

## Research on the application of multimedia space experience in the narrative of urban planning museum

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### Abstract

The Urban Planning Museum is a special place that stores too many memories. Interpreting it is not as simple as interpreting a book or an architectural space. The value of a museum is often to convey its history and cultural relics information and knowledge to the audience more quickly and completely, and to achieve its social communication purpose. As ordinary visitors, the traditional form of urban planning museums is too simple, and the way of dissemination and experience of historical relics and information is difficult for the audience to resonate with. Therefore, I tried to think from the perspective of the audience, and through the intervention of multimedia space experience design, explored how to obtain new methods from the traditionally restricted narrative concept of urban planning museums, so as to make the museum "alive" and allow the audience to participate. The content of this paper involves design art, iconography, communication, leisure studies, museum studies, psychology and other disciplines, and the choice of research methods is also diverse. Among them, the literature analysis method was chosen as a tool to organize professional development-related materials; the multidisciplinary interdisciplinary research method referred to a large number of knowledge contents in other fields; and the field survey method was used to collect various aspects of data. Finally, the case analysis method and thinking method analysis are used to organize the data and draw conclusions.

**Keywords:** Urban Planning Museum, multimedia space, spatial experience, multimedia narrative

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## **Introduction**

With the development of science and technology and changes in public needs, the application of spatial media in urban planning museums will have more possibilities and opportunities. We expect that the Urban Planning Museum can provide richer, in-depth, and interactive urban narratives through these spatial media, so that the public can better understand and participate in the development of the city. The Urban Planning Museum is an important place to display the past, present and future development of the city. Its goal is to let the public understand the planning and development of the city and participate in the city's decision-making and design. In this process, the application of digital media not only enriches the form of display, but also enhances the transmission effect of information, using interactive display, visual impact, immersive experience and other methods to help the narrative of the urban planning museum.

## **Research's objective**

This article is a study on the application of digital space experience in the narrative of urban planning museums. It can not only enhance the experience of visitors and improve the effect of information dissemination, but also provide new methods and perspectives for related research, which has important research significance.

## **Literature review**

### **1.The definition and characteristics of digital space experience**

Digital space experience inherits many traditional art theories, such as formalism, expressionism, postmodernism, etc. These theories help us understand the creative methods, artistry, social functions, etc. of digital space experience. At the same time, some new theoretical topics are also proposed, such as interactivity, virtuality, network, etc.

Digital space experience design is closely related to media theory. For example, McLuhan's "medium is the message" theory emphasizes the role of media in shaping information, which is very important for understanding the influence of digital media. (McLuhan, 1964) In addition, the interactive, non-linear and other characteristics of digital media art also challenge traditional media theory. Technology is the foundation

of digital media art. For example, Kuhn's theory of scientific revolution and Latour's social theory of science and technology all provide valuable perspectives for understanding the technological foundation of digital media art. The development of science and technology also poses new challenges to the digital space, such as the application of new technologies such as artificial intelligence and big data. Design is an important aspect of digital space art. For example, Bruner's semiotic theory and Norman's design psychology theory have provided important guidance for the design method of digital space experience. New fields such as interactive design and experience design of digital space experience are also challenging traditional design theories.

In general, the theoretical basis of digital space experience design is diverse and complex. It not only inherits traditional theories, but also faces new challenges and problems. This provides a rich perspective for us to understand and study digital space experience design, and also proposes new research tasks.

## **2. How is the application development of digital space experience in urban planning museums?**

The application and development of digital space experience in urban planning museums can be regarded as the product of multidisciplinary intersection, which covers theories in multiple fields such as information science, education, design, human-computer interaction, and art. The following is its general theoretical development process:

1. Early stage (1990s): The early digital media applications were more about planning the exploration of museum digitization. The relevant theories were not mature on how to effectively use these technologies. Early practice was more based on trial and error. However, the practice at this stage accumulated rich experience for later theoretical development. Paul Conway discussed the impact of digitization on museums, libraries and archives in his 2010 article "Preservation in the Age of Google". He believed that digitization is not only a means of preservation and dissemination, but also helps to improve the accessibility of resources. performance and utilization. (Conway, 2010)

