

Research Article

Teaching Practice for Digital Media Design in the Context of Media Integration

Xu Chen  and **Zhifeng Jiang**

Faculty of Creative Design, Zhejiang College of Security Technology, Wenzhou 325000, Zhejiang, China

Correspondence should be addressed to Xu Chen; 16016081@zjst.edu.cn

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In the current digital environment, various media are greatly integrated, and the traditional teaching is facing difficulties. Especially in the epidemic environment, the traditional classroom has been difficult to meet the needs of teaching. Therefore, this study aims to design a video teaching system for classroom teaching by using the digital media technology in the media fusion environment, so as to meet the needs of students' digital learning in the new era. For dry teaching design, this study focuses on the analysis of video teaching in classroom teaching and adds subtitles for classroom video materials to facilitate students to learn. For the principle of media integration, this study uses the combination of digital media and various media to achieve the purpose of teaching design. The experimental results of this study demonstrate that the time of video segmentation is between 130 s and 170 s, and the overall segmentation accuracy is above 95% and up to 100%, indicating that the functional use of the system in this study is satisfactory. For the function of adding subtitles, the overall accuracy rate of the system is above 97%, and the highest rate is 100%, which fully shows that the system can provide good support in the learning process.

1. Introduction

Media convergence is developed under the deep promotion of social media, and it is an unstoppable development trend. Judging from the current situation of media convergence development in China, many experts and scholars understand media convergence based on media, and believe that there are still many problems in media convergence. In addition, the fusion mode, fusion content, and fusion results of media integration are described. Media integration is the joint development of multiple media driven by the development of Internet technology. It is a media development trend with richer content, more diversified communication methods, and more precise audience positioning. It is also a trend that integrates technical systems, content interaction, audience positioning, and awareness concepts.

Digital media art is conducive to improving students' creative exploration ability. With the combination of digital art and science and technology, students need to use the comprehensive ability of all aspects, such as photography,

and they need to pay attention to composition, light and shadow, shooting, and other capabilities. When creating stop-motion animation, it needs innovative thinking, unity and cooperation, and active exploration ability. All the creation of digital image art requires students to have the relevant knowledge of art and give full play to the imagination space and innovative thinking. Therefore, it is necessary to design digital media teaching practice under the situation of media convergence.

Therefore, the innovation points of this study are as follows: (1) for the media fusion theory, this study adopts the current signal transmission mode and convex optimization theory for communication upgrade, so as to achieve better transmission effect and provide a guarantee for students' learning. (2) For the teaching design of digital media, this study focuses on the function of adding subtitles and dividing videos. Such a function can provide students with a better learning environment, and videos with subtitles are very helpful for students' understanding.

2. Related Work

Since 2014, the discussion and exploration of media integration in Chinese academia and industry have once again become hot topics. In the current digital media environment, many scholars have discussed them. Park et al. [1] believed that digital media have changed the art itself and the teaching method of aesthetic education in colleges and universities, and it was an important means to expand art teaching resources [1]. Xu et al. [2] applied the teaching model he invented to practical teaching cases and found that the new teaching model can improve students' achievement by 20%. The rationality and effectiveness of the teaching model were preliminarily verified through standardized tests and questionnaires [2]. Chu [3] believed that students can widely absorb unique knowledge through reading and make up for the lack of teachers' teaching time, that is, the time, space, and culture that enter the book through reading. Without it, people can only live in personal time and space [3]. Cheng [4] summarized the research status based on the application and practice of animation and digital images in interactive media teaching resources. In addition, he also expounded the research content, research objectives, key problems to be solved, and future prospects [4].

However, with the global pandemic, digital teaching has also become more urgent, and many people have explored this. Lee et al. [5] believed that in response to teaching challenges in higher education, blended learning has become a common practice in colleges and universities. Flipped learning (FL) represents an emerging form of blended learning, in which students individually watch online lectures before class and then interact with peers and teachers to participate in classroom learning activities [5]. Laporte and Zaman [6] proposed to use the term computation in conjunction with a well-defined computational model whose semantics are clear and match the problem under study [6]. Troussas et al. [7] described an innovative and sophisticated method for improving the interaction between learners and computers in Java programming tutorials by providing them with sufficient learning materials. To this end, a combination of pedagogical theories and intelligent technologies, namely, component display theory and content-based filtering and multicriteria decision analysis, aims to provide personalized learning materials that improve student interaction [7]. It can be found that the teaching design around the relevant research is centered on the teaching effect design of teachers and does not really go deep into the learning needs of students, while this study analyzes the needs of students.

