

# A Study on Usability Evaluation for Interactive Display of Large Projection in Commercial Space

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Today, interactive exhibition display technology has been into people's lives, which and at the same time, it also has stimulated many kinds of sense organs on humans. However, while an interactive exhibition display technology fits the requirement of the users and promotes the display beneficial result, the usability evaluation becomes the key topic. Jeffery F. Rayport (2008) indicated that if a business needs to success, the first priority should be paying attention to the end users' experiences. The goal for the technology should be user-experience oriented, which is to concern about the positive and negative feedback on the interactive devices used by the users. Usability assessment is necessary for the interactive device since it directly influences the relationship between the businesses and the users. The paper is to study the interactive display of large projection in commercial space. Through observation and interview, the study induces the usability evaluation and designed principles. Besides, with these approaches, we can acquire the characteristics of the system in the commercial space. The study result shows: (1) Big size interactive projection system has to emphasize on the interactive cues of the content, and promote the view and attendance of the users. (2) In order for users not only focus on the blocks of the interactive projection, we have to set the cues of reaction ranges, and separate the ranges of interaction. (3) Applying the system, we can promote the sound and light, and increase the joys and achievements of the users. Particularly, most users report that this system can bring the new feeling, and increase the benefits of the display in commercial space. This study results advice the system to make use of the commercial space, and focus on the cues of the ranges along with the view of the interaction and reaction. Last but not least, the system is supposed to focus on the strength of the sense organs and connect the different aspects as concerned.

***Key words: Commercial space, Interactive Display of Large Projection, usability evaluation, display technology***

## **1. Introduction**

An exhibition combined technology in recent years shows the diversity of a wide range of manifestations, and appears in various occasions. In 2011, Japanese clothing company imported Sony Corporation Right-on AR MIRROR, the AR face recognition technology, which provided a variety of new costumes fitting experiences; In Taiwan Pavilion Expo, and the Taipei Flora Expo Pavilion of Dreams 2010, and the 2012 Taipei International Game Show, and other aspects of the display field, new technology can also be observed. The Industrial Technology Research Institution(ITRI) in Taiwan 2012, which cooperated for the first time with Park Lane By Splendor, created interactive “Lighting box - City Phytocide”. It was the core technology combined with art and sensing technology that interacted with the audience through 16 projectors projecting from three sides around. It not only created the dynamic visual effects and shocked viewers sensory, but also overcame the display limitations of the Techno Art of the Art Gallery and Museum. The technology penetrated into lives of people and accessed to the mall, which eventually energized the mall with more vitality and extended value [7].

Interactive technology has brought a lot of crowds and business opportunities for the shows; additionally, it spread out into peoples’ lives. In 2011, Far Eastern Department Store in Taichung arranged an interactive exhibition space that applied interactive projection display to attract the audiences’ attention. Basically, the application services can be divided into two aspects-- one is to show the environment, and the second is to provide experience for the audiences. Suitable display technology is applied basing on the various characteristics and needs of the shows; Chang (2009) also pointed out that because much of the interactive display technology ignored the purpose of showing and applying interactive science and technology rationally, the display technology must be thoroughly examined before applying.

In recent years, Taiwan has involved frequently in major international exhibitions. Exhibition has played an important role in promoting digital industry. Display shows are often presented along with various display techniques. With the development of new technology, the issues that users encounter should also be taken into considerations. That is, the key affecting the effectiveness of exhibition is the user experience. Jeffery F. Rayport (2008) indicated that if a business needs to success, the first priority should be caring for the end users’ experiences. Achieving goal should be user-experience oriented, which is to concern about the positive and negative feedback on the interactive devices from the users. Usability assessment is necessary for the interactive device since it directly influences the relationship between the businesses and the users. The research uses the department store " Ocean Simulation System - Interactive Display of Large Projection” as an example in assessing whether the store could attract users with the interactive device. Emphasizing on usability problems, through the observation and analysis, we could explore whether the interactive system could be operated successfully, or the display content could be understood. With the usability problems and the application of usability assessment, we could offer some suggestions for the future design on the open space commercial interactive exhibition, and the future related studies.

