

The Design and Function of Online Learning System Based on Artificial Intelligence Technology

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Abstract: With the continuous development of science and technology in China, some changes have taken place in the field of education under the Internet environment. In the field of education, the traditional learning mode can no longer meet the needs of contemporary rapid learning. Therefore, under this background, the online learning mode is born. Because the online learning mode is not mature enough, it needs the support of powerful information technology, so as to achieve the purpose of constantly improving the online learning mode. In this paper, the application trend of online learning system based on artificial intelligence technology is firstly started from the concept of online learning mode, and then the design and function of online learning system under artificial intelligence technology are further studied and discussed.

Under the background of rapid development of network communication technology, it has brought some changes to our life and study. In the field of education, it cannot be denied that information technology will continue to change our education industry[1], so we must speed up the reform process of education industry. Under the background of artificial intelligence technology, teachers' teaching methods and students' learning methods are gradually changing. Now an online learning system is designed to fundamentally improve teaching efficiency and learning effect through the influence of online learning methods[2].

1. The Concept of Online Learning Mode

In the process of the development of artificial intelligence technology, the derived online learning mode has brought some influence to people's learning. In the online learning mode, users can conduct targeted learning according to their own needs, which greatly improves the flexibility and freedom of learning, and also can guarantees the learning effect. Based on the online learning mode under the network environment, the impact is huge, which is mainly reflected in the following aspects[3-4]. ①Cultivate the ability of autonomous learning. In the online learning mode, the learning resources, time, place are not restricted, which can better cultivate users' good habits of autonomous learning. ②Form interactive learning. By learning in the online learning mode, users can quickly obtain different learning resources. On the other hand, through the use of functions such as homework and examination management, relevant homework tasks and examination tasks can be completed[5]. The most important thing is that different users can fully communicate and exchange

with each other through the online learning system to complete the mutual solution and answer questions. ③Innovate individual learning methods. In the traditional learning mode, users use the same learning resources and learn the same learning courses, while in the online learning mode, users can choose learning according to their actual situation, which has obvious personalized characteristics[6].

Compared with traditional offline learning mode, online learning mode still has great advantages in practical application because of its own innovation, which is mainly reflected in the following aspects. ①Personalization. Users can directly use terminal devices to learn after connecting to the network, and arrange the learning progress according to their own needs. ② Network. Using artificial intelligence technology can update different types of learning resources, it is more convenient for users to get the latest learning resources. While online learning systems have some advantages, they also have some disadvantages. Because the Internet is a virtual environment, it is very different from our real world. Therefore, in the process of online learning, students and teachers cannot produce real emotional communion in the communication[7]. Because of the lack of emotional communication, it will make students feel boring and tedious in the process of learning. The purpose of learners using online learning system is to apply what they have learned. They can learn theoretical knowledge and practical knowledge points at the same time. Therefore, learners are more willing to operate while learning, so that they can better master what they have learned. Online learning is also different from traditional classroom learning. In terms of shortcomings, students lack listening factors and visual factors in the online learning system, so they lack the interaction of directly participating in the teaching process, which is not conducive to the cultivation of students' practical ability[8]. In the traditional classroom, in order to make students better understand knowledge, the teacher can explain some complex content. However, in online learning systems, teachers record teaching videos in advance and wait for uploading before students come to learn. As a result, there are certain limitations in learning, which leads to a fixed learning mode and a lack of flexibility[9].

2. Demands of online Learning System under Artificial Intelligence Technology

Through the analysis of the use method and construction function of the online learning system under artificial intelligence technology, different rights can be reasonably divided through the operation of personnel in the system[10]. The personnel can be mainly divided into several roles, such as system manager, expert, educational administrator, teacher and student. Among the five roles, each one has different abilities and tasks. The main responsibilities are as follows.

Firstly, system managers. System managers have the highest operation authority in the online learning system. Their job is to manage and maintain the entire online learning system, such as the management of resources and data in the online learning system. Secondly, experts. Experts in the online learning system mainly refers to the higher achievements of experts in certain areas. The use of expert's ability can identify the shortcomings of the online learning process. Meanwhile, experts can put forward opinions in time and make effective corrections according to the suggestions. In this way, the online learning system can be more in line with the teaching characteristics of teachers and the learning needs of students, so as to better promote the management and development of the online learning system[11]. Thirdly, educational administrators. The main responsibility of educational administrators lies in the management of users in the online learning system, such as reasonable arrangement of teachers' teaching situation and careful inspection of students' attendance, etc. In addition, educational administrators also need to manage students' learning tasks, as well as teachers' teaching results and students' test scores[12]. Fourthly, teachers. Online learning system mainly includes the teachers engaged in teaching. The main authority of teachers in the online