3. Media Convergence and Digital Media in Teaching

3.1. Media Convergence Situation. In the information society, media are everywhere, and they play a role in shaping and controlling social forms. Digital electronic information transmission mode makes the information gradually decentralized. The new energy released by the interaction of media is also just like the huge energy released by atomic fission. Media fusion produces cattle in the society and

human hearts. However, the electronic medium itself is fluctuating, and this decentralization makes the information appear more flat. As proposed by "Internet +," any subject should embrace the Internet, and any discipline is integrated into the current media environment [8]. This media technology beyond time and space has dissolved the distance between people. This is an era of mutual "union," but also an era of mutual "integration" [9, 10]. Society has become a flat, consuming, mass collective without a center. Everyone has the right to speak, the traditional power is transferred, everyone has the medium, everyone can spread, and everyone will have an impact. Therefore, it can be seen that the fusion of media releases new energy through the interaction of various media. Media fusion and traditional media are shown in Figure 1.

Media integration includes not only the integration of media management and business operations but also the integration of media production mechanisms and corporate structure levels of media ownership. Its application in teaching is shown in Figure 2.

Media integration is still accelerating the development of single media to omni-media, and the host and dissemination of talk shows also need to be upgraded in this process. In this study, in the sample sorting, as far as possible, we will sort out the cases with high ratings and click-through rates [11]. This study summarizes the typical characteristics, requirements, and trends of talk show hosting and dissemination under the background of media integration through the analysis of models with high market recognition and social influence.

3.2. Teaching Design under Digital Media. Digital media are processed and recorded using binary data [12]. They adopt the principle of digital communication to collect, store, and transmit various vector digital texts, which can carry various forms of information including graphics, images, videos, sounds, and animations. In the usual sense, digital media are a carrier and platform, and they are logical or physical media. "Digital media" are well known as "digital multimedia," one is the carrier of digital audio and video files, including network media, digital vision coal body, and mobile phone body. It has a relatively complex form of communication, with a variety of interactive functions and interface menu and more visual impact and appeal but also has the characteristics of personalized participation and interaction. General manifestations of digital media art include digital TV animation, multimedia animation and its network animation, virtual 2D and 3D online games, virtual reality roaming technology, animation cartoon, video clips, digital design works, digital maps and illustrations, digital stunts, and digital audio. Because of modern advanced computer technology, this has brought unprecedented opportunities and challenges for the development of digital new media technology and art. The accelerated progress of powerful circular network technology and digital communication technology has a wide space for development, so it is still a global trend to promote the development of digital, information, and network of traditional art. Moreover, TV

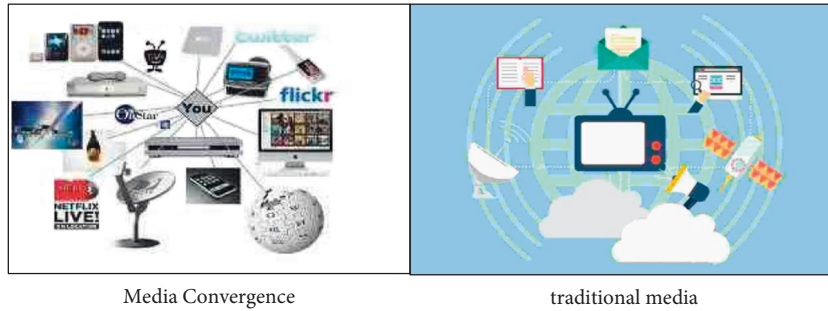


FIGURE 1: Media convergence and traditional media.



FIGURE 2: Media convergence and teaching application.

stations and radio stations have achieved digital integration and network integration, and digital equipment is used for filming, editing, and broadcasting. New media pan-animation includes virtual online games, mobile phone animation, digital TV animation, film animation, computer animation, and multimedia teaching and entertainment programs. Digital audio and the like have become the dominant form of new digital media bearer [13]. At the same time, it can use the computer for interior decoration design, drawing renderings of building plane elevation construction drawings, and designing industrial products according to the actual situation. The focus of the country's promotion of the incubation of high-tech industries is the development of the digital media industry. The digital media industry is upgrading towards this new industrial model, as shown in Figure 3 [14, 15].

