Visitors' Interaction in an Experiential Designed Environment: A Case Study of a Multimedia Gallery

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ABSTRACT

Currently, there has been a shift in the built environment in creating engaging exhibition spaces such as museums and galleries. This is a challenge nowadays as the creation of digital exhibition spaces depend largely on technological content and devices. Issues arise where visitors may not perceive the intended environment. It is seen that this sense of change needs further study on visitors' perception and behaviour as users of the space. Experiential design deals with human interaction with the built environment. The objective of this study is to observe how visitors' behaviour and interaction are influenced by the experiential design concept. A case study is conducted at a local gallery with selected visitor profile of young adults and adults with art and design background. The investigation is done based on the case study guideline, mapping out setting, and timing and tracking observation method to gauge visitors' perception and action in a multimedia gallery. Eighty visitors were observed throughout the three-day exhibition from 9:00 a.m. to 5:00 p.m. Data collected answers the research question: how does the experiential design concept influence visitors' behaviour and interaction in a multimedia gallery? The findings are beneficial to understand gallery visitors' needs in achieving fulfilling interactive and engaging experience. From the observation done, it is identified that multimedia galleries incorporated with experiential design elements build meaningful experiences through the five senses, promotes a sense of place and well-being as well as the allowance for visitors to be more confident in approaching tools and devices that are unfamiliar to them. Curators, designers and artists will gain from this research in designing better interactive environment. The research limitation is the visitor age group which is the young adults and adults' age group, as well as the single case study done.

Keywords: *multimedia gallery, built environment, visitors' experience, experiential design, interactivity and engagement*

INTRODUCTION

This research focuses on effects of changes in exhibition spaces such as museums and galleries as technological advancement transcends globally in all areas inclusive of the built environment. These changes motivate spaces to transform into interactive audience-centred, where displays and installations focus more on the relationship between visitors, content, and context. This creates a basis for this study in the apt introduction of experiential design concept that addresses the connection between visitors and space. Engagement of multimedia spaces stresses on interaction and emotions in order to create a connection with its users. Therefore, in order for multimedia galleries to be most engaging, visitors should acquire meaningful experiences via the five senses, the space projects a good sense of place and flexibility as well as an environment that stimulates visitors to enjoy more with confidence in interacting with new media content, tools, and technology. The issue that comes with designing interactive multimedia galleries is that more often than not, visitors are presented with static and passive exhibition content and mode of display. Instead of experiencing and interacting, these displays

refrain visitors from achieving the connectivity envisioned, thus leaving them feeling unsatisfied and unmoved. Therefore, by observing visitors' experience and movement in a multimedia gallery sheds some insights into how to design better spatial layouts for better interaction and engagement.

The awareness of changes taking place across the globe in the era of multimedia and the internet has progressively transformed exhibition spaces such as museums and galleries. As stated by Varitlova (2019), the objective of these spaces has also changed from being collectors and keepers of knowledge for the arts and craft to creative digital interpretations and interactive education spaces. The technological changes lead to gallery advancements in areas of the build environment, production, and process of the digital media content, as well as application of high-tech tools and devices. These adaptations result in exhibition spaces becoming highly visitor-inclined and audience-centred, thus creating spaces that cater more for exhibition of expressions (Recupero et al. 2019).

Museums and galleries as we know are basically 19th century institutions of aesthetics and values, bringing with them static modes, mostly without current technologies in display content and planning ideas. Giannini and Bowen (2018) stressed that current methods are required in gallery presentations in order to maximise deliverance of meaningful experiences. This is in accordance with the 21st century paradigm shift of exhibition spaces focusing on interpretations and visitor connections. The inclusion of more interactive exhibits and installations require the readiness of the build environment to adapt to changes (Giannini and Bowen 2018).

The impact of technological advancement not only transcends how our buildings look and operate, but it also changes the art scene and related fields. Two-dimensional and three-dimensional artworks have morphed into new art forms such as net art, installation art, interactive art, and virtual reality projects. They are attracting rising numbers of interest and participation. While these activities point to positive and interesting creative outputs, intended visitors' action and perception in multimedia galleries are mismatched and differ from expectations. Without addressing visitors' emotions and interactions, the multimedia gallery intended space design will not be thoroughly successful as indicated by Dika (2020), stating that exhibition spaces need to be redesigned as the 200-year-old concept is outdated in collecting and displaying digital art.

