Future Development Trend of Multimedia Network

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Abstract. With the rapid development of computer network, multimedia technology has gradually spread throughout all aspects of people's life. This article, based on the concept and characteristics of multimedia, expounds the application of multimedia technology and the trend of future development. It makes a heavy analysis of multimedia teaching and analyses the meaning and advantage of multimedia teaching.

1. Introduction

Multimedia is the media that interactively disseminating information, which combines two or more media. It can process and transmit text, sound, image, video and so on, as is shown in figure1. Finally, it can be used in a friendly way. For various media information, multi-channel and simultaneous collection, storage and processing are adopted[1]. Nowadays, multimedia emphasizes the synergy between various media and the large amount of information they contain. Because the key equipment to deal with multimedia is the computer, so all kinds of media information, such as images, sounds, words and so on, should be digitized and stored in the computer by different coding methods. Multimedia has a tremendous impact on people's lives, daily communication, entertainment and transportation are inseparable from the help of multimedia.

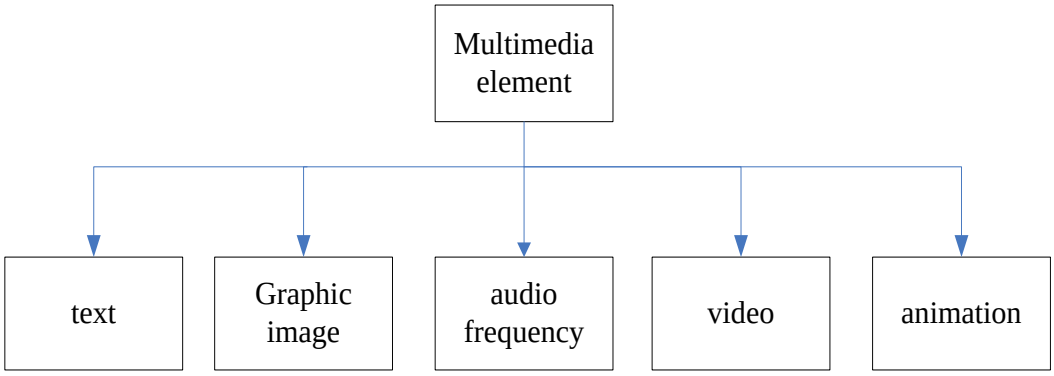


Figure.1 Elements in Multimedia

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2. Application of multimedia technology

Multimedia technology is the fastest and most active part of the field of information technology. It makes the virtual network world more colorful, makes the network closer to people's life, and meets the needs of people's life, learning and work[2]. At present, the application of multimedia has been involved in art, education, entertainment, medicine, scientific research, and so on. With the development of communication technology and the needs of people's life, the application of multimedia technology will become more and more broad.

2.1 Multimedia data compression

Before the multimedia signal is transmitted, because the signal data is very huge, the storage space is also very huge, so it is imperative to compress the data. For an example of a true color video image with a resolution of 640*480, for example, the number of bits per frame is 640*480*24=7.37Mb, which needs to occupy the storage space of 0.9Mb, then the hard disk of the 1G capacity can only store more than 1000 images of such images. At the same time, the average frame rate of the movie is 24 frames per second, then the one minute movie fragment will probably need 640*480*24*60*24=1327MB storage space, which is obviously inappropriate for the multimedia network, so it is necessary to solve the problem of the storage and real-time transmission of the video, image and audio signal data.

2.2. Multimedia monitoring system

With the development of image processing technology and audio technology, multimedia technology is also gradually applied to various monitoring systems[3]. The monitoring system can synthesize images, sound, animation, text and other information, quickly search in the database, which can be presented on the computer interface in time, and find abnormal conditions in order to take emergency measures. The application of multimedia technology has made the existing security system more powerful, and has an important impact on traffic control, bank security, hotel management and other fields.

2.3 Education and teaching

The multimedia technology has a profound influence on the teaching. The traditional teaching mode is easy to let the students feel tired and confused[4]. The introduction of multimedia to the teaching of information can make the students concentrate well through video animation, audio images and so on. Many teaching courseware can be compiled by teaching and using multi media. Aiming at students' weaknesses, we should carry out in-depth teaching, create a vivid teaching environment, let students study independently, and improve their enthusiasm for learning.

2.4 Communication multimedia

Human beings have gradually entered the information age, the communication between people is more and more frequent, multimedia communication can indent the distance between people. Now there are many ways of multimedia communication. People chat by mail or phone, but it can only communicate personal information through sound and text[5]. Many people need face-to-face communication and discussion. Video communication technology appeared. People can communicate face-to-face via video communication even if they are separated from each other. It has greatly facilitated the work of today's companies and eliminates long distance travel and expensive travel expenses.

