Research on the Platform Construction of Multimedia Technology Education Curriculum System in Film and Television

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Abstract. People often use "film and television media" as the carrier of audio-visual programs, but there is no clear theoretical definition of multimedia technology course teaching and teaching resources construction experience. This paper analyzes the definition, category and development of multimedia film and television technology, summarizes and expounds the construction method and main content of film and television multimedia curriculum system.

Keywords: Film and television multimedia technology · System construction

1 Introduction

In the era of simulation technology, film and television production adopts the traditional video technology, and the production process of shooting, recording and editing cannot be separated from the single storage media of video tape. Since the 1990s, the traditional film and television production technology has been gradually replaced by multimedia film and television production technology. The maturity of computer non-linear editing technology, multimedia three-dimensional animation design and virtual studio technology has completely changed the traditional production process, transmission and reception mode of film and television media shooting, recording and editing.

In order to adapt to the new requirements of technology development on the knowledge structure of talents, broadcasting and television director, multimedia animation production, advertising design and other communication majors have set up new multimedia technology courses. Because the teaching material of this course adopts the general multimedia technology teaching material of electronic information, it is very difficult for teachers to teach and students to learn. At present, the domestic research on film and television multimedia technology is only limited to professional papers, and there is no teaching material that combines the content of film and television production and the dissemination of film and television programs, and there is no more complete auxiliary teaching resources. Therefore, the film and television multimedia technology curriculum system needs to be constructed.

M. A. Jan and F. Khan (Eds.): BigIoT-EDU 2021, LNICST 391, pp. 530–536, 2021.
https://doi.org/10.1007/978-3-030-87900-6_61

2 Definition and Characteristics of Film and Television Media

Under the promotion of the digital process, the traditional film and television media have been greatly impacted, digital coding has become the main media, people will be in the form of digital transmission of film and television media also known as digital film and television media.

2.1 Various Types

Film and television media include many forms. The same information type has different requirements in terms of rate, delay and error code. Therefore, the transmission system must adopt a variety of encoders, a variety of transmission media interfaces and a variety of display modes, and can exchange information with a variety of storage media. Recommendation 374 of ITU-T defines six kinds of media: sense media, presentation media, display media, storage media, transmission media and exchange media. But in different situations, the definition of media is different. For example, when we study the relationship between media representation and time, we define discrete media and continuous media [1]. In the field of mass media, people often use film and television media as the carrier of audio-visual programs. In my opinion, film and television media should also include information representation, storage, transmission technology and means related to hearing and vision. In the era of analog electronic technology, audio tape or video tape is the main storage media of film and television media, open circuit transmission or cable transmission is the transmission media, television and tape recorder is the display media, and analog signal is the representation media.

2.2 Variable Bit Rate

Multiple information transmission requires multiple transmission rates. The transmission rate required by various information media is shown in the Table 1.

Table 1. Transmission rate of various information bodies.

Media	Transmission rate	Compressed bit rate	Sudden peak/average peak
Data, text, still image	155 bps–1 bPs	< 1.2 Gbps	3–1000
Voice, audio	64 kbps1–536 MBPS	16–384 kbps	1–3
Video, motion picture	3–166 MBPS	56 kbps–35 MBPS	1–10
HDTV	1 Gbps	20 Mbps	-

The delay is variable. The time delay of the compressed voice signal is small, but the time delay of the compressed image signal is large, which leads to the problem of different steps between different types of media. Continuity and suddenness. The transmission system is burst, discrete and non real-time when transmitting data information, while the

voice signal and dynamic image are real-time, continuous and non burst with high data rate. There is a large amount of data. The transmission system transmits a large amount of dynamic image data. For example, the amount of data generated by studio quality digital video signal is 200 Mbps per second, and the transmission rate of uncompressed HDTV signal is as high as 1 Gbps.