2. Digitization and interactivity (2000s): With the popularization of the Internet and the development of digital technology, people began to pay attention to how to improve the educational function of museums and enhance audience participation through digital media. At this time, the theories of pedagogy and human-computer

interaction began to play a role in the digital media application of museums. For example, how to design interactive exhibitions, how to provide personalized learning experiences, etc. Donald Norman proposed the user-centered design principle in "The Psychology of Design" in 1988, emphasizing the user's needs and experience as the core of design. This theory has great inspiration for the design of interactive displays in museums. (Norman, 1988)

3. Socialization and mobility (2010s): The popularity of social media and mobile devices has driven the development of planning museums in the direction of socialization and mobility. At this time, sociological and mobile learning theories began to influence the planning of digital media applications in museums. For example, how to use social media for museum marketing, how to provide mobile learning experiences, etc. Henry Jenkins discussed the trend of media convergence in detail in his 2006 book "Converging Cultures" and believed that in the digital era, different media forms will increasingly cross-integrate and user participation will become higher and higher. John Traxler and Agnes Kukulska-Hulme are pioneers in the field of mobile learning. They began to pay attention to mobile learning in the 2000s and proposed the theory and practice of mobile learning, how to conduct personalized learning anytime and anywhere in different occasions and environments. (Jenkins, 2006)

4. Virtualization and Augmentation (2020s): Paul Milgram and Fumio Kishino proposed the concept of mixed reality in 1994, discussed the possible applications of virtual reality and augmented reality in detail, and provided a theoretical framework for the application of these technologies in museums. As technologies such as AR and VR mature, planning museums have begun to explore the possibilities of virtual exhibitions and augmented reality. At this time, virtual reality theory and augmented reality theory began to play a role in planning digital space experience applications in museums.

### **3. Theories and research methods related to digital space experience**

In the study of digital media space experience design, we can collect and analyze data in a variety of ways to provide valuable insights. The following is a description of how to conduct research using research methods such as qualitative analysis, case analysis, and multidisciplinary research.

1. Qualitative analysis method: Qualitative analysis usually includes in-depth interviews, focus groups, field observations, and user log analysis. It mainly focuses on the subjective feelings of users and needs to establish deep connections with

participants and understand their experiences, feelings, expectations and needs through in-depth conversations and observations. In the study of experience design in digital media spaces, qualitative analysis can help us understand users' experiences when using products or services, and how they understand and interpret these experiences. In this way, we can discover design problems, advantages and possibilities for improvement, as well as new design directions.

2. Case analysis method: Case analysis is to study and study specific examples, analyze the reasons for their success and failure, and extract and summarize experiences and lessons. In the study of digital media space experience design, we can select some typical or representative cases for in-depth study, such as some well-known digital media spaces, some innovative design solutions, or some controversial designs. In this way, we can learn, refine and accumulate knowledge and experience from actual applications and practices.

3. Multidisciplinary research method: The multidisciplinary research method emphasizes comprehensive research and analysis from the perspectives of multiple disciplines. Digital media space experience design is an interdisciplinary field involving design, psychology, sociology, communication, computer science and other disciplines. Through multidisciplinary interdisciplinary research, we can have a more comprehensive and in-depth understanding of problems and find more solutions and innovation points. For example, we can combine design theory and psychology knowledge to understand and improve users' perception and cognitive experience; we can also combine sociology and communication knowledge to understand and improve the effects of social interaction and information dissemination.

These research methods have their own advantages and limitations, and usually need to be used flexibly in specific research to complement each other. At the same time, researchers also need to continue to pay attention to new theoretical and technological developments and continue to learn and improve.

## **Methodology**

### **1.literature analysis method**

It is to conduct in-depth research on the trends, strategies, development and design of digital experiential display spaces based on relevant information and literature. At the same time, it focuses on research and analysis of theoretical knowledge and design cases related to the design methods of interactive experiential

display spaces at home and abroad.

## **2. Multidisciplinary interdisciplinary research method**

This article refers to relevant knowledge from the fields of display design, communication, psychology, leisure, architecture and other fields of design art.

## **3. example analysis method**

Based on the relevant exhibitions and documents that the author personally visited, I used case analysis to study designs with obvious characteristics, and comparatively analyzed their experience methods, display methods, effects, themes, etc., and then used them as materials to contribute to the development of this paper. Finish.

