Application of Interactive Multimedia Installation Art in Display Design

WenXin Xiang*, Tong Liu
Jilin Animation Institute, China, 130000

*Corresponding author e-mail: 102126273@qq.com

Abstract. Currently, display design is no longer a pure exhibition of items with the development of science and technology as well as the society, which integrates the power of art and audience’s participation and interaction. Based on this background, interactive multimedia art installation has been applied to display design. The article first introduces the background of the application of interactive multimedia art installation in display design, then summarizes the definition, development and advantages of interactive multimedia art, and lastly analyses how interactive multimedia installation art can be applied in display design.

Keywords: Interactive Multimedia Installation Art, Display Design, Application

1. Background
The rapid development of science and technology usher in Industry 4.0. Under this context, designers in the display design industry have begun to combine technology and artistic language to interpret the display topic [1-2]. That is when interactive multimedia art installation emerges in display design [3-4]. For installation art, its interdisciplinary and cross-domain characteristics allow itself to use multimedia art freely in order to produce interactive effects through using devices as a carrier.

In practice, interactive multimedia installation art has been more and more widely used in exhibition halls [5-6]. In addition, the researches have been carried out mainly centering on how interactive multimedia installation art can adequately fulfill the purpose of scientific and technological display and cultural exchange in the design of the exhibition hall, interpret the display philosophy, convey information, and make the visitors resonate with the interaction of the exhibition items. Therefore, interactive multimedia installations and the boosting effect of art on the display industry can be given full play through strengthening the research of application of interactive multimedia installation art in the exhibition and exploring and summarising basic laws and planning requirements.
2. Introduction of interactive multimedia installation

2.1. Definitions of interactive multimedia installation art and display design
Installation art refers to the reconstruction and re-combination of consumed or unconsumed materials in daily life in a specific environment to enrich their artistic forms and representations. In a simple word, installation art is a comprehensive display of the combination of the site, construction materials and emotions. Multimedia technology combines interactive computer technology and digital communications technology, forming an interactive system in which all kinds of information link with logic after media texts, graphs, pictures, videos and audios are dealt. This system is called interactive multimedia, which effectively combines installation art to construct interactive multimedia installation art.

The overall systematic structure of interactive installation artworks contains four main parts, namely, computer multimedia processing subsystem, information detection, and acquisition subsystem, transmission subsystem, and media performance subsystem (see Figure 1).

![Overall systematic structure of interactive installation artworks](image)

**Figure 1.** Overall systematic structure of interactive installation artworks

In summary, interactive multimedia installation art is an art form that is based on installation art and uses multimedia technology to genuinely interact with the surrounding environment or things to convey a specific humanistic concept.

As to display design, display space should be talked about firstly. It emerges along with the development of civilization and economy. The process of designing the display space into a special one by certain artistic representation forms to get audiences immersed in it and make them communicate is display design.

2.2. The development of interactive multimedia installation art
In recent years, with the rapid growth of the Internet industry, editing programs on personal computers have become cheaper and more popular. Multimedia art has been further prospered. More artists have begun to explore the application of interactive technology in installation art and have been committed to creating interactive multimedia installation art and interactive web art. In particular, this trend has effectively driven the demand for intelligent display interactive products, indirectly showing the rapid
development of interactive multimedia installation art, as shown in Figure 2.

![Interactive smart tablet sales in China](image)

**Figure 2.** Interactive smart tablet sales in China

In summary, interactive multimedia installation art broke through the traditional constraints and is free from the limits of any discipline, freely borrowing the cutting-edge achievements of related disciplines with vertical and horizontal expansion force and art processing methods going beyond time and space. It has become a rich and diverse art form while developing innovatively.

2.3. Advantages of interactive multimedia installation art

Interactive multimedia installation art mainly employs technologies such as detection, collection and transmission system to create, which makes use of the actual forms that information technology presents and touches audiences’ feelings with artistic works. On this basis, different media forms are combined, and their meanings and background should be dug in to enrich audiences' sensory experience, enhance their interests and understandings of the designer's thoughts.

That’s why interactive multimedia installation art has the following advantages. 1) Interactive multimedia installation art has stronger expressive tension than traditional art forms. 2) Interactive multimedia installation art is of great ingenuity. 3) Interactive multimedia installation art can be ahead of the time. 4) Interactive multimedia installation art is comprehensive. 5) Interactive multimedia installation art is interactive. 6) Interactive multimedia installation art attaches importance to emotional expressions. 7) Interactive multimedia installation art can bridge the gap between audience and art.

3. Application of interactive multimedia installation art in display design

The interactive multimedia installation art enables viewers to interact with the work and to change the image, shape, and even the meaning of the work through touch, movement, and sound. At the same time, it has the multimedia functions of sound, touch, and smell, which makes the display more diversified and active. Through the interactive multimedia installation art, the act of obtaining information is entirely dynamic. What the designer has to do is to guide the viewer and enhance their interest. By doing so, they can become the operator of the latest design in person, and get endless fun from it. Extensively, the advantages of interactive multimedia installation art can be concluded as focus on the extension of people’s life experience, ingenuity, pioneering, comprehensive, and interactivity.

Since interactive multimedia installation art has so many advantages, it is widely used. This part
will discuss its application.

Through the combined application of media such as video, audio, animation, pictures, text, the background and meaning of the objects displayed in the exhibition are deeply explored, realizing a dynamic exhibition form that bears both in-depth vertical analysis and horizontal expansion that is not very easy to achieve by ordinary display means. In this way, the cooperation of viewers’ vision, hearing, and other senses and behaviors are promoted, creating a new experience and increasing audiences’ interest in viewing and exploring so that the intention of the exhibition designer will be magnified and more natural to recognize to the most considerable extent.

For example, using sound effects to touch people’s auditory experience, using visual effects such as animation, video, and naked eye 3D to touch people’s visual experience, using lights to enhance the visual impact, using odours to create an atmosphere, etc., all of which are vehicles to express the theme and meaning of the exhibition items in a more powerful way. The following part will analyze the application of interactive multimedia installation art in detail.

4. Summary
Interactive multimedia installation art facilitates culture transmission in the form of interactive experience. It changes the previous indoctrination of cultural communication. It pays more attention to the corresponding changes in audiences’ thoughts, emotions, psychology, and physiology when experiencing the exhibition and making corresponding smart feedback to achieve the purpose of effectively transmitting culture. Interactive multimedia installation art has much room for development in display design, and it is the development trend of the display art design.

References
[1] Ahmed S U. Interaction and Interactivity: in the context of digital interactive art installation[C]//International Conference on Human-Computer Interaction. Springer, Cham, 2018: 241-257.
[2] Batagelj B, Solina F. Preservation of an interactive computer-based art installation—a case study[J]. International journal of arts & technology, 2017, 10(3): 206-230.
[3] Deliyannis I. Interactive multimedia installation art development using recycled input and sensing devices[J]. International Journal of Arts and Technology, 2016, 9(2): 108-125.
[4] Gao Z, Li J, Wang H, et al. Digiclay: an interactive installation for virtual pottery using motion sensing technology[C]//Proceedings of the 4th International Conference on Virtual Reality. 2018: 126-132.
[5] XU R. Interactive and participatory. The research of multimedia interactive installation in urban environments[J]. 2018.
[6] Celentano A, Dubois E. A layered structure for a design space dedicated to rich interactive multimedia content[J]. Multimedia Tools and Applications, 2017, 76(4): 5191-5220.