storing the data uploaded from multiple sources. The most important data source is extracted by searching the Big Data in the network. The intelligent computing information keywords are set for feature extraction and stored in the database server. Other data sources are uploaded and stored by different uploaders using mobile devices, including overseas Chinese, overseas enterprises, domestic enterprises, individuals, and other organizations. Uploaders can upload intelligent computing education teaching resources inside the platform. Different types of data will be stored in different databases. Databases form a complete database group through internal links. The developer detects the data stored in the system database at the terminal to see if there is any illegal information, and then deletes or allows the data to be spread, so that learners can receive good intelligent computing education.

3.2. Construction of Autonomous Learning Platform. The architecture of intelligent computing learning platform system is shown in Figure 4. The service object of intelligent computing education autonomous learning platform is everyone in various industries or groups. A complete service

layer is established according to the service population, and the data are extracted from the database for push. Developers only need to publish the learning platform to different clients; users can learn and use it through mobile devices; and search the corresponding teaching resources from the platform according to their own needs.

Figure 4 shows that the architecture of the system is divided into five layers, which are data storage layer, user service layer, interface layer, user use layer, and terminal access layer from bottom to top. The data storage layer is mainly used to manage and store data, including historical database, update database, cache database, and file storage. The system will detect the database regularly and screen out the latest data to replace the outdated data. The user service layer consists of three parts, the first is the content module, which includes interface call, teaching resource push and basic services; the user learning module includes user services such as creative activities, user interaction, and Knowledge Q & A; the basic service component mainly provides some background management services, including user registration, user data upload, user management, content management, and other basic services. The interface layer is responsible for the docking operation between the user layer and the service layer. It is an important link to transfer the service layer information to the user layer using the relevant protocols and calling other capability platform interfaces. The next level is the user level. Users operate through Web links, mobile apps, and other third-party systems to achieve online interaction on the platform. The top layer is the terminal layer. The architecture of the terminal layer needs to consider both the PC end and the mobile end. In addition, in order to ensure that users can log on to the platform anytime and anywhere, other terminal interface architectures need to be retained.

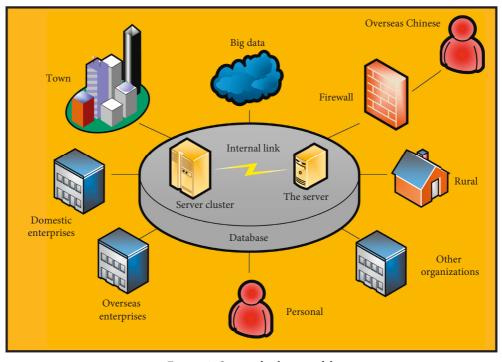


FIGURE 3: System database model.

4. Analysis on the Test Effect of Intelligent Computing Learning Platform

4.1. Evaluation of User Learning Results. In the process of analyzing the test effect of Intelligent Computing learning platform, the hardware platform and program used in this paper develop and run webapp mode based on HTML5. The development tools are Dreamweaver CS6 and JetBrains webstorm, which are suitable for mobile terminals, PC terminals and other terminals. The test application object of the platform is 100 people, and the platform has 200 intelligent computing songs, 100 videos, and 500 articles. Through tracking and observing the registered users of the platform for one month, recording the login and learning situation of the users, the average number and time of users online every day can be obtained from the background, as shown in Figure 5.

As shown in Figure 5, most of the mobile end users are PC end users and other end users. The number of users who are online from 6:00 to 9:00 in the morning is the minimum in a day. Most of the users who use the mobile device login platform to learn concentrate on 12:00 to 21:00 every day. The number of mobile end users who are online from 6:00 to 18:00 continues to rise, and then continues to decline. The main reason is that the convenience of mobile devices leads to a significant reduction in the utilization rate of other devices. The period of time when the number of people on PC is the most is between 12:00 and 18:00, while the users using other terminals are mainly concentrated in the period from 21:00 to 24:00. It can be seen from the results that the intelligent computing learning platform is suitable for multiple terminals and can realize the user login at any time.

Figure 6 is a summary and analysis of the learning situation of platform users in 1 month, which is analyzed from four aspects: user participation, recognition, completion rate, and the proportion of multiple users. As can be seen from Figure 6, user participation in learning is good, and each index evaluation can reach more than 80%.

In Figure 6, the user participation increased from 80% in the first week to 94% in the fourth week, indicating that users gradually integrated into the learning environment of the platform, and their recognition of patriotism also improved with the improvement of participation. The platform also has a knowledge question and answer session for the learning content. After one or part of the learning, the system will ask questions about the relevant content. The platform will evaluate the user's correct rate as the learning completion rate. It can be seen that the user's completion rate is always maintained at a high level, indicating that the user's learning in the platform is in a state of beginning and end most of the time. And the proportion of users' repeated click learning of relevant content also showed a high level in a month, indicating that the teaching resources of the platform can meet the needs of users. In a word, from the user's use, the platform can unilaterally bring users a better experience.

When users participate in learning, they can also participate in the process of platform resource update. Platform content update increases user interaction content. The progress of platform update driven by user participation is shown in Figure 7.

