

The Application and Development of Educational Game of Augmented Reality Technology

Shubin Wang

China West Normal University, Nanchong, Sichuan, 637009, China

369709596@qq.com

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Abstract: In recent years, the rapid development of science and technology in our country has promoted the constant reform of education, and the development direction of education is to put education in fun. In order to fully meet the needs of education and entertainment, teachers need to be able to set up educational games in line with students' psychology and thinking in the teaching process. However, combined with the current situation of education in China, we can see that there are generally dull and single problems in the teaching process. It is not conducive to stimulate students' interest in learning. Therefore, this paper analyzes the application and development of the educational game of augmented reality technology, hoping to create an educational game with strong entertainment, high interaction and rich sense of reality, so as to lay the foundation for promoting the educational reform.

1. Introduction

With the continuous development of science and technology in our country, teaching resources are also constantly enriched. At present, the combination of teaching and science provides students with a variety of learning ways, which can not only improve students' interest in learning, but also fully meet the teaching concept of teaching with pleasure. As one of the learning ways of students, educational games can directly affect the learning efficiency and learning level of students. However, due to the single way of playing in the current teaching process [1], it leads to the visual fatigue of students, which is not conducive to the improvement of students' autonomous learning ability, but also can not give full play to the role and value of educational games. In the digital era, we need to innovate the game form and inject new vitality into teaching resources. Therefore, it is of practical significance to analyze the application and development of augmented reality technology education games.

2. The Concept of Augmented Reality Technology

Augmented reality technology is a new comprehensive technology, including: display technology, human-computer interaction technology, computer technology and other technologies. And the cost of this technology is relatively low in development. Through the augmented reality technology, the information that is difficult to understand in the real world or in the real space can be realized. Through simulation, simulation and other technologies, the virtual world can be established, so that people can experience the reality in the virtual world through the senses of vision, hearing and so on. In addition, users can interact with the objects in the virtual world through special equipment, which is the combination of virtual reality and strong interaction. Applying it to the game development of education can not only strengthen students' skill training [2], but also enhance students' interest in learning, improve teaching efficiency and promote the smooth progress of education reform.

3. The Development of Educational Game of Augmented Reality Technology

3.1. Principles of Educational Game Development

Augmented reality technology education game development is different from other game development engine oil in the same point. Its development goal is to stimulate students' learning enthusiasm, so that students can improve their learning ability through game situation in learning. Therefore, in the development process, we need to consciously infiltrate cultural knowledge. It can be analyzed from the following aspects:

First, we need to fully follow the principle of interaction. In the process of game development, game plot is the basis of augmented reality education. Therefore, we need to fully apply augmented reality technology in the aspect of story plot and abide by the principle of interaction. Game development is vivid and flexible, which is conducive to students' timely information feedback in the process of game, so as to improve their learning ability Goals.

Second, we need to fully follow the principle of competition. In the process of learning, students should not only break through themselves, but also make progress through fair competition with other students. Therefore, in the process of game development, we need to respect the new competition principle, for example, through game clearance points, students can achieve self competition. Students can compete horizontally by completing tasks through multiplayer games.

Third, we need to fully follow the principle of rule-making. In the development process of educational games, we must follow the principle of rule-making, which must be recognized in the real world, and put an end to fabrications. Only by fully ensuring this principle can students acquire knowledge in the process of playing.

Fourth, we need to fully follow the incentive principle. In the process of educational game development, if we want to make students keep fresh at all times, we need to integrate the incentive principle, so that students can improve their enthusiasm and independent learning ability in the learning process. For example: after the game is over, you can associate the student's score with the game level. The better the student's score is, the richer the reward will be.

3.2. Educational Game Development Needs

In the development process of the augmented reality technology education game, the following aspects need to be analyzed, as shown in Figure 1:

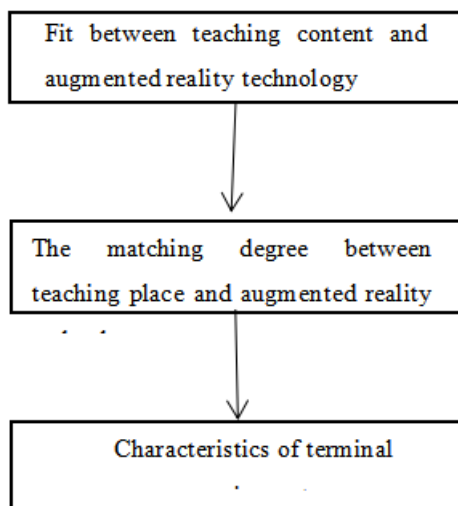


Figure 1 Demand analysis of educational game development

First, in the process of teaching, we need to fully consider whether the teaching content can meet the needs of augmented reality technology model development. That is, whether the story of educational game has application significance in the teaching process.

Second, the matching degree analysis of teaching place and augmented reality technology, in the process of educational game development, the demand for game resolution, environmental light source and so on is relatively high. Therefore, in the process of development, we need to fully consider whether the creation of teaching is feasible, and whether it can create a good game experience space for students.

