

The Research and Exploration of an Integrated Theory on Networked Video Courses



Lin Zhang^{1,2*}, Xiaoping Li², Chengbo Wang²,
Xiaoxuan Ma¹, Jie Wang¹, and Huili Zhang²

¹ Beijing University of Civil Engineering and Architecture, Beijing, China

² Beijing Institute of Technology, Beijing, China
zhanglin@bucea.edu.cn

Received 25 October 2016; Revised 13 June 2017; Accepted 26 June 2017

Abstract. Networked video courses are the inevitable product of Internet plus and new media technology. It is an organic combination of educational technology, interactive video and the Ninth Art. By analyzing teaching objectives and learner's psychology, the paper describes the design of teaching situations based on the teaching theory. Applying suspense design, conflict theory, montage technique and blink technique to teaching design, this research establishes a new integrative teaching model of movie, video, teaching, studying and practice and realize the new transformation of the traditional teaching model and idea.

Keywords: course direct, psychology design, teaching design, teaching model, web video course

1 Introduction

With the development of the Internet and the emergence of new media technology, multimedia has gradually replaced the traditional media. New ideas, concepts, teaching models and teaching methods make all teaching staff and audiences enjoy the teaching and learning process. The process of thinking and creation are more creative. Referencing third-party concepts, techniques and materials can package their own teaching process so that teachers change their teaching thinking and process.

Web video courses is an organic combination of educational technology, interactive film and television (the form of audience participation who can choose the different path of the film and television to watch) and the ninth art (video game). It carries the thorough research on analysis of learner groups and teaching situation design combining the teaching design theory. It integrates cognitive perspective of networked video courses, suspense design, conflict theory and other theories into teaching design in order to form the new model of network video teaching. It is an integration of "video, visual, teaching, learning, practice" which is completely different from the traditional knowledge system [1].

The course designers can use networked video courses theory into the course analysis so that it can adapt to the different characteristics of individual learners by selecting the appropriate teaching environment. They can make sophisticated teaching design and complete the interaction of teachers and students in the interactive teaching scene by using the existing experience and according to the different teaching objectives and targeted teaching programs. Television technology enriched the innovative design of film and television courses. It changes the perception and experience of learners and sets up a new observation different from the traditional teaching resources. Web video course uses the perspective of film and television to explore the world. It learns new means and use them to build a new platform to promote the current learning methods so that there will be new changes. It can prompt teachers to use the new method to complete the teaching and the exchange of multimedia courses.

* Corresponding Author

2 The Fusion Structure of Networked Video Courses Theory

2.1 Fusion with Film Director Theory

The essence of information dissemination is that it is the representation of the states of the movement things and the law of the characterization. Information is abstract and it can only be extracted, transmitted, processed, understood and applied when it is represented by specific symbolic. The nature of education film director is that the information is encoded by specific symbols through the film and television equipment. The information dissemination of educational film and television has its own unique language symbol system. Course director in a sense is to replace the traditional teaching design, and it is the new presentation of the traditional teaching design in field of the new media and online courses. If we only move the original physical space classroom directly to the network, it will be “moving classroom” and the teaching effect is quite limited. Lectures in the physical environment are for the limited population which are exchangeable, controllable style of teaching and targeted teaching design, but they are difficult for targeted implementation in the network. The network courses belong to the new media category, and they should demonstrate the new media and the movie attribute. We should use the means of film and television and the presentation of the problem and narrative methods to describe the problem, resulting in traction on the course so that students in the subtle influence on the problem of “caught” to make it immersive learning environment in the infection process to master the knowledge in their own exploration and complete the learning process. We should make full use of dramatic, conflict, the suspense of film and television as well as the expectations of the target and other means to complete the design of the film and television environment [1].

2.2 Fusion with Psychological Theory

Psychology research results show that the visual experience is five times the auditory experience for people accessing to information sources. For the same teaching content, if we use the traditional classroom teaching methods, students can only remember 60% in just listening to 3 hours. Only let the students see the teaching content, 3 hours later, they can remember 70%. If we use seeing and listening at the same time, students can remember 90%. 3 days later, the memory rates of the three methods are 15%, 40% and 75% respectively. The most prominent feature of film and television teaching is which combines many kinds of elements such as comprehensive, image, color, sound, plot, emotions, emotions together and they can easily stimulate learners to immerse in the expression of the scene of the film and television works. Interest is the profound expression of people’s emotional attitude to things. When people come into contact with something to produce a pleasant emotional experience, they will have a yearning for psychological and then they will have interest in them.

We can fully utilize the networked video courses theory and research the movie audience psychology. We can use high-tech and combine with the characteristics of “cognitive theory” [2], integrating language, music, art, film and other art forms and means to construct the all-round, multi-level, multi-angle knowledge systems. It can lead to a strong learning motivation and interest to enhance the learning effect. Students can learn the networked video courses by non-linear editing methods which are flexible, convenient and adapted to the characteristics of the learning so that all kinds of learning groups enjoy the unlimited learning vitality. Therefore, the teaching design concept of the networked video courses is very fit with the students’ interest and it is very important for improving the students interest and learning initiative.

