

An Analysis of Colors, Personalities and Operating Ways of Shadow Puppet Roles for Interactive Game-base Learning Materials

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The shadow play in Taiwan was derived from Chau-Chou in Mainland China. It is a representative of Chinese culture. Shadow puppet prevails among the southern part of Okayama. There are five playgroups of traditional troupes considered famous. The government of Kaohsiung County spread the traditional cultural industries to set up a shadow puppet Digital Museum, and regularly organize cultural performances. Because scientific and technological progressed, sound and light entertainment challenge. The gradual disappearance of the shadow puppet impression. Therefore the important issue is how to use integration of traditional and innovative media applications, and effective preservation and promoted.

The characteristic of shadow puppet is its head. Puppets carving of the face and the color change can differentiate the character's personality, good and evil. Every roles have different Performing styles. The color is distinguished Personality and characteristics of shadow puppets. They color in brown, red, green, and black. So this study was to explore the color proportion on shadow puppets' face with five shadow puppet troupes. Analysis and sort out of color, model design and different operational behavior of those troupes in Taiwan. By using the Munsell color system to Annotate and analysis of its color ways. The data can provide the relevant character design material for visual design and media design courses, such as animation and Interactive learning materials.

Keywords : Shadow puppet; Character design; Munsell color system; Game-base learning

1. Introduction

Dissemination of traditional Chinese Puppet Shadow is the unique history and culture rather one of the local performing arts, but also a civilian population and popular recreational activities. The government has promoted the traditional arts slowly in recent years, Puppet Shadow's movement is very entertaining.

Color plays an important role on the cultural life of mankind, it is closely related to human behavior. When the visual received color through the brain affected the physiological and psychological changed, and then color was

different receiving the message. Different in the evolution of the history and living environment for the application of color perception by color configuration and the extent of people's psychological preferences, the appropriate color for match relative of character.

Such as puppet shows, traditional puppetry, shadow play, puppetry will be role divided into Health, Dan, Jing, last, ugly five categories. Subtle shadow play even through the head and body pattern, color, and by the light, shadow and subtle performances action, the character of the various roles of the opera performance, this study is to be designed by the modern color and character roles. Related research, to explore whether there is a correlation of color for shadow play dual roles personalized design and classification, the role of color, and shadow puppets six the preliminary induction and integration, and the use of the related elements of design interactive textbooks, the purposes of this study are as follows:

1. Through color survey, to explore the role of the representative color, shadow play even seven categories relationship with color principle.
2. Interactive video and computer operation could enhance learners' motivation.
3. The combination of puppet movement and computer-assisted instruction.

2. Literature

2.1 Chinese shadow puppet history background

The geographical shadow puppets show the style and acting styles because of the regional different characteristics in recent years due to the changing times, Taiwan Chinese shadow puppet or south of Kaohsiung, Taiwan. According to the old art of Kaohsiung County informed that the division is more difficult due to the external transport, spread and activity areas and can only limit the range in the near Kaohsiung County; On the other hand, over the years, most of the shadow puppets technician because of family heritage, do not pass to an outsider. This is one of the problems that the Chinese shadow puppet can be circulated far and wide.

In recent years the government is focused on the preservation and promotion of traditional culture, many special kinds of museums were set up, specialty shop in the city and the county also, Kaohsiung set up a Chinese shadow puppet Digital Museum, assisted the public understanding the Chinese shadow puppet, and experience the essence of traditional folk art.

2.2 Taiwan shadow puppet the role of shape and color classification

Making shadow puppets divided into the sun engraved with incised. Carved means a lined convex, leaving the main decoration lines, remove blank portion, and therefore better able to show engraving detail; the compared with lineolatus of incised "is concave, engraved in addition to the main lines, leaving Most of the blank, to be colored, and therefore better able to show color.

The traditional puppets color is black, green, red, yellow, blue and dark lines taboo, because its color can't be reflected in the light irradiation. Taiwan shadow puppet characters, divided into a male lead , a female lead , a supporting male lead , a male role , the jester , God, blame several types, usually also divided loyalty, rape, being evil, Kimitada usually have a positive outlook.

The basic color of shadow puppets, the traditional red, green, black-based, usually mainly in the head as the the role classification basis , therefore this study are summarized as follows:

2.1.1 The character of " a male role "

"a male role " stands for the characters representing women in the play, they are divided into "Young male role "and" Strong male role " Wen Sheng " and "older male role " can be divided according to age; Usually "the words too courtly, Strong actor heroic spirit" and "older male role " hanging long whiskers. The Wen Sheng is usually presented by the color of red, black, and brown, nowadays green, purple and blue are added to vary. The following are characters often appear in the show.