To address this issue, experiential design concept looks at the interaction between inhabitants, the space, and the emotional connection. It stresses on human interaction with the built environment and currently is deemed crucial to be applied in multimedia galleries. Engagement and emotional connection are the foundation of experiential design concept. If a space does not allow its occupants to feel connected, it's not experiential as stated by Demaria (n.d.). Experiential design integrates multiple disciplines to create memorable interaction. Thus, creating engagement in public spaces with conventional methods is increasingly more challenging in "the age of experience" (StudioVN 2019).

In most exhibition spaces nowadays, visitors are limited to visual and passive connection with art pieces. This is evident as the art pieces are exhibited in protected environments, creating a barrier and a restrained visitor experience (Harada et al. 2018). This poses as an issue in designing multimedia galleries where they are fundamentally based on interaction and engagement between visitors and content, tools, and environment. These insights lead to the increasing number of exhibition spaces exploring more means to engage better with their visitors.

Due to the issues highlighted, this study is conducted based on the research question; how does the experiential design concept influence visitors' behaviour and interaction in a multimedia gallery? Therefore, there is a need to conduct a case study that observes how visitors' behaviour and interaction in a multimedia gallery are influenced by the experiential design concept. The findings in this study will be able to identify visitors' behaviour in a multimedia gallery and give suggestions based on spatial layout designs, content, and activities, as well as tools and technology. The inclusion of experiential design elements is envisioned to heighten the level of interaction and engagement in multimedia galleries.

LITERATURE REVIEW

Multimedia Galleries

Multimedia galleries are physical exhibition spaces that cater to analogue and digital content via various display tools and technology. As museums and galleries are incorporating more of technology in their presentation tools and content, more interactivity takes place among visitors, physical spaces (context), content and activities, tools, and devices.

Emerging technology is now transforming exhibition spaces not only in the pervasive environment but also in everyday life (Giannini and Bowen 2016; 2017; 2018). The digital culture has also changed beliefs of visitors and nature of exhibitions (Giannini and Bowen, 2018). Based on the changes mentioned above, this research focuses on multimedia galleries and how experiencing digital media in physical space requires appropriate changes to the establishment.

Multimedia galleries have emerged and gathered interest and recognition in the past decade. While this development is promising in most of the digital exhibition spaces, there remain issues and challenges that need to be addressed (Li, Liew, and Su 2012). This progression continues to impact multimedia galleries in all related aspects, especially in the area of built environment that has always been acknowledged to be one of the important components of visitors' experience (Falk and Dierking 2000; Forrest et al. 2015). Gathering information on visitors' perception and reaction to these spaces will assist us further in designing multimedia galleries.

Physical gallery spaces that do not adapt to digital changes are slowly becoming remote, distanced, and disconnected. It is found out that visitors are finding it more difficult to connect and communicate with the space and content, as well as with other visitors. This leads to the concept of multimedia galleries complementing physical spaces and not meant to replace traditional spaces (Li, Liew, and Su 2012).

Inadequate studies done on visitors' experience in multimedia galleries, result in issues of interaction and engagement in dealing with digital artworks. Conventional mode of design planning, choice of content, tools, and technology do not really accommodate digital display and installations in terms of interaction as the terminology "interactive" in digital content require participation of visitors. As stated by Giannini and Bowen (2018), it is important to understand areas of improvement to meet visitors' expectations. Multimedia galleries of the 21st century are now challenged for unprecedented and innovative ways.

Technologies in Multimedia Galleries

A variety of media are used as communication tool in exhibition spaces. They form an important part in visitors' communication via the various medium and method used (Matthews and Buxton 2018). This is further enhanced by (Parker and Saker 2020; Duguleană et al. 2019; Geismar 2018) that the spatial layout is seeing insertion of emerging technologies not only as tools and devices, but also in the production of the content and the content itself.

Shannon and Turing are pioneers of information theory; algorithms, machine-learning, and artificial intelligence (Giannini and Bowen 2017). These new creations shape our digital culture at current times and in the future, where social and culture changes are facing digital revolution focusing on communities and individuals. Physical space and interfaces are also seen blending in more with artificial life and Internet of Things (IoT) (Giannini and Bowen 2018).

In installation art which refers to site-specific works that deal with actual space, be it interior or exterior, includes gallery-based installations, digital based, electronic based, and other installations are becoming more interactive as well (iCreative 2017). Progressive improvement in technology enables new exploration where media used are bolder, hybrid, sensorial, and most importantly considers visitors' behaviour when interacting with installation (iCreative 2017). Video technology combined with installation art makes use of surrounding environment in impacting audiences started in the 1970s with video art and the increased accessibility and visibility in vicinities such as galleries and museums to on-site installations inclusive of projections and performances (iCreative 2017). Sound installation, a time-based artwork which includes sound and time element interacts with the surrounding space which is important to gauge perception of visitors towards development of sound (iCreative 2017).

