Adopting Technology To The Role Of Narrative Design Strategies In Museum In China

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Abstract

Culture has evolved into a fundamental asset from which the themes and narratives necessary for "placemaking" can be depicted. New tourist attractions, cultural routes, and heritage centres are constantly being built as culture is increasingly seen as a tool for advancing society and the economy. Consumers are on the lookout for new experiences because they are growing extremely wary of the same activities at every vacation spot. Given the significance of self-definition and cultural capital in post-modern society, innovative approaches to cultural tourism are worth considering. The purpose of this research is to define the role that narrative elements play in influencing creative products at museums in China. The outcomes from this research can achieve a higher level of integration among the objects in the museum and the delivery of information and impact to visitor experience based in developed narrative design using technology. In this paper, qualitative methods adopted, and the comparative of case studies analysis allows to provide design and ideas to guide the development of future exhibition spaces. The importance of creativity in the developing of new products, as well as strategies for adapting to the challenges of mass production, are both discussed.

Keywords: Cultural Heritage, Technology in Museum, Narrative, Display Design, Experience

INTRODUCTION

As people's needs increase, there are a growing number of strategies for gaining knowledge. Museums have adopted digitalisation as their future development trend in order to integrate to the current social environment. Digital display employs augmented and virtual reality, technological advances in computers, and internet technology to carry out sequential analysis of general showcase elements as well as information knowledge in order to create an immersive experience. Narration forms and transforms events into a chain of events that might encourage the imagination, and with this understanding involves the opportunity to share the untold stories.

The significance of media art in museum space design is becoming more important as digital presentation and narrative tools become more widely used in museum exhibit design. A new design paradigm will emerge as a result of the narrative integration of media and space, which will disrupt conventional approaches to creating and appreciating exhibition spaces. Modern museum space and display design has offered fresh ideas and possibilities. The usefulness and significance of pulling technologies could be emphasised. Museums' conventional space narratives and construction practises have been transformed and the audience's learning mechanism and pattern of behaviour in the museum environment have been transformed. Though, the impression and experiences from the museum audiences is typically respectable, cumulative, and supportive. As viewed and utilised by their present audiences, museums are tools of stability and not seen as revolution.

Museums in China, particularly those located in the large cities, require detailed understanding in order to carry out an in-depth investigation of the relationships between adopting technology, exhibitions and narratives. Audiences to museums want to leave with endorsing their own values and perspectives. In this sense, going to the museum is only one of many possible forms of pleasure, a time to "replenish" individual's viewpoint on the world. There are various classic narratives for more than five thousand years ago worth researching, and folk tales, religious ideologies, and mythologies all have value as inspiration for the creative visual industry. The National Museum of China is a palace filled with artefacts and relics from the past few thousand years of Chinese history. The use technology to navigate the situation efficiently to provide visitors an memorable experience in a virtual environment, visitors were able to strike the Zenghouyi chime-bells, a museum treasure dating back to the Warring State Period (475-221 BC) (Soumik, 2019). In addition, panoramic cameras were set up to capture videos of the chime in real-time, which were subsequently transmitted through the 5G wireless network to smartphones application and displays in the museum (Soumik, 2019).

Tourism and culture both play a significant part in image development, providing a fundamental rationale for landscape aesthetics as well as transforming the environment to better reflect the consumers' needs. The concept of a museum keeps changing as it requires redevelopment. Although the concept of a museum's educational function is well-established, its specific attention, their character, and its purposes are significant arguments among the museum experts. Currently, museums around the world encounter the challenges of attracting and keeping number of visitors, especially younger generations such as children and teenagers. Moreover, the decline number in visitors indicated as a bad impact to economically especially to educational and social implications.

Visitors are able customise their experience and content of the museums based on their interests, and they can interact with the showcases in a more natural way. Adopting technology in the museums can enhance the way of how visitors integrating effect of learning. The aim of this research is to find out (1) how do museums use technology to generate knowledge? and (2) In what ways may the connections between visitors and the technology in the museums be interpreted?

LITERATURE REVIEW

Museum exhibits, especially thematic exhibitions with the timeline sequence, implied "narrative budding" before narrative theories were formally introduced as the associations or techniques of the exhibition. Beijing's Palace Museum is a national museum of cultural and creative product design because to its extensive collection of artefacts and collections. The Palace Museum has massive collection of over 1.8 million artefacts. The Palace Museum has been effective in attracting young visitors because to its contemporary creative collections that assimilate with traditional cultural motifs. Insufficient main cultural prominence, lack of creativity, crucial adaptation, and artistic aesthetics scarcity are all challenges with current creative products that have less relevant to heritage (chen kewei 2020). The current creative products and artefacts unable to satisfying the emotional requirements and sense of cultural belonging of visitors. It is essential for museums to recognise the narrative components that contribute to creative results. The importance of narrative design in museums can be enhance by the use of technology.

