Research on Teaching Design and Construction of Role Design Course under Mobile Internet Context

Yang Yuan

Shanghai University of Engineering Science China and South Korea Multimedia Design College
333 LongTeng Road Shanghai 201620, China
Shanghai, China
yoyo810608@163.com

Abstract

The mobile Internet environment provides guidance for market development and aesthetic orientation of digital media art design. The Role Design course as a basic course for digital media art design plays an important role in major directions of game design, animation design, film and television special effects, APP application, virtual reality, etc. By exploring the teaching system, teaching methods and contents of Role Design under the digital media art design major, this paper try to build a more systematic and comprehensive digital role design platform for students, to focus on how to make students maximize the ability of their own innovative thinking in the course teaching process, and to ensure that the design concept is superior than the design behavior, the design idea better than the design specification, and the design process more important than the design result in different links of the teaching process.

Key words: Role design, Role positioning, Role derivation, Role connotation

Clear and distinctive course teaching system

Under the environment of mobile Internet, it is more realistic to cultivate complex talents in digital media art and design, which is also an important part to expand the cultural industry in China [1].Driven by information visualization and the diversification of digital art, digital media art and design course teaching should be actuated by innovative thinking, based on traditional culture, aimed at creating ideas with role digital image, so as to develop the teaching mode which could create design leading by industry. First, targeted and purposeful guidance and teaching are required towards design methods in correspondence with the application category. Role Design is a professional foundation course for the undergraduates of digital media art design major. Featured with strong practicality, applicability and interdisciplinary, the course sees students' creativity and production capacity throughout the course teaching from role planning, graphic design to 3D output, actively explores students' innovative thinking, and updates teaching methods and means, and builds organic connection in theory and in practice.

Represent the contents about the origin of Role Design, design styles, design creativity, design and production techniques, industry development trend, design application, etc., and systematically sort out the design theories and design production of "role design", and their application and development. Make use of analysis and conclusion of domestic and overseas classical cases, design and production methods, future design trends and application to organize the teaching content of the whole course, and form an integral and systematic teaching system. This course builds a systematic digital art and design platform for students by focusing on how to cultivate students' innovative thinking in course learning, guiding by the market development of digital design and aesthetic orientation, and creating roles according to the emotional needs of users and the rule of artistic design, and simultaneously by extending the role design in different digital domains, such as animation, games, virtual reality and augmented reality. This course focuses on the cultivation of students' abilities in art innovation, and allows students to conduct art expressions with free imaginations; digital media art modeling works of great influence in the industry are analyzed during the teaching to effectively link the theories in textbook with practice and allow students to have a deep understanding of the theories lectured by teachers. Students can try modeling expressions by applying various modeling theories as guidance during their modeling expression practices under independent proposition. The course stipulates the propositional assessment requirements; with regard to the preparation and production of simulated items, a complete item production system, from the initial role connotation construction, role positioning formulation, role concept design, role original painting production, 3D role model production, role derivative product development, etc. is accordingly created.

Course teaching modules with the combination of modeling foundation and design creation

Course teaching knowledge module consists of 32 class hours in total in four parts, as described in Table 1 below. The module covers key points such as theory and practice teaching, traditional modeling foundation and practice of design creation. The development of mobile Internet not only renders efficient and convenient services for our life and production, but also brings infinite reverie for the design and development of innovative and creative industries. Role design course teaching should be connected with the practice of digital industry, and applied to the development vein in digital design. The characteristics of current digital role design and future design trends will be summarized in conjunction with the market and application platform of role design at home and abroad. Students would have a deeper understanding of the nature of role design, and their study interest of the course would be inspired in teaching.

The modeling of role design is based on the human beings in real life. Everyone has his/her fundamental identification ability for human appearance. For students engaged in professional design, only if they have a solid grasp of the modeling methods and skills, they can have the ability to shape a role. The basic teaching of role design is, based on the modeling foundation of human body, to analyze the composition of human bones and muscles, and explain the principle and law of human motion. Besides human beings, animals also show the most modeling language in role expression. The most classic role images in the world are mostly designed based on animals. Game and animation are the most common application platforms for digital role design, which include role costumes and props, and role dynamic design. To teach the digital role design, the requirements and key points of role design in different platforms should be introduced. At last, students can summarize the knowledge of early stage courses and apply design theory to do role design practice. Similar to the formulation and production of general design items, independent proposition of role design requires a complete item production system embracing initial role concept design, original role production, 2D role production and 3D role printing. This model transforms the single role creation under sporadic course directions and wide themes into targeted, oriented and highly driven character project creation, is able to motivate students' "self-help" study enthusiasm, replace the "homework" with "works" created through research - analysis - creation - conclusion, and focuses on the cultivation of students' role innovation ability and comprehensive quality [2].