2.3 Fusion with Teaching Design

The teaching design takes the whole teaching system and teaching process as the research object. It integrates the teaching process, including teaching objectives, teaching content, teaching objects, teaching strategies, teaching media, teaching evaluation and many other basic elements. It uses the systematic approach to model the teaching process [3]. Teaching design should serve for the teaching process, and should not be a stumbling block to it [4]. The networked video courses improves the teaching design and integrates into interactive scenario design by using the theory of “conflict”, “viewpoint” and “suspense” in film and television drama. The networked video courses theory puts

forward the “chicken feet” theory. Professional teachers analyze the knowledge points and extract the true meaning of each knowledge point. Then they will use the classic lines and language to describe the knowledge points and design the detail of the important points. Teachers can design more humane and philosophical knowledge points by using their rich experience and through the game of interactive and virtual incentive mechanism to strengthen the learning effect of knowledge points.

In summary, the formation and development of the networked video courses theory are effected by the humanities and natural disciplines. It is interrelated with the humanities of art, aesthetics, psychology and other theoretical disciplines.

3 The Theoretical Exploration on the Teaching of Networked Video Courses

Networked video courses used a variety of media to complete the construction of new ideas and form a new television network media teaching model of the integration of “video, visual, teaching, learning, practice”. Networked video courses is a great breakthrough to the traditional teaching thought. It is a kind of teacher’s all-round accomplishment raise and it is also the deep creation to the teaching design method. The theoretical innovation can be summarized as follows:

3.1 Put Forward the New Thinking of Multi-disciplinary Integrated Networked Video Courses

Put forward the characteristics of audio-visual fusion which should be possessed by networked video courses. The networked video courses more emphasis on the concern degree of the knowledge for the teachers. They include the sensitivity to the knowledge points of the course, the degree of the multidimensional search, the degree of knowledge relevance, the approximate degree of subject knowledge and the correlation of life and modern history, etc. Thus, teachers cannot be rote in the course design and teaching process. They should use multi-level indexing techniques and transform the logical thinking into the visual impression index. In the teaching process, we can use environment, situation, peripheral knowledge and the corresponding film and television thinking in order to make students master knowledge. Education cannot transform education. Education must be transformed by third-party technology and third-party domain knowledge to complete the transformation of new ideas and new thinking. In today’s environment, the concept of education should be in accordance with the development of Internet thinking. We should make innovation in order to survive and make new classifications of education on the web. From the macroscopic point of view, pure technology cannot transform the nature of education and web teaching must be integrated by disciplines, interdisciplinary research to deepen the way.

Put forward the basic thinking of film and television life and artistic processing. In the teaching design, we must pay attention to various associations of thinking. Television teaching should be designed into a variety of forms of movement, such as lens, depth of field, mirror design. The techniques can reflect the thinking ability, psychological ability, the laws of nature movement and so on. It is the sublimation of art processing thinking based on the thinking of life. It can make static objects move together and create three-dimensional thinking.

Put forward the plot curve of the film design thinking. In teaching design, knowledge points can be expressed as multiple plot curves. The plot curves include suspense processes, conflict climax, suspense fermentation, question trough, problem narrative transition and other nodes. Knowledge point difficulty curve can express the teaching ideas vividly, for example “teaching is not taught by hand, but by experience”, “teachers should not tell what is knowledge, but tell what to do”. So, television teaching design should uphold the concept of film and television which is to strive to achieve $1 + 1 > 2$ goals.

3.2 Put Forward the New Requirements of Teachers’ Information Literacy and Ability

“The comfortable level of you give others will determine your level of success”. How can we make each other really feel the physical and mental pleasure of comfort level? This requires efforts to develop teacher information literacy and ability.

Learning design skills. How to use technology to reduce teaching traces is an important research question. We should eliminate the existence traces of teachers and teaching space traces in order to create flip-teaching innovation. In the process of subversion to find the latest fusion technology so that it reflects the artistic form that the film and TV teaching should have. If too much emphasis is on the technical, the students will be annoying. As most of the technical staff to show off course works are often the most unsuccessful works. In order to perfect the basic works of the lecture and the material of artistic value, we should simplify the art of complex problems, weaken the technology, strengthen the art, design the platform to be humanized, and use art to eliminate the coldness of engineering.

Learning the material integration. Teachers should have the ability to design curriculum structure in the teaching of web video course. They should put forward the problem, decompose the knowledge points and explain their own design problems. It is best to put a book into three pages, and then explain the knowledge points divergently. Teachers should search for material around knowledge points. We should pay attention to the ideological, historical, game, political and experimental characteristic of the material which is an important indicator to test the literacy and knowledge level and the ability of teachers. Teachers should be able to empathy, give a high degree of generalization of knowledge and analyze the audience.