Evaluation in a narrative is the assessment of action importance in the context of the story. Similarly, evaluation in a narrative design is an analysis of the process of design such as what insights can be derived from the collected events and attitudes of narratives (Hidayat, 2019). A designer evaluates the design processes using analysis of data, formulation of problems, programming, and implementation of design concept as part of the design process evaluation. The designer has been involved in enhancing the quality of the exhibition space's design without consideration to the museum's budget, but focusing on meeting the needs of the museum's visitors and its aesthetic qualities. It is significant to aware that the visitor wants to enjoy the museum's exhibit without getting bored. In addition, every museum visitor hopes that they can easily comprehend the information or messages delivered by objects or artefacts displayed in the exhibition spaces at the museum.

The setting of story influences the orientation of narratives. Place, time, situations, and personalities are playing significant roles in establishing the setting. Narrative interior design of the museum is resembling to a novel that requires a well-developed plot and a specific atmosphere created through careful consideration of other factors such as data user, managers, site as well as architectural design (Hidayat, 2019). Consequently, augmented reality (AR) used at the British Museum, is one of the most successful real-world applications of interactive digital storytelling. The British museum using a specialised tablet application, the museum tour was transformed into a story puzzle for the children. Narrative design is at the heart of an engaging experience and this is a recognition that has been at the core of many a successful museum over the past decade.

2.1 Structure of visual narrative

Oxford English defines, a narrative is describing events or telling a story (Oxford Learner Dictionaries, 2023). Artists, designers, and psychologists have all investigated how technology can be adopted to facilitate a narrative design experience at the museums. They have created innovative techniques for continually focusing the attention of visitors and for keeping visitors focused throughout transitions.

The concept of visual salience has been the focus of significant investigation by psychologists, and their findings have proven that outliers among visual characteristics such as size, colour, shape, and orientation more commonly catch the attention of the visitors. The attraction's intensity is influenced by many factors, such as the museum settings. For example, a brightly coloured object decreases its significance when it is surrounded by other objects that are also brightly coloured and be most important is influenced by the viewer's task, which can include things like expectations and top-down search (Kouper, 2018). It is significant for the museum to make sense of information in a narrative that is openly delivered to the visitors. The information that a visitor understands without being unstated in the words is called inference. In theories of visual narrative comprehension, bridging inferences, in which visitors "fill in" information left unexplained among "panels"(Cohn & Wittenberg, 2015). In order for a visitor to develop these bridge inferences, it requires two panels to present content that builds from the bottom up. Nonetheless, some panels in the visual style of illustrations have limited semantic content that inference is required to comprehend their meaning, regardless of how they relate to other information. Images from visual narratives communicate information in various forms and in various levels of meaning (Cohn & Wittenberg, 2015).

2.2 Museum Narrative Design with Technology

As a result of the development of technology, the conceptualization and structure of museums has become increasingly "smart", and the addition of technology has impacted how the visitors perceives the exhibition. Interaction represents one of significant essential features of VR. Visitors are continuously connecting with their surroundings and are frequently producing knowledge from their surroundings through interaction (Zeng & Cao, 2021).

Figure 1. China National Arts and Crafts Museum in Beijing in 2023. Source: Global Times (2023) (Yuche & Liuliu, 2023).

The process of narrative design is primarily focusing on the creation of "things" and the "potential" of the storytelling. The whole "thing" environment is connected to the story of the design process for cultural products (Zhou et al., 2020). Product narrative design is the method of design which products are employed as cultural symbols and are constructed by putting on the concepts of narratology. When it comes to the design of cultural and creative items, the narrative plays a more prominent role than usual. Narration has the power to make product displays more engaging, emotive, and compassionate (Zhou et al., 2020). Visitors are more likely to experience a sense of immersion when they make advantage of the interactive elements and sensory stimulation. Visitors have an easier time producing a sense of immersion because to the realistic sensory stimulation and natural real-time input, combined with the assistance of virtual reality technology makes it possible for them to experience the environment more accurately (Zeng & Cao, 2021).

Figure 2. Cultural relics digitised at Palace Museum in China in 2021. Source: China Daily (2023).

The Palace Museum is collaborating with non-profits and sci-tech companies to increase its capabilities in the areas of cultural exhibition, communication, and tourism. Additionally, it enhances its heritage protection capabilities by integrating traditional restoration practises with innovative scientific and technological developments (Xinhua, 2023). Narrative forms may different depending on the subject matter, motivations, and the temperament. The product has become merely intangible object that comprises a variety of stories, characters, settings and behaviour. These fundamental factors provides emotional, cultural, and social aspects to the objects in the museums. In addition to presenting the product in a static manner, it is also illustrates its fundamental functions such as the material, colour and function are presented (Zhou et al., 2020). Initiated in 2014, China's Smart Museum Project does not promote digital museums or virtual museums, but rather a new type of museum comprised of dynamic perceptual systems for and between people and objects using new technologies, such as cloud computing, big data, and artificial intelligence (AI) (Wang et al., 2023).

