

A Study on Experiential Digital Art User Experience

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Abstract

Under the era of new media, as user preference becomes acquainted with visual and spatial media, it has been changed to a form that audiences are participating in the art work through interactive design. Interaction characterized by interactivity has been researched in diversified fields as a strong tool by which audience is able to experience art work by attracting and concentrating user's concern based on multi-sensory experience in a space.

Therefore, in this study, a questionnaire for increasing user experience in experimental digital art field was performed. The objective of future research is to implement immersive art (IA) work by producing art work utilizing the result of questionnaire.

Keywords: *We would like to encourage you to list your keywords in this section*

1. Introduction

1.1. Objective and Background of Research

The biggest characteristic of new digital media in 21c is two-way communication. It enables interaction between physical space and electronic space as well as communication among humans, humans and space [1].

Digital technology-based complex information devices have been increased. Therefore, as design target is diversified, systematic linkage of product using method, robot, artificial intelligence response and behavioral product as well as simple hardware or software with other individual entity also becomes a new design target.

Therefore, while design target was static like furniture and centered on hardware, design of new product in which various designs are converged is being increased. When observing its case, software and hardware such as mobile device, interactive toy and home appliances are composed through its organic combination and contrary to existing products, products having dynamic, interactive and intelligent attribute have been transformed and emerged as shown on below Figure 1.

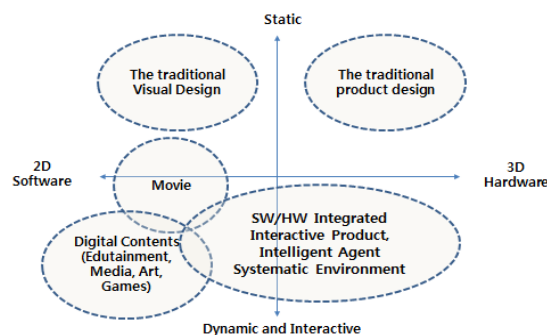


Figure 1. Changes in the Design According to the Development of Digital Media

Owing to development of latest technology, human-oriented values such as economic value, usability, emotional value, social value could be flexibly reflected in design product and it has been emphasized as a new capability of designers.

In particular, along with this change, problem solution ability for new design method, its requirement is urgently required so that design based on understanding of users could increase satisfaction and immersion of users.

In case of converged design art work, even interaction-related matters including usability are required to be provided considering position of users and based on general knowledge of hardware and software, it is required to be contributed to planning and materializing system and service. In addition, complicated problem of usability should be also solved intuitively and emotionally [3-4].

Therefore, in this study, along with shifted design paradigm, a questionnaire for preparing basic data in order to produce new digital art work of high immersive level would be researched.

1.2 Content of Research

Objective of this study is to provide substantial support by suggesting a method of being able to solve problem and requirements at the time of designing experimental digital art work in order to increase its immersion.

Table 1. The Purpose of the Study Details

	Goal
1	Deduction of problem at the time of producing experimental digital art work and its requirement
2	Suggestion of requirements of experimental digital art work
3	Verification of design usability utilizing suggested requirements

1.3 Study Method and its Composition

Based on research objective being suggested hereinabove, a research was progressed as shown on below Figure 2 by solving stage-by-stage research problem.

In Chapter 1, composition of this study, research background, its necessity and outline were described. In Chapter 2, characteristic of design process for producing experimental digital art work by understanding its concept through relevant research was identified. In addition, a concept for increasing immersion was also summarized. In Chapter 3, requirement through relevant research was deduced and regarding its usability, interview with experts utilizing questionnaire technique was progressed. In Chapter 4, result of research method and contents was summarized and based on this result, future research was arranged.

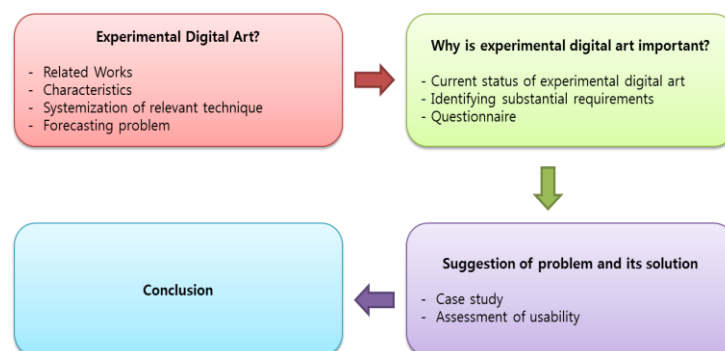


Figure 2. Research Method and Summary

2. Related Works

In Chapter 2, characteristic of digital art design is identified by understanding a concept of experimental digital art through relevant literature and grafting it with design process. In addition, a concept of increasing immersion at the time of producing experimental digital art is arranged.