Figure.1&2 "a male lead "—"Wen Sheng " (left) and shadow puppets role "Wu Sheng " (right)
(Quote from The shadow puppetry digital Museum)

2.1.2 The character of "a female lead"

"a female lead " plays the role of women, according to the age, identity, and can be divided into the type of "female role", "actress", "Tsing Yi" and "old Dan," Wu Dan "in the play. "Artistes" which is mostly a bubbly girl, young woman, Wu Dan is a martial art for women, "Yi" is the end Zhuang Xian Shu, older women, "Lao Dan" elderly women.



Figure.3&4 "a female lead " - Huadan shadow puppets role
(Quote from The shadow puppetry digital Museum)

2.1.3 The character of "a supporting male lead "

The "a supporting male lead" face decorated with painting, in order to distinguish Faithfulness Tough, can be called "Baikal" usually refers to the uninhibited character or insidious male role. This kind of role, is not the normal people do depict the characteristics of his style is very diverse in the use of color part of the face is very exaggerated, has a vivid and beautiful patterns, so the demon net "argument arrangements through the plot and most of the net has the characteristics of the "round eyes", in which the role played by doing replacement, such as cattle devil, Sha Monk, in general, the net angular in shape more becomes rather complex. Face a variety of different colors to represent different symbolic, mainly red, black, green and white as the representative, and play

role category often appear as follows:

1. Red: represents courage and upright, utter devotion.
2. Black: upright brave act decent.
3. White: symbolizes treacherous, brave and yellow performance.
4. Blue and white: treacherous, the generation of Greenwood bandits.
5. Blue: representatives of the hero of the bush.



Figure.5 "a supporting male lead " — of Guan Yu shadow even role
(Quote from The shadow puppetry digital Museum)

2.1.4 The character of "a male role "

"A male role ", also known as the public a male role , is the Vice corner of the older students, the end, for the old and the elderly, approaching life. Now mostly merged into the "older students" class, plays often appear Role category is as follows:

1. Generally based on long beard (white beard) as a major appearance for the elderly, for example, the Earth God.
2. A male role two kinds: the opening of said white wide, closed the said village public.



Figure.6 "a male role" - Taiwan Emperor shadow puppets role.
(Quote from The shadow puppetry digital Museum)

2.1.5 The character of "the jester"

1. Wen Chou: exceedingly troublesome Playboy, facial lines exaggeration, regardless of the legs, the use of gray harmony in the drama White, funny, such as Ma Wen-Cai.
2. Martial arts of the jester : humorous character generals, waist, split legs, imitation is the structure of the Strong actor exaggerated facial lines, but not as good as the a supporting male lead angular colors fancy the Cheng Yao-Jin.
3. A female lead of the jester: the face look like Funny female roles, older women a female lead to decorate,

very exaggerated facial lines, for example, the matchmaker.



Figure.7 "the jester " Japanese officers and soldiers shadow puppets role.

(Quote from The shadow puppetry digital Museum)

2.1.6 The character of "Miscellaneous"

"Miscellaneous" means some special characters, such as fairies, ghosts, and animal. Most of them do not exist in the real world, they only appear in the fairy tales or legend stories. The following are those frequently show up in the play: Such as monks, spirits, ogres, strange heads, and exploring horses.



Figure.8 "Miscellaneous" The role of supernatural being.

(Quote from The shadow puppetry digital Museum).

2.2 Munsell System

Munsell color system was founded in 1905 by Munsell, it established the color vision model in 1915. Munsell published Munsell Book of Color in 1927. Color measurement, the American Optometric Association in 1940, members will color measurement by the book as a correction and correction Munsell Color System "in 1943, becoming internationally accepted color system.

Munsell divided the hue into 10, each of them are subdivided into 10, Overall Total 100 hue, 5 is a representative hue, hue as much as almost the limit of human distinguished hue. Provided by the five main color (5R, 5Y, 5G, 5B and 5P), interposed there between YR, GY, BG, Pb, and RP 10 order, subdivided into 100 Order hue. Shadow puppets application of color black, brown, red, green, yellow, to understand by the hue circle color measurement shadow puppets why the basic color index[11].