METHODOLOGY

This research uses the case study method according to (Yin, 2014) using multiple cases studied than a single case. Multiple case studies motivate to examine correlations between cases and theories and prevent unintended associations. The data analysed through case-studies of museum exhibitions and collections in selected place in China. We gathered data

visualisations with narrative elements and then attempted to identify and categorise the design elements that effectively communicate narratives with data. All examples gathered from sources such as online journalism, blogs, visualization books and research papers. Three case studies were used to demonstrate the narrative design strategies in this paper. First questions highlighted, How do museums use technology to generate knowledge? And second question, In what ways may the connections between visitors and the technology in the museums be interpreted? Narrative visualizations in order to deepen understanding of how common design techniques represent rhetorical strategies that make certain interpretations more probable (Hullman & Diakopoulos, 2011).

This method employs visual and narrative structures to guide attention and identifying how technology can enhance the interaction between visitors and museum. Additionally, the aspects of the relationship between visualisation and visitor knowledge as well as the sociocultural setting also will be explored. Three selected case studies of narrative visualization. The observed collection of case studies met all three of the following criteria: (1) the use of AR/VR in the narrative design; (2) Narrative design using AR/VR provides visitors to explore museums independently (3) the relationship between museums and visitor's experiences influencing their knowledge.

RESULTS AND DISCUSSION
4.1 Increasing cultural heritage and museum experiences using technology
Technology represents all the qualities that a museum is expected to have entertainment, informative and fascinating. It is also a significant device tool for narrative, with the ability to create new real world and show various perspectives using a computer mouse. Based on findings, cultural heritage is viewed as a living thing that can be 'incremented' through the creation of new tangible and intangible products. By analysing significant museums around the world, this research examines the usage of digital technology, highlighting its advantages and disadvantages in terms of both techniques and applications.

In addition to traditional audio tours, the museum is also experimenting with the use of web applications and mobile devices to facilitate two-way communication between visitors and the museum. As a result, visitors to museums can access their collections through many mediums, including computer-generated imagery, interactive games played on-site, and the more traditional media that provides information about exhibitions and their behind-the-scenes operations. Moreover, by using social media to distribute media like photos and videos, artists may reach more audiences than ever before. Visitors also can have direct experiences with the artworks and the artists themselves by taking part in the activities and performances and become a significant component part of the entire experience.

4.2 The capacity for cultural traditions to evolve
Recently, museums have shown signs of becoming more dynamic, multi-purpose spaces where a variety of cultural programmes are offered to a wide range of visitors. Since the middle of the twentieth century, museums' responsibilities have expanded beyond simple preservation to include providing a lens through which to see the present. Based on the findings, an individual's emotional response plays a crucial role in the museum experience and are looking into the topic in greater depth. Visitors have such a strong need for reassurance that they may not even detect slight changes from their preferred narrative when experiencing an exhibition. The visitors are more likely to be dissatisfied if the museum narrative suddenly and explicitly contradicts from their own expectations.

Additionally, visitors go to museums because they want experiences that will have a positive impact on them personally. For instance, children who might not have interested or engaged with the museum's artefacts would have been drawn in by the virtual treasure hunt through the learning experience. In addition to learning, children formed positive associations with the museum setting by experiencing it as a fun place to play. The technology can enhance the capacity for cultural traditions to evolve and made more understandable as well as approachable by using digital storytelling tools complicated historical events. This created a standard narrative that allowing viewers to connect with the past on a more personal and meaningful level.

4.3 Contemporary storytelling for museum experiences
The concept of cultural accessibility has advanced in parallel with the growth of digital culture in museums during the past few decades. Therefore, going to a museum through a virtual experience has developed into an option that is more comprehensive than the traditional one. It is necessary for a museum to build a strong brand in order to attract visitors, preserve the history of the institution, and demonstrate the attributes and tales of the artefacts in their collection. Collaboration between professionals working in museums and designers working in sectors as varied as industrial and fashion design, multimedia and graphic design, and communication design with the goal of improving the experience that museum visitors have while they are there.

The inset in this section keeps this same approach, presenting the players in the same sequence with the colours that are linked with them, thereby effectively matching the content. the visitors examine the visualisation is not determined by these components, even though they do create smooth transitions between different parts of the visualisation. When visitors looking at the visualization, the visitor's attention is initially drawn to the largest image, due in part to its size,

central placement, and colour, but also because it is named with a large headline that attract them indicating where to look (Kouper, 2018).