Digital technology makes new media programmable. In traditional media, the way people acquire information is linear and can only be read and viewed in the inherently arranged order of the medium. For example, in print media, the arrangement of information is carried forward word by word, sentence by sentence, page by page, step by step, one logic is closely linked to the next, and one concept leads to

another. The way the audience obtains information also follows a linear logic as follows: in traditional TV media, even though the invention of the remote control makes the TV interactive to a certain extent, the audience can change the channel at will. But all TV programs are in a one-to-one correspondence with the timeline and what TV programs are played at any time. The audience's choice is only to watch or not to watch, but they cannot decide the progress of the TV program, let alone pause at will. If you look at a photo collection, the viewer's initiative can only be reflected in whether or not to watch or which picture you choose to see. We cannot arbitrarily edit the picture, such as changing the contrast, color correction, or fill light. The content presentation of traditional media is relatively stable. Different from the linear characteristics of traditional old media, new media can be abstracted into a digital presentation, which is editable, giving new media nonlinear characteristics. It can edit and design images using preset algorithms in photo editing software like Photoshop and can call up image information anytime, anywhere, and use it where you need it. It can also use video editing software such as Premiere to perform video editing operations according to software programming and structure the montage of native image

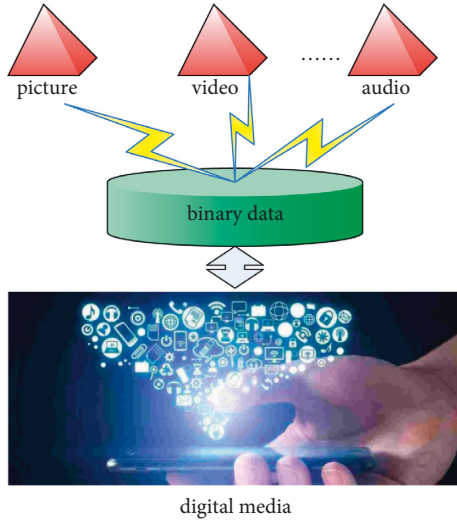


FIGURE 3: Digital media.

materials and the integration of audio and music according to your own needs and preferences. The programmability of new media makes art in the era of digital media reproducible and adaptable and provides more advanced technical support for artistic creation based on digital media [16]. Relying on digital technology, new media continuously integrate into all the old media forms that have been produced, “every old media will serve as the content of new media.” Defining new media and digital media requires a developmental perspective, but this developmental perspective does not mean that the evolution of new media requires the elimination of old media as an opportunity. On the contrary, in the process of media evolution, old and new media are intertwined, learn from each other, and influence each other, which more reflects the integration of media and innovation on media integration. In the era of digital media, the inclusivity between media is more obvious. Media are not only a message, but digital media allow media to have its own expression. This expression integrates the content of individual experience and is reflected in the laws of video art changes [17].

With the advent of the digital age, digital technology is widely used in all aspects of people’s lives, including the application of “digital imaging technology” in art teaching in primary and secondary schools. As a tool to assist teaching, the application of digital images makes teaching forms more flexible, teaching resources become more abundant, and the efficiency of art teaching has also been significantly improved. With the development of digital imaging technology, the use of digital media technology to assist classroom teaching has gradually been widely used in the field of teaching. Modern digital media have become an indispensable part of modern art classrooms, which has brought revolutionary changes to art teaching. Compared with the traditional model of blackboard writing and textbooks, junior high school students are more inclined to the modern education model of digital media combined with computers. In the art education of primary and secondary schools, the modern digital information education model is more

comprehensive, extensive, and entertaining, which can allow students to acquire knowledge in a relaxed and pleasant learning environment, fully mobilize students’ enthusiasm for learning, and let students’ learning becomes active. It can also use digital video teaching to explain the difficult points in the classroom, so as to achieve the teaching goals. Therefore, in the digital age, more art teachers choose a teaching mode that combines digital image teaching with classroom teaching [18].

3.3. Network Optimization Convex Optimization Theory

3.3.1. Subgradient Descent Method. As shown in Figure 4, the subgradient descent approach was first put up as a straightforward algorithm for reducing uncorrelated convex functions in the 1970s. With a few major differences, this technique is fairly similar to the standard gradient approach for differentiable functions. For instance, unlike gradient techniques, which utilize an accurate or approximative linear search, subgradient methods use a step size that is curved forward. Subgradient techniques are not pure descent methods, in contrast to standard gradient methods, and their values can (and frequently do) rise. Newton’s methods are faster, but subgradient techniques are easier to use and more versatile. It is occasionally feasible to create a straightforward distributed algorithm for the issue by combining subgradient approaches with primal or dual factorization strategies [19].