With all of these technologies, visitors are led into creating their own experience once they understand, explore, and connect. Visitors are able to make their presence felt and obtain impressions of it. They help to build a deeper connection between the visitor and the museum than was ever possible before (Barton and Meszaros 2021). In instances of virtual reality, immersion and presence are two terms that are frequently used to describe the virtual reality experience (Parker and Saker 2020; Glover and Linowes 2019).

Visitors' Experience

Museum Experience Model by Falk and Dierking (Reinwardt Academie 2013) illustrated that exhibition spaces provide visitors an insight from tangible entities, social environment, and individual perceptions (Figure 1). In the model, the "perception of museum affordance" relates to the "identity related visit motivations" which

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consists of personal context, physical context, and socio-cultural context. All of these components form the basis of study in order to understand better the reason of visits and what motivates visitors to achieve a satisfying experience. As seen from the model, the built environment (space) can offer suggestions and even dictate behaviour (perception and action). It can be designed and implemented to produce different intended behaviours (Motalebi 2001; Fallah and Fallah 2015). Behavioural and aesthetic selections of individuals would be either limited or developed, based on the environment layout (Lang 2011; Fallah and Fallah 2015).
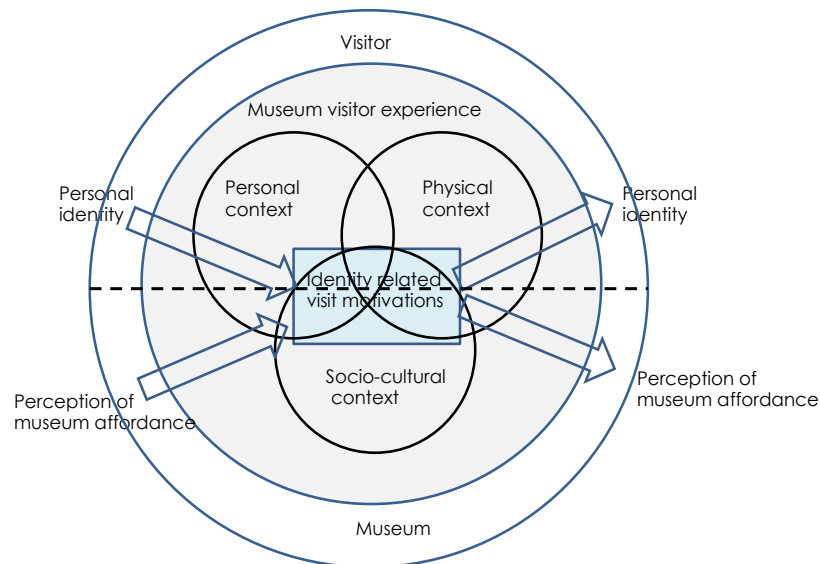

Figure 1   Museum Experience Model.
Source: Reinwardt Academie (2013).

Another component in the model which is personal context deals with heightening of visitors' experience and create new interests and audiences. These further stresses that exhibition spaces are currently aimed and designed to have more accessibility in sharing experience and knowledge (Levent and Pascual-Leone 2014; Harada et al. 2018).

González-Rodríguez, Domínguez-Quintero, and Paddison (2020) studied on the relationships of experience, value, and emotions fulfilment. These components demonstrate the importance of experience quality and visitors' satisfaction (González-Rodríguez, Domínguez-Quintero, and Paddison 2020). Currently, visitors' experience has been given prominence with the enhancement in applications of information technologies (American Association of Museums 2012; Vesci et al. 2021). Focus is now definitely shifting from content display to the users of space which are the visitors (Kotler and Kotler, 2000; Vesci et al. 2021). Exhibition spaces have now elevated from the importance of gallery settings to a more satisfying visitors' experiences (McIntosh 1999; Chan 2009; Vesci et al. 2021). In order to attract and instil interests in new visitors to multimedia gallery spaces, the characteristics and behaviours of visitors need to be analysed (Del Chiappa, Andreu, and Gallarza 2014; Vesci et al. 2021).