Third, the analysis of the characteristics of the terminal equipment, the game terminal equipment can directly determine the function and interactivity of the game, therefore, in the development process of educational games, in order to ensure the stability of the game, it is not appropriate to design too many scenes and links [4].

3.3. Development and Design of Educational Games

In the process of game design, it is necessary to fully consider the ultimate goal of game design, so as to improve the overall structure of the game. As an educational game developer, first of all, it is necessary to analyze the needs of teaching, build the game scenario, virtual corner color and context background with students' thinking mode and psychological characteristics, and then fully consider the game task. In order to enrich the content of the game, through the augmented reality technology can be difficult to understand the real world or real space information, through simulation, simulation and other technologies to build a virtual world, so that people can experience the real world in the real world through vision, hearing and other senses. In addition, the user can interact with the objects in the virtual world through special equipment, which means that the user seems to be in the virtual world, with the characteristics of virtual reality combination and strong interaction, such as: game rules design, game reward mechanism design, game information feedback design, etc. at the same time, in the process of game design, it is necessary to emphasize the application of augmented reality technology. Through the effect of light and shadow, we can ensure the virtual combination of games, so that students can be in the game, so as to improve the enthusiasm of learning.

3.4. Development and Implementation of Educational Games

In the process of educational game implementation, developers need to combine game needs and game plans, scientifically select development platforms, development tools and development languages to ensure that game functions are consistent with development and design, so that they can fully play their roles and functions in the process of education.

4. The Application of Educational Game of Augmented Reality Technology

In the process of practical English teaching, the teaching effect is very significant. Students can understand the game story situation through game dialogue, which can not only improve their enthusiasm for learning, but also enhance their sense of mission in learning. In the specific application process, students can choose game characters according to their own preferences, and game characters will replace students to complete tasks and checkpoints in the virtual world. Combined with the current situation of education in our country, we can see that there are generally dull and single problems in the teaching process. It is not conducive to stimulate students' interest in learning. Therefore, this paper analyzes the application and development of the educational game of augmented reality technology, hoping to create an educational game with strong entertainment, high interaction and rich sense of reality, so as to lay the foundation for promoting the educational reform, and also interact with other characters. After the game characters are selected, they need to enter the game task. Students can choose the scene of word memory through augmented reality. Answer the game questions in combination with the game situation [5], so that students can strengthen their memory ability in the game experience. After students complete the Q & A task, the system will scientifically evaluate the accuracy and speed of students' answering questions, and provide reward achievements, which will help students keep fresh at all times under the driving of task, so as to improve their learning level. The specific operation includes the following steps:

First, the students need to start the game software according to the game prompts, enhance the sense of mission of the students to complete the game by reading the story background, which is conducive to add color to the learning tasks of the students, so as to stimulate their interest in learning.

Second, students choose game characters according to their own preferences. Game characters can not only interact with students, but also interact with other characters in the game world with

the help of tools, which is conducive to students to complete game tasks through the combination of game characters and themselves. As shown in Figure 2



Figure 2 VR glasses

Third, students can unlock the next level after completing a task. The scenes and tasks of each level are different, which can keep students fresh at all times, and enable students to improve their learning ability while completing the game task.

Fourth, students can search for the target object in the game scene, and select the corresponding English words according to the information prompted by the object.

Fifthly, after the students complete the question and answer, the system will show the answer results in combination with the speed and accuracy of the students' answer, which is helpful for the students to check the causes of the errors, so as to correct them. At the same time, the students can be rewarded with achievements in combination with their scores, and the higher the scores, the richer the rewards [6].

Sixthly, the game system can push the Related words to contact the students with the wrong questions, so that the students can learn pertinently, so as to improve the learning efficiency and level.

5. Conclusion

The development of educational games through augmented reality technology needs to be considered in combination with the teaching content, meet the development needs of students, stimulate students' interest in learning through game task driving, and fully meet the teaching concept of teaching with pleasure. This paper analyzes the application and development of augmented reality technology education games, hoping to lay a foundation for improving teaching efficiency.

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References

- [1] Chen, Xiangdong., Wan, Yue. (2017). Development and application of augmented reality education games -- Taking "bubble planet" as an example. China audio visual education, no. 3.
- [2] Qi, lisen., PI, Zonghui., Xu, Miao., Wang, Shuguo. (2014). Technology types and educational applications of augmented reality. Modern educational technology, no. 11, pp. 20-24

- [3] Wang, cixiao., Li, He., Shang, Junjie. (2017). Application and development prospect of educational games based on virtual reality and augmented reality. China audio visual education, no. 8.
- [4] Li, Yi. (2018). Design and application of AR technology in education and Teaching. University education, no. 10, pp. 209-211
- [5] Zhou, Sen., Yin, Bangman. (2017). Augmented reality technology and its application status and development opportunities in the field of education. research on audio-visual education, no. 03, pp. 88-95
- [6] Zhang, Chen. (2018). Interactive strategy design and application of mobile augmented reality education games. Northwest University.