Teaching System and Application of Preschool Education with Big Data

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Abstract. Online education service not only covers millions of Internet users in small and medium-sized cities, but also has the advantage of low cost compared with offline preschool education. Therefore, online education is the development direction of China's future education. Network education platform, has been more and more widely used in education and teaching, network teaching platform is mainly divided into several categories, but most of them are developed by computer professionals, whether in the pre production of the website, or in the post maintenance of the website, are time-consuming and laborious. For a school, the cost of using courses is relatively high, and the computer level of personnel is relatively high. As an open source software, Moodle is more convenient to use, and teachers with general computer level can also use it. Therefore, in recent years, its application in the field of education is more and more favored by educators.

Keywords: Preschool education · Moodle · Teaching model · Teaching design

1 Introduction

Today, with the rapid development of science and technology information, the network has brought great changes to our social life. The application of network in the field of education has led to great changes. Network learning has become a new way of learning in school education and a second classroom for students to learn and communicate. The rapid and direct network interaction makes people's communication jump out of the limitation of time and space. People are trying all kinds of things, such as online job hunting, online trading and online education [1]. As the forefront of the new generation of education, kindergarten should also keep pace with the times, so that children can take the first step on the starting line of keeping up with the trend as soon as possible. Piaget's cognitive construction theory makes us realize that the most fundamental thing for children to understand the network and use the network for learning is how to promote their interaction with the "network education environment", because only in this way can children really feel and appreciate the charm of the network, stimulate more desire for exploration, and develop their own more potential. Therefore, in order to achieve a better effect of preschool education, it is necessary to establish a network teaching platform which is similar to classroom teaching. It can not only meet the needs of teachers' teaching, but also facilitate the implementation of home cooperation, home co education and home interaction, so that busy parents can better understand their children's school situation after work and know their children's shortcomings [2–4].

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2 Related Research Status

In China, in 2003, Pang Lijuan and others talked about the importance of preschool education to people's development (including people's personality and cognitive development) and to education, family and society. In 2009, Liu Yan analyzed several problems of preschool education in China, and proposed that the rapid development of preschool education in the future can not do without the support of the government. In 2013, Zhang Na put forward new ideas on the curriculum model of preschool education. In view of many disordered phenomena in kindergarten curriculum, blind imitation has made the curriculum rigid and inflexible [5]. This paper puts forward that the new curriculum mode should be applied with open thinking: first, the development mode of combining foreign curriculum with localized curriculum; second, the mode of combining curriculum theory with practical curriculum practice; third, the mode of combining inheriting tradition with insisting on development. The curriculum should be diversified, be able to build its own curriculum model according to the actual situation, and understand the curriculum model with an open attitude [6].

In foreign countries, Agnes of Belo University uses sound reading teaching in early childhood education. Early childhood is a time network full of imagination and fantasy. Therefore, it is very natural at this stage. Through literacy, folktales, nursery rhymes and other materials, education should cultivate children's imagination. The purpose of this paper is to stimulate the psychology that children's success depends on the preparation they receive when they are young. They insist that children's full preparation for life requires their ability to read and write; Anthony of the University of Florida in the United States also thinks that preschool children should urgently develop early literacy and reading skills; KAMs Khan of the University of Turkey is making a comparative analysis of the early education and the current situation of preschool education in Australia and Turkey. In Turkey's early childhood education, women's active participation in daily life is a key development. The importance of early childhood education is emphasized. It can be seen that preschool education is not compulsory in these two countries [7].

In this experiment, accuracy, precision, recall and macro F1 are used to measure the experimental effect. The definition is as follows:

$$Accuracy = \frac{TP + TN}{P + N} \tag{1}$$

$$\text{Pr}ecision = \frac{TP}{TP + FP} \tag{2}$$

$$\text{Re}call = \frac{TP}{TP + FN} \tag{3}$$

For preschool teachers, most of the computer professional knowledge is not strong, for the establishment of preschool education platform has no operation control authority, so the content of the website can only be passively accepted. For the local pre-school education website, especially the website adapted to the internal use of kindergartens, we should strengthen the pertinence of the content of the website, at the same time, we also hope to have a platform suitable for teachers to update their operation at any time and in time.