Experiential Design Concept

In the 2017 Experience Framework, Gensler stated that visitors' experience is the objective of a designed physical entity as well as interaction, intention, and expectation (Gensler 2017).
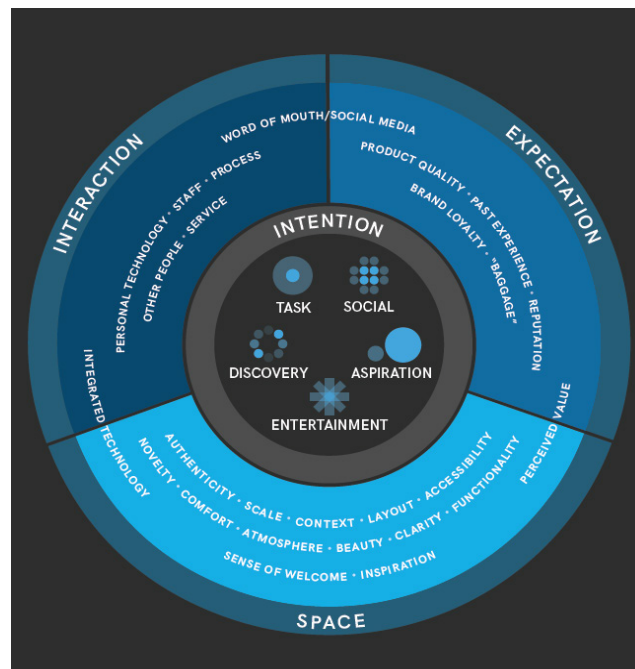
Figure 2 Experience Framework.
Source: Gensler (2017).

The five modes of experience are:

1. Task Mode: focused visitors.
   Design implications: to be in navigation control.

2. Social Mode: interacting with others.
   Design implications: space with community interaction in mind.

3. Discovery Mode: exploratory mood.
   Design Implications: inspiring spaces.

4. Entertainment Mode: escape mood.
   Design implications: spaces designed for memorable impact.

5. Aspirations Mode: expansion intention.
   Design implications: connection and growth.

Based on the key findings from Gensler (2017), flexibility in navigation, affordance in interacting with visitor community, ability to explore freely, impactful space designs, and aspiring connectivity intention are components that are used in the design of the multimedia gallery.

Thus, it is seen that the nature of exhibitions has transformed throughout the years as an impact of technological advancements. Experiencing digital media in physical spaces requires a framework to incorporate experiential experiences suitable in interacting new engaging content and technology. With this, comes the issue pertaining to visitors' experience and spatial layout designs that need to be addressed as seen in previous researches. Several frameworks concerning visitors' experience, technologies in multimedia galleries, and the experiential design concept have been designed and studied in respective areas. It is also discovered that spaces that do not respond to these advancements are slowly becoming irrelevant, not conducive, and disconnected with visitors. From previous studies, it is also seen that the built environment can dictate behaviour (perception and action) and be designed to influence intended behaviours. By heightening visitors' experience via spatial layout and inclusion of appropriate content, tools, and technology, the gap of designing exhibition spaces can be minimised. This research puts together further a methodology in observing how visitors' interactions and behaviours are influenced in a multimedia gallery.

METHODOLOGY

I. Case Study Guideline

The research method is based on an observational case study involving a thorough descriptive analysis in obtaining an in-depth appreciation of the phenomenon of interest (Crowe et al. 2011). In Table 1, the guideline consists of context, objective, study design, the case, data collection, analysis, and key findings.

Table 1 Case study guideline (Crowe et al. 2011).

E-Gallery Faculty of Creative Multimedia	
Context	Experiential design in multimedia galleries.
Objective	To observe how visitors' behaviour and interaction are influenced by the experiential design concept.
Study Design	Single, intrinsic case study.
The Case	How does the experiential design concept influence visitors' behaviour and interaction in a multimedia gallery?
Data Collection	Qualitative moderate-participant observation study at a local gallery.
Analysis	Timing and tracking observation records and mapping out setting.
Key Findings	Visitors' behaviour and interaction in a multimedia gallery environment.

As stated above, researchers need to identify a suitable context where the design layout is designed based on experiential design concept. The objective of observing how visitors' behaviour and interaction are influenced by the experiential design concept leads to identification of visitors' activities and behaviours in the different zones. This observation study is a single study focusing on the open layout plan indicated in the multimedia gallery. A qualitative moderate-participant observation study is conducted where observational activities are done by a team of observers to ensure rigour and trustworthiness (Guba 1981). Data is then analysed from the timing and tracking observation records and mapping out setting. From the data analysis, key findings of visitors' behaviour and interaction are obtained and discussed further in the findings section.