TABLE I
COURSE TEACHING KNOWLEDGE MODULE

	Course content of Role Design	Time allotment
Module 1	Acquaintance with role design	2
	Role design methods	2
	Creativity and expression of role design	2
	Total	6
Module 2	Constitution and analysis of human body	2
	Constitution and analysis of animal body	2
	Modeling, drawing and design of human role	4
	Modeling, drawing and design of animal role	4
	Total	12
Module 3	Design and production of role costumes and props	2
	Design and production of role dynamic states	4
	Total	6
Module 4	From 2D role to 3D role	4
	Production and display of final role effects	4
	Total	8
	Grand total	32

Key points related to the design of teaching content in the course

At the beginning of teaching Role Design, students are required to establish their own modeling database in electronic or paper for completing their role design. In addition, teachers have established the "Up-Star" APP learning platform, which build a bridge of teaching interaction with students to share resources by using the Internet besides classroom teaching. Teachers can record online video to meet the needs of students for online learning modeling techniques and supplement the deficiencies of classroom learning on the learning platform. Students keep in touch with teachers by uploading homework and design materials.

The teaching content design of Role Design is mainly reflected in the following aspects:

Understanding and cognition of related role design conception. Current development of role design, and elements of role design. It explains the characteristics of role design under different ethnic and regional cultural backgrounds, and emphasizes the influence of cultural background on role design.

Conclude role design methods from the perspective of culture, religion and art aesthetics. Conclude analysis upon the cases of role design in animation and game works to make students fully understand the cultural meaning behind role modeling. Introduction is made by centering on the basic content of role design and production, such as human body proportion, five sense organs, human motion principles, skeleton structure of animals, motion principles of animals, and color principles.

Foundation of human body shaping - human body posture. It is to make students master knowledge about the human skeleton, muscle structure, human motion, etc. and finally be able to paint integrally and accurately rough design drawings for the roles through the detailed explanation of human body components (bone, spine, muscle, flesh and skin), and the grasping of human body's mass balance, and main activity characteristics of humans in different ages, genders, professions, environments, personalities, and races. It aims to make students have a full understanding of the expression techniques to the physical characteristics of human bodies in different personalities, ages, and professions, etc. through lecturing on basic knowledge about human body proportion, facial features, expression of hands and feet, mass balance, scenography in combination with detailed analysis of related role design drawings and iconography of five sense organs.

Foundation of human body shaping - human body face. It aims to make students have a better grasp of the knowledge of components of facial features, muscle movements and facial expressions through the detailed explanation of human body components (bone, spine, muscle, flesh and skin), and the grasping of human body's mass balance, and main activity characteristics of humans in different ages, genders, professions, environments, personalities, and races.

Explain design of the role expression. Expression refers to that people express their feelings through words and actions. Facial expression is the most intuitive reflection of people's emotional changes. There are people with different nationalities and linguistic backgrounds in the world. Although there is a language barrier that cannot be overcome between different groups of people, people could have a resonance in the communication of facial expressions. For instance, the

audience can understand the role's traits and mood swing by its changes on eyes, eyebrows, nose and facial muscles in animation works.

Explain and analyze the design on the costumes and props for roles in animation and game works. Analyze the performance of costume modeling and culture in role design. It makes students learn about and grasp the methods and techniques of roles' costume design in conjunction with the cases of role design in different games and the performance of functionality and aesthetics of costumes in the games.

Creative practice of role design is conducted in a form of proposition. Students are required to emphatically conceive the role image, which should be intact and rational and be in compliance with the text description, from the domestic and foreign traditional famous works or animation works that are selected as the design proposition. Each student is required to retain the design drawing for role concept, role design drawing and three views of role during the design course.

The production of the role design's display effect should be completed, and the course achievement display is represented by the production effect of the role design display board. With regards to the design and display of A3 display board, students are required to think about and practice how to highlight their design theme and role features, and required to design reasonably colors, set properly font sizes, adjust appropriately the background and be proficient in skills. The display effect of role design should be consistent with the original intention of the role design.

It keeps the same pace with the development of digital media design technology, and adopts the full digital teaching mode. The modeling software involves Painter, Photoshop, ZBrush, etc. 3D printing is introduced into the course to guide students master how to transform 2D flat images into 3D images.