Hypothetical function is obtained as follows:

$$f: R^n \rightarrow R, \quad (1)$$

R is a convex function; in order to minimize the function f , the subgradient descent method uses an iterative method:

$$x^{(k+1)} = x^{(k)} - ag^{(k)}, \quad (2)$$

where $x^{(k)}$ represents the value of the x th iteration, $g^{(k)}$ represents any gradient of the function f at point $x^{(k)}$, and $a > 0$ represents the step size of the k th iteration. Therefore, it can be seen from equation (2) that in each iteration of the SGD method, the direction of function descent is the opposite direction of the subgradient. Since function f is a convex function, it can be seen from the properties of the convex function that the subgradient of f in x satisfies the following equation:

$$f(y) \geq f(x) + g^T(y - x). \quad (3)$$

Since the traditional subgradient method is not a descent method, it usually iterates until the best point found at the current step, that is, the best point with the smallest function value. At each step, it is necessary to set

$$f_{\text{best}}^{(k)} = \min\{f_{\text{best}}^{(k-1)}, f(x^{(k)})\}. \quad (4)$$

If point $x^{(k)}$ is found to be the best point of function f so far, that is,

$$f_{\text{best}}^{(k)} = f(x^{(k)}), \quad (5)$$

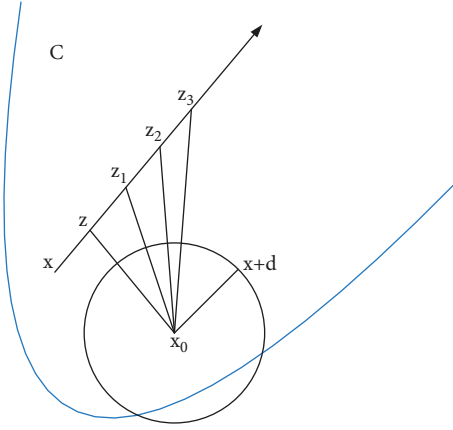


FIGURE 4: Convex optimization theory.

then set $i_{\text{best}}^{(k)} = k$ (if we use the descent method, we can omit this step, and this research point uses the descent method), and then we can get

$$f_{\text{best}}^{(k)} = \min\{f(x^{(1)}), \dots, f(x^{(k)})\}, \quad (6)$$

where $f_{\text{best}}^{(k)}$ is the optimal value found in the k th iteration.

3.3.2. Step Size Setting Rules. The general step size setting rule scheme is as follows:

Constant step size is obtained as follows:

$$a^{(k)} = h, \quad (7)$$

his a constant independent of k .

Constant step size is obtained as follows:

$$a^{(k)} = \frac{h}{g^{(k)_2}}, \quad (8)$$

where

$$h = x^{(k+1)} - x^{(k)_2}. \quad (9)$$

Square findable step size is obtained as follows:

An example of a typical step size that satisfies this scheme is as follows:

$$a_k = \frac{a}{b+k}, \quad a > 0, b \geq 0. \quad (10)$$

But the step size needs to meet

$$\sum_{k=1}^{\infty} a_k^2 < \infty, \quad \sum_{k=1}^{\infty} a_k = \infty. \quad (11)$$

3.3.3. Projection Method for Constrained Optimization Problems. Under the norm definition, the distance from point $x \in R^n$ to closed set $C \subseteq R^n$ is defined as follows:

$$\text{dist}(x_0, C) = \inf\{x_0 - xx \in C\}. \quad (12)$$

The infimum in the formula is always reachable. Each point z in C that is closest to x_0 , that is, satisfying

$z - x_0 = \text{dist}(x_0, C)$, is defined as the projection of x_0 on C . By using symbols, we can obtain

$$P_C: R^n \longrightarrow R. \quad (13)$$

In equation (13), function P_C is the projection of x_0 on C , that is, for all x_0 :

$$P_C(x_0) \in C, x_0 - P_C(x_0) = \text{dist}(x_0, C). \quad (14)$$

Another way of expressing it is

$$P_C(x_0) = \text{argmin}\{x_0 - P_C(x_0) | x \in C\}. \quad (15)$$

It is called the projection of P_C to C .

If C is a convex set, then the convex set C can be expressed as a set of linear equations and convex inequalities by computing the projection $P_C(x_0)$ as well as the distance $\text{dist}(x_0, C)$ using a convex optimization problem:

$$Ax = b, f_i(x) \leq 0, \quad i = 1, \dots, m. \quad (16)$$

Then, the projection of x_0 to C is found by solving the problem about the variable x . Of course, if it is Euclid projection, the problem becomes

$$\begin{aligned} &\text{minimize} \quad x - x_0^2, \\ &\text{subject to} \quad f_i(x) \leq 0, \quad i = 1, \dots, m, \\ &Ax = b. \end{aligned} \quad (17)$$

The problem is solvable if and only if C is not empty, the optimal value is $\text{dist}(x_0, C)$, and any optimal solution is a projection of x_0 to C .

4. Design of Digital Media Video Nonlinear Teaching System

4.1. System Design Requirements. In order to meet the basic operation of video nonlinear editing without making the software too complicated, the following expected design goals are listed. If you want to edit the material, the first thing to do is to be able to successfully decode the material, so that the material can be imported. Of course, the material here mainly refers to video, audio, and so on. Here, it is very convenient to convert the processing of video signals into digital signal processing. The first advantage is that the signal is not easily lost during transmission; the other is that it can be repeatedly saved and reused.