II. Mapping Out Setting

In this mapping out setting (Schensul, Schensul, and LeCompte 1999), a multimedia gallery is designed to instil components of experiential design concept such as flexibility in navigation, affordance in interacting with visitor community, ability to explore freely, impactful space designs, and aspiring connectivity intention (Gensler 2017).

The mapping out setting consists of a detailed explanation on the count of attendees, a physical map of the setting and description of the physical surroundings, a portrayal of where participants are positioned over time, images with description, and a description of the activities being observed.

a. A count of attendees

In Table 2, the team of observers will indicate the gender and age group of the visitors. The group of visitors all have art and design background, and they consist of young adults and adults age group.

Table 2 A count of attendees.

No.			Total
1	Gender	Male = 23	80
		Female = 57	
2	Age	Young adults = 53	80
		Adults = 27	

b. A physical map of the setting and description of the physical surroundings
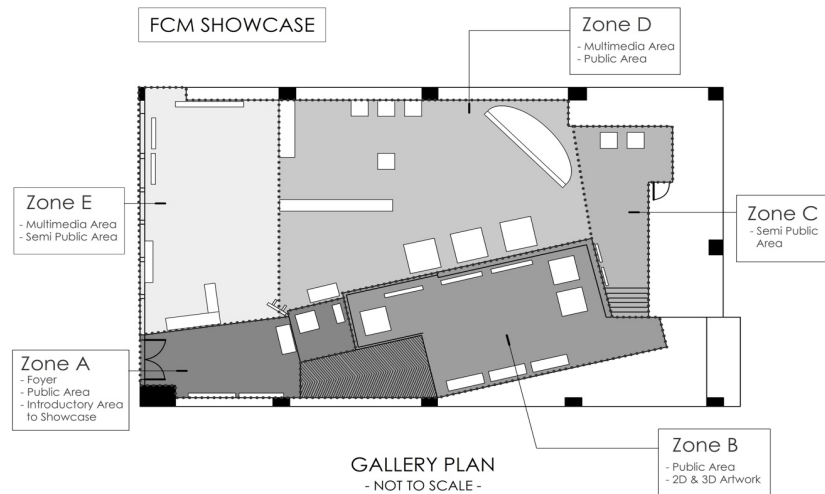
Figure 3   Layout plan of e-Gallery.
Source: Author's collection.

In this layout plan, it is seen that the space is divided into several zones to indicate space usage, such as:

Zone A: Foyer (public area)
Zone B: Display area for 2D and 3D artworks
Zone C: Resting area (semi-public area)
Zone D: Multimedia area (open, public area)
Zone E: Multimedia area (semi-public area, a smaller intimate exhibition space)

Based on the components of experiential design (Gensler 2017), these zones advocate flexibility in navigation, affordance in interacting with visitor community, ability to explore freely, impactful space designs, and aspiring connectivity intention. They are designed to seamless lead from zone to zone, promote flexibility in choosing their routes, open-plan to enhance communication and interaction, and provide experiential digital inclusions.

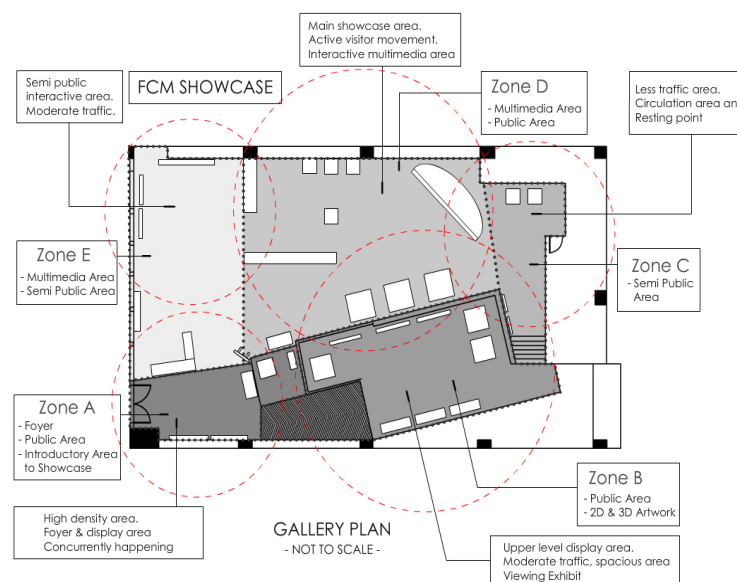*c. A portrayal of where participants are positioned over time*

Figure 4   Visitors' movement and area of interest.
Source: Author's collection.

d. Images with description

Figure 5 Zone B, view from ramp towards upper deck area.
Source: Photographed by author.