In addition to guiding students to have themed and directed design trainings in the classroom teaching, they are also encouraged to participate in various design competitions, such as mascot design competition, game original drawing design competition and illustration design competition. Students are provided with opportunities to correlate the theory with practice through classroom practice teaching and after-class practice and training.

Innovation and creation-themed course teaching practice

The course teaching is themed on classic animation works to reinterpret the original stories and the animation creators' understanding and expression of cultural connotation in the process of role image creation. Roles are classified by attributes, such as the differences in design representation of human role, animal role, plant role and mechanical role, based on the understanding of content and role characteristics. Besides, the artistic elements applied in animation works should be reasonably used for re-integration. Due to the differences in aesthetic tastes and trends of audiences under different historical backgrounds, the creative thinking of students should be explored on the basis of referring to classical works to consciously cultivate their innovative capacities. If you seek for changes in teaching creativity, you will find keywords to embody role characteristics, such as beauty, kindness, loyalty, cattiness and hero. By this, design different modeling elements

that could express the personality tension are analyzed in depth [3].

In fact, teaching practice of the role design course is the process practice of digital image creation for the role. The whole practice consists of two parts. It focuses on the digital role, analyzes the cultural background, artistic characteristics and performance forms of the definite subject, and summarizes and concludes the connotation of the role [4]. The role's connotation is dominated by text description and then the role is repositioned based on the systematic theory of the role design. Role positioning is the premise of role design practice. In the practical teaching of role design, firstly, students are required to complete the design plan of the role. The concept design of the role converts the text content into the image effect based on the content of role planning. According to the students' understanding of role connotation and positioning, students are imparted the drawing method of the design for role concept in the teaching course. Students are required to revise the defects and problems in their modeling homework upon teachers' detailed comments. The final role image is made in 2D technique according to the modified image effect of each student. For example, in the course teaching of Role Design for sophomores from Sino-Korean School of Multimedia Design, Shanghai University of Engineering Science in the first semester of 2018, an animation film Uproar in Heaven produced in 1983 by Shanghai Animation Film Studio was taken as the design theme. Students were required to redesign and draw from the development of role connotation, role positioning and role modeling in the works, by extracting various effective elements from the reference objects, and in conjunction with different design styles. Figure 1 and Figure 2 below show two different types of role images designed by four students. The role in Figure 1 is a female fox in the original book, beautiful but evil. Two students choose to create this image from different expression means. The role image on the left side of Figure 1 is a female orc model that is created through Western realistic technique to interpret the grotesque style. She is the embodiment of beauty and beast and props assembled on her show her intrepidity. On the contrary, the feminine and graceful woman in the right dresses up like a role in an oriental drama. Her gesture and expression reflect the reserved beauty pursued by Chinese people since ancient time. Only the tails hidden under the skirt will reveal her cunning nature.

Fig. 1 Role design of "Huji" in Uproar in Heaven with different style.

The role in Figure 2 is named "Dansheng", who appears as a child in the original text. Students present different design on

the basis of their respective understanding of the role. The left image in Figure 2 is closer to the original description, which appears as the image of a traditional Chinese folk clay doll -- large head, red bellyband and cute chignon. The expression makes the role more dynamic and joyful. The right one in Figure 2, designed with a strong Japanese-Korean aesthetic style, is dressed in more delicate hair ornaments and garments. The particularly contrasting and lively color, coupled with facial expressions and movements quite live up to the aesthetics and fondness of the young people.

Fig. 2 Role design of "Dansheng" in Uproar in Heaven with different styles.

Students can present different design styles and images when facing a same role, and create a complete image backed with clear design process and plenty of references. Their achievements are in line with the purpose of the course, reflecting students' ability to combine painting basics and design theory in designing role from a virtual world view. It demonstrates that as to complex and variable human shapes, students are creative in refining details, creating accurate role models and reinterpreting them in combination with role styles and genres.

Conclusion

The mobile Internet provides rich humanities, art and design materials for digital media art design, which guides students to exert their creativity and imagination to integrate various resources and apply them in a reasonable manner after mastering certain professional skills. As digital art and technology will be connected closer in the age of intelligence, role design should be centered on the role's connotation, forming a close network between role positioning and role derivation. The future teaching of Role Design will not only talk about the role design and presentation. While fully stimulating the imagination and creativity of students, the course is bound to combine the hardware equipment and programming language of the digital platform to truly realize integration of technology and art in design so as to follow the innovative, forward-looking, expansive and international design trends in future digital art.

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