## **2. Literature Review**

### **2.1 Theory of Display Technology**

Nippon Display Federation’s definition for display is “the conveying technology of a particular topic presented in a particular space.” The Nippon Display Federation further explained, on the purpose of nurturing education,

sales, bargaining, and transmitting information, display in particular time and space, is a way that could transmit the message to the audiences [18]. According to a scholar of American Museum -- G. Ellis Burcaw (1975), for the related explanation on display, he pointed out that Exhibition is a collection of art, history, science and technical objects that is different from Display and Exhibit. It makes viewers shift from the displays and create meanings or sense of beauty. Accompanied by descriptions or icons, display interprets or guides the audience's attention [10]. The term "Display Technology" is defined by Display Technology Development Sig. The organization in 2010 sponsored by the Department of Commerce, cosponsored by IDEAS innovate application research institute, and executed by TECHART Group Company, was a co-organization of business, government, and scholar. The organization's purpose is to promote the Taiwanese creative areas and technology cooperation exchanges, and explore the commercialized combination of creativity and technological innovation. Display technology like projectors, touch panels, and mobility sensors found in two related aspects, which are display environment or audience experience, often applied into businesses, services, exhibitions, museums, or big shows. [4]. Lee (2005) said the device that can interact with the participants and achieve the goal of interacting can be categorized as an interactive technology. Therefore, interactive technology is a part of display technology, while display technology is a part of supplement interactive technology. Lu (1999) simplifies the display elements in four steps: display target, display topic, display media, and display space. Hwang and Wu (1992) indicate that commercial display nowadays can be divided into three main types: commercial exhibition, consumptive exhibition, and an integrative exhibition. Exhibition areas would then be divided into three types: "open", "semi-open" and "closed". Therefore, display columns should also be classified which in a way help the customer choose display products conveniently and evoke them to buy the commodities. Chang (2010) also pointed out that the commercial display elements, such as commodity elements, consumer elements, and the space environmental elements, would affect customer's buying desire. As Taiwan frequently attends big international exhibitions, the style of the displays differs. In order to stimulate the audiences' sensory organs, the display styles also innovate from time to time. Du (2010) pointed out that exhibition included expositions, museums, shows, multimedia, commercial advertisements, sales and digital content, fully integrated software, hardware and space. With various multimedia presenting the theme in modern interactive display, the display technique differs as the multimedia changes. There are six common techniques -- static display, image display, demo display, movable display, simulative display, and interactive display. For the interactive characteristics, Shedroff (1999) proposed six interactive dimensions: (1) feedback (2) control, (3) creativity (4) productivity, (5) communication, (6) adaptation. If a person is more satisfied, that means the display is more interactive. Borsook & Higginbotham (1991) proposed the six main comprised elements for interaction: (1) immediacy of response. (2) non-sequential access information. (3) adaptability (4) feedback (5) options (6) bi-directional communication.

## **2.2 Usability Engineering and Evaluation Criteria**

Usability Engineering is a user-centered evaluating method which is focused on the user interface, system evaluation, information design, and usability engineering. In addition, they are highly related to the usability engineering. Nielsen (1993) proposed test, inspection, and inquiry as the three methods to be the assessment methods. The three assessment methods are as followed-- (1) Testing: Coaching Method Retrospective Testing Co-discovery Learning. (2) Inspection: Heuristic Evaluation, Cognitive Walkthroughs, Expert Review. (3) Inquiry: Observation, Interviews, Questionnaires and other methods. Domestic and overseas scholars develop out

differently in application, whereas the usability assessment criteria also differ. The study induces the usability assessment criteria proposed by the three experts and makes the table 1.

Table 1. Assessment criteria of three experts

Experts and scholars	Using the assessment criteria	
Jacob Nielsen (1993)	1. Visibility of system status 3. User control and freedom 5. Prevent Error 7. Flexibility and efficiency of use 9. Good error messages	2. Match between system and the real world 4. Consistency and standards 6. Feedback 8. Aesthetic and minimalist design 10. Help and documentation
Bitgood (1994)	1. attracting power 3. teaching power	2. holding power 4. motivational power
Donald Norman (2007)	1. Visibility 3. Constraints 5. Consistency	2. Feedback 4. Mapping 6. Affordance

Based on the assessment method of usability engineering, the purpose of this study was to find out problems that users might encounter in the commercial space “Interactive Display of Large Projection”. Integrating the usability assessment criteria proposed by three experts and assessing the characteristics of the interactive projector system, We induce the ten assessment criteria as the basis on the standard of the usability evaluation.