Firstly, the distance between the source node and each neighbor is calculated. The first forwarding node is the farthest node, expressed as N, and the other two nodes are selected according to the location of n. The source node is the origin, the abscissa is the line sn0, and the coordinate system is established. By dividing the source node into three sectors with M/3 transmission range, each neighbor node n defines an angle function and a position function of the formula respectively:

$$f_n = \cos 3\alpha/2 \tag{1}$$

$$g_n = f_n \cdot d_{sn} \tag{2}$$

$$Q_w = (\omega) = \frac{\sum pug(W_{pg})}{p \times q} \tag{3}$$

The main function of network transmission processing module is to carry out user server P2P direct connection transmission, signaling transmission, terminal P2P penetration, transfer and so on. When most wireless network terminals connect to the network, they are in a NAT local area network, and their ports and IP are private to the local area network, so they can't directly connect to two terminals in the local area network. The UDP penetration module of P2P network is mainly based on NAT penetration technology. Both sides get the p address based on the public network, promote the port mapping, and finally complete the direct connection process, And the transmission of multimedia data, if NAT successful penetration.

3 Characteristics and Category of Film and Television Multimedia Technology

3.1 Main Advantages

In addition, it is necessary to construct a home multimedia terminal with digital technology, compression coding technology and network technology, which integrates the fidelity of film and television image, the interaction of computer and the distribution of network. Interactivity. Interactivity is an important feature of film and television multimedia technology. It enables users to control and use the film and television media more effectively, and increase the attention, understanding, planning and production of the media. In a sense, not only the film and television media, but also all forms of media require interaction. The interactivity of film and television multimedia technology is mainly manifested in the realization of two-way interactive services, such as video on demand (VOD), network interactive television and so on. Intelligence. Video multimedia digital equipment is the integration of computer, radio and television and communication

functions. The nonlinear editing system, virtual studio, hard disk broadcasting system, etc., which are put into use at present, give full play to the intelligent functions of the control system of the grate [2]. Video multimedia technology is based on digital audio, video technology and computer technology, This paper studies the application of multimedia technology in the production, transmission and reception of digital radio and television system.

3.2 Storage Technology

As one of the important storage devices of computer, hard disk drive (HDD) has become an important storage medium in film and television production system. The hard disk of professional broadcasting system adopts rad technology, and the disk array rad is a fast and super large capacity external memory subsystem composed of many disks. At present, it is widely used in hard disk broadcast system and video on demand system. It has become a necessary equipment with high reliability, fast response and large capacity storage. At the same time, the development of CD storage technology is also very fast. DVD adopts MPEG-2 image compression technology, audio adopts MPEG-2 audio or AC-3 standard 51 channel surround sound technology, audio sampling frequency is 48 kHz. There are four kinds of recording density: single-sided single density, single-sided double density, double-sided single density and double-sided double density. The single-sided single density has a capacity of 4.7 GB (DVD-5) and double-sided double density can reach 17 GB (dvd-17). It has replaced CD as the storage medium of mainstream film and television programs. In addition, there are two kinds of distributed storage technologies that will be gradually promoted.

4 The Development Direction of Film and Television Multimedia Technology

From the perspective of digital process, communication system, computer system and mass communication system are all developing towards digital direction. However, due to the different purposes and technical standards of these systems, there has always been a big gap for end users, which is difficult to integrate, However, they have already penetrated into each other. At present, they have the conditions to realize the “three electric integration” (telephone, television and computer) of information presentation and display media and the “three networks in one” (telephone network, cable television network and computer network) of transmission media. This kind of “integration and unification” is not a simple combination in form, but a combination of the development of multimedia technology in technology, so as to form a unified multimedia information system (MMS), which provides a new opportunity for the development of film and television technology. The combination of the content and style of film and television media and the interactive ability of Web will produce broadband interactive film and television forms, such as webt. Film and television media will enter a new era of interactive media [3]. In the future, radio and television will gradually transfer to broadband IP. The information appliances produced by the integration of Internet TV and computer will become home information terminals (including set-top boxes). Interactive digital video

technology based on network will become the development trend of communication technology in the future.