Of course, each research method has its own advantages and disadvantages. For example, the methods mentioned above all involve the intervention of subjective factors of the researcher. Factors such as the researcher's world view, knowledge reserve, experience, etc. will all affect the review and analysis of materials and information. But as far as research methods are concerned, there is no absolute right or wrong. Educational research law scholar Babbie once pointed out: "You cannot decide whether the measurement method is correct or not. You can only judge the contribution and benefit of this measurement method to the understanding of empirical data and the development of social behavior theory." (Babbie, 1990) Therefore, for research methods The selection and application of research methods not only affect the researcher's mind, but the research methods will also directly affect the practicality of the research results.

## **Results**

1. The definition and characteristics of digital space experience in the narrative of urban planning museums

A. digital spatial experience defines narrative in urban planning museums

By using digital technologies, such as virtual reality, augmented reality, interactive devices, etc., the audience is placed in a simulated urban planning environment, allowing them to understand and perceive the city's development process, planning concepts and future prospects through an immersive experience.

This experience mainly includes three aspects: perception, cognition and emotion. It aims to arouse the audience's curiosity, thinking and emotional resonance by providing rich, vivid and intuitive information, thereby enhancing their understanding and recognition of urban planning.

B. Characteristics of digital space experience in the narrative of urban planning museums

**Immersion:** Taking advantage of digital technology, viewers can integrate into the virtual urban space and feel the changes and impacts of urban planning as if they were actually there. This immersive experience allows viewers to have a deeper and more intuitive understanding of the content and significance of urban planning.

**Interactivity:** In the digital space, viewers can interact with the environment, information, and other viewers in various ways, such as operating models through touch, gestures, voice, etc., participating in games, sharing feelings, etc. This interactivity not only improves the audience's participation and fun, but also enables them to understand and perceive urban planning from different angles and levels.

**Diversity:** Through digital technology, we can simulate and display the diversity of urban planning, such as different eras, regions, cultures, groups of people, perspectives, etc., as well as the relationships and influences between them. This diversity can broaden the audience's horizons and enrich their experience and knowledge.

**Innovation:** Digital space experience breaks the limitations of traditional museum narratives, allowing us to try and implement more innovative methods and ideas, such as improving the audience's interest and memory through storytelling, gamification, contextualization, personalization, etc. Reveal the complexity and importance of urban planning through data visualization, simulation and other methods.

### C. Conclusion

When applying digital space experience, we need to pay attention to several issues: First, we must respect and understand the needs and differences of the audience, and provide an experience that adapts and satisfies them; second, we must synthesize and balance the advantages and limitations of digital technology to avoid technology dominance. or the tendency to show off skills; third, we must pay attention to the authenticity and effectiveness of the content to ensure the quality and value of the experience; fourth, we must continue to observe and study new theories and technologies, and explore and practice better design and narrative methods.

2. How is the application and development of digital space experience in urban planning museums?

The application and development of digital space experience in urban planning museum narratives can be understood from the following stages:

#### A. primary stage

Digital technology is mainly used to display basic information and images of urban planning, such as playing text, pictures and videos introducing urban history, planning and architecture through computers, projectors and other equipment, or

displaying the geography of the city through electronic maps, digital models and other tools , structure and style. Although this method is more intuitive and rich, it is less interactive and experiential, and the audience's role is still mainly to receive and watch.

#### B. intermediate stage

Urban planning museums have begun to introduce more digital interactive devices, such as touch screens, virtual reality helmets, gesture recognizers, etc., allowing viewers to directly operate and control digital models, games and scenes of urban planning through touching, moving, wearing and other behaviors. Experience the changes and impacts of the city, and participate in urban design and decision-making. This approach improves audience engagement and fun, but still requires specialized equipment and space, and the technology and content are more expensive to develop and maintain.

#### C. advanced stage

The Urban Planning Museum uses the latest digital technologies and concepts to create a comprehensive digital space experience. For example, through augmented reality technology, digital information and physical space are integrated, allowing the audience to see and Interactive with relevant information and stories of urban planning; through the Internet of Things technology, connect various sensors and devices, collect and analyze the audience's behavior and feedback, and achieve personalized and intelligent experience; through big data and artificial intelligence technology, research and Demonstrate the complexity and importance of urban planning, and raise and explore new issues and concepts in urban planning.