learning system is to manage learning, including students' academic performance management, students' homework management and so on. At the same time, teachers can also view the message content of students in the system, and effectively improve the teaching process according to students' questions and needs[13]. Fifthly, students. In the online learning system, the whole role of the student is also included. The role of the student is usually the current student who has successfully registered through the network. The student learns through the online learning system. Because the main task of students is to study, their operation authority of the online learning system is relatively small. It can mainly obtain learning materials in the system and understand the learning content that they need to study through the system, so as to realize a new learning mode, strengthen their learning ability, and comprehensively improve the learning efficiency and quality[14].

3. The design of online Learning System Based on Artificial Intelligence Technology

3.1 Design Goals

The online learning system designed in this paper is based on artificial intelligence technology, and the design goals are mainly reflected in the following aspects. ①Perfect function. The function of the online learning system needs to maintain a certain effectiveness and accuracy, and it should be designed according to the actual needs of users, so as to achieve a perfect functional design. ②High safety. The online learning system also has certain requirements on the use of security, such as the classification of security levels according to different users. In addition, different users have different operation rights. When logging in to the system, users need to enter the user name and password. Only after the login information is correctly entered can they enter the system, so as to ensure the effectiveness and security of the operation. ③Simple operation. The online learning system based on artificial intelligence technology has gone through a lot of research in the design process, and analyzes the management mode and learning business of the online learning system at the same time. The operating interface of this online learning system is mainly displayed in Chinese, and is equipped with a lot of instructions to guide users to operate.

3.2 Structure Design of online Learning System Based on Artificial Intelligence Technology

The innovation of online learning system is inseparable from the application of artificial intelligence technology. Under the artificial intelligence technology, the traditional learning system is constantly optimized and improved, forming the "online" advantage, and comprehensively enriching the learning mode. The structure design of online learning system under artificial intelligence technology is mainly divided into the following modules, which are online learning system module, learning resource management system module and teaching management system module.

As shown in Figure 1, Under the artificial intelligence technology, the online learning system module is the most core part of the whole online learning system, which mainly includes the teaching link and the learning link, etc. The teaching link and the learning link are fully unified, which can realize the user's online learning.

Learning resource management system module is mainly responsible for the management of various resources in the whole online learning process.

Teaching management system module is mainly responsible for the management of the various affairs of the teaching link, which can further improve and supplement the shortcomings of the online learning system module, in order to promote the smooth development of online learning.

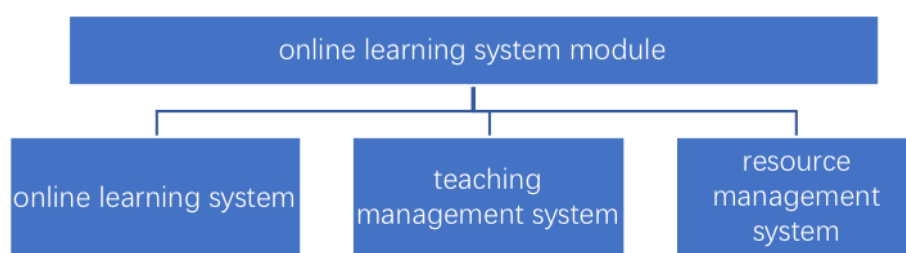


Figure 1: Structure of online learning system under artificial intelligence technology

The function of online learning system under artificial intelligence technology

According to the structure design of the online learning system under artificial intelligence technology, the functional structure diagram of the online learning system can be obtained, which mainly includes the following functions.

①Login: the user can log in to the online learning system by entering the user account and password on the system page; ②Personal information management: under the function of personal information management, users can modify and save the basic information of individuals; ③Registration: people who want to become users of the online learning system can input their basic information to complete the registration through the system registration page. After registration, they can log in; ④Resource management: in the resource management function, users can carry out the following management operations on resources, such as upload, download, delete, share, query, etc., but also can manage their own tests, and can also review the tests; ⑤ Online learning, online examination: users can log in the system. According to their actual needs, they can choose the course of study. After learning the course, the system will automatically generate a test paper about the learning content, and they can complete the exam online. ⑥ Learning effect evaluation: in the learning effect evaluation function, the learning effect of users is mainly realized by analyzing the learning process, homework situation and examination situation of users ⑦Course management and approval: under the course management function, users can apply for courses according to their own situation, determine the syllabus, and effectively manage the teaching courseware, homework question bank and other resources at the same time. ⑧User management: for the user management function, it can add, delete, modify, search, block, start and other operations for the user. ⑨Data and log management: Data management includes data backup and recovery, and log management includes log backup, clearing, and viewing.