Table 2. Using the evaluation criteria standard

	Assessment criteria	Directions
Using the evaluation criteria standard	1. User Control and Freedom 2. Consistency and Standards 3. Flexibility and Efficiency of Use 4. Aesthetic and Minimalist Design 5. Visibility 6. Feedback 7. Constraints 8. Attracting Power 9. Holding Power 10. Motivational Power	1. Easy to operate, enhance all ages to do 2. Consistent standards and logic to be found 3. Operation the apparatus sensitivity of the reaction and induced effects 4. Projection screen art style and content design 5. Need to be clearly know the device at a glance, provide information 6. Auditory, visual, tactile, language on access to information 7. Application of the physical limitations of error-proofing 8. To be able to attract the attention of the audience, and then read and learn 9. The audience maintaining visited the length of the display of the contents of the time 10. Can cause the interest of the audience, to inspire viewers to discover more knowledge

### 3. Methodology of Research Methods and Execution Processes

Based on the related previous literatures of display technology, usability engineering, and evaluation criteria, we choose observation and interviews as our basis on the usability evaluation method. Assigning the classical work, conducting the experimental operation, making the document analysis, and inducing the usability problems, we propose the adaptations and suggestions on the interacting usability. The research framework is shown as Figure 1:

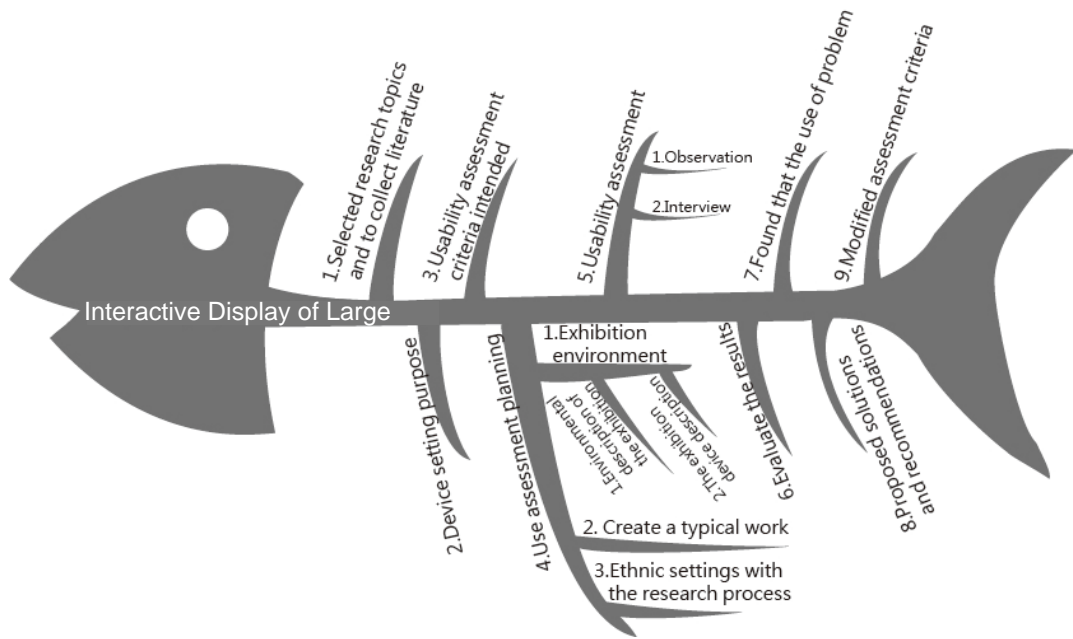


Figure.1 The usability assessment study process

### 3.1 Case Study: Commercial Exhibition Environment and Devices Description

"Interactive Display of Large Projection" is a large-scale interactive device which can interact with many people simultaneously. Interactive approaches for users are standing under the interactive wall, waving both hands. As for the environmental and device setup, the system would show and display special interactive effects randomly.