2.1 Concept and Characteristics of Experimental Digital Art

“Digital art” is called as very diversified terms including ‘Internet art’, ‘Web art’, ‘Interactive art’, ‘Media art’ and ‘New media art’. As its concept is most close to art form of ‘Digital art’, it is used as a meaning of digital art. As its term, it is defined as ‘Media Art’ and ‘New Media Art’.

This digital art is digital interactive art. As interaction that is the most important characteristics of digital art, ‘a nature of participation’ that is important characteristics of existing avant garde art and post modernism could be singled out. In other words, it is like interactive of ‘interactivity’ or ‘Two-way’. This interactive may be called as an art having a cycle of producing a new transformed output depending on action or stimulating elements and transmitting it to users. Figure 3 shows communication process between user and digital art as its characteristics.

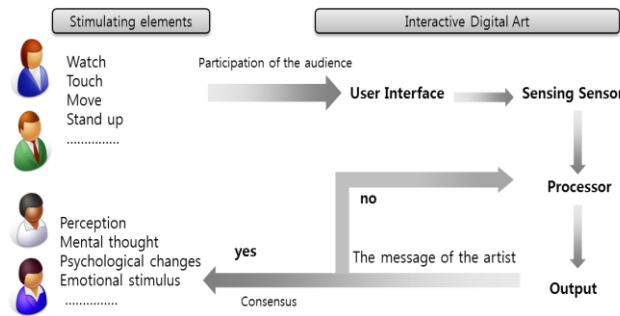


Figure 3. Communication Process between User and Digital Art

Table 2. Feature of Digital Art

Reproductivity	- Complete reproduction of digital information - Several originals could exist.
Accessibility	- Search of artificial intelligence pattern beyond search of index level - Search of all the information in a digital form including text, video, sound
Network	- Sharing through cable, wireless network
Complexity	- Experimental interface beyond audio-visual information including text, sound, video
Manipulability	- Rebirth as digital information of a new form by conversion and manipulation is enabled regardless of any form of digital information
Interactivity	- As a new communication overcoming physical restriction in time and space, potential as an alternative to simplex of traditional media

3. Experimental Digital Art

3.1 Composition of Experimental Digital Art

Schmidt suggested 5 types of experience including “sense, feel, think, act, relate” in marketing terms. Basic attribute of marketing may have exhibition communication and structural

isomorphism in terms of the fact that it is also a communication act of inducing purchasing behavior.

Therefore, when considering it in an experimental perspective based on this, it is as shown on below Figure 4 [7].

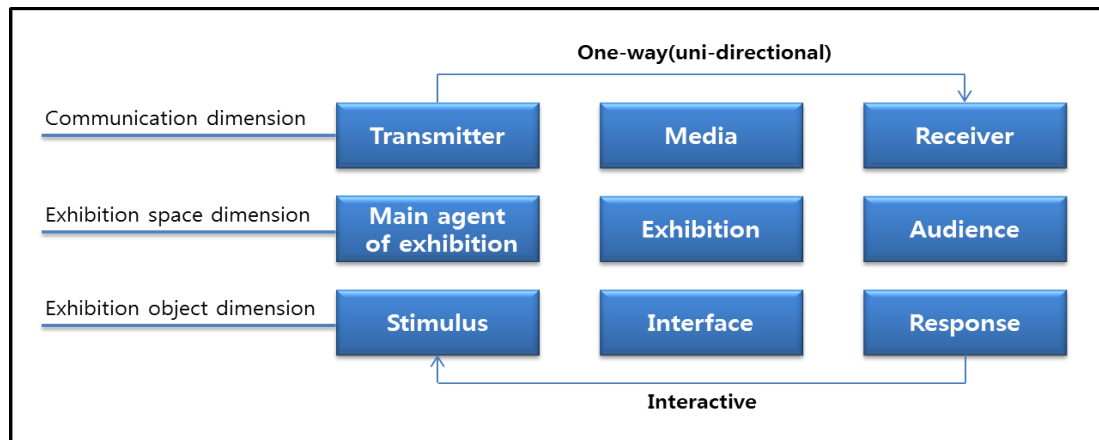


Figure 4. The Structure of Communication and Experience Digital Art (EDA)