Figure 7 analyzes the impact of users on the platform under the premise of user participation. It can be seen that with the continuous increase of user participation, the updated data of the platform is also changing. In the first

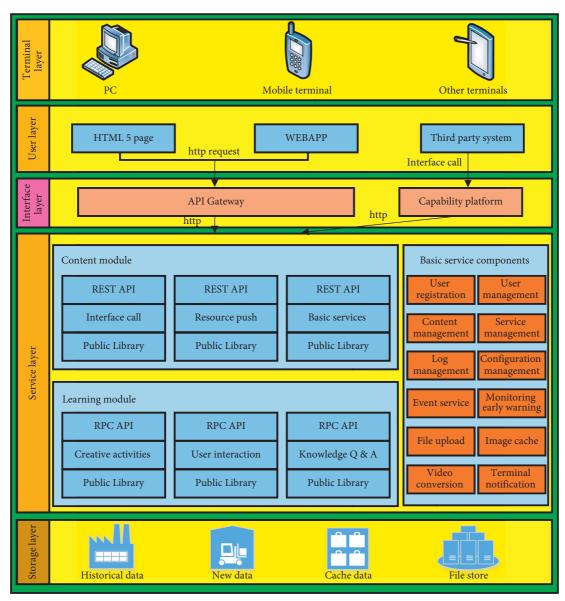
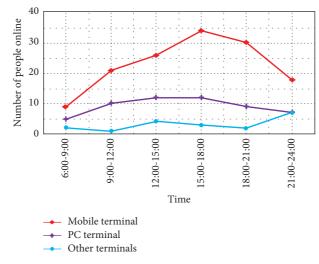


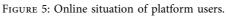
FIGURE 4: System architecture of autonomous learning platform.

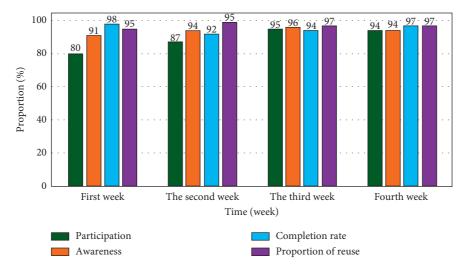
week, most of the teaching resources of the platform are updated by developers, while only 10% of the resources can be updated by users as uploaders. With the continuous participation of users in learning, their thirst for knowledge of teaching resources is constantly changing, and they begin to gradually participate in the uploading and updating of teaching resources on the platform. They mainly upload a series of contents such as their own learning experience or intelligent computing deeds as resources. In the end, the proportion of users participating in the updating of the platform has reached more than half of that of developers. Through the analysis of the influence of users on the platform, we can see that the platform development function is perfect, the learning platform has good interactivity, can exchange experience online, enhance the intelligent computing thought of users, and the users in the platform have strong freedom of autonomous learning.

4.2. Analysis of Platform Satisfaction Survey Results. The online test time of the platform is 5 months. The online and offline questionnaire survey is conducted for the users participating in the platform test to obtain the user's evaluation of the platform, which is used as the evidence to optimize and improve the platform content. The questionnaire survey is conducted in urban and rural areas, and the evaluation results are shown in Figure 8.

The questionnaire content in Figure 8 includes five evaluation indexes: beautiful interface, operability, learning resources, interactivity, and platform management ability. In the offline questionnaire survey, there are some problems such as the platform is in the test state, few registered users and poor interaction. Therefore, there are fewer urban users with high evaluation of platform interaction and platform management ability. However, the overall evaluation of the two indicators also reaches 89% and 90%, and the high price









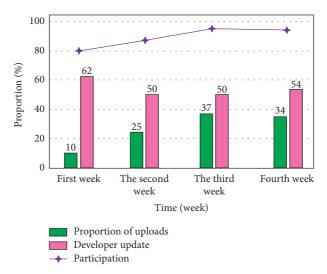


FIGURE 7: User impact on platform update.

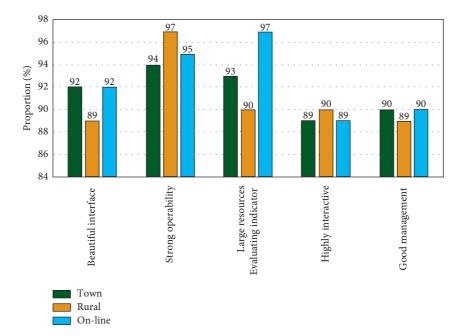


FIGURE 8: Results of questionnaire survey.

users of urban users on the platform's operability account for 94%. Most of the rural users have a higher score on the operability of the platform, which indicates that the development of the platform can be fully applied to different people in many places, but few of the rural users participate in the aesthetic evaluation of the interface. The online questionnaire survey results show that the number of users with high ratings on the platform's learning resource database is more, accounting for 97% of the total number of participants, and the number of users who give high ratings on the platform's operability also accounts for 95% of the total number. From the overall online and offline survey results, the number of people who highly evaluate the platform interactivity and management ability is small, mainly because the number of test people is small, which can not reflect the platform interaction and other functions. It needs to increase the number of test users to get more accurate evaluation. Other overall evaluations are high, which indicates that the platform has good practicability.