Figure 6 Zone D, main exhibition area, multimedia content.
Source: Photographed by author.

e. A description of the activities being observed

Table 3 A description of the zones and activities.

E-Gallery Faculty of Creative Multimedia	
Zone A: Welcoming area	Public area. Foyer: Welcoming area.
Zone B: Upper-level display area	Public area: 2D and 3D display area. Video screening area.
Zone C: Resting point	Semi-public area: Partially hidden for resting points; take a break area.
Zone D: Main multimedia showcase area	Public area: Main, active public open space for various multimedia interactive activities. A happening space.
Zone E: Installation area	Semi-public area: An intimate cocoon space for interactive installation artworks.

III. Tracking and Timing

This method is based on Serrell (1998), a standardised approach to identify trends and patterns in visitors' behaviour which includes:

a. Stopping behaviours

This group of variables is used to describe where people went, where they stopped, and how they spent their time. Visitors were observed based on their activities/movement in each zone as summarised in Table 4.

b. Other behaviours

These often describe what people did, above and beyond the stops (Table 5).

c. Observable demographic variables

This part of observation is on the category of visitors from the age group criteria (Table 6).

d. Situational variables

This section includes any situational variables that may affect visitor behaviour (Table 7).

Table 4   Stopping behaviours.

Space Zoning	Behaviour Pattern (leisure, brisk, viewing with discussion, walk past through, and re-visit)
Zone A: Welcoming area	**Description of space:** Public area. Foyer: Welcoming area. **Observation:** It is observed that visitors that arrive at the foyer area will look around to choose the route that they will follow. They look for more information before briskly walk towards their chosen path.
Zone B: Upper-level display area	**Description of space:** Public area: 2D and 3D display area. Video screening area. **Observation:** Visitors go up the ramp towards this display section. They walk leisurely, as the 2D and 3D exhibits are accompanied with a lot of information. They also interact with the exhibitors, spending time and viewing with discussion. They are free to touch and interact with the display items. They watch the video screening while discussing and while leisurely walking. As there are no seats available, the screening area allows freedom to mingle around.
Zone C: Resting point	**Description of space:** Semi public area: Partially hidden for resting points; take a break area. **Observations:** This is a small area meant for resting points and taking a break. Visitors are seen talking and discussing about the exhibition while standing leisurely looking around. They seem at ease and because there are no exhibits here, visitors tend to do other things such as checking their phones, taking pictures, discussing, and looking around. The dimmed ambience and enclosed area gives privacy for visitors. Their mood slows down in this area. Some also bypass this area.
Zone D: Main multimedia showcase area	**Description of space**: Public area: main, active public open space for various multimedia interactive activities. A happening space. **Observations:** Visitors find themselves in an open area that is filled with digital showcases and interactive devices. They are also seen to be interacting with other visitors when they share devices, discussing with themselves as well as with the exhibitors. They also re-visit the showcase items as they are arranged in an open-plan layout, and thus visitors roam freely and re-visit. A much hyped-up area where interaction is active, with multimedia devices displaying multiple light and sound.
Zone E: Installation area	**Description of space:** Semi public area: An intimate cocoon space for interactive installation artworks. **Observations:** Visitors are seen to be interacting with the digital showcase in a more intimate manner as the exhibits are located at a semi-enclosed area that are dimly lighted. As the space is also smaller with fewer exhibits, visitors are seen to leisurely interact and spend more time here compared to the fast paced of zone D.

Table 5   Other behaviours.

E-Gallery Faculty of Creative Multimedia	
Other Behaviours	**Description**
Visitor path	Visitors followed the route of the gallery exhibits through zones A, B, C, D and E. Upon reaching zone B, some visitors do not follow the route and might return to the entrance without going to zones C, D and E, or spend more time at the breathing space and re-track back to the entrance. Some discovered the multimedia area at zone D and did not complete their journey to zone E. Some came back after a break to complete the whole route while some, on their way to exit, detour into other zones that they have missed out. **Observation:** The intended path and sectioned area are just guidelines. Visitors tend to follow their own choice of route based on type of content and activities, familiarity with tools and technology as well as time factor, visitor-partner factor and other factors.