Learning to adapt knowledge. Students not only learn to adapt, teachers have to learn to adapt too. It is important for teachers to converse their roles and thinking ways, they should learn to make multi-element design and experience teaching standing in different roles so that they can present the students a different point of view.

3.3 Put Forward the New Method of Describing the World

New thinking produces new theories, new theories produce new patterns, new patterns produce new systems, new systems generate new methods. Innovation is innate, not nurtured. If we want to preserve the capacity for innovation, we must find ways to protect and stimulate this innate creativity.

Form a new form of education. Media can cause the changes in thinking. Traditional teaching will simply connect the various phenomena embodied in education. It is only an interpretation from the phenomenon to the basic theoretical concept. It cannot achieve the process that condensing teaching content to the teaching language and teaching form. The networked video courses describe all aspects of the problem from the phenomenon to the phenomenon, from the problem to problem and they can describe them more profound.

Form a new form of knowledge representation. If there is no suspense design, there will be not web video effects. If there is no conflict, student will not have interest points. No expectation will cause that the goal of teaching continuity cannot be achieved. To break the inner inertia of teachers is one of the important ways to master new knowledge. The teachers who can comply with the times can entangle the content of the classroom and avert the doubt. We should really do prose teaching and make teaching process change from contradictions to contradictions then to no contradiction again. Therefore, teachers should be good at the deformation of the classroom and diversification of the knowledge so as to truly reflect the different teaching and teaching role.

Form a new teaching conception. Teachers of curriculum design innovation must be derived from teaching, but requires higher than teaching. The teachers are required to come out from the experience and form a more in-depth experience in a broader environment. Teachers should connect with their own life experiences in the process of re-combing the knowledge points. They should connect the knowledge to their own life experiences and their own understanding of knowledge. They should reconstruct the problem of knowledge to form a new system of personal knowledge.

4 The Application of Networked Video Courses

4.1 The Design Process of Networked Video Courses

The design of the course follows the general process of curriculum design. From the analysis of the course content and the teaching object, the curriculum analysis and design process is gradually carried out, which uses various techniques to make the teaching resources and course design. With the

characteristics of film and television elements, presented to the students a new teaching model. Fig. 1 shows the overall process of networked video courses curriculum design.