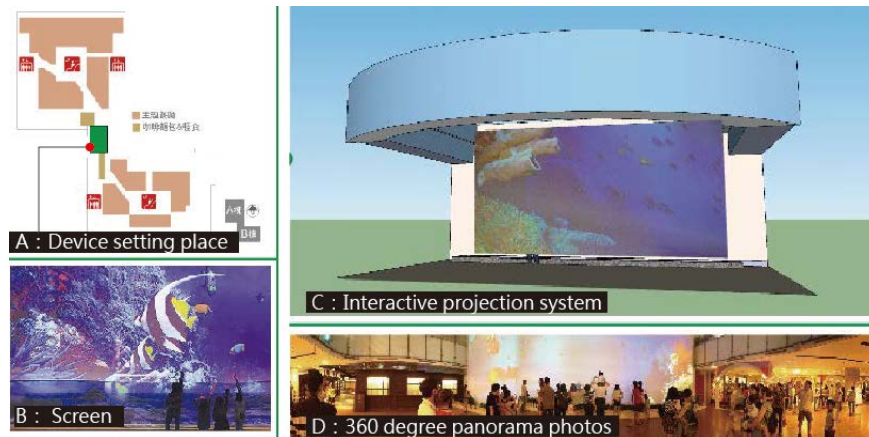


Figure.2 Exhibition environment

### 3.2 Establish Typical Work Steps

Typical work is to emphasize on the functional settings of the big size projection interactive system. With the scene simulation, we could set up the typical work and let the users operate successfully during the process. Furthermore, the problems could be detected in the operation process.

Table3. Typical work steps

Typical work steps	Steps	Assessment criteria	Tasks Time
1. Interactive Waving bubbles	Step01	Following the Instructions	attracting power
	Step02	Into the visible range sensing area	motivational power
			10sec
			7sec

	Step03	Observe the projection content	Aesthetic and minimalist design	10sec
	Step04	Reaction time before action	Visibility	4sec
	Step05	Hands in the air	Constraints. User control and freedom	4sec
	Step06	See the screen bubbles	Flexibility and efficiency of use. Feedback	3sec
	Step07	Reaction time before action	Visibility	4sec
	Step08	Waving	Constraints. User control and freedom	4sec
	Step09	See the screen bubbles	Flexibility and efficiency of use. Feedback	3sec
	Step10	Reaction time before action	Visibility	3sec
	Step11	Moving in the visible range	Constraints. User control and freedom	5sec
	Step12	See the screen bubbles	Flexibility and efficiency of use. Feedback	3sec
	Step13	Observation of the effects of the projection content	holding power	10sec
2.Interactive Waving and feed	Step14	Reaction time before action	Visibility	2sec
	Step15	Repeat hands in the air	Constraints. User control and freedom	2sec
	Step16	See the screen start to feed	Flexibility and efficiency of use. Feedback	3sec
	Step17	Reaction time before action	Visibility	2sec
	Step18	Repeat waving	Constraints. User control and freedom	2sec
	Step19	See the screen start to feed	Flexibility and efficiency of use. Feedback	3sec
	Step20	Reaction time before action	Visibility	2sec
	Step21	Moving in the visible range	Constraints. User control and freedom	2sec
	Step22	See the screen start to feed	Flexibility and efficiency of use. Feedback	3sec
	Step23	Observation of the effects of the projection content	holding power	39sec
3.Interactive Waving and feed	Step24	Reaction time before action	Visibility	2sec
	Step25	Repeat hands in the air	Constraints. User control and freedom	2sec
	Step26	see big number of fish	Flexibility and efficiency of use. Feedback	3sec
	Step27	Reaction time before action	Visibility	2sec
	Step28	Repeat waving	Constraints. User control and freedom	2sec
	Step29	see large number of fish	Flexibility and efficiency of use. Feedback	3sec
	Step30	Reaction time before action	Visibility	2sec
	Step31	Moving in the visible range	Constraints. User control and freedom	2sec
Step32	The screen shows numbers of fish then repeat the effects (1), the end.	Flexibility and efficiency of use. Feedback	3sec	

### 3.3 Ethnic Settings & Research Process

The interactive device is placed in the open-space commercial area and is not age- limited. The study conducts stratified random sampling and divides users group into 5 groups according to their age. We then could analyze whether there are operational problems on the interactive device detected by the users. The evaluation experiment is as followed-- 1. Number of participants: 15, 2. Target: stratify the aging groups into five life phrases. 3. Operating Time: it'll take turn of playing the three special effects which lasts 3 minutes. The process is as follows:

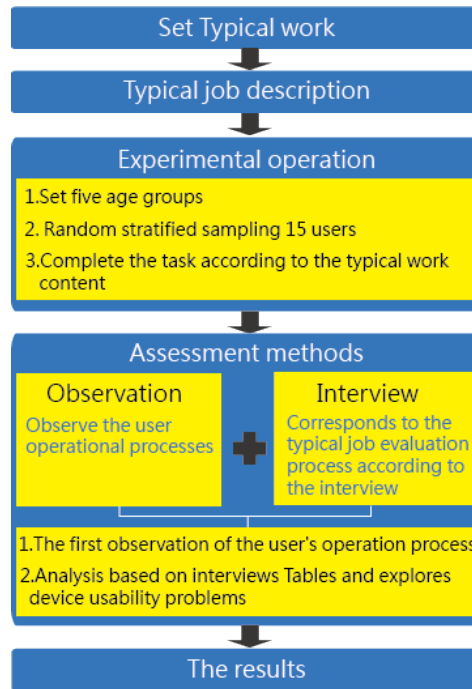


Figure.3 Usability evaluation experiment flowchart

## 4. Results and Discussion

### 4.1 Analysis of Test Subjects

This study divided users into five levels, including children under the age of 14, teenagers aged 15-18 or men aged 19-39 as in the prime of life, 40-60 year-old men as in middle-age, and men over the age of 60. They are randomly selected with three users in all levels as the study sample. Basic information is listed as Table 4

Table4. Basic Information of Sampling Users

Level	User Code	Age	Gender
Childhood (under 14 years old)	U01	9	Female
	U02	11	Male
	U03	12	Female
Youth (15-18 years old)	U04	16	Female
	U05	16	Female
	U06	16	Female
Prime (19 to 39 years old)	U07	30	Male
	U08	30	Male
	U09	34	Female
Middle-aged (40-60 years old)	U10	40~60	Male
	U11	40~60	Female
	U12	40~60	Male
Elderly (over 60 years)	U13	63	Female
	U14	Over 60	Female
	U15	Over 60	Female

### 4.2 Analysis and Evaluate the Usability Problems

This study aimed at the experimental evaluation of the typical operation tasks, and carried out the results of the

interview. Those results are corresponded to ten evaluated criteria in this study. About the using cognition on the interactive projection system for different age groups, embodied analysis and results are as followed in table five.

1. Art and Design of Devices: The whole art designs are adored by the masses. 73.3% of users report that they like the screen design. Taking the aging group into the main consideration, the favoring percentage for children, prime and senior groups are 100 percents. Youngsters like it to the degree of 66.7%. The study shows that the art design of the setting is preferred by the young people and children. Furthermore, the elderly along with their families who go to the department store and see a big size projection interactive setting will be especially curious about it, meanwhile, more acceptable with the art design screen.

2. Knowing the interactive function without reading the instructions: Only 6.7% of the overall people realize to how to operate this projection interactive setting before reading the instructions. In all ages, other than the 30% of the youth population can immediately understand the interactive setting, childhood level (below 14 years old), prime level (19 to 39 years old), middle-aged level (40 to 60 years old), and the population of the elderly level (above 60 years) are 0%. It means when they first see the appearance of this setting, they couldn't know how to interact. That is, the distinct design for the interactive device is insufficient. The research found that the difference of novices and stagers must be considered within the use of setting. There are 30% young users who have been experienced this kind of installations. Therefore, they are more intuitive and sensible than the new learners at the first time.

3. The difference of sensing height while operating the setting: For raising hands, it shows that it will give more feedback (60.3%) when raising hands to the setting. In youth level, middle-aged the level and elderly level's reaction about the hands rising, feedback is more than 50%; other level like childhood and middle-aged are not obvious. Both of the childhood level and the middle-aged level seem uncertain. According to evaluated criteria "the height limitation of the sensing range", there is only one user in the child level that receives feedback when he/she raises hands. Preliminary exploration might have limit height of the sensing range. Also, maybe the middle-aged users don't completely understand the concept of interactive technology, so some users will be confused whether the effects on the screen are the feedback due to their interaction.

4. The difference of sensing width while operating the setting: For every age level, they get the feedback from raising hands and interaction with the width sensing. Overall, only 40.2% of the users approve to give the feedback for waving hands. The youth level and elderly level users get 100% feedback. It's not obvious within the childhood level, prime level, and middle-aged level. More than 50% users cannot get the feedback from the setting when they wave their hands. Only one tester in each level can get the feedback. (The childhood level, prime level, and middle-aged level) Correspond with the evaluated criteria: The width of sensing range is not obvious in the raising hands case. The key point about the users not to get the feedback is no certain interactive range. It causes the users don't get anything when randomly waving their hands.

