The Application Value Research of Visual Culture in the Design of Multimedia Learning Resources

Huixia Wang, Sa Yang and Zhibing Liu

ABSTRACT

The purpose of this study is to improve the design efficiency of multimedia learning resources in the Internet age, so the literature study and case analysis methods were used to analyze the FLASH courseware named Flat Toss Movement Research, based on the theory of integration of visual culture and learning resources so that we could explore the application value of visual culture in the design of multimedia learning resources. The results draw the following conclusions: visual culture integrates decentralized multimedia learning resources into a whole; visual culture has realized diverse selection of resources and enriches the construction of multimedia learning resources; visual culture makes people clear to open to new perspectives on the construction of multimedia learning resources; visual culture emphasizes morality education and wisdom education while nurturing in order to create the humanistic value of multimedia learning resources.¹

INTRODUCTION

Before the Internet age, teachers were good at passing new knowledge through written language and spoken language. The human left brain, which is responsible for processing languages, has been better trained in emphasizing texts and discourses, and the spatial reasoning, symbolic analysis, and graphic interpretation capabilities that connect the right brain have been greatly neglected[1]. However, in

¹Huixia Wang, Sa Yang*, School of Educational Science and Technology, Huanggang Normal University, Huanggang, China, 438000.
Zhibing Liu, College of Mathematics and Physics, Huanggang Normal University Huanggang, China, 438000.
the Internet age, humans have more emphasis on the balanced development of the left and right brains of learners, and advocate linking knowledge texts with images to achieve a fusion with visual culture. Indeed, today’s rapid development of the Internet has opened up a new vision for the design of multimedia learning resources. Visual culture has the superiority beyond national boundaries and language barriers. What’s more, it makes learning resources more vivid, and it can stimulate learners’ interest in learning, which creates objective conditions for the wide application of visual culture. What is the application value of visual culture in multimedia learning resources? The article will focus on exploring this issue during the analysis of the case of the FLASH courseware, Flat Toss Movement Research.

VISUAL CULTURE AND MULTIMEDIA LEARNING RESOURCES

Visual Culture

Visual culture first appeared in the book named *Aesthetics of the Hungarian*, which was written by the theorist, Béla Balázs. The meaning of visual culture in this book is the ability to express, understand and interpret things through visible images. Professor Xian Zhou, who works Nanjing University, is the earliest scholar to define visual culture in China. He believes that the basic meaning of visual culture is that visual factors, images or videos, occupy the dominant position of our culture[2]. Professor Shuyu Zhang, who works Nanjing Normal University, believes that visual culture is not only an art, but it is also a cultural style in which people can directly obtain information and interpret meaning through visual perception[3]. Peng Zhang said that visual culture means that culture has moved away from a linguistically rationalist form and has increasingly turned to image-centered, especially the image-centered perceptual form. Visual culture not only marks the transformation and formation of a cultural form, but also means a transformation of the human thinking paradigm [4].In educational fields, visual culture can be understood as the information presented by the visualized teaching media, or the visual processing and creative ability of the learners through learning[5].

Compared to the delayed propagation of traditional visual culture, the linear information organization of the media and the form of non-feedback, the new visual culture has gradually entered the digital era. It is undeniable that FLASH animation can integrate text, images, sounds, videos, animations and other forms of teaching materials to provide students with multiple senses and multiple stimuli. The visualized FLAS Hanimation can achieve two-way interaction between man-machines and long-distance interactive learning between people. It can also simulate the production of the virtual reality world and create an immersive real feeling that enables learners to perceive and operate various objects in the virtual world.
Multimedia Learning Resources

From the view of educational theory and educational technology, the definition of learning resources by the American Institute of Education and Communication (AECT) is widely recognized. The AECT’94 definition has a wide range of implications for the definition of learning resources, which thinks learning resources are resources that support learning, including teaching materials, support systems, learning environments, and even any factors that can help individuals learn and operate effectively.[6] Generally, this resources can be generally divided into some teaching resources, which are specifically designed according to certain teaching goals, such as topical learning websites; and other resources, which aren’t specifically designed for education, such as museums, network information, etc.; but when these resources are applied to education, they have become a part of learning resources. Prof. Kekang He pointed out that learning resources refer to all the elements that can be used by learners during the learning process. They mainly include people, finances, materials, and information that support learning.[7] These show that the design of learning resources is more focused on the combination of technology, which is inseparable from the development of information technology.