To sum up, in the application development of digital space experience, we can see the innovation and efforts of urban planning museums in technology, content and form, as well as the emphasis and pursuit of audience experience and urban narrative. However, we also need to see that digital space experience is not a panacea, and there are also some challenges and problems, such as how to ensure the stability and security of technology, how to deal with technology updates and obsolescence, how to balance audience differences and fairness, and how to evaluate and improve The quality and value of the experience, etc. Therefore, we should continue to pay attention to and study the application and development of digital space experience, and strive to realize the goals and responsibilities of urban planning museums.

3. In what ways are digital spatial experiences expressed in urban planning museum narratives?

Digital space experience is expressed in various ways in the narrative of urban planning museums. The application of various digital media technologies in space improves the dissemination efficiency of display information and enhances the

audience's experience. This article investigates multiple museums The digital space experience effect can be derived in the following ways:

#### A. Virtual Reality (VR)

With a virtual reality headset, visitors can immerse themselves in a new, highly realistic environment. They can walk in the planned new city or personally participate in the planning and design of the city. Such an experience can enable the audience to better understand and accept the concepts and strategies of urban planning. For example, at the New York City Planning Museum, it offers an exhibition called "Virtual New York." By wearing VR glasses, the audience can be taken into a virtual New York, where they can see the New York skyline from the air, and they can also "walk into" the interior of the building to see the details of future planning.

#### B. Augmented reality (AR)

Through the screen of a smartphone or tablet, visitors can see digital information combined with real-world context. For example, they can use the device to see new buildings emerging on models in museums, or see historical changes in urban spaces. Augmented reality can not only enrich the visual experience of visitors, but also provide more layers of information and stories. For example, at the Science Museum in London, AR technology is used in urban planning exhibitions. Audiences can use their mobile phones or tablets to see real-life models superimposed with virtual building or traffic information. This method helps the audience understand the concept of urban planning. How the various elements work together.

#### C. interactive exhibition

Through technologies such as touch screens, interactive projections or dynamic models, visitors can directly interact with exhibits, such as modifying city planning diagrams, or understand the complexity of urban planning through games that simulate city operations. This approach can inspire visitors to participate and explore, allowing them to learn and think while having fun. Many urban planning museums use interactive touch screens to present complex data and simulations. For example, in the Shanghai Urban Planning Exhibition Hall, viewers can view and operate urban planning models on large interactive screens, and understand various aspects of urban planning through gestures to zoom, rotate and move the models.

#### D. Big data visualization

Urban planning involves a large amount of data, such as population, transportation, environment, etc. Through data visualization technology, these abstract and complex data can be transformed into intuitive and beautiful images to help visitors understand and remember. At the same time, through the display of real-time data, visitors can also feel the vitality and changes of the city. At London's City

Transport Museum, visitors can see a real-time visualization of traffic flow. This visualization collects and analyzes a large amount of traffic data, including public transportation and private vehicles, so that viewers can understand the city's traffic conditions and traffic hot spots.

#### E. Intelligent Navigation

Through positioning and recommendation algorithms, museums can provide personalized tour services for each visitor, such as recommending exhibits based on the visitor's interests and needs, or providing information and tips based on the visitor's location and time. Intelligent tours can not only improve visitor satisfaction, but also improve museum operational efficiency. At the Amsterdam City Planning Museum, visitors can download the museum's smart navigation APP and enter their points of interest (such as architectural design, environmental protection, public transportation, etc.). The APP will recommend a personalized guide based on the visitor's interests and the museum's exhibit information. Customized visiting paths so that visitors can more effectively find the exhibits they are interested in.

The above are some expressions of digital space experience in the narrative of urban planning museums. With the advancement of technology in the future, more new methods and concepts may emerge. Overall, digital spatial experiences provide urban planning museums with a variety of possible narrative and display methods that can better engage audiences and enhance their engagement and learning by taking advantage of modern technology.