5. The difference whether moving or not while operating the setting: The study found that it's unclear (Only 20.1%) to define the sensing rage. Users cannot tell which better range to sense or where the best place to operate.

6. Whether never to see similar big size projection interactive settings in other department stores: The study found that it is rare to see a similar large-scale projection system in other department stores or commercial spaces. The overall percentage never seeing a similar installation is 100%. From this, it's not common now. So, setting interactive installation to the 11th floor of Taichung Far Eastern Department Store is a unique exhibition.



7. The interactive setting will be one of the reasons why you come to the department store: The overall percentage is 67%. For each age levels, the child level and elderly level 100% agree with this; youth level is 66.7%; prime level and middle-age level are respectively only 33.3%. Based on the observation of this study, this interactive projection installation is indeed highly preferred by children. But for the elderly, they're not familiar with the combination of large-scale interactive projection and display technology. However, they agree with this interactive installation in the commercial space. In addition, there is lower attractive for prime level or middle-aged level. According to the information above, we know that this " Interactive Display of Large Projection " settings might be considered to design for all age levels.

8. Is it appropriate to set the interactive devices in the space? (11F exotic cuisine): Studies indicate that 87.1% users think that the interactive installation is suitable setting in the Far Eastern Department Store 11F. Only two users are not agreed. Both of them are female users who are in childhood level and prime level. According to the interview, the U03 user indicates that the installation should be set on the first floor. The main reason is that the customers to the Taichung Far Eastern Department Store have no need to get to the 11th floor; U09 users indicates that the installation should be set on the ninth floor in children's area is more appropriate. In this study, the percentages of the above interviews are collected as shown in Table 5.

Table5. The collection of the interview contents

No.	Interviewed Questions	Different ages	Percentage	
			YES	NO
1	Do you like the art design of this screen?	Childhood	100%	0%
		Youth	66.7%	33.3%
		Prime	100%	0%
		Middle-aged	0%	100%
		Elderly	100%	0%
2	Without seeing the instructions, do you know it has interactive function?	Childhood	0%	100%
		Youth	33.3%	66.7%
		Prime	0%	100%
		Middle-aged	0%	100%
		Elderly	0%	100%
3	When you start using the device for sensing height, is it makes a difference between not showing of hands, and showing of hands?	Childhood	33.3%	66.7%
		Youth	66.7%	33.3%
		Prime	66.7%	33.3%
		Middle-aged	33.3%	66.7%
		Elderly	0%	100%
4	When you start using the device for sensing width, is it makes a difference between not showing of hands, and showing of hands?	Childhood	33.3%	66.7%
		Youth	100%	0%
		Prime	33.3%	66.7%
		Middle-aged	33.3%	66.7%
		Elderly	100%	0%
5	When you start using the device, is it makes a difference between moving around or not?	Childhood	33.3%	66.7%
		Youth	0%	100%
		Prime	33.3%	66.7%
		Middle-aged	0%	100%
		Elderly	33.3%	66.7%
6	Have you never seen similar large-scale projection interactive device in other department stores?	Childhood	0%	100%
		Youth	0%	100%
		Prime	0%	100%
		Middle-aged	0%	100%
		Elderly	0%	100%

7	Will the interactive setting be one of the reasons why you come to the department store?	Childhood	100%	0%
		Youth	66.7%	33.3%
		Prime	33.3%	66.7%
		Middle-aged	33.3%	66.7%
		Elderly	100%	0%
8	Is it appropriate to set the interactive system here? (11F Exotic Cuisine)	Childhood	66.7%	33.3%
		Youth	100%	0%
		Prime	66.7%	33.3%
		Middle-aged	100%	0%
		Elderly	100%	0%

Based on the above statistics, similar interactive installation is rare in the department store's setting. But most users agree that this interactive installation is set at the department store floor (11F Exotic Cuisine). They have positive opinions about the art design. However, there is only 6.7% of the total percentage "Without seeing the instructions, do you know it has interactive function?" in question 2. In Question 4: "When you start using the device for sensing width, is it makes a difference between not showing of hands, and showing of hands?" In Question 5 " When you start using the device, is it makes a difference between moving around or not?" For operating flexibility and consistency in interactive devices, there is 40.2% and 20.1%, less than 50% agreement of the survey. Thus, within the operation of the visibility and usability issues, this big size projection interactive system still need to improve on the usability problems.