3 Problems in Practical Teaching of Preschool Education Major

3.1 Practice Teaching has not been Effectively Implemented

In the practical teaching process of preschool education major in some colleges, although the overall teaching objectives and contents are set, and the theoretical teaching and practical teaching hours of preschool education major are specifically arranged, there are still some problems in the actual teaching, such as the implementation of some courses is not in place, However, it does not involve the practice teaching of children's psychological development and early childhood education activities. The teaching mode is still regular and lacks practicality. Due to the lack of conservation curriculum arrangement in preschool education major of junior colleges, it is difficult for students to learn conservation practice, and it is difficult for teaching content and teaching methods to innovate effectively with the development of the times. Teachers still occupy a dominant position in the teaching process. Teachers require students to learn how to turn students into passive learning, and it is difficult to plan all kinds of children's practical activities independently [8–11].

3.2 Lack of Practical Teaching Conditions

Due to the lack of sufficient hardware and software facilities, it is difficult to effectively meet the diversified learning needs of students. Although some colleges have basic handicraft room, dance training room, calligraphy room and piano room, there is no lack of powerful training room or skill training classroom. For example, infant care skills, swimming guidance skills, environmental facilities skills and so on, but these professional skills training rooms are not perfect. In addition, some junior colleges lack professional experience in preschool education, which only has a theoretical basis. Most of the teachers enter the work after graduation, which makes it difficult to effectively master the practical activities of kindergarten. During the University, they also learn theoretical knowledge, lack of practical teaching experience of children, and are limited to talking on paper in the teaching process, which makes it difficult to improve the practical teaching ability. At present, the practice teaching time of preschool education major is too short in most colleges in our country [12]. The school has arranged the usual skills training and students' classroom time, and the rest of the time has not been reasonably arranged, so it is difficult to improve the students' comprehensive ability [13].

3.3 The Management of Practice Teaching is Not Enough

The practice teaching process of preschool education should be a gradual process, but some teachers just regard the practice teaching as a teaching task, and do not pay attention to whether students participate in the practice teaching activities, and do not carry out targeted teaching according to the students' learning situation, lack of practice teaching management. At the same time, the school did not pay attention to the practice teaching management, lack of specific staff and special management organization, it is difficult to strengthen the practice implementation process [14].

4 The Construction of Teaching Ecosystem

(1) Building a harmonious and equal relationship between teachers and students
Teaching is mainly taught by teachers, students passively accept knowledge into teacher guidance, students take the initiative to explore learning, fully respect the dominant position of students. Teachers are no longer superior, but explore and cooperate with students [15]. Teachers and students should increase more effective interaction, so as to stimulate students' learning initiative. Teachers' personal emotion and teaching style can also exert a subtle influence on students, and students' positive feedback can promote the emotional communication between teachers and students. Teaching should not be a cold and boring teaching of knowledge and skills, but an emotional and happy learning process.

(2) Making open and diversified teaching objectives
In the era of "education informatization 2.0", the construction of home education platform, education software app, website and we media operation have sprung up one after another, which requires kindergarten teachers to master the use of information technology to serve teaching, optimize classroom experience, and improve the ability of curriculum construction. The teaching goal of information course is to cultivate students' information literacy. In addition to knowledge and skill goals, teachers should pay more attention to process goals and emotional goals [16]. For example, in "data processing in excel", let students collect data from life, process data, and feel the whole process of data processing, so that they can know how to apply Excel to life. Through the case of "city temperament from reading index" in the classroom, we can feel that the society attaches great importance to reading and imperceptibly tell students that learning is endless. At the same time, we should cultivate students' big data thinking and feel the efficiency and convenience of information technology. As an information technology teacher, we should be able to combine the teaching content, create a meaningful teaching situation, consciously infiltrate the information technology emotional goals, cultivate sentiment, stimulate emotion, and cause students' emotional resonance.

(3) Renew the teaching content in keeping with the times
The information courses of preschool education major mainly include computer application and multimedia production. With the emergence of information products such as artificial intelligence, Internet of things, cloud computing and big data, the curriculum should keep up with the development of the times and closely integrate with the needs of kindergartens. Some kindergartens have used flipped classroom, online courses, vr virtual reality for teaching, and set up 3D printing courses, robot education, children's interesting programming, etc. In order to train talents to adapt to the development of preschool education industry, the curriculum should also follow the latest research in the field of information, try to add digital, scientific and technological curriculum elements, and even research and cooperate with excellent third-party education software companies on preschool education content, increase information knowledge, and broaden the scope of employment of students [17, 18].