Table 5 (*Continued*)

E-Gallery Faculty of Creative Multimedia	
Other Behaviours	**Description**
Social interaction in group	Visitors in a group were seen mingling and interacting with each other, as well as with the content and devices. **Observation:** Being in a group, they seem to have more confidence to browse, interact and ask for assistance when needed to.
Social interaction with others	Visitors who are single visitor type navigate the exhibition space at their own pace. **Observation:** At the 2D and 3D area, they are seen walking at leisure at each content display. At the interactive display section they are seen at times interacting with other visitors, especially when there is a sharing in device engagement.
Social interactions with docents	**Observation:** Occasionally when the need arise especially at the interactive content area.
Take breaks	Visitors take a break at zone C and outside of the gallery. **Observation:** They are seen resuming their visit after the break.

Table 6   Observable demographic variables.

		Student	Staff		
No.	Children	Young Adults	Adults	Elderly	Total
1	–	53	27	–	80

Table 7   Situational variables.

Variables	Description
Levels of crowding	It is seen that when the level of crowd is high, certain exhibition area which needs interaction with visitors will not be able to cater to all visitors at the same time. This hinders visitors from enjoying the experience. Less crowd/moderate crowd provides a comfortable gallery atmosphere. No crowd sometimes affect visitors where they find themselves timid, especially at the digital content area.
Special programmes	Visitors on special programmes focus on their visit intention, and thus there is an objective to follow. They usually seek to experience selected content only. Visitors on own free visit have ample time to wander more and interact more, or take breaks and cut short visits.
Month or season	Types of visitors and behaviour differ at different times of the month or season.
Day of week	There is a difference between weekday and weekend visits. Weekday visits are more focused to formal visits, especially if done under a specialised event.
Time of day	Time of the day also sees a difference in visitors' types and behaviours. Morning visits usually are arranged to be of official visits while afternoon and evening visits are more of leisure visits.

IV. Rigour and Trustworthiness

To ensure rigour and trustworthiness as stated by Guba (1981), a criteria checklist by Bowen (2005) is implemented in this observation study.

Table 8   Criteria checklist.

Criteria items	Action taken
i. Respondent validation or member checking	More than one observer during field work. On-site investigation involves one student assistant and two researchers throughout the exhibition session.
ii. Peer viewing debriefing	Research team discussion session after the field work research to discuss and compare notes and data collected.
iii. Thick description	A term used by the cultural anthropologist Clifford Geertz as a method in displaying cultural scenario and comprehension to visitors' behaviour. Illustrated in the data collection above.
iv. Audit trail	To confirm on the establishment of the findings qualitatively. A detailed description as seen in Table 1 to Table 7.

To conclude, the implementation of observational case study and a thorough descriptive analysis is to obtain an in-depth investigation of visitors' behaviour in a specified site. Context, objective, study design, case, data collection, analysis, and key findings assist in the methodology carried out. The site is designed with components of experiential design such as flexibility in navigation, interactivity affordances, and impactful designs that enhances engagement. In tracking and timing, visitors' behaviours are gauged and tabulated to identify patterns in their navigational activities and to identify components such as building meaningful experiences, bringing up levels of engagements and immersion, promoting a good sense of place and emotional connection as the fundamental factor of experiential design concept.

FINDINGS

Based on the research method which follows the case study guideline, tracking and timing, and mapping out setting criteria, findings are derived from observational data collected. The findings describe how visitors' behaviour in a multimedia gallery is influenced by the experiential design environment. Areas that are involved in a multimedia gallery design include spatial layout, content and activities, tools and technology, visitors' experience, and experiential design concept.

Experiential Design Concept Builds Meaningful Experiences

It is seen from the tracking and timing findings in Table 4: Stopping behaviours, visitors look around upon arriving at the foyer area near the entrance (zone A). They are seen to be looking for information before they proceed with their route. The location and function of space (entrance), with some interactive exhibits displayed led visitors to try them out before proceeding up to the ramp (zone B) or continued to zone D or zone E. This is in accordance with the audience-centred focus of current exhibition spaces where museums and galleries are more prone to explore visitor's perspectives rather than the pre-determined path concept of traditional conception (Hooper-Greenhill 2000; Simon 2010; Recupero et al. 2019). Therefore, experiential design concept builds meaningful experiences as the freedom to choose their journey belongs to the visitors themselves.

Suggestions: To heighten visitors' experience, multimedia gallery pathway routes can be designed to allow alternatives and freedom of choice for visitors to create their own journey while still following the envisioned storyline from the curators and artists.