This study intends to utilize the open-source program FFmpeg to implement the above functions. Due to the open source of the program, it can be well optimized but also prompted its functional strength. If you want to collect a video signal, you can use FEMpg; if you want to achieve video format conversion, such as conversion of MP4 format video and AV format video, we can also use the powerful functions of FFmpeg, because it itself has a library of audio and video encoding and decoded libavcodec. Of course, it will also record audio and video for a long time, can also convert video and audio, and can stream audio and video. These series of important features make FFmpeg well in line with the target requirements expected in this article [20, 21].

Using the video nonlinear editing software system, after editing the video track, we should also be able to export the mainstream video players (Youku video player, QQ video player, iQiyi video player, Tencent video player, Baofeng video player, etc.), such as MP4, AVI, and FLV, which is conducive to the dissemination of video works. After fully analyzing the basic requirements of video postediting, the author made an overall architecture diagram for the basic operations used in the video editing software system, as shown in Figure 5.

After continuously operating the existing video nonlinear editing software for many times, combined with the problems that beginners are easy to encounter when learning, the following necessary steps are summarized: first, users need to prepare which materials they want to edit and then import the materials into one area. If they want to edit, they can select materials from this area for editing. The editing here includes editing of video, processing of audio, insertion of pictures, addition of Mongolian subtitles, fusion of materials, and so on. But at the same time as editing, there is also an area that can be previewed in real time. After all the materials are edited, it can be exported the video in a mainstream format.

4.2. Implementation of the Main Functions of the System. The main module options expected by the software system are as follows: menu bar, tool list, material area, video preview area, editing tools, material properties, and track timeline, as shown in Figure 6.

With this nonlinear editing software, it can resize, trim, or cut visual money. At the same time, it has real-time preview, picture overlay, subtitle template, video decoding, digital zoom, audio mixing and editing, digital video effects, and other functions. The video editor supports real-time video preview, clip scaling, trimming, and cutting, as well as video compositing, image overlays, watermarks, digital zoom, video clips, and video transitions.

According to the design goals, overall architecture, and main functional modules of the system, the overall work flowchart of the system is shown in Figure 7.

First of all, there must be preparations, including which materials you want to edit, whether you know which directory different types of materials are in the local directory, etc. Then, the material is imported into the material area according to different categories. If we want to start nonlinear editing of the material at this time, we can use the mouse to drag the material from the material area to the track timeline and put the material of different categories on different tracks above. On the track, we can perform nonlinear editing on the material, including the division and combination of the material, and the editing of Mongolian subtitles. While editing the material, we can also see whether we are satisfied with the editing effect in real time through the preview area. Finally, if we are not satisfied with the effect, we can return to re-editing. If we are satisfied, we can directly proceed to the next step or export the video in mainstream formats [22].

4.3. System Test. Software testing is produced along with the production of software. In the traditional waterfall model, in order to ensure that the software quality can meet the needs of users, software testing must be carried out [23]. In recent years, the software engineering community is more inclined to a new concept that software testing should run through every stage of the software life cycle. This makes it easy to verify whether the current stage meets the requirements, so that we can find errors as early as possible and correct them in time. On the contrary, if we cannot find errors through software testing in the early stage, the cost of later modification will be very large, and the difficulty of modification will also increase. So, it is not conducive to the smooth delivery of software applications and virtually increases the workload of software developers.

4.3.1. Test of the Main Functions of the System. When a software is developed, whether it can be applied or not, it must be installed to see if it can achieve the desired effect, especially the installer of the exe file. When installing, it depends on whether each control of the installation interface is valid, whether the path for creating the installation can be customized, whether the required disk space after installation is large, and so on. Finally, after the installation is complete, we can test whether the program can be run.

Based on the hardware environment, software environment, and some necessary interfaces, in which the software runs, we can make a macro-level verification of whether the overall functionality of the software system can achieve the expected effect. It is necessary to find the place that conflicts with the previous regulations, in order to prepare for a subsequent optimization. The system function test results are listed in Tables 1–5:

The test solution in Table 1 shows that there is no problem with the installation of the software, and it can be installed and run smoothly.

The test results in Table 2 show that the system's function of importing materials is effective and can achieve the desired effect of the system.

The test results in Table 3 show that there is no problem with the video screen splitting function, and video screens of different formats can be split.

The test results in Table 4 show that the function of presenting subtitles to the video screen is effective, and subtitles can be successfully added to the students' teaching video screen.

The test results in Table 5 show that the system can be uninstalled at any time without causing trouble to users.