The multimedia learning resources in this paper are all digital transmission resources specifically developed and designed for educational purposes, including pictures, texts, sounds, videos, animations, as well as derivative expressions such as Flash, VRML, interactive media, games, web pages. They are characterized by digitization, networking, multimedia, intelligence, virtualization, interactivity, and technology.

THEORETICAL ANALYSIS OF THE FUSION OF VISUAL CULTURE AND LEARNING RESOURCES

Dell’s theory of The Tower of Experience, Gagne’s teaching design theory, Jonathan’s Constructivism theory, and cognitive psychology theories all have relevant discussions on the integration of visual culture and learning resources. Dell’s theory of The Tower of Experience proposes that visual symbols, still pictures, movies, and televisions all play an important and indispensable role in the classification and selection of teaching media, and its basic view also points out that education and teaching should start from specific experience and gradually rise to abstraction. In the Gagne’s teaching design theory, he believes that teaching designed for effective learning can be transmitted in a variety of ways and can use a variety of visualized media. Jonathan’s Constructivism theory believes that in the learning process, learners should be provided with various information resources, including various types of teaching media and teaching materials. The use of these media and materials is not to assist teachers in teaching and demonstration, but is used to support students’ autonomous learning and collaborative exploration. In this process, students are the main subject, the teacher’s guidance is supplemented, and
students are trained according to the natural laws of their own cognition so that students can construct meaningful knowledge and improve visual literacy skills [8]. As we all know, image and actual demonstration forms are more powerful than words and textual descriptions in attracting attention. It is precisely cognitive psychology that the process of cognition begins with attention. Attention directly relates to how well information processing can be performed or processed. At this time, visual culture is more likely to attract students’ attention than the word culture.

THE APPLICATION OF VISUAL CULTURE IN THE DESIGN OF MULTIMEDIA LEARNING RESOURCES

The visual culture in education is the use of visual teaching media to display educational information. Using visual culture to help learners learn has become a major feature of modern education [9]. For example, the Knowledge Passport Program, jointly initiated and funded by NASA and the National Science Foundation, led the Internet into the field of children’s education. Children under the guidance of their teachers made online virtual trips to the Antarctic and the Arctic, asked questions and communicated with their favorite scientists and writers. In China, we have organized and implemented more than 10 million kindergarten teachers’ information technology application upgrading programs for primary and secondary schools from the government level. This shows that the visual culture has a strong application value in the design of multimedia learning resources.

Brief Introduction of Flash Courseware Named Flat Toss Movement Research

As the emerging fourth media, Internet does have its unique advantages, such as timely reporting, zero transmission costs, multimedia, and retrieval. Flash animation has rapidly developed into the most popular form of multimedia resources in the Internet era. According to statistics, 99% of websites around the world have embedded Flash Player [10]. Flat throwing exercise is the important content in high school physics. In students’ textbook, the concepts of flat throwing exercise are introduced in conjunction with some physical phenomena in daily life. Learners can remember many common laws, but they cannot have a deeper and thorough understanding of this knowledge, let alone the flexible use. In fact, the FLASH courseware named Flat Toss Movement Research is made to solve this problem. The courseware is different from general computer software. It is based on the latest research in visual culture. This soft can enable students to interact with each other, and can evaluate students’ learning. It mainly has 9 modules, as shown in Figure 1.
Analysis of the Application Value of Visual Culture in the Flash Courseware of Flat Toss Movement Research

INTEGRATE SCATTERED INDIVIDUALS INTO A WHOLE

Visual culture promotes the integration of multimedia learning resources. *The Flat Toss Movement Research* navigation bar is shown in Figure 1. It incorporates the IE browser menu ideas and combines learning objectives, knowledge preparation, comprehensive application, practice consolidation, practice improvement, content summary, and exploration research. With the help of the navigation bar, learners can quickly and easily select the knowledge modules they need, and they can clearly know the current location. In addition, learners can select the modules they need at any time and enter relevant content. The courseware interface is concise, intuitive, clear, and easy to operate. *The Flat Toss Movement Research* also integrates the texts content and formulas on the textbooks with images, animations and interactive operations, to form a visual information integrating text, images, animations, and interactive operations. This shows that in the Internet era, whether it is television, film, advertising, photography, or painting, architecture, animation, art design, etc. have all become media for the transmission of visual information. And after a high degree of fusion of multimedia resources through visual culture, people have largely overcome the gap in the text when mastering knowledge.