5 Construction Method of Film and Television Multimedia Technology Course

5.1 Multimedia Technology

Establishing the characteristics and technical category of film and television multimedia technology is the basis of determining the teaching objectives of film and television multimedia technology course. However, film and television multimedia technology is a highly comprehensive technology, and its disciplines are competitive, It involves computer technology, network technology, digital audio-visual processing technology and plug-in television technology, and many of the contents are new concepts, new theories and new technologies put forward in recent years. How to organize the teaching content to achieve the teaching objectives and build the curriculum system, the author thinks that we should first study the professional background and the pre curriculum setting of the teaching objects, and find out the advantages of the communication students Secondly, take part in the graduation defense and work report of students to understand what multimedia technology knowledge students have and the existing deficiencies.

5.2 Main Role

On this basis, the teaching plan, course handout and teaching plan are drawn up, and the test feedback method of teaching feedback technology is used in the teaching course to evaluate the teaching effect. Finally, through the analysis and research of the test paper after the mid term and final examination, the difficulties of students in mastering multimedia technology are found out, and the adaptability and pertinence of the teaching scheme (handout) are studied and constantly modified. Practice shows that the combination of theory and practice can achieve good teaching effect. For example, after teaching the theory of compression coding, students are asked to use compression tools (winzip, WinRAR) to compress various media; after teaching digital audio technology, students are required to use coot software to edit and synthesize audio signals, etc. all these have obviously improved students' interest in learning and learning effect.

6 Teaching Requirements of Film and Television Multimedia Technology Course

6.1 Course Teaching Requirements

According to the characteristics of film and television multimedia technology and professional characteristics of technology category integration, through teaching practice, the teaching requirements of this course are determined as follows:

Master the concept of media and the definition of film and television media, understand the six media concepts defined by tu-t, understand the development of film and

television technology, and master the four characteristics and technical categories of multimedia digital film and television technology. To master the basic characteristics of visual system (VS) and auditory system (has); to master the basic principles of audio image digitization; to master the physical characteristics and components of image and sound media; to understand the basic characteristics of video signal.

Master the basic theorem and method of audio digitization; master the system structure and working principle of DPCM coding; understand the characteristics of subband coding and ADPCM coding; understand the performance and characteristics of MPEG-1, MPEG2, mpeg-2acc and MPEG-4 audio standards.

Master the basic concepts of data compression; master the methods of Huffman coding, run length coding and arithmetic coding; understand the physical meaning of prediction coding and transform coding to achieve data compression; master the three coding algorithms of JPEG compression standard of still image compression standard; understand the characteristics of h261.

6.2 Main Application Scenarios

Master the main format and characteristics of video tape recorder, master the main technical index and storage principle of CD-ROM memory, master the types and main characteristics of CD-R disc, master the format and application of DD disc, and master the characteristics, mode and application of rad technology, Understand the application of storage area network technology and network attached Technology master the characteristics and basic principles of SCSI, USB, IEEE1394 and SD interface; master the format and characteristics of common video camera; master the main performance indicators and working principles of audio card and video card; master the composition and main functions of Multimedia production platform; understand the classification of multimedia production software; master the application of storage area network technology and network attached technology [4]. Master the basic principle, main functions and classification of nonlinear editing system; master the software configuration and technical indicators of nonlinear editing system. Master the essentials of non-linear editing system steps and steps; master the basic principles of multimedia animation technology.

7 Summary

Working process oriented professional curriculum system construction is a curriculum system model with vocational education characteristics, which enables students to learn and master professional knowledge and skills in the process of completing specific tasks, and is conducive to cultivating students' comprehensive professional ability. It has become the main trend of vocational education curriculum reform. master the goal of MPE frequency compression standard; master the basic concepts of data compression; master the basic concepts of Huffman coding, run length coding and arithmetic coding; Master the application of MPEG-2 in the field of radio and television, understand the main application of MPEG4, MPEG-7, mpeg21 standards and M-JPEG and DV formats.

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