Experiential Design Concept Brings Up the Level of Engagement and Immersion

At zone D, the multimedia showcase area, it is observed that visitors are seen interacting with content and devices, as well as with other visitors. The open-plan layout concept encourages visitors in this area to freely visit whichever digital and interactive exhibits that attract their attention. This active interaction and participation creates a space that allows creativity in determining content, selection of path to follow and choice of tools to use. The observation relates to iCreative (2017) where they mention media are now multimedia with sensors and react to visitors' behaviour when interacting with immersive media. As a result, experiential design concept that stresses on all five sensors brings up the level of engagement and immersion to the extent that it influences visitors' behaviours.

Suggestions: Multimedia galleries can design the spatial layouts to include tools and technology that can be enjoyed by visitors by understanding visitors' movement when they interact and participate with the content. Ample space allows comfortable environment while having choices in selecting preferred content and tools sets a conducive and satisfactory interactive exhibition space.

Experiential Design Concept Promotes a Sense of Place and Well-being

Referring to observation in the visitor path's row in Table 5, visitors are observed to understand that there are routes to follow in the gallery. Some are seen to follow the serial path, some re-track their journey to re-visit items that they have missed, while some skipped some items or sections altogether. These behavioural patterns of choosing and selecting preferred exhibits allows visitors to plan their own experience based on the type of content and activities, familiarity with tools and technology as well as time factor, visitor-partner factor, and other factors. Therefore, experiential design concept promotes a sense of place and well-being, especially when assisted by the use of tools and technology in enhancing interaction and engagement. This is supported by

Barton and Meszaros (2021) where they stated that by incorporating technology, visitors are able to understand and create their own experience.

Suggestions: Planning of the placement of content and activities with respective tools and technology must take into consideration visitors' experience. Allocation for visitors includes addressing their familiarity to try out new devices in a comfortable environment at their own pace.

Engagements and Emotional Connection Forms the Basis of Experiential Design Concept

During the observation of social interaction in group and others (Table 5), differences of visitors' behaviour between single and group visitors is evident. Exploring in groups allows visitors to feel more confident in experiencing tools and technology that is unfamiliar, as well as to approach content and activities that need more understanding. Having peers allows the process of sharing, discussion, and interacting more openly. As for single type visitors, the leisure pace of individuals allows them to observe and experience their choice of content and activities. At times, they were observed to interact with other visitors, especially when interaction and sharing of device is needed. Therefore, both sets of behaviour patterns are perceived as a result of engagements and emotional connection, which forms the basis of experiential design concept (Demaria n.d.).

Suggestions: Catering to single and group visitors need different treatment of spatial layout and design of tools and technology. The different sets of requirements must consider their engagement and interaction among content, tools, and other visitors as well. Providing ample space, well-designed content, and tools provides a sense of well-being that heightens visitors' emotional connection with the exhibition space.

CONCLUSION

Over the past half-century, museums have evolved from being predominantly cultural repositories to playing an important social role as venues for educational leisure experiences. Accompanying this development has been an increased emphasis on optimising visitor experience (Falk and Dierking 2000; Forrest et al. 2015). Therefore, from the findings, it is seen that experiential design environment encourages visitors to explore, interact, and engage with content and activities, tools, and technology as well as with other visitors as visitors' experience is the key element in order to build meaningful gallery experience.

The issue of designing multimedia galleries based on interaction and engagement prompts a study to be done by investigating how visitors are influenced by the experiential design concept in a multimedia gallery. Observations done bring to the suggestion that interactive multimedia galleries which consist of spatial layout requirements, content, and activities as well as tools and technology requirement benefit from the experiential design elements incorporated to bring the level of interaction, interactivity, and engagement to a higher level. Due to the limitation of the study being a single case study, more case studies can be done in the future to observe behaviours and experiences in multimedia galleries. The findings which are experiential design concept builds meaningful experiences, promotes a sense of place and wellbeing, engagements, and emotional connection forms the basis of experiential design concept. Experiential design concept that brings up the level of engagement and immersion, are studied based on the components of a multimedia gallery in this study such as spatial layout, content and activities, tools and technology, as well as visitors' interaction. They are also based on a certain group profile such as young adults and adults only in a focused environment of a multimedia gallery.

From the findings; by observing and analysing visitors' behaviour, movement, and attitudes; insights can be provided to curators, designers, architects, artists, and others. A new understanding in designing experiential designed spaces is envisioned to attract more visitors in enjoying the multimedia environment. This is supported by the notion that while the traditional conception focused on the exposition and tended to direct visitors' behaviour throughout pre-determined paths, exhibition spaces today are prone to explore visitors' perspective in order to collaboratively build meaningful experiences (Hooper-Greenhill 2000; Simon 2010; Recupero et al. 2019).

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