4. How does digital space experience enhance the experience effect in the urban planning museum narrative?

The application of digital space experience in the narrative of urban planning museums is a multidisciplinary research field involving computer science, design, psychology, sociology and other disciplines. The following is some theoretical basis through literature analysis on how digital space experience can enhance the experience effect in the narrative of urban planning museums, and is also analyzed with cases:

Interactivity in digital space: Interactivity in digital space can enhance audience participation and immersion. Audiences can interact with the digital space through various devices (such as touch screens, gesture recognition devices, etc.) to actively explore and obtain information instead of just passively accepting it. This participatory experience can enhance the audience's knowledge and understanding, thereby improving their depth of understanding and perceived quality of urban planning stories. The Los Angeles City Planning Museum has multiple interactive touch

screens in the display area. Visitors can learn more about the history, current situation and future planning of Los Angeles through sliding and clicking.

**Visualization capabilities of digital technology:** The visualization capabilities of digital technology can greatly enhance the audience's visual experience. Digital technology can display the urban planning process and future models in a dynamic way, allowing the audience to more intuitively understand the meaning and goals of urban planning. The Copenhagen City Planning Museum in Denmark uses innovative digital methods, including augmented reality (AR) and large-screen multimedia, to introduce Copenhagen's urban planning to the public. Among them, a representative exhibit is a huge city model equipped with augmented reality technology. Visitors can use a dedicated tablet computer to see how the buildings on the city model change over time.

**Personalized experience in digital space:** Digital space can provide a personalized experience for the audience. This is because digital spaces can collect and analyze audience behavioral data and provide personalized information and services based on this. This personalized experience can improve visitor satisfaction and visit effectiveness. **Paris Urban Planning Museum:** This museum uses large screens and interactive tablets to provide a wealth of information about the history and current situation of Paris. This digital display method allows visitors to independently select the information they are interested in to view, which improves the visitor experience. **Extensibility of digital space:** Digital space can provide scalable experiences. For example, through technologies such as virtual reality (VR) and augmented reality (AR), audiences can explore in spaces beyond physical limitations, improving the audience's immersion and understanding. **Know the depth. Hong Kong Planning Exhibition Hall:** There is a large virtual reality device in the museum. Visitors can use this device to visit every corner of Hong Kong in a virtual environment and feel the prosperity and charm of the city. In addition, you can also learn about the history and future development of Hong Kong through virtual reality technology, and feel the changes and development of the city.

The above studies provide us with a theoretical foundation to help us understand how digital spatial experience enhances the experiential effect in urban planning museum narratives. However, further empirical research and innovative designs are needed on how to apply these theories into practice.

## Discussion and conclusions

First of all, multimedia technology uses computers to create animations for the original unchanging text information, which integrates the digital space, exhibits and explanatory information well, and uses large-scale multimedia projection technology to play it in a timely manner to fully mobilize the audience. interest, making the audience more interested in exploring more information about the exhibits, and keeping the audience lingering.

Secondly, through the intervention of multimedia technology in the spatial form, history can be made concretely visible and perceptible, allowing the exhibits to speak for themselves. The exhibits are an introduction, allowing them to tell a legendary historical story. The purpose of this is to retain tourists, allow the audience to communicate with them in an immersive and awakening historical environment, and take the audience through the time tunnel to truly experience the history of urban development. This cannot be replaced by other means of display.

The Urban Planning Museum gradually began to think about how to effectively communicate the results of its research with modern audiences. The purpose of museum display is no longer to pursue true historical display, but to devote itself to content that can be meaningful to the public. Transfer of knowledge. Therefore, the Urban Planning Museum exhibition attempts to connect the researchers' research results, historical collections, exhibition space, audience experience and other factors to plan an exhibition with a purpose, a stand, and a perspective.

In short, this type of exhibition is reflected in the urban planning museum, which specifically reflects the purpose and intention of the museum to display the historical development of the city, the planning museum's stance on historical events, and the views that the curator intentionally wants to convey to the audience.

## References

- BabbieR.Earl. (1990). **Survey Research Methods**. Cengage Learning.
- ConwayPaul. (2010). Preservation in the Age of Google: Digitization, Digital Preservation, and Dilemmas. **Library Quarterly**, p.73-80.
- JenkinsHenry. (2006). **Convergence Culture: Where Old and New Media Collide**. NYU Press.
- McLuhanMarshall. (1964). **Understanding Media: The Extensions of Man**. McGraw-Hill.
- NormanDonald. (1988). **The Psychology of Everyday Things**. Basic Books