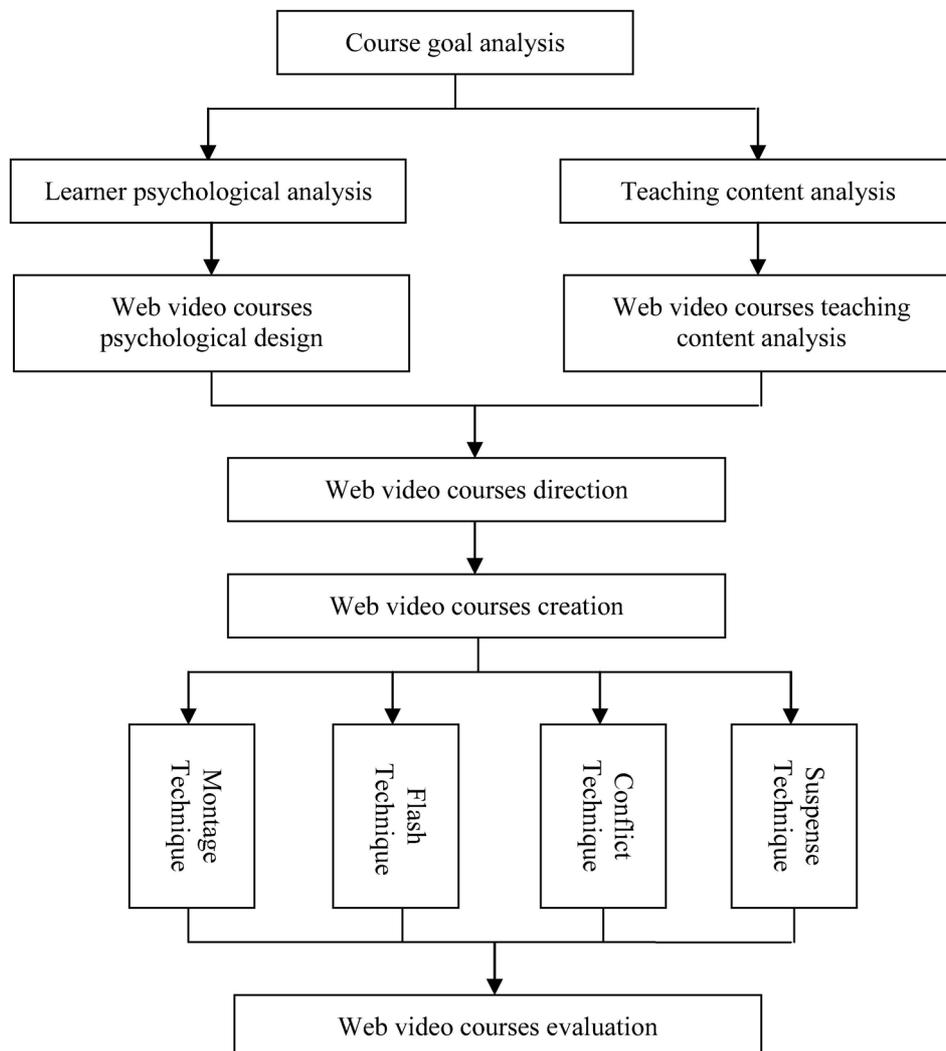


Fig. 1. The overall process of networked video courses curriculum design

4.2 Psychological Design of Networked Video Courses

The foundation of networked video courses theory is education psychology and film psychology. The form and technique of film and the psychological element have the following relation [1]:

- (1) The movement of the lens represents the movement of attention.
- (2) Lens conversion represents the conversion of attention.
- (3) A close-up is a particular concern for someone or something.
- (4) Cut back or flashback corresponds to the psychological behavior of memory, or corresponding to the illusion and imagination.
- (5) Omission corresponds to the psychological mechanism of association or hint.

From the point of networked video courses, even the simplest instructional video does not equate to mechanically recording materials and online classes. We must creatively organize sensory materials according to rules, set up courses from a psychological point of view and package them.

When we make the psychological design, we should not only have a full understanding of the psychology of the students, but also design the course according to the audience characteristics, including the acceptance level and acceptance adaptability of knowledge, adaptability of teaching environment and the degree of interest in teaching methods. By analyzing a variety of psychological factors, we can adopt the appropriate techniques to complete the course design. The principles of psychological design of

networked video courses teaching is shown as Fig. 2.

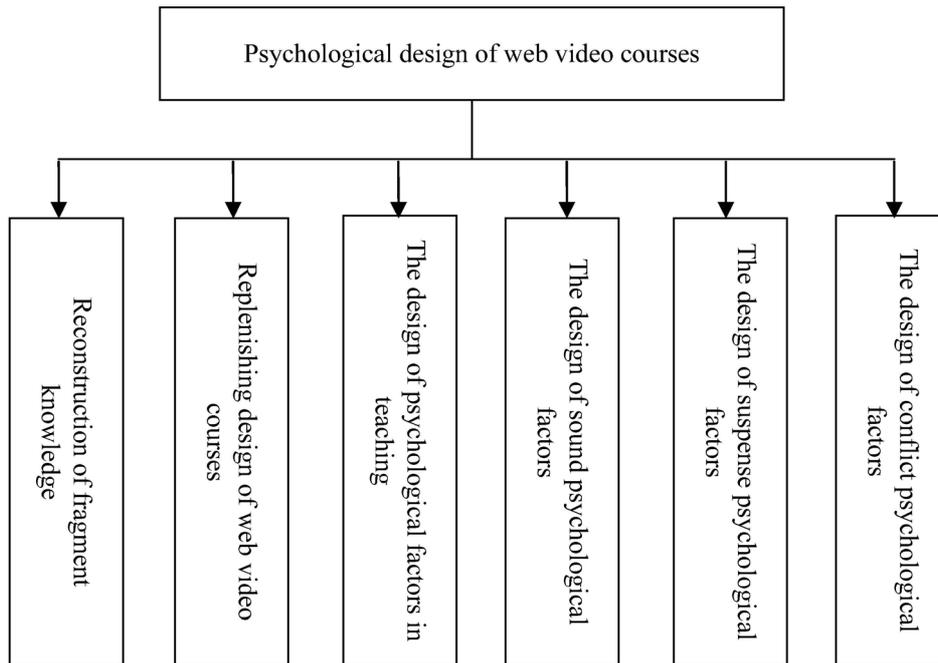


Fig. 2. The principles of psychological design of networked video courses teaching

4.3 Design Technique of Networked Video Courses

The application of montage technique. The montage technique is not just to shoot the clips to be stitched together, so that the audience can obtain a complete impression on the continuous development of the action, but also reveal the secret hidden internal relations among many things. It is a visual expression of artistic means. Montage can be divided into narrative montage and performance montage. Narrative montage can be divided into parallel narrative montage, cross narrative montage and reproductive narrative montage. The performance montage can be divided into contrastive montage, metaphorical montage, lyrical montage and psychological montage [5].

During the design process of the networked video courses, we should link the lens screen according to the overall course content and the clues of the natural timing so that the knowledge point of the narrative can maintain a certain consistency. Pile some of the similar lens which describes the same content together to form a particular image. By highlighting an important scenario to emphasize the knowledge points involved in this scenario. At the same time, in order to emphasize the knowledge points or theorem which is difficult to be understood, teachers can also combine some people, things or scenarios together which is similar to them to make the audience understand better. In addition, we also can use the technique of interspersed montage, interrupt temporarily the original narrative in the normal narrative process, suddenly insert a description of the relevant lens, and then restore the original narrative content. The application of montage techniques can make the construction of knowledge more systematic. Make use of the curriculum and cross-curriculum knowledge to form a heuristic search, reorganization, secondary use, sublimation knowledge points to complete the systematic design of resources. As shown in Fig. 3, first of all, connect the knowledge points to form a heuristic search, and then form the relevant knowledge points in series and complete the knowledge of the point of reorganization or sublimation function based on the integration of film and television technology.

