Humaniora, 10(2), July 2019, 127-133
DOI: 10.21512/humaniora.v10i2.5199

P-ISSN: 2087-1236
E-ISSN: 2476-9061

SUBJECT-OBJECT ENGAGEMENT STUDY IN EXHIBITION SPACES: A COMPARISON BETWEEN TAMAN MINI INDONESIA INDAH'S PAVILION AND INDONESIA KAYA GALLERY

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Received: 21st May 2019/ **Revised:** 10th June 2019/ **Accepted:** 25th June 2019

How to Cite: Wulandari, A. A. A., Ruki, U. A., & Fajarwati, A. A. S. (2019). Subject-object engagement study in exhibition spaces: A comparison between Taman Mini Indonesia Indah's pavilion and Indonesia Kaya Gallery. *Humaniora, 10*(2), 127-133. https://doi.org/10.21512/humaniora.v10i2.5199

ABSTRACT

The research aimed to analyze the engagement between local visitor with objects in a conventional exhibition space and a technology-based exhibition space. The method of this research was a qualitative method with descriptive analysis. The data collection was done in two stages. The first stage was collecting secondary data or desk research. The next stage was the primary data collection using both qualitative and quantitative methods. Data were collected in two exhibition spaces; Riau Islands Province pavilion in Taman Mini Indonesia Indah as conventional exhibition space, and Indonesia Kaya Gallery that was located in the Grand Indonesia shopping mall as a technology-based exhibition space. The research shows visitors' engagement emerges not only because of the objects itself but also of its surroundings; the path and signage, the lighting design, how the objects displayed and labeled that will create certain engagement with its audience. Technology also gives great help to create subject-object engagement. However, to appreciate and really engaged with the objects, the audience still wants to see real objects and not the digital substituted.

Keywords: *subject-object engagement, conventional exhibition space, technology-based exhibition space*

INTRODUCTION

In the past, museum is used as a center of scholarship and curatorial expertise, but today, the museum becomes a more public and visitor-oriented institution that helps people learning about the tangible and intangible, such as history, science, culture, memories, hopes, and dreams, while also providing entertainment. Nowadays, education as the prime function of the museum is not only aimed for school children like it used to, but also for a broader audience of all ages. This is called the life-long learning. With the changes in visitation, visitor-oriented education has become crucial in contemporary museums.

Educational role in the museum can be achieved in two ways; exhibition, which can be described as a form of mass communication and education program that involves face-to-face teaching and can be described as a form of interpersonal communication. Earlier, the educational role in museums is limited to the only exhibition. In this model, the message is one-way only, and visitors only act as a passive audience. Even though the audience has different characteristics and opinions on what they want to see, and they do not want to see. They only see what the museum and the curator have prepared for them, or known as the curatorial hypodermics (Hooper-Greenhill, 1994). This is why many museum exhibitions in the past failed to communicate. However, in the last 40 years, the mass communication model is rejected and replaced with the idea of an active audience and moving closer to interpersonal communications. Models for interpersonal communication can be face to face conversation between two people or people in groups, for example, in educational sessions, where interactive and two-way communication is occurring.

In today's museums, communication methods are more flexible. They adopt both methods of communication; the mass communication through the exhibition, and interpersonal communication through educational programs. Besides displays and exhibitions, to make education in museums more interesting and accessible for all ages, they have used other methods as part of their display. Sometimes these methods are very creative, such as using audiovisual and living interpretation. Museums are now aware that they have diverse visitors with various expectations, and they start to use different kinds of media to satisfy those expectations.

Furthermore, to make the exhibitions more interesting and entertaining, where visitors not only as of the passive audience but should also be actively participating, museums have started to add some technologies related entertainment in the museum exhibitions (Medic & Pavlovic, 2014).

The last 30 years, it can be seen that the museums have experienced structural reform and innovations due to the development of technologies. These changes have been the source for digitalizing museums from museum collections to their policies, and from the use of human resources to their activities (Çıldır & Karadeniz, 2014). Various technologies, such as online technologies, simulations, interactive presentations, and digital exhibition, are more favored by museum educators, whether it is online or onsite. With the help of technology, exhibitions able to showcase personal or social stories and memories which are presented through video or film presentations as touch screen and interactive. Thus, it is accessible for every kind of visitors from various age group. Besides, in today's interactive exhibition environment, museums exhibit objects at a less number (Çıldır & Karadeniz, 2014).

The use of technology does not only popular in modern museums abroad, but also various exhibition space in Indonesia. Although it is still relatively small in number, in the last five years, digital technologies have started to enrich exhibition spaces, such as one newly renovated museum; Bank of Indonesia Museum. This museum uses various technologies as part of the exhibition as well as some art exhibitions which apply augmented reality that can be accessed from visitors' smartphones. Not only used as part of the exhibition, one gallery, the Indonesia Kaya Gallery even replaces all real objects with digital and virtual objects. Here, the overall exhibition consists of multimedia and interactive devices such as interactive media, touchscreen, sensory play, and virtual reality.

Museum visits are learning experience that should not be only about looking at objects, but also experienced the objects. That is what makes museum visits are exciting. Museum audiences as the active learner should be informed, provoked, moved, or inspired by the objects they see, or the subject-object engagement. There are many possibilities with subject-object engagement in the museum. These do not only to read the text panel that explains historical story associated with an object but also to experience an embodied engagement with that object thus form their own ideas and a tangible physical connection with those who made and used it in the past (Dudley, 2010). Beer points out that visitors only spend one minute to see artefacts (Li & Liew, 2015); thus it is needed other interactive method to make visitor wants to explore and spends more time with an object. Previous studies show that contemporary visitors are interested in a more interactive technology based-exhibition. However, by replacing real objects with digital images or other interactive technologies, how about the subject-object engagements? As it also mentions that originals and reproductions or replicas are experienced in different ways (Saunderson, Cruickshank, & McSorley, 2010), how does the visitors' engagement with digital objects different from seeing real objects?

Even though research in digital technologies in museums context is still in infancy as well as its application in Indonesian museum, the topic is urgently needed to be discussed and applied to developed Indonesian museums and exhibition spaces. This research will look further subject-object engagement by comparing a conventional exhibition space which only displays real objects in a conventional manner without any use of technology and a technology-based exhibition which only use multimedia and interactive presentations without any real objects. Both exhibition spaces have chosen as study case should display similar objects; Indonesia's art and culture, such as traditional clothes, and architecture. Moreover, it has both must strong educational purpose to introduce and educate visitors about Indonesia's art and culture. Riau Island province pavilion as one out of 34 pavilions erected in Taman Mini Indonesian Indah, the largest open-air museum in Jakarta, will be used as the conventional model. While, a recently opened Indonesia Kaya Gallery in Grand Indonesia, Central Jakarta will be used as the technology-based model. This research aims to analyze and compare the engagement between visitors as subjects with display objects in a conventional exhibition space and a technology-based exhibition