(4) Explore the teaching method of online and offline integration

As a mature online learning platform, our super star Fanya platform provides rich curriculum resources and services, establishes a channel for interaction between teachers and students, and effectively connects school education and family education [19]. The combination of online courses and online courses is conducive to promoting students' fragmented learning and lifelong learning. Teachers should be good at using big data, cloud computing and other technologies to develop personalized training programs for students, so that cloud education, digital learning and other high-quality network resource sharing become more convenient and efficient. As the information classroom is oriented to social needs and students' professional needs, it requires strong practicality and skills. Therefore, in online and offline teaching, it should be advocated to carry out project-based teaching combined with kindergarten, with discussion and exploration as the main way of learning, so that students can actively participate, so as to improve the ability of information teaching and sustainable development [20].

(5) Create a high quality and efficient information technology teaching environment
The teaching of information technology course must be guaranteed by information technology facilities. The school should increase the investment in software and hardware equipment, pay attention to the maintenance and update of multimedia classroom, network classroom, campus network and other facilities, and improve the utilization rate of students' facilities. In addition, the school should also pay attention to the investment in educational software resources, to establish a stable network resource platform, to support the communication and interaction between teachers and students with the network, and through various evaluation activities, encourage teachers to accumulate multimedia materials, courseware and teaching cases and other teaching materials, at the same time, increase cooperation with kindergartens and other colleges and universities, and enrich a large number of teaching materials Learning resources are added to the platform to provide convenient learning channels for teachers and students at any time and realize resource sharing [21].

(6) Construction of multi dimensional teaching comprehensive evaluation system
Teaching evaluation has the functions of diagnosis, encouragement and guidance. Teachers should be good at making use of multi-dimensional and three-dimensional evaluation, not only for students' knowledge ability, but also for their practical ability, information consciousness, innovation ability and other aspects of process evaluation. Teachers can use big data and cloud computing for diagnostic evaluation, and make targeted training programs according to students' interest and potential to teach students in accordance with their aptitude. In teaching, teachers use big data to collect students' process materials, push learning materials that meet students' current needs according to students' feedback, and adjust teaching in time. Teachers can also encourage students to use mobile app to make interesting works, share the results through social platforms, and finally include the likes, comments and votes in the assessment. Multi dimensional evaluation can bring more valuable evaluation basis in many aspects, so as to motivate students and promote teaching.

5 System Construction

5.1 Preparation and Arrangement of Supporting Materials

(1) Hand related pictures and knowledge selection. According to the requirements of preschool education manual course teaching practice, based on the basis of learners, according to the teaching objectives, the front-end analysis is carried out to determine the appropriate manual course related knowledge, pictures and operation steps, so as to pave the way for the later case design and implementation [22].
(2) Material collection and processing. Combined with children's manual knowledge, pictures and operation steps, combined with the actual teaching needs, the materials needed for scientific organization and classification.
(3) The selection of children's manual knowledge, pictures and operation steps. Based on the specific teaching objectives and learning activities of preschool education manual course, according to the teaching standards, integrate the relevant knowledge and materials, and reasonably plan and organize the learning unit [23].

5.2 System Design Ideas

According to the structure of Moodle course platform system, the teaching system of preschool education manual course program selects two basic page types: test page and branch table page. Among them, the test page is used to present questions to the learners. After the learners learn, test and submit the answers to the test questions, the program teaching system provides real-time diagnostic learning feedback to the learners, and dynamically guides the learners to enter the next knowledge point or return to the original knowledge point to learn again. In order to reflect the overall performance of learners, the test page is set up to record sub items and summarize them into the overall performance of learners. The branch table page is mainly used to set up learning branches. Each branch is relatively independent, based on the learning objectives, and does not set up separate items. Correct and wrong answers will only affect the learning progress, but will not affect the learners' performance. When all the learning branches are completed, you can enter the next stage of knowledge learning. In Moodle platform, teachers can fully combine the advantages of the test page and the branch table page to complete the docking, feedback and jumping between the corresponding learning links. If learners complete the answer within the specified time, they can view their own learning results and test point explanations. Moodle platform can show each learner's answer process and results in detail in the form of a report on the teacher's side, and the display content mainly includes learning scores, answer time and so on, As well as the highest score, the lowest score, the average answer time, the most time and the least time, and other classified summary information, and even can be refined. The system design idea is shown in Fig. 1.