3. Characteristics of multimedia technology teaching

In the multimedia teaching environment, students can better accept knowledge, and from a variety of multimedia information to find the information they need. The multimedia teaching has bid farewell to the previous way of writing, adding various forms of media[6], such as images, animations, audio, and so on. It can reappear the content that the traditional teaching can’t show in the classroom, and can seize the characteristics of the contemporary students and combine their own advantages, as shown in the figure2, so that the teaching and learning will become more relaxed and interesting. Students can participate more actively in the curriculum and improve the efficiency of the whole classroom.

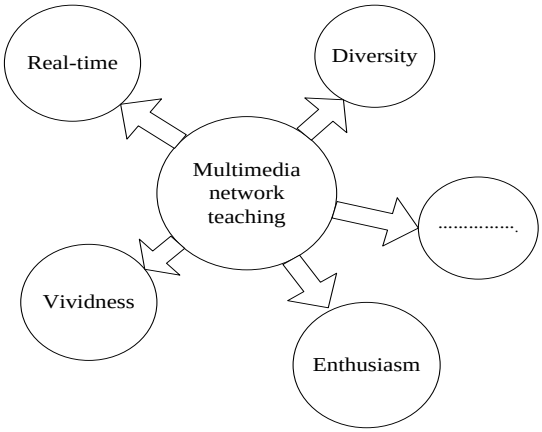


Figure.2 Characteristics of multimedia network teaching

3.1 Diversity

The multimedia teaching is based on the computer network, the Internet has rich teaching resources. Through the multimedia network teaching, students can directly contact a large number of network information, not only limited to the knowledge of books, students can carry out a large number of extracurricular extensions[7], enrich their own knowledge and stimulate students' desire for knowledge. To enable students to learn in a real sense, for the problem that can't be solved, students can find relevant knowledge on the Internet, through multimedia teaching, let students develop a good learning habit.

3.2 Real time

The multimedia network teaching can realize the agreement with the outside information. Most of the contents in the book are classic old content[8]. The attention to the frontier of the subject is very low. Relying on the multimedia network technology, the students can first understand the latest related research and development of the subject and carry on the real time interpretation of the latest achievements. Let students understand what kind of research their profession should do.

3.3 Vivid dynamic display

Multimedia teaching is based on all kinds of images, video, audio and other information, giving students visual and audio-visual experience. For those abstract and difficult courses, multimedia teaching can solve these problems perfectly, and turn abstract objects into objects through visual frequency to students, such as some three dimensions. Model, circuit transmission circuit, let students feel their specific construction and experimental process[9], there are some dangerous chemical experiments, in the classroom or laboratory experiment is completely impossible, so that the students can be displayed through the video, let students understand their specific process.

3.4 Improve the enthusiasm of the students

The multimedia teaching is different from the traditional course teaching. It can provide the information such as image, video screen, sound, dynamic text and so on, let the students' various senses to be stimulated, so that the attention of the students can concentrate. Through the multimedia teaching, Teachers can explain knowledge to students according to the content they need, and do not need to follow the fixed textbook mode. Multimedia will link up the knowledge we need to learn, so that we can enhance the systematicness of learning[10]. Multimedia teaching provides students with many aspects of thinking. In a limited period of time, students can have a logical and procedural understanding of the teaching content, and do a profound memory, and can cultivate the creative thinking of the students. At the same time, the multimedia network teaching also provides a platform for students to communicate. Students can use the multimedia teaching platform to carry out cross regional communication learning and listen to various professional academic reports.

4. The future development trend of multimedia network teaching

4.1 Combination of multimedia network and AR Technology

With the development of virtual reality technology, there will be a great deal of intersection with the teaching field in the future. If students can immerse themselves in their studies, they will help students understand their knowledge deeply, and the virtual reality technology meets the requirement perfectly. Virtual reality technology allows students to feel the concrete objects directly through interaction, as if they have entered another world, and students will be more focused. The integration of multimedia network and virtual reality technology can promote the educational work of students, let more students enjoy learning and are interested in learning, rather than forcing students to study like the present education[11]. At the same time, the students' learning efficiency will reach an unprecedented height.