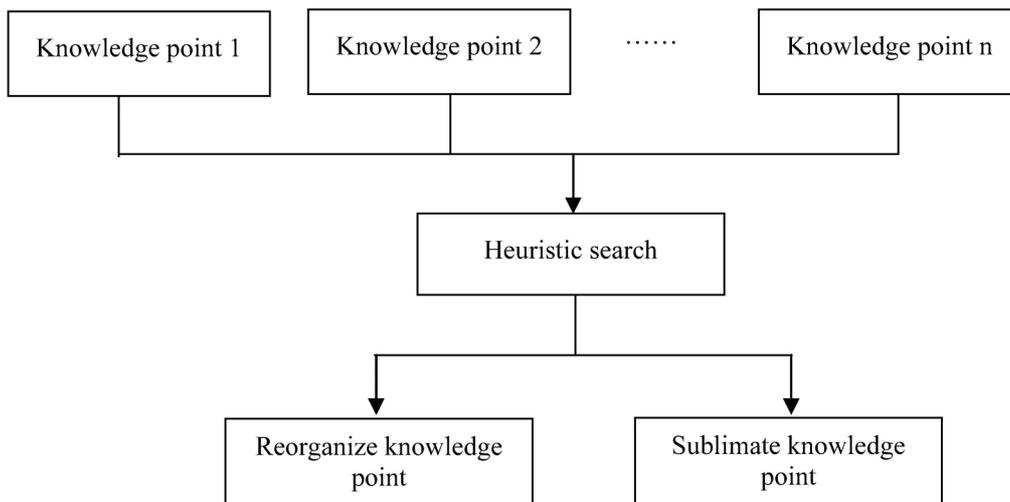


Fig. 3. The process of heuristic search

The application of Flash technique. Flash is a special image narrative technique which recalls the past events or imagines future scenarios through fast and short-lived video shots. It is the concrete expression of the mental activity and emotional change in the short period time [6].

Flash must have the reason which can trigger the characters flash. The reason may be to see someone, encounter one thing, see something or hear someone say something. These people, things and words are the memory of the characters, which can be with a deep impression, associate with a memorable event, or lead people to imagine the future of things. Flash should express the lens, such as thinking and memories of the close-up. The purpose of Flash is to attract the attention of the audience with white flash, fast-paced and special sound. After the Flash, it will remind the audience to return to the reality of the scene by the special way. The role of Flash in the teaching is very important, which is suggestive, predictive and can review for the role of learners. Fig. 4 shows the whole frame of Flash.

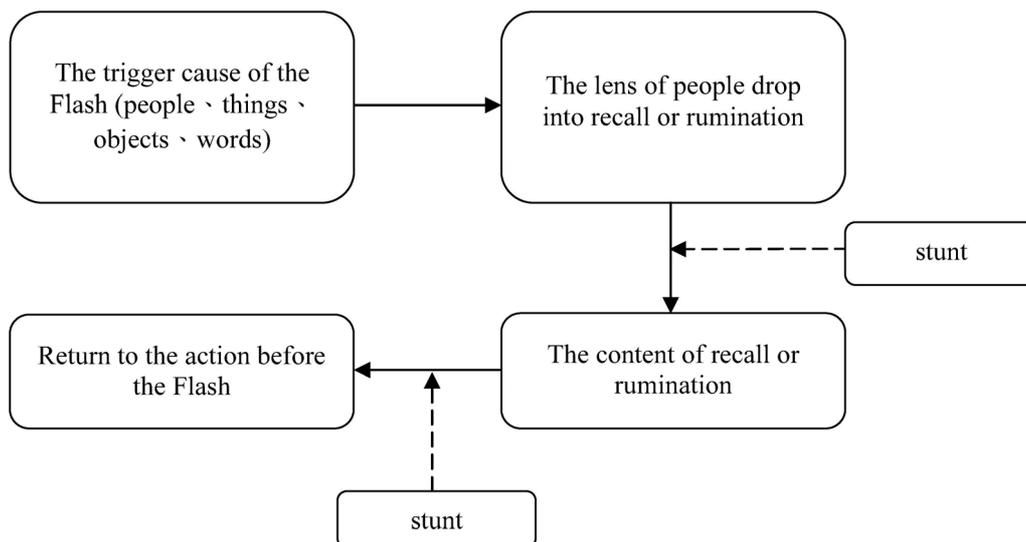


Fig. 4. The whole frame of Flash

The application of conflict technique. In the traditional teaching process, the teachers' lectures are often straightforward and cannot effectively stimulate the learners' learning mood. "Conflict theory" is integrated into the teaching design with networked video courses theories which can well stimulate the students' thirst for knowledge, so that students learn knowledge with questions, think through the problem, solve their own problems and effectively improve the learning effects.