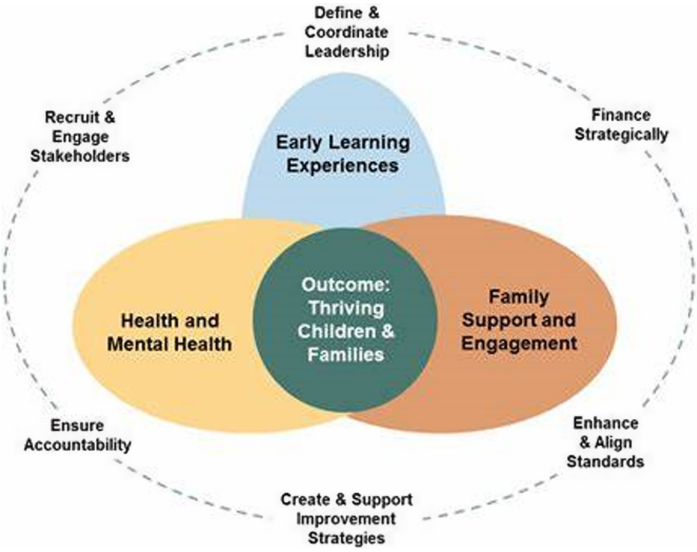

Fig. 1. System design ideas

5.3 System Construction Process

This paper describes the design process of the paper-cut technology section, which mainly includes three basic processes: adding content directory and content display page, adding test branch table page and setting the jump target of each test question/branch.

(1) Add content directory and content display page. Click the "new content page" hyperlink to fill in the page title, edit the page in the content, and add "basic knowledge" and "basic skills" and other test items in the content page. After learning, learners can click the relevant content to complete the learning test of knowledge and skills.
(2) Add clusters and test questions. According to the test content of "basic knowledge" and "basic skills" added in the content page, build the "basic knowledge" and "basic skills" cluster, add all the test questions of the knowledge point in the cluster, and finally add the cluster end page.
(3) Jump to goal setting. When all the test feedback questions and branches are added, open the "test questions/branches list" page. According to the requirements of the corresponding course teaching plan, click the "Edit" icon in the "behavior" to find the corresponding test feedback answer or description item. According to the branch direction, in the jump list after each item, select the target question or branch to jump to, and then complete the program teaching activity addition.

Login with the learner's account, you can see the learning examples of program teaching activities, and easily jump to the page of program teaching activities. The remaining time of program teaching system learning is displayed under the directory of program teaching system, which is used to help learners grasp the learning progress of

program teaching system; The learning score of program teaching activities is displayed at the bottom of the program teaching system, and the interactive module is displayed at the bottom of the program teaching system. According to the settings of these jump buttons and question pages, the page Jump and interaction of program teaching activities are completed, so as to realize personalized learning (see Fig. 2).

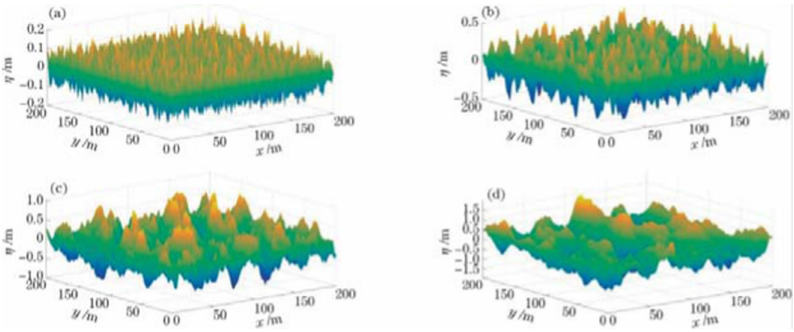

Fig. 2. Simulation with education system

6 Conclusion

Today's society is a society with popularization of network education and rapid updating of information. With abundant network resources, Moodle provides a new tool for preschool education to expand education, broaden vision and communicate. As parents, they can see their children's performance in kindergarten, and communicate with teachers to give timely feedback; as children, they can learn more and more interesting knowledge from the platform; as teachers, they can learn more about each child's situation according to online learning communication, so as to teach students according to their own characteristics. Therefore, it is of great significance to establish an interactive platform for preschool education based on Moodle.

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