3.3 Database Design

Data records the results of online learning system operation. It should be known that database is hardware system and software system which is mainly used to store data. Database technology is also an important part of modern artificial intelligence technology, and the data stored internally is also the most important operating data in the whole system. In other words, the quality of database design will directly affect the operation efficiency of the system. Generally speaking, the design of the database in the online learning system is a process from abstraction to refinement, the following from the functional modules of the database, database table design and other aspects to build a comprehensive database.

3.3.1 Database Function Module

According to the functional design of the online learning system, the actual data in the operation of the system is extracted to form the database table, so as to integrate the physical database of the online learning system. Combining the user management, communication management, course

management and teaching management of the database function module, the database function module is constructed. In the online learning system, it needs to provide operational services for users through a lot of learning videos. At the same time, it also contains the resources needed by learners and teachers, such as images, videos and other resources. These learning resources are shared through the network. When the online learning system is presented on the mobile phone as a whole, the teachers and learners can access it through the support of the network. The functional modules of the database also need to be effectively designed. In order to combine into the functional modules of the database, the database table must be designed in different modes. Only in this way can the data in the database be successively presented on the table and stored in the online learning system.

3.3.2 Database Table Design

Online learning system database table design mainly needs to determine the following table. ①Basic information table of users: In fact, the effective management and maintenance of user information data includes user's number, user's name, user's gender, user's native place, user's political status, user's birth information, user's ethnic information, user's department information, major information, etc. ②User login information table: Actually, it records the relevant content of the user in the online learning system, including the user number, user name, user password, user type, etc. ③Course information table: In fact, it stores the effective data of teaching, including course information coding, course information name, course type information, course duration information, course teaching information and so on. ④System management table: It contains log number information, backup data information, recovery data information, permission management information, etc. ⑤Student examination table: It contains student number information, student name information, student class information, student score information, student's department, course code information, etc. ⑥Teaching data table: It contains the teaching data number, teaching data name, teaching data information, etc. ⑦Student score table: It contains student number information, student name information, course data information, test score information and test time information.

4. Application of online Learning System under Artificial Intelligence Technology

When modern scientists apply artificial intelligence technology to the design of online learning system, in order to improve the universality and intelligence of the online learning system, they maximize the advantages of the online learning system. It can be said that in the actual application process of online learning system, the application scope becomes more extensive and the application ability becomes more effective. In order to deepen the cognition of online learning system, the online learning system is mainly applied from the practical aspect based on artificial intelligence technology. The main application aspects and situations are as follows.

4.1 Register online for Classes

In the online learning system based on artificial intelligence technology, one of the most convenient applications is online registration and course selection. Online course selection also has certain typicality, which is different from the fixed schedule in traditional classroom teaching. Online registration and course selection mean that after students complete the registration of the online learning system, they can set up a curriculum plan for students according to their own academic performance and learning level. At the same time, in the learning process of students, the online learning system can effectively and correctly record the learning situation of students, and at

the same time adjust the deficiencies of students' current learning situation, so as to achieve the effectiveness of online learning.

4.2 Online Examination Test

Under the artificial intelligence technology, through the application of online learning system, students not only can complete the online course selection and online learning, but also be able to complete the online test in the system. Online examination allows students to test their own ability. It can propose an accurate exam according to their own study plan. Through the examination, students can check the omissions and fill the gaps, and know their own shortcomings and advantages. Through examination and testing, students can make a targeted learning resource according to their own learning situation. At the same time, they can flexibly adjust the difficulty of learning materials in combination with their understanding of learning knowledge and carry out more suitable learning procedures.

4.3 Online Evaluation Feedback

Under the artificial intelligence technology of online learning system, one of the most important applications is to effectively feedback students' learning results and make students understand their learning situation. In this way, students can better summarize and reflect on themselves after understanding, so as to let students know from which aspects to better improve their learning efficiency and quality. At the same time, learning evaluation feedback through the online learning system can enable students to better measure their own learning level, make better learning plans for themselves in the following learning process, and improve their own performance and ability.

5. Conclusions

In general, with the continuous development of Chinese artificial intelligence technology, the online learning system designed under the support of artificial intelligence technology has been applied more and more widely. The application of online learning system can not only improve learners' autonomous learning ability, but also improve their learning habits. After conducting online learning, online examination, online evaluation and other functions, it can bring users a good online learning experience.

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