One Design of an Online Game Based Teaching System Integrated with the Traditional Teaching Resources

Peng ZHANG\textsuperscript{a,}\textsuperscript{*}, Zheng LIU\textsuperscript{b}

Nanometer Information Department of Suzhou Industrial Park Institute of Services Outsourcing, Suzhou, 215123, China
\textsuperscript{a}zhangp@siso.edu.cn, \textsuperscript{b}liuz@siso.edu.cn

\textsuperscript{*}Corresponding author

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Abstract. Online resource sharing application is already comparatively common in colleges and universities, it assists in teacher teaching and students' self-learning exercises. But, because theory knowledge is difficult to display, tradition teaching resources aren't suitable for the "Analog Electronics" course. This paper puts forward a design of the online game based teaching system which can be integrated into the traditional teaching resources.

Introduction

Online resources sharing can be used as a tool to extend the classroom teaching, and effectively reduce the pressure on the limited classroom time. However, the traditional teaching resources are still lack of attraction for the professional basic courses of science and engineering such as "analog electronics". Because the theoretical formula is difficult to display by animation or video, and the interaction of traditional teaching resources is not enough, it is easy for students to get tired of fatigue.

On the one hand, the traditional teaching resource sharing class plays a poor role in the teaching process. On the other hand, phenomenon of students indulging in the game is more and more serious. The combination of online games and teaching activities can effectively improve students' interest and improve teaching quality.

Instructional System Design of Online Game and Teaching Resources Integration

The content of educational online games should be oriented to the needs of students, grasp the ideological characteristics of contemporary students, and assist in training high level application oriented talents. This paper designs the platform system structure of the online game teaching system as shown in Fig. 1. The system will be integrated with the traditional teaching resources and teaching activities.

Data Services Integration

Many colleges and universities have completed the teaching resources library which is suitable for their own teaching characteristics. It is very necessary to make full use of the existing resources in the online game of the construction education.

On the basis of the traditional teaching resources library, colleges and universities try to increase the game information database and strengthen the review of the database, and the three databases provide a unified background data services. In the game of teaching related exercises, teaching resources of traditional video, simulation experimental data, text data, courseware, audio, and students, classes and teachers' basic information are still stored in the traditional teaching resource library. While the game nature of the data (such as points, grades, characters, props, NPC, tasks, associations, checkpoints, maps, etc.) information is stored separately in the game information database. In addition, the game teaching system should give full play to the function of computer...
automation, the background processes should automatically store students’ wrong answer, and after a period of time force students to review, so as to strengthen the memory effect. The relevant data will be stored in the database to strengthen the review.

In order to facilitate data transmission, the system provides a unified access interface. The interface is designed according to users’ needs, in the backstage database corresponding data are collected, and the production of complete data packet is transmitted to the user, onstage user does not need to care about the system structure of the database design.

![Diagram of Game Based Teaching System Platform](image)

**Figure 1.** Game based teaching system platform.

**Integration of Teaching Information**

Traditional network resources teaching platform usually provides information statistics, feedback and evaluation mechanism. The system of the game through the background service program of statistical information, tasks permissions function module, traditional resources library statistical data will be integrated into the game screen, and through the data access module, the game in the process of information into traditional resource database statistics.

Online game teaching system should give full play to the advantage of process, the background service system of information statistics module, as shown in Fig. 1, is responsible for the overall acquisition of user information, then carries on the statistical analysis, and in the game content, the creation of virtual queries hall, list and feedback form. Display in the virtual hall queries, list the content of feedback, some from the data generated in the course of the game, if the character level, score and others from in the relevant information from the traditional database, such as animation, video viewing schedule information, and so on. Game system will also be a detailed record of the student login, so that teachers understand the students learning process, but also to provide a reference for the game content, the form of improvement.
Data access module for unified game program and background data service system information interaction, the background data (including game data, data of teaching resources, strengthening memory data) to demonstrate to the game content, and user generated in the course of the game data are saved to the corresponding database. At the same time, the data generated in the course of the game, you can also affect the traditional teaching resources library, for example, to accomplish certain tasks in the game data saved to the traditional teaching resources system of integral statistical summary for teachers and students evaluation and incentives, provides the basis.

In order to combine with the teaching progress, the game system also provides the function of task authority, which makes the content of the game consistent with the progress of the classroom teaching, as shown in Fig. 1. Tasks, levels, scenes, props and other information in the game to more with the progress of the classroom teaching, the game will provide the background system tasks, checkpoints, the scene of the authority information set tool. The teacher can choose to open or close some tasks according to the progress of the course or some kind of students.

**Integration of Teaching Activities**

In the teaching system, the network game will be an important supplement in the teaching process. Game content should be integrated with the various aspects of the teaching, no matter in the pre class, after class homework, virtual experiments, unit review, experience exchange, display and other teaching aspects.

At present, the popular online game forms have two kinds, one kind is small web games only for one or two people to experience the game program, often through flash or HTML5, providing casual form of entertainment. The other is multiplayer online game, providing interactive entertainment experience. Popular multiplayer online game is divided into two kinds: a weak flow network game, in this game, the player into a group, usually in a sequence rules in turn operation, this kind of game server needs less data quantity; another is strong flow network game, in this kind of game, thousands of players gather together, they could communicate with each other and together complete the task of the game, game server is required to handle the data with large amount of information. The different forms of online games are suitable for different teaching links.

Web games for the small game into the homework, exercises, as well as pre class preparation and other teaching links. Through "the answer", "whack-a-mole", World War II aircraft, "zombies", "Parkour", "the answer checkpoints and other forms, homework, exercises, and in front of the class preview content were game packaging, theoretical knowledge into the joy of the game of the process.

Weak flow network game suitable for integration into the unit review or simulation experiments and other teaching links. Through the construction of a chess game in the form of a class, so that students get together, free to choose a learning group, unit review and virtual simulation operation.

Strong flow network game can be integrated into more teaching activities. Through the construction of community types of role-playing games, students can be in the virtual world of knowledge review, accumulation, mutual exchange, to complete the relevant learning tasks, etc. The game also provides the campus learning virtual community, we discuss together in the virtual world, along with checkpoints. At the same time the game will be integrated into practice, training, semester projects and graduation design teaching link, by setting the virtual works exhibition hall to record student work production process, each time, the progress of the completion of, and exhibit their works with the final result. Through the virtual exhibition hall, students can understand each other's work situation, mutual evaluation, provide more feedback information. The teacher can help the students to improve and improve according to the feedback information.

**Summary**

Network game as an important supplement to the teaching process must be integrated with the various aspects of teaching throughout the whole teaching process. This teaching system not only
improves the quality of school education and teaching, but also promotes the construction of the characteristics of the campus culture, and creates a good atmosphere of school education.

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