Users of different ages have different adaptability to the platform content. In order to understand the perfection degree of the platform content and the applicability of the platform, a questionnaire survey under the same index is conducted for offline users of different ages. The results are shown in Figure 9.

Figure 9 shows the results of a questionnaire survey of people aged 12 to 65. For users aged 12 to 18, more people highly evaluate the beauty and operability of the platform interface, while less people highly evaluate the interaction of the platform, accounting for only 87% of the total. The survey results between the ages of 19 and 30 show that more people highly evaluate the operability of the platform and the amount of learning resources, and less people evaluate the beautiful interface. The survey results of the 31 to 50 age group show that most people have a high overall evaluation

of the platform, and 94% have a high evaluation of the operability, resources, interactivity, and management ability of the platform. The survey results of 51 to 65 years old show that more people have higher evaluation on the operability and resources of the platform, and less people have higher evaluation on the interaction of the platform. The aforementioned results show that due to the large age difference, there will be a large range of changes, but the intelligent computing learning platform generally meets the needs of all ages, indicating that the learning platform built this time can achieve the expected teaching effect in all ages.

Platform optimization is carried out by extracting opinions from all aspects. On one hand, the optimization of intelligent computing learning platform is carried out by users, on the other hand, it needs experts to check the quality of teaching resources. Figure 10 shows the survey results of platform design evaluation conducted by experts in various industries. Taking a full score of 10 as an example, the platform protection ability, learning resource quality, compatibility, and development prospect are taken as evaluation indexes.

Figure 10 shows the evaluation results of each expert on the platform. The education experts have higher scores on the content of teaching resources on the platform, indicating that the system has better ability to analyze and store data. Engineering experts mainly evaluate the antiattack ability and compatibility of the platform. It can be seen that the protection ability of the platform is good. The expert score is 9.6, and the compatibility of the platform is also strong. The reason is that the reserved port of the platform can realize multidevice login. The development prospect of the platform is evaluated by economists and gets 9.7 points, which indicates that the platform has good commercial value. The aforementioned results show that the platform design has been relatively perfect, only need to optimize in small details.

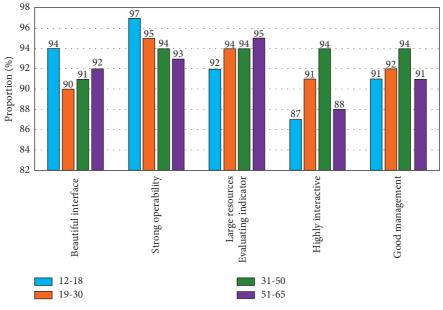


FIGURE 9: Questionnaire survey of different age groups.

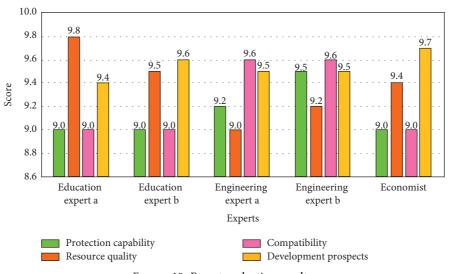


FIGURE 10: Expert evaluation results.

5. Conclusion

For intelligent computing education, a self-learning mode under the construction mode is proposed. Through the design of database and platform architecture, an intelligent computing learning platform is constructed and developed under the Web app mode based on HTML5. This method combines constructivism theory with new algorithm and can get more accurate and comfortable teaching thrust in the process of user learning. By tracking and recording users' online time during the test, it can be concluded that users will spend part of their spare time on Intelligent Computing Education and learning. On this basis, further understand user learning. The results show that with the passage of time, users' participation in the platform continues to improve, and the number of repeated learning of learning resources is

also increasing. This shows that the construction of intelligent computing platform is more successful and can stimulate the patriotic enthusiasm of users. At the same time, the improvement of user participation also affects the optimization of the platform. Finally, through the questionnaire analysis of users, we can get a more accurate use of the platform. The results show that people in different regions have different evaluations on the functions of the platform, but the overall evaluation is still high. Through the investigation of different age groups, the results show that the platform function evaluation of different age groups is mostly at a high level. To sum up, the intelligent computing learning platform constructed by the construction mode has perfect functions and relatively complete teaching resources. It has good practicability in different environments and lays a good foundation for intelligent computing education.

However, this paper has certain limitations. The dilemma of algorithm technology training needs to come from the trust in the practice of algorithm technology. The research ignores the educational (Academic) theory, lacks the intervention of educational experience and practical wisdom with teachers as the main body, and discusses the hidden control of capital power. Therefore, further discussion is needed in future research.

Data Availability

The experimental data used to support the findings of this study are available from the corresponding author upon request.

Conflicts of Interest

The authors declare that they have no conflicts of interest regarding this work.

Acknowledgments

In the post-EPIDEMIC era, "family and country feelings" should be integrated into party history education for college students: A case study on The Outline of Modern and Contemporary History of China (Grant no. 2021GJJG207).

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