Conflict is a very important design method in the teaching design. Various forms and levels of conflict

are undoubtedly the most important factors which can attract students' emotion. We should try to find out the conflict charm of the subject matter with the conflict factor so to seize the student's attention. During the web video teaching process, in order to produce conflict, teachers should touch the psychological bottom line, touch the moral bottom line, touch the conflict bottom line and touch the fear bottom line continually. They should convey the corresponding emotions, feelings and ideas. Therefore, in the course of film and television curriculum design, after acquiring the clear needs of the students, the teachers can set the obstacles to this demand and the students will continue to overcome the obstacles one after another to achieve their purpose and achieve their needs [7].

The application of suspense technique. There is no drama without conflict, no online courses without suspense. We cannot complete the teaching objectives without psychological expectations. We should introduce events from teaching as a bait for the whole problem. A more detailed explanation of the problem is very important. Through the film and television techniques, from phenomenon to phenomenon, we can let the audience at a glance, be more able to fall into them and more vivid. Suspense can break the balance of the original information structure, form an information gap, stimulate the human natural celestial form of psychological orientation and result in a strong psychological tension. This psychological tension will continue until the learners explore the follow-up results in order to achieve a new balance of information structure so far. At the same time, everyone has a glimpse of desire. When learners face of suspense about the fate of people or the development of things or reversal of the radical, they will not easily let go of the opportunity to further snoop. In addition, when the suspense answer is announced, the psychological tension of the learners will be released, which will also produce pleasure.

The establishment of suspense is based on certain psychological basis of the audience as the prerequisite, and activates the corresponding audience psychology, attracts the audience to take the initiative and positive psychological state into the construction of the suspense in order to complete their own suspense activities in the psychological journey or psychological risk. In the whole suspense sequence, each stage may cause the audience to different psychological reactions, show a different psychological state. Each stage reflects the different psychological function and role. Fig. 5 shows the stages of the suspense sequence of psychological performance.

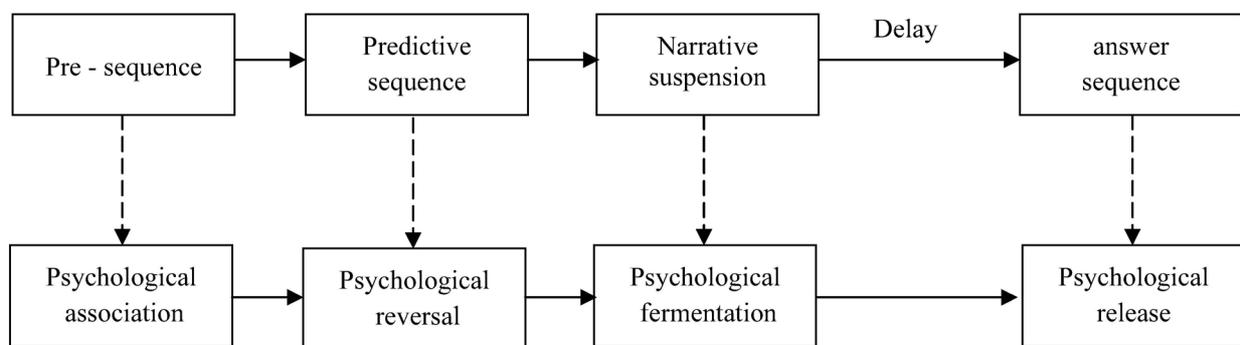


Fig. 5. The suspense and audience psychological map

In the teaching design, the networked video courses first use the narrative suspense design method to let the learner have the corresponding understanding to the thing or the character, and sometimes can produce the corresponding emotional foundation. It uses the different relationship between the characters and the learners to design different suspense scenes. Under the premise that the learners and the hero are unaware of the situation, the occurrence of the drastic change and reversal takes place, which makes the learners get shocked feeling and psychological shock and deepen the memory of the learning content.

4.4 Intelligent Search and Process of Teaching Resources of Networked Video Courses

Intelligent search of teaching resource of networked video courses. The process of networked video courses is the process of knowledge precipitation, which needs to constantly update and keep pace with the times, so that it can be with strong vitality. With the continuous development of science and technology and human cognition of things, the course content and course system are changing constantly.

Many new concepts and new theories have emerged, and the phenomenon of integration between disciplines has become more and more common. How to obtain more abundant teaching resources and how to derive other forms of resources through processing is an urgent problem to be solved in the information age, and it is also a difficult problem to enrich the course of film and television. Based on the deep research on the structural characteristics of the existing network education resources and the automatic text categorization technology in the field of data mining, this research proposes and implements the heuristic search platform framework of teaching resources, which provides technical support for enriching audio, video and text resources. The framework of the intelligent search platform is shown in Fig. 6.