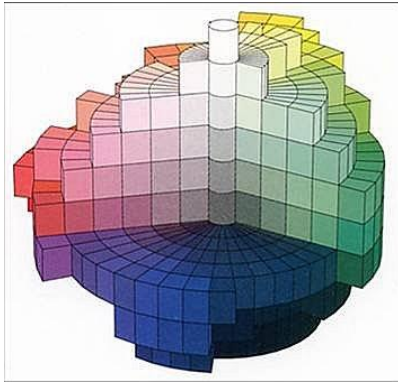


Figure.9 Munsell Colored Geometric
(Data taken from the Color Planning)

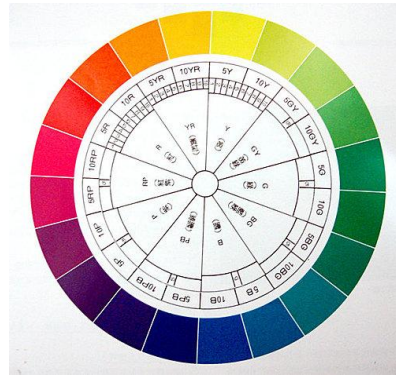


Figure.10 Munsell Hue Circle(Data
taken from the Color Planning)

2.3 The Inverse Kinematics for Interactive Game-base Learning Materials

Shadow puppets in the performances are, relying on the flexible hands of technicians to operate, and they use the operating rods and fixed rods to make a wide range of actions, therefore every movement of the shadow puppets is often related to the experience of the technicians, that is to say old technicians' experience haven't been replaced by action skills.

The computer animation can be designed and amended in accordance with the idea of the designers. Principles of the computer animation are to use key frame (Setting Keys) to set Flash IK skeleton with the key frame action. In this study I use Flash IK skeleton to match the setting keys. By setting, designers can adjust. action or poses of the performers.

At this stage, most of the 3D software has skeleton functions, such as: Maya, 3DMAX, its principle is a unique node level which is called the joint (Figure 11, Figure 12). We set the skeleton into the internal part of the characters to manipulate through the joint level and rotation.

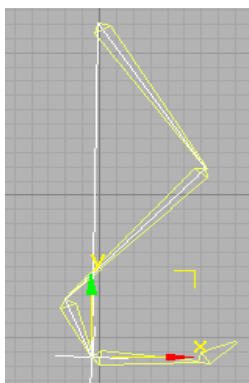


Figure.11 3D
Skeleton side view



Figure.12 3D Skeleton erected picture

Gaming is an important learning mode. Though gaming to teach attests learners' attention. Young Siou-Huei [6] research said, it can train the children creative, imaginations, hand-eye coordination and interaction between their peers by Lego games .Educational computer games with sounds and lighten effects let the learners in the competing atmosphere to stimulate the learning motivation. Garris, Ahlers & Driskell [1] said there are some parts inside the games: input, process, and output. In first part contains the fantasy, rules or goal, interact, challenge, curiosity and controlled.




3. Research Methods





3.1 Analysis of the role of each troupes' shadow puppets

Analyze the Taiwan representatives Theatre puppets the way of carving and Color scheme, and organized into the following forms:

Table 1. The Okayama Shadow Puppet Troupe role modeling and color classification

(The researchers organize, Image data taken from the the Kaohsiung digital shadow puppetry Museum)

Troupe Name	show	Characteristic
Dong Hua		<p>There are two ways to carve shadow puppets-Yang and incised. The main color is Leather brown, and the others include red, black and green.</p>
Horng Hsing Ger		<p>There are two ways to carve shadow puppets-Yang and incised. Leather brown is scarce (Neck and hands appear more). The others use red, black and green.</p>
Yong Xing Le		<p>There are two ways to carve shadow puppets-Yang and incised. The carving of Five Shadow puppets is more complicated. Leather brown is scarce (Neck and hands appear more). The others used red, black, green and yellow.</p>

		
Ford		There are two ways to carve shadow puppets-Yang and incised. Leather brown primaries are scarcer (Neck and hands appear more). The others used red, black, green and yellow.
Heh Sing		There are two ways to carve shadow puppets-Yang and incised. Leather brown primaries are scarcer (Neck and hands appear more). The others used red, black and green.
Hong Xing Ger		There are two ways to carve shadow puppets-Yang and incised. The ways of Carving is more modern, and the colors are more capricious. The basic colors are traditional green, red and black, yellow. They are more colorful.

3.2 semi-structured interviews

Interviews recorded image, videos and questions. And the step has two-stage interviews.