Major elements of interaction could be mainly divided into four elements including visual, auditory, tactile and motor sense and this is like a stimulus being provided for a successful exhibition experience. On the other hand, among type of experiment, emotion, cognition and behavioral relation are reactions of audience and when these elements are accompanied, interactive experience exhibition is taken place. Therefore, structure of interactive element and exhibition experience is taken place by cyclic feedback as shown on Figure 5.

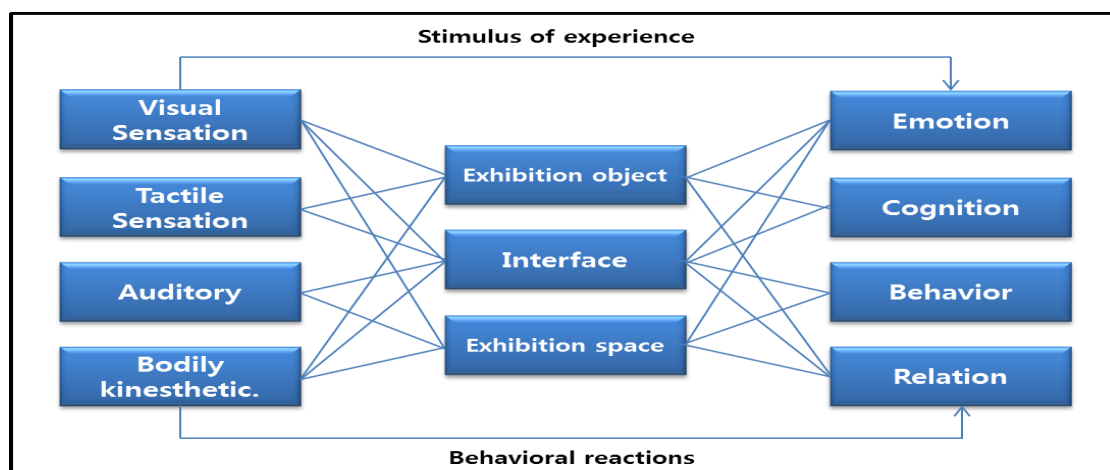


Figure 5. Cycles of Interaction and Experience

3.2 Experimental Digital Art Work and Experiment Method

For this experiment, a questionnaire was progressed after having test subjects experience ‘Jump’, an art work of Lee, Hye Young that is an experimental digital art. Concept of experiment work was produced based on a concept of dizzy extreme sports such as bungee jump, base jump and diving. It’s like a concept of Ilinx among play theory of Roger Caillois [9].

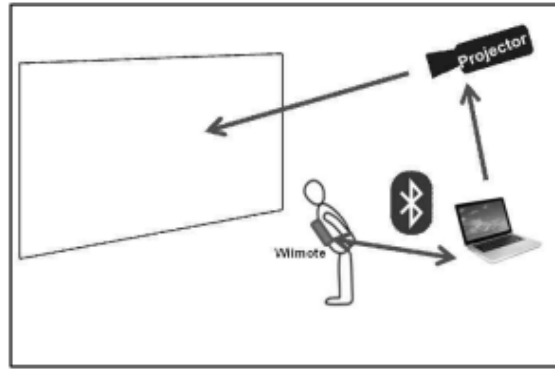


Figure 6. Jump Concept - Experience Digital Art (EDA)

Experience of art work was performed in a way that user attaches Wimote to upper part of body by using band. Wimote being attached to upper body of audience is visualized by IR sensor depending on gradient of upper body. During art work experience, 3D cube is visible and this is transformed as follows in real time by user control [9].



Figure 7. Experience of Digital Art (EDA)

In order to evaluate usability for increasing immersion of experimental digital art, 10 test subjects who were interested in relevant art work were selected from male, female university students in their 20-30th and they did not have actual using experience of experimental digital art. In order to ensure objective evaluation, a questionnaire was performed by targeting such test subjects and content of questionnaire is as shown on below Table 3.