4.3.2. Load Test. After using a lot of time to complete an application, in order to ensure that the software can run stably under heavy load, there must be a verification link. The verified content can include the simultaneous input of content greater than a predetermined amount and the time, after which the software application reacts to this action after inputting a content. At the same time, different types of content are input to determine whether the software

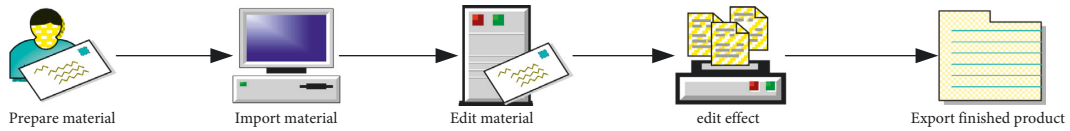


FIGURE 5: Overall architecture diagram of nonlinear editing system.

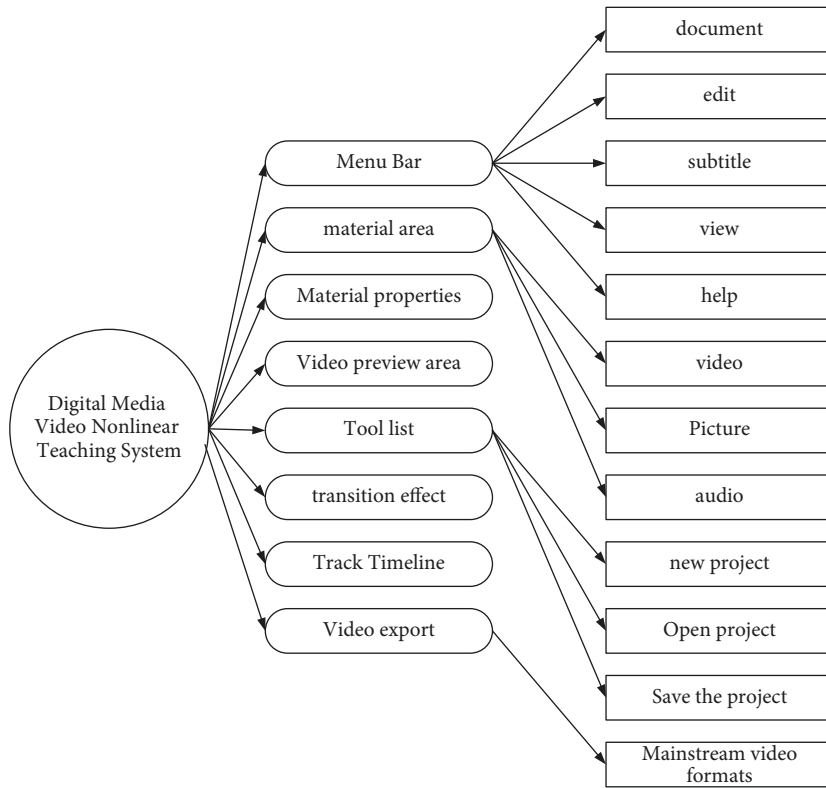


FIGURE 6: Functional block diagram of the main requirements of the nonlinear editing system.

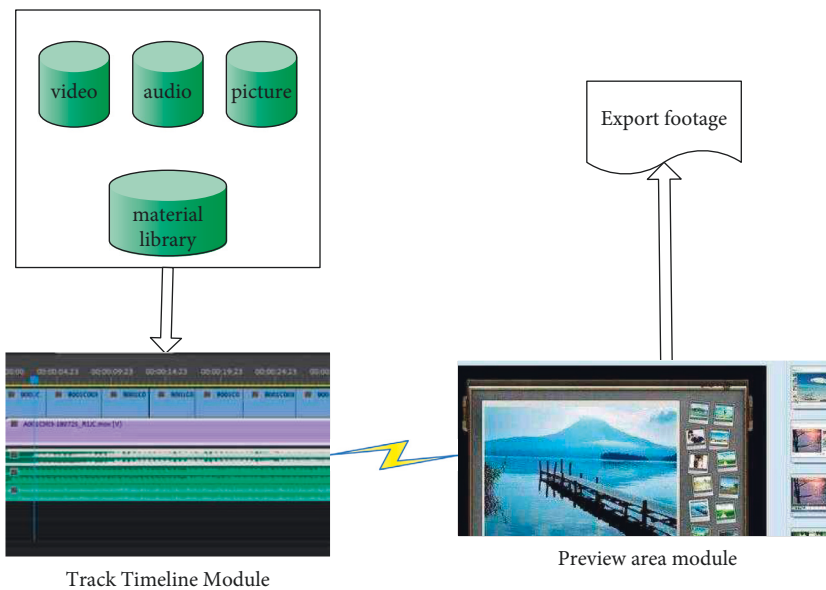


FIGURE 7: The overall Wang Zuo flowchart of the nonlinear editing system.