![Figure 1. The navigation bar design of Flat Toss Movement Research.](image1)

![Figure 2. The Flat Toss Motion simulation interface.](image2)
DIVERSE CHOICES

Visual culture enriches the construction of multimedia learning resources. With the continuous enrichment of visual image resources, the proportion, status, and role of visual culture will become more prominent. The Flat Toss Motion Simulation interface is shown in Figure 2. The learner can input the parameters as required, and the results can be obtained through animation demonstration. The Planting and Free Falling, Planting Motion Simulation, Aircraft Simulation of the Practice Improvement module have comprehensively used sounds, images, animations and other multimedia means to create situations, simulate the experimental process. At the same time, during the development of the courseware, according to the basic idea of instructional design, the content of the course is arranged from simple to difficult, and the theory combines reality so that learners’ innovation is improved. The design and development of the courseware of Flat Toss Movement Research selected a variety of visual media resources, changed the courseware type led by and built a richer variety of multimedia learning resources. Once again, it has proved that multi-dimensional selection of multimedia types through visual culture can enrich the construction of learning resources.

BE OPEN-MINDED

Visual culture opens a new perspective of multimedia learning resources construction. As shown in Figure 3, the interface design, character image, text, experimental apparatus and an animated demo of the flat toss motion concept interweave together. The complete interface and large amount of information enable learners to learn concepts and demonstrate operations, thus improving learners’ interest and learning effect. Hypertext and multimedia combination with visual culture constitutes the hypermedia technology. This is closer to people’s thinking. Through hypermedia, we can provide higher level of response than hypertext link, and realize more convenient and intuitive two-way communication. So visual culture gives multimedia learning resources new traits: the combination of text and images, the combination of hypertext and multimedia, in the form of structured group content, presenting the content in a visual representation. This multimedia learning resource are concise, complete and clear, and inspired by the association.

MORAL AND INTELLECTUAL EDUCATION

Visual culture creates the humanistic value of learning resources. Compared to word culture, the application of visual culture to designing multimedia learning resources embodies the people’s demand for the development of personalized, cultivates aesthetic ability and moral quality, so that the students can not only know of scientific knowledge, but also know why and how to do it in the influence of the science and art environment. The experimental device under the innovative thinking of research on The Flat Toss Movement Research is shown in Figure 4. Because the
fluid has the characteristics of liquidity and continuity, there will be a direct trace on a continuous flow of fluid that is moving in a flat throw motion, so that we use water instead of horizontal cast metal balls to do the experimental. The experimental equipment is the disposable infusion of hospital, water, gas tubes, water tubes, bubble level, metal coordinates, oily marker, line weight, scale, etc. Among them, scalp vein needle was used as water tubes, and bubble level is used to adjust injection needles. The experimental device is simple and easy to operate, and this device’ experimental effect is better than horizontal cast ball movement device in Figure 3. In this process of learning under the innovative thinking of research, we train students’ correct scientific attitude, help students to set up the correct outlook on life, values, world view, personality characteristics, aesthetic taste, and let students learn to be progressive modern people.

Figure 3. The Flat Toss Motion Concept interface.

Figure 4. An experimental device for creative thinking.
CONCLUSIONS

In the E-learning3.0 environment, visual culture may help people use a new perspective to solve the problems in the education and finally improve the efficiency of multimedia teaching resource design. In this research, we believe that the application of visual culture in the design of multimedia learning resources can develop the rich variety, novel and beautiful learning resources, bring new enlightenment for multimedia learning resources design and development, cultivate the learners’ visual literacy and created the humanistic value of multimedia learning resources.

REFERENCES