### 4.3 The Usability of Revision

1. More intuitive design content: Based on the usability principle of evaluated criteria, the large screen projection may not easily display its functions for the users. It suggested that there must be more intuitive words on the screen, and it will increase the visibility of the system. 2. More clearer sensing range: No matter on the height, width and measure of area, the interactive installation are vague. The sensing area is not clear enough, so that most of the users must stand in front of the interaction wall. This situation makes inconvenient in movement. The study recommended that add a tip about sensing range, and recognize whether the interactive area is more clearly. 3. More feedback of sound and light effects: This interactive effect is uncertain. From the interviews with users, some users do not know whether they trigger the effects of not. It recommended that the system can add some light and sound when the users are using. It also brings joy and achievement. 4. Adding different height sensing range: This interactive installation set in the open commercial space is no age and height restrictions, so the convenience for the operations must be considered. For different height users, it may cause the use of differences in height. This study suggests that for different heights should set the interactive platform in the sensor area, or the sensors set at different heights. Finally, the information conveyed two principles are as follows:

(1) The medium of information for communication is the instructions. That for the users understands the content, in order to achieve the concept of users operations.

(2) The medium of information for communication is the projection wall. By projecting on the wall, users know better the content of the display.

### 4.4 Create New Usability of Evaluated Criteria

In this study, in the light of “the large size projector interactive system” used in interactive technology in the commercial space, this research brings out the evaluated criteria. Resummarize the evaluated criteria listed in Table 6:

Table6. The suggested criteria of usability in big size projection interactive system

Evaluated Criterion	Explanation
1. User Control and Freedom	Simple steps to enhance the convenience of the users of all age levels
2. Flexibility and Efficiency of Use	The reaction and sensitivity of operational effects
3. Aesthetic and Minimalist Design	The art style of Projection screen and content design
4. Visibility	Knowing the device at the first time, and providing the user information clearly
5. Feedback	The acquirement of Auditory, visual, tactile, language information
6. Constraints	Interface on the height, width, area of manipulation powers
7. Attracting Power	Attracting the audience's attention to visit Taichung Far Eastern Department Stores
8. Holding Power	The length of the time that audience focus on exhibition contents
9. Motivational Power	Whether to attract the interest of the audience, or to inspire the audience to keep playing
10. Teaching Power	What the audience learned from the exhibition? How much about learning?

According to David Chang (2009), he believes that a successful interactive display must be user- friendly, which makes audience easy to use, easy to operate, safe and comfortable, demonstrate the concepts, and the messages to attract viewers’ stimulation and attention. Interactive installation set in a department store display is a certainly novel and a unique concept. But the interactive installation instructions did not convey to the purpose and content of the display. Thus, When operating " Interactive Display of Large Projection ", the user does not know the feedback which they really get. Display content should increase "Teaching Power" to increase learning, rather than follow "for interactive to interactive" in case of no ineffective on learning. Therefore, this study shows the concepts of Chang (2009). For good display design principles, in addition to interactive multimedia shows not only with a glamorous surprise effect, and the unique attractiveness, but also “sustainability" and ”guidance”. With the "content" attraction, viewers will go to Taichung Far Eastern Department Stores to interactive with the “Interactive Display of Large Projection”. It creates more entertainment and fun. Therefore, the Teaching Power is used in the evaluation criteria within “Interactive Display of Large Projection ”.

## 5. Conclusions and Recommendations

The study shows that (1) large size projector interactive system in the open commercial exhibition must emphasize the projected interaction clues to improve the visibility and participation of users; (2) in order to avoid all users gathering in front of the projection interactive wall block, it must require the tips of the sensing range. The block should be clearly divided into interactive area and non-interactive area; (3) in this interactive system, it suggested that strengthen the feedback mechanisms of sound, light effects, to increase pleasure and achievement of user interaction. Overall, the majority of users indicate that this device can bring the novel feeling, and can

enhance the commercial space display highlights. This study suggests that big size projection interactive systems are used in commercial display space. You must pay attention to the scenarios range of tips and interactive visibility, intensity of sensory feedback mechanisms, as well as multi-induction link to achieve the interactive concept of commercial public space.

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