TABLE 1: Installation test results.

Subdivided items	Content description	Expected outcome	Test results
Accept the agreement	After selecting the acceptance agreement, can you click Next?	You can click next	Pass
Do not accept the agreement	Can you click Next after you choose not to accept the agreement?	The next step is grayed out and cannot be clicked	Pass
Next jump	Whether to jump after clicking next	Jump	Pass
Generate desktop shortcut	After selecting create a desktop shortcut, whether to generate a desktop shortcut	Select, after the installation is complete, generate a desktop shortcut	Pass
Back to previous step	Can you return to the previous step after clicking Back to return?	Can go back to the previous step	Pass
Cancel the operation	Can you cancel the installation after clicking Cancel?	Can cancel the installation and prompt whether to cancel the installation	Pass

TABLE 2: Imported material test results.

Subdivided items	Content description	Expected outcome	Test results
Import video footage	Import videos in different formats	Assets are displayed as thumbnails	Pass
Import audio material	Import different formats of audio	Assets are displayed as thumbnails	Pass
Import image material	Import pictures in different formats	Assets are displayed as thumbnails	Pass
Import subtitle material	Import subtitles in different formats	Assets are displayed as thumbnails	Pass

TABLE 3: Video material segmentation operation test results.

Subdivided items	Content description	Expected outcome	Test results
Segmentation of news video in MP4 format	Right-click on the MP4 format news video on the track timeline to split the operation	MP4 format news video is divided into two parts	Pass
Segmentation of news video in FLV format	Right-click on the FLV format news video on the track timeline to split the operation	FLV format news video is divided into two parts	Pass
Segmentation of news video in AVI format	Right-click on the AVI format news video on the track timeline to split the operation	AVI format news video is divided into two parts	Pass

TABLE 4: Caption display test results.

Subdivided items	Content description	Expected outcome	Test results
Single column subtitles	Import time track axis via SVG subtitle file generated by open source program	In the video preview area, the Mongolian subtitles will be displayed in a single-column vertical format.	Pass
Multicolumn subtitles	Import time track axis via SVG subtitle file generated by open source program	In the video preview area, the Mongolian subtitles will be displayed in vertical format in multiple columns.	Pass
Single column dynamic subtitles	Import time track axis via SVG subtitle file generated by open source program	In the video preview area, the Mongolian subtitles will be displayed in a multicolumn dynamic vertical (bottom to top) format.	Pass
Multicolumn dynamic subtitles	Import time track axis via SVG subtitle file generated by open source program	In the video preview area, the Mongolian subtitles will be displayed in a multicolumn dynamic vertical (bottom to top) format.	Pass

application can respond effectively. Therefore, this study simulates the use of students in class and uses a virtual machine to simulate 100 students online at the same time, and the tester logs into the system as an administrator. Students complete the three operations of importing video, adding subtitles, and dividing video in the system. With 10 simulated tests in the lab, the system runs for the average time of 100 students. The test results are shown in Figure 8.

As shown in Figure 8, the response time of the simulated system with 100 people online at the same time is all within

5 s, indicating that the system can run smoothly when the load is 100 people. Specifically, the time to upload a video fluctuates between 2 s and 4.5 s, and the fluctuation range is large. The reason is that the uploading network speed of the video material is very important, and the size of the video material is also different, so there is a certain fluctuation. The time for adding subtitles is between 1 s and 1.5 s, which is generally stable, indicating that there is not much burden on adding subtitles, which fully shows that students will not encounter the situation of missing subtitles in the process of

TABLE 5: Uninstallation test results.

Subdivided items	Content description	Expected outcome	Test results
Tips before uninstalling	After clicking Uninstall, are there any relevant prompts?	There is a prompt before uninstalling, whether to uninstall the software	Pass
Uninstall progress bar	Is there a progress bar during the uninstallation process?	There is a progress bar showing the uninstallation progress	Pass
Prompt after uninstallation is complete	After the software uninstallation is complete, check whether there are relevant prompts	It prompts that the uninstallation is successful, but some elements need to be uninstalled manually	Pass

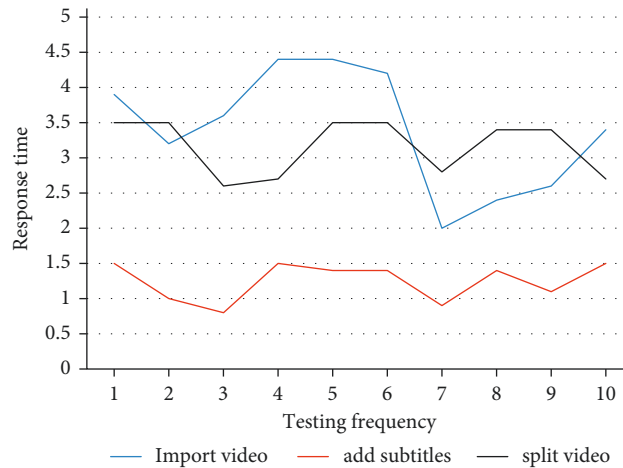


FIGURE 8: System load test results.

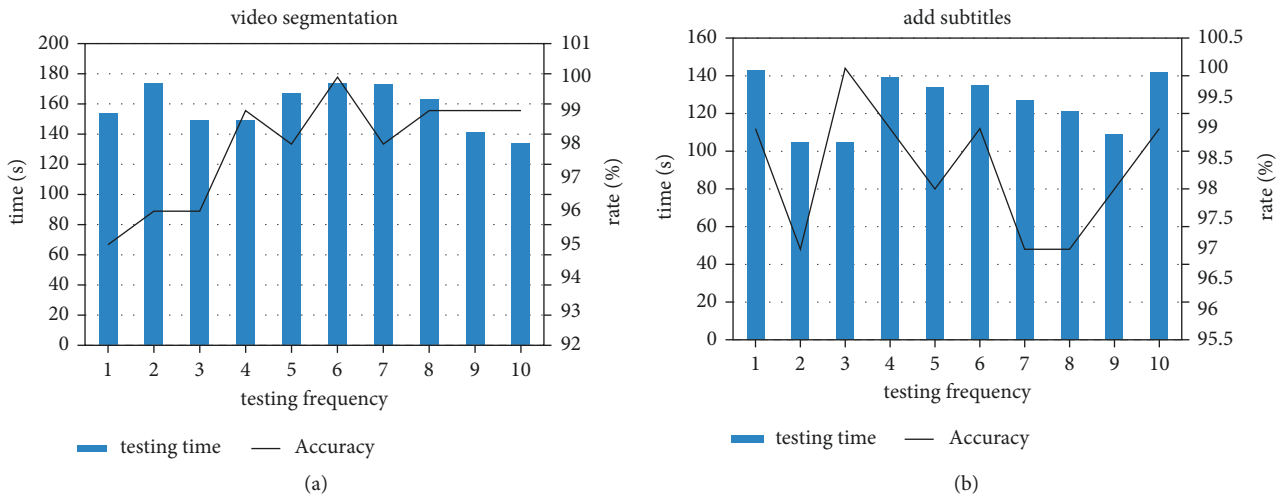


FIGURE 9: System efficiency test.

learning. The time to split the video is between 2.5 s and 3.5 s, the time is not very long, and the fluctuation is not very large, which can fully meet the learning needs.

4.3.3. *System Efficiency Test.* The system is tested for subtitle addition and video segmentation efficiency. This study uses 100 groups of video materials and uses software to add subtitles in batches and divide them according to knowledge points. This study has carried out ten experiments to test the

accuracy and time of adding subtitles. The results are shown in Figure 9.

As shown in Figure 9, the system is satisfactory in the functional tests of splitting video and adding subtitles. For the split video screen, it can meet the needs of students to study the video screen in sections under the digital media and improve the learning efficiency. In the system test, the video segmentation time is between 130 s and 170 s, and the overall segmentation accuracy is above 95%, and the highest is 100%, indicating that the use of the system functions in

this study is satisfactory. For the function of adding subtitles, the overall correct rate of the system is above 97%, and the highest is 100%, which fully shows that the system in this study can provide good support for students in the learning process.

5. Conclusions

In the current era of all-media informatization, in order to seamlessly connect the theoretical courses of video production with the application practice of post technology, an application research on the video nonlinear editing teaching experimental platform model for news media integration is proposed. This study first put forward the research background and research significance of the media industry and analyzed the advantages and disadvantages of several mainstream nonlinear video editing software and the significance to the basic application education of media. Second, it introduced the related knowledge of modern educational technology, the related foundation of media technology, and the relationship between them. Next, on the basis of theory, in order to satisfy the basic operation of video nonlinear editing without making the software operation too complicated, the overall framework and functional modules of the software system are not calculated. Finally, this study investigates the characteristics of several commonly used video nonlinear editing software and improves some functions, including the simplification of some functions, the vertical display of subtitles, and the localization of the software interface. The results showed that the overall design can meet the learning needs.

Data Availability

No data were used to support this study.

Conflicts of Interest

The authors declare that they have no conflicts of interest.

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