3.2.1 The first phase of interviews — Dong Hua shadow play regiment Mr. Fu-Guo Zhang. (Figure 13)

1. To introduce the historical background.
2. How to design the shadow puppets and install the rods.
3. To show the basic operating method.

3.2.2 The second phase of interviews —Yong Xing Le shadow play regiment Mrs. Ying-Jiao Zhang. (Figure 14)

1. Interview: beginners to learn the operating skills of the shadow play.
2. Shadow play mobile with performances.
3. The affect for operating lever quantity of actions.

4. Learning shadow puppets is interesting.
5. The assessment of action in Game-base Learning.



Figure.13 Mr. Fu-Guo Zhang teaches basic operating method.(Researchers shooting)



Figure.14 Mrs. Ying-Jiao Zhang teaches how to control shadow puppets. (Researchers shooting)

3.3 Digital interactive textbook design

To know shadow puppets action concept and characteristics of the skeleton build in shadow puppets joint, and graphic analysis of shadow puppets hand and foot movements swing tips. (figure.15) Learners learning content in formal, and learn how to control shadow puppets hand and foot movements.

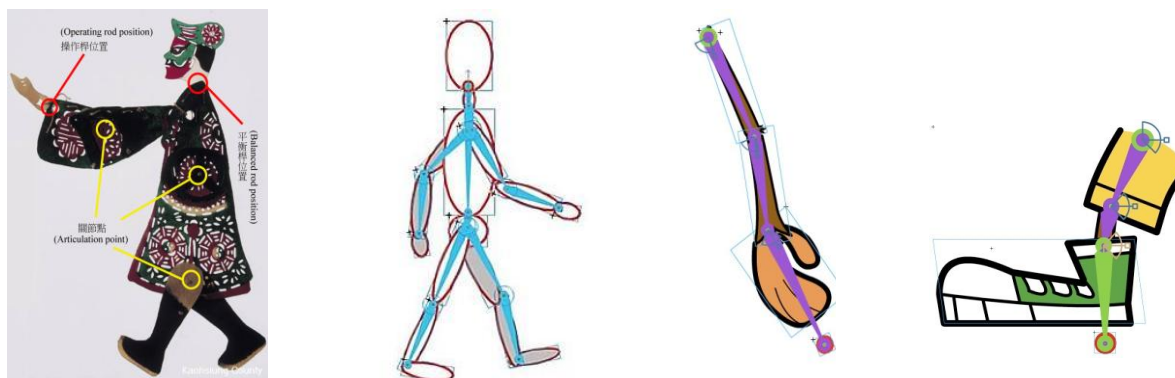


Figure.15 Shadow puppet characters into the Flash of IK application (Flash Application Examples, 2008)

The game-base learning materials presents the main screen can be divided into four operating interface. Learners can use materials content and interface to understand materials design and layout: There are starting interface, the shadow puppets action parsing and animation Appreciation, shadow puppets operations interact and checkpoints activities.

1. Start screen: Into the Digital Materials. (figure.16)

- The shadow puppets of action parsing and animation appreciation: Every action has a graphic to learn and watch, and have playback to control, learning objectives and learning content description. (figure.17)
- Shadow puppets interactive game : Using keyboard Corresponding way, and IK design shadow puppets character. Learners can use the keyboard control shadow puppets, experience to simulate the movement, fighting and jumping action of the shadow puppets by themselves. With aspect keys control “up”, “under”, “left” and “right”. (fig.18)
- Emigrated activities: Emigrated activities to experience the shadow puppets action. Every shadow roles has different actions, and use different action to checkpoints activities and understand shadow puppets action. (fig.19)



Figure.17 Start screen (Researchers made)



Figure.18 The shadow puppets of action parsing and animation appreciation. (Researchers made)



Figure.19 Shadow puppets interactive game (Researchers made)



Figure.20 Emigrated activities (Researchers made)

4. Expected Conclusions

This stage focuses on the analyzed entities shadow puppets joystick operation mode to converse to a virtual interface operation mode (keyboard / mouse) by means of literature and organized roles with color, we understand the relationship of every theater group, IK skeleton erection and digital interactive textbooks to do finishing integration. Single shadow puppets operation will gain a lot of plots as a performance background, and the concept of the festival, a clear definition of shadow puppets operation. Learners must know how to manipulate shadow puppets to reach the plot performances. Learners choose their own ideal role to implement multiplayer co performances by the network platform, to the type of Internet Theatre show, it allows the learners to display their creativity and interpret the imagination of the story, and provide interactive and digital Wyatt Fun learning materials available for using.

5. References and Notes

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