Every museum's collections are priceless treasures of exceptional significance. Some extremely precious treasures will then be permanently displayed in the museum. For the long-term preservation of cultural artifacts, they are primarily stored in museums (Zeng & Cao, 2021). New information and communication technologies, such as augmented reality, are the primary interface between the exhibition and the interaction of its visitors (Pedretti & Iannini, 2020).

4.4 Technology enhance relationship between museums and visitors

People will be able to learn about the development of technology while also experimenting and playing with music, due to evolution of technology. The government could provide equivalent support for the overall strategy of development and transformation that is consistent with the challenges in the growth of cultural and creative industries, such as money, policy, and talent support. This provides the visitors at the museum an immersive experience, giving them the impression that they are an integral part of the display. Binaural audio enables visitors to 'hear' in three dimensions. The local development in creative and cultural sectors is currently in the early stages of exploration and has not really begun, whereas the commercialization of others has already taken place into commercial activities.

Traditionally, usually this binaural audio experience includes actors portraying the roles of kings, ambassadors, architects, travel writers, and tourists, rather than the usual expert commentary about specific objects. It is an approach that helps ensure the longevity of physical artefacts by making a digital record of them at a certain point in time. However, it also satisfies the need for visitors to touch and play with objects. While Augmented and Virtual Reality (AR/VR) technology has already revolutionised museum exhibits, it is only now being used to create full virtual museums with many displays (Museum Heritage, 2022). It represents a single of what is anticipated to be an extensive list of virtual museums on the platform, allowing the opportunity to a fresh generation of museum curator, new chances to develop experiences in a world with no budget, and connecting people with other online users who may be located halfway around the world (Museum Heritage, 2022). The perspective of visitor is entirely within their control in AR narrative visualisation. This sort of intervention is always guaranteed in AR since the visitor operates the device and determines the perspective of the experience while moving (Marques et al., 2022).

4.5 Enhance number of visitors to museum

The increasing popularity of technology in museums has brought in a greater variety of options for interpreting topics, as well as more methods for visitors to participate in exhibits. Digital technology enables visitors to engage deeper, promotes interaction between people in the museum as well as transforming the experience of visitors from being an observer to being somebody who participates. This transition provides museum visitors with the opportunity to explore culture and heritage through a medium that was previously only associated with contemporary culture and modernity. Interactivity within the museum keeps visitors in the museum for longer. Museums are designed to encourage participation, they are spaces where you do things, and provide multiple ways to interact, experience, contribute, and explore.

Adopting modern technologies such as digital displays, holograms, and projection techniques, the museum is able to convey the story and bring the inventor's inventions to life. Moreover, participating in an app-led urban treasure hunt also provides some visitors with an interactive digital experience before they enter the museum. High-tech, next-level fan experience is provided by technological special effects such as a customised LED ribbon as visitors integrate the real-life walls and an emotional musical soundtrack over the museum speakers.

CONCLUSION AND FUTURE RESEARCH

There are many opportunities for museums to utilise technology, including Augmented Reality (AR), Virtual Reality (VR), and others. However, the application of AR is the simplest way to utilise to provide explanations of objects or artefacts, and visitors that employ AR will receive more information from their experiences at the museums. Museums might utilise it to showcase 3D digital representations of artists next to their works, with the artists themselves providing a narration. Through the use of interactive media as well as a multisensory environment, visitors receive the chance to actively interpret and participate in the exhibition's reading process. The visitors create their own interpretations between the information presented with their own prior experiences and knowledge. Technology allows for the implementation of a third dimension into exhibits, which help bringing objects or scenes to life. The AR experience at the museum allows visitors access through their smartphones, and explore beyond the museum's walls. The family-friendly exhibit employs technology to facilitate learning. Participation by the visitor in the museums makes the experience unique and have massive impact to their personal lives.

The use of technology in the narrative design of a museum, such as AR or VR, is capable of showing cultural treasures, however it can also have many interactive functions, that will enhance the pleasure and symbolises the ability of virtual reality technology. The visitors are given the opportunity to experience narrative space, and they slowly understand the space and produce their own meaning based on their individual experiences. When the museum guests are actively involved in the making of unique and memorable meaning, they will remember the meaning of the object and artefacts that is on display in the museum exhibition. Further research needed to investigate the behaviour and attitude of museum

visitors as they engage with the scenes that are seen around the museum. An empirical study can be conducted on the museum visitors in order to determine the factors influencing their knowledge and attitude towards the museum's implementation of augmented reality, which allows visitors to investigate and interact with exhibits in previously unimaginable ways. In the future, it is expected that museums outside of China will utilise these technologies to better preserve their artefacts and provide enhanced user experiences.

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