4.2 Combination of multimedia network and artificial intelligence technology

The multimedia technology knowledge gives students a different visual and auditory experience, so that students can understand the knowledge they want to learn more deeply, but the multimedia network technology can not realize the interaction between the students and the network, and can't analyze the students' learning behavior. With the development of artificial intelligence technology, the multi-media technology and artificial intelligence technology are combined to produce the intelligent teaching system[12]. The system can help the teaching to analyze and evaluate the students' learning behavior, to assign each student to their own learning plan, and to teach by the material, and the system can be used at any time. The progress and effect of students' learning, at the same time the self-adaptive adjustment of various teaching plans, a lot of guidance for students' puzzled problems, so that students can learn more knowledge.

4.3 Combination of multimedia network and communication technology

With the popularization and development of 4G technology, the connection of communication technology and Internet technology is becoming more and more closer. The application and teaching of 4G technology can be an efficient mobile learning[13]. Students can't have to study at a certain time in a certain place, but rely on their mobile phones at any time and anywhere to study, find information on the mobile phone, watch the teaching course on the mobile phone, make full use of the rich teaching resources, and give full play to the enthusiasm and initiative of the students[14].

4.4 Build a multimedia teaching platform in cloud computing environment.

At present, although the multimedia network teaching platform in Colleges and universities is more perfect in function, the network platform is not adjusted and optimized according to the characteristics of the school itself. Most of the systems are based on the big environment of the Internet application. There is a phenomenon of irrational distribution of resources, which can't meet the demand of multimedia teaching[15]. It is necessary for the school to build a multimedia teaching platform suitable for the needs of its own development, based on its own development needs, and build a multimedia teaching platform suitable for the needs of its own development, allocate the resources reasonably, adjust the playback resources dynamically, which can help the students to quickly locate their own interest in the internal capacity. It can save the network bandwidth resources and improve the performance of the whole system.

5. Conclusion

With the rapid development of information technology, the demand for multimedia technology is becoming more and more intense in all walks of life. All kinds of new concepts and technologies will be integrated into the multimedia technology and continue to develop and innovate. In the future, there will be a variety of colorful multimedia applications. Multimedia technology into the classroom, and education and teaching mutual influence, mutual progress, training for the new era of numerous technical talents, these talents can promote the continuous development of multimedia technology, and gradually form a virtuous circle.

6. Acknowledgement
The work was supported by the 2017 graduate education reform research project of the Wuhan University of Science and Technology (YJS201718), the reform and exploration of computer professional curriculum system oriented to system capability training (2017249) and the Ministry of Education Industry-University Cooperation Joint Education Project (201702134010).

7. References

[1] Jiang J J.2017 Cross-regional design and implementation of modern electronic technology experimental network teaching platform. *Modern electronic technology*, Vol. 40 pp.39-42.
[2] Yi Z H and Li P. 2016 Research on Physical Education in Colleges and Universities Based on Multimedia Network Teaching Platform. *Automation and Instruments* pp.200-201.
[3] Zhou Y Zhang L Q and Lin J M. 2010 Design and implementation of multimedia network teaching platform for instrumental analysis experiment. *Experimental technology and management* Vol27 pp. 93-95.
[4] Wang M. 2018 Application prospect and problems of network multimedia technology in high school physical education. *Science and Technology Industry Parks*
[5] Lv F H. 2017 Application and development trend of computer multimedia technology. *The Guide of Science and Education: electronic version* pp.253.
[6] Wang Y. 2017 Research on Embedded Network Video Monitoring System in Multimedia Technology Environment. *Computer Measurement and Control*, Vol.25 pp. 91-95.
[7] Hu X Y. 2017 Trend of multimedia technology. *electronic technology and software engineering* pp.79
[8] Ren G Z and Bai Y N. 2016 Research on Specific Data Mining Methods in Multimedia Intelligent Teaching System. *Electronic Design Engineering* Vol.24 pp.4-7.
[9] Chen Y and Lin C. 2017 Multimedia classroom operation and maintenance management system. *Experimental technology and management*, Vol.34 pp.301-304.
[10] Hu G Q and Chen Y. 2017 Design of intelligent English Multimedia Classroom Based on SDN [J]. *Modern electronic technology* Vol.40 pp.88-91.
[11] Wang Z. 2017 The influence of the application of multimedia technology on teaching. *Digital world*, pp.19.
[12] Liu H M. 2017 Application of multimedia technology in teaching. *Science and technology innovation* pp.175-175.
[13] Wang Z Z. 2016 A computer network multimedia video teaching system design. *Electronic design engineering* pp.66-68.
[14] Liu X Q. 2017 Application of multimedia network teaching platform in Physical Education in Colleges and universities. *Automation and instrumentation* pp.214-216.
[15] Wang Z R and Liu N Y. 2016 Development strategy of multimedia network teaching platform *Information and computer (theoretical version)* pp.160.