Table 3. Survey of Experience Digital Art (EDA)

1	Test subjects will use experimental digital art frequently as a result of experiencing such art.
2	As a result of experiencing experimental digital art, they think that this system is required and could be familiar with.
3	As a result of experiencing experimental digital art, they think it to be convenient for use.
4	As a result of experiencing experimental digital art, they think that support of expert would be required in order to use this system.
5	As a result of experiencing experimental digital art, they think that diversified functions of this system are well combined.
6	As a result of experiencing experimental digital art, they think that this system provides a sense of reality..
7	As a result of experiencing experimental digital art, they think that a lot of people could

	master using method of this system very quickly.
8	As a result of experiencing experimental digital art, they think that this system provides serious interference.
9	As a result of experiencing experimental digital art, they feel confident in using this system.
10	As a result of experiencing experimental digital art, they think that there is no need to learn a lot in order to use this system continuously.

3.3 Result of Experimental Digital Art Experiment

Score of questionnaire was evaluated by dividing it into 10 stages from 1 point representing “strong negation” to 10 points representing “strong affirmation” and its result is as shown on Figure 8.

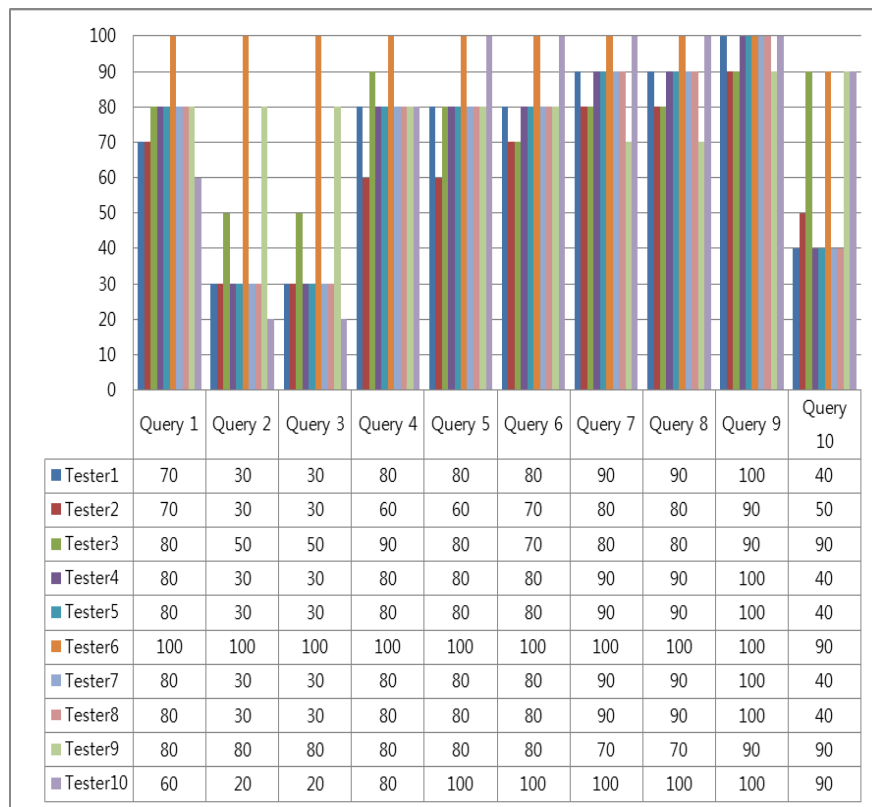


Figure 8. Result of Experimental Digital Art Experiment

Average of usability evaluation was 74.3% and in usability, positive response was represented. In addition, average of Item 10 in which there is no need to learn a lot in usability was 77% and it represented low rejection. In addition, in a question for a sense of reality, high reaction of 99% was represented.

4. Conclusion

In this study, in order to measure experience of users in experimental digital art, by having test subjects experience experimental digital art, experiment was performed through a method of questionnaire. As a result of questionnaire, average of experimental digital art was 74.3% and in its usability, positive reaction was represented and in a sense of reality also, high reaction of 99% was represented. As a future research, experimental digital art based on the result of questionnaire of this study is intended to be designed and developed so that it could be utilized for relevant application industry and life science.

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