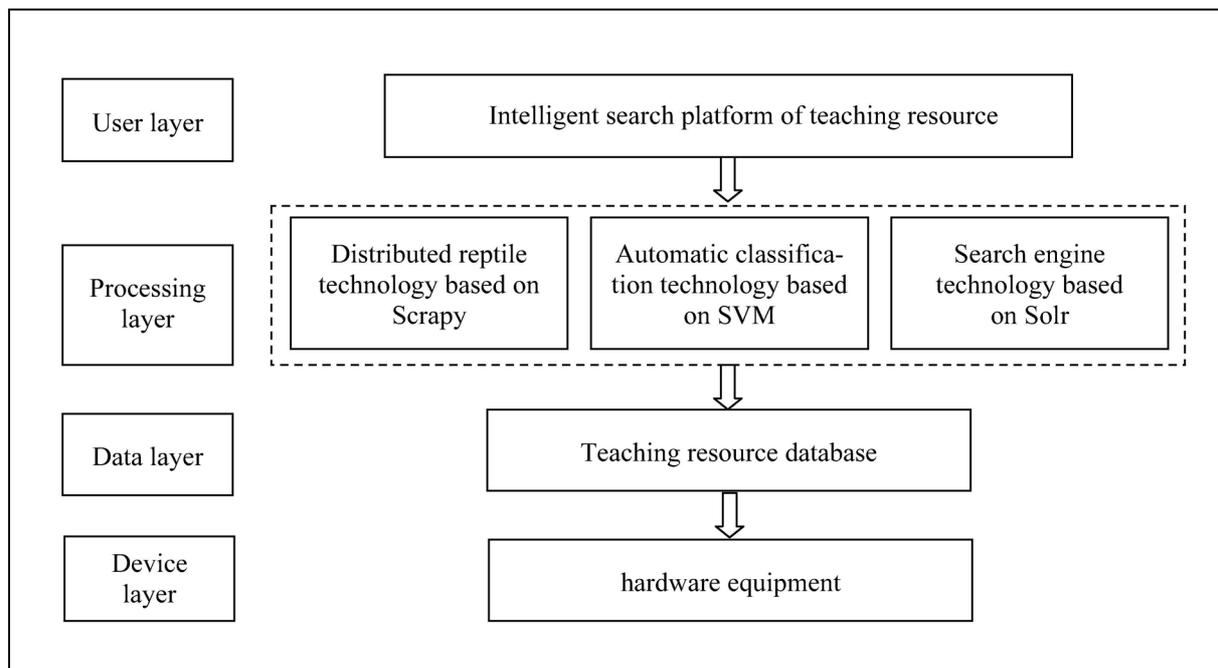


Fig. 6. The framework of the intelligent search platform

The system framework is divided into four layers, namely the user layer, processing layer, data layer and device layer.

(1) The user layer provides the human-computer interaction interface for resource retrieval and processing for the system user.

(2) In the processing layer, Scirus distributed crawling technology is used to search the network resources, and the search results are preprocessed and stored in the database. Then, the SVM classifier is trained to complete the automatic classification of the resources. Finally, the Solr search engine server indexes the resource data.

(3) Data layer is the use of a variety of data acquisition methods to access to the different types of teaching resources, which are usually stored in the database.

(4) Device layer mainly refers to the hardware devices of client and server.

The processing of teaching resource of networked video courses. The processing of teaching resources includes two processes, one is resource processing and the other is fragmentation knowledge reuse.

(1) Resource processing refers to the process of clipping existing resources. For three-screen courseware, video, audio, and other resources need to be fragmented, cut out the required part of the fragment.

(2) Fragmentation knowledge reuse is based on the needs of teachers to produce courses, the reuse of fragmented resources, to build a new curriculum to complete the effective use of resources.

In addition to the content of the course can select the local database resources, we also can search network resources by the search platform and process them to achieve the reuse of resources. At the same time, the system can also recommend resources to reflect the characteristics of intelligence. The specific process flow is shown in Fig. 7.

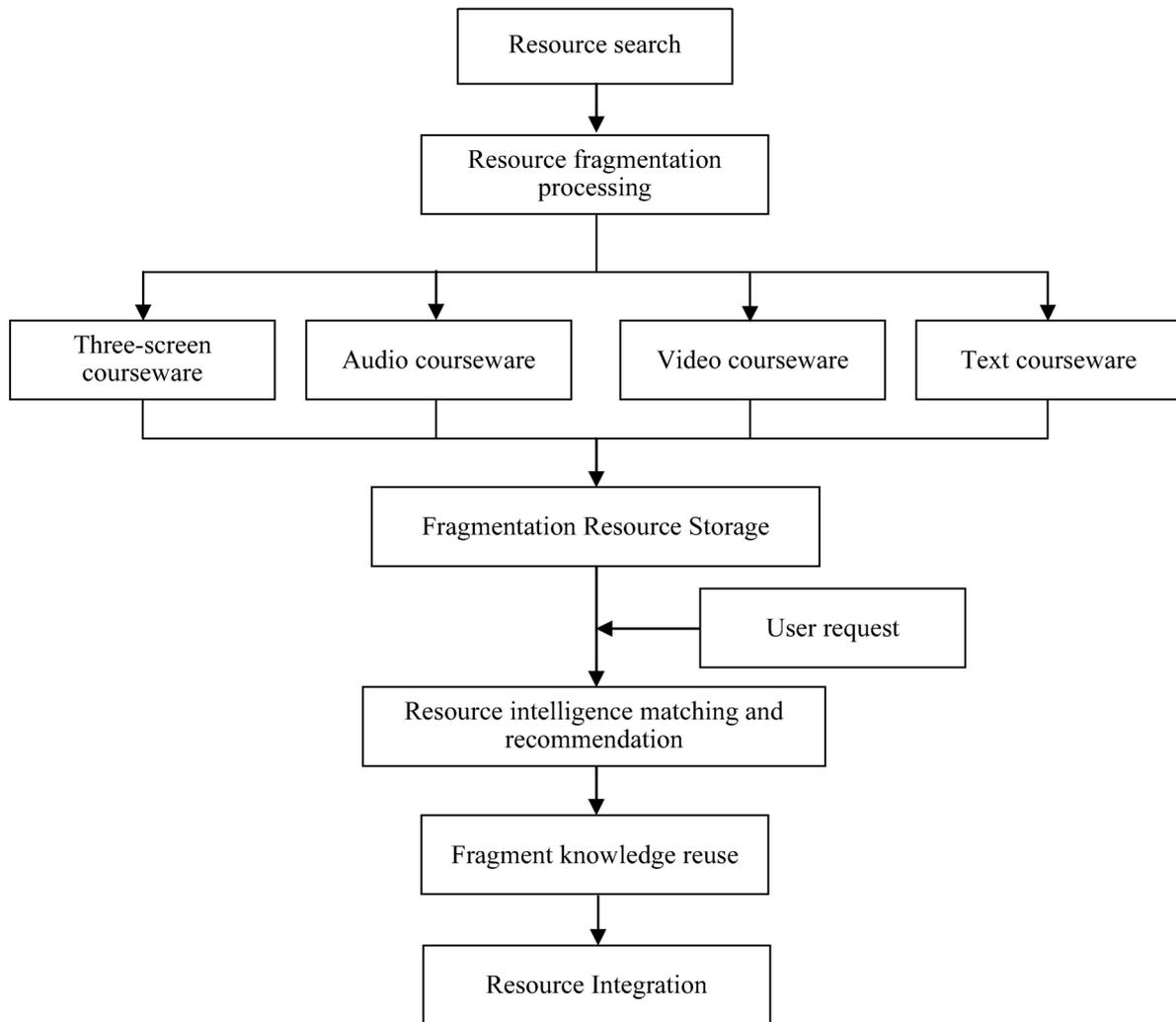


Fig. 7. Resource processing flow

5 Conclusion

Compared with the traditional teaching mode, the networked video courses more follow the audience cognitive psychology. On the basis of the combination of film director theory, psychology theory and instructional design theory, this paper explores the process and method of constructing complete networked video courses using montage, flash, drama conflict and suspense.

With the change of the teaching media, the instructional design must approach the design of film and television. Teachers understand the teaching cognition regularity in the application of the networked video courses in the adaptation, multi-scene and problem resolution. This can make the structure of teaching content in line with the psychology of human exploration and find the film and television to understand the world of laws and methods. Through the new description of knowledge and expression, the audience can take the initiative to complete the exploration of knowledge. The advanced technologies are adopted in the acquisition and processing of teaching resources. The technologies of network reptile, intelligent classification and fragmented knowledge reuse further enrich the teaching content of the networked video courses and have produced better teaching results.

References

- [1] X. Li, A Textbook on Networked Video Courseware, Beijing Institute of Technology Press, Beijing, 2013.
- [2] D. Zhang, Educational Psychology, People’s Education Press, Beijing, 2013.

- [3] L. Pi, *Instructional Design: Theory and Technology of Psychology*, Higher Education Press, Beijing, 2001.
- [4] W. Cai, P. Lu, H. Huang, Why Information technology and teaching is difficult to deep integration, *E-education Research* 10 (2014) 26.
- [5] X. Han, *Film Directing Art*, China Film Press, Beijing, 2010.
- [6] X. Li, Q. Xu, A new mode of teaching resources construction based on film and TV art—Network video courseware, *Journal of Beijing Institute of Technology(Social Sciences Edition)* 3(2015) 158-159.
- [7] J. Qin, *Psychology of film and Television Arts*, China Radio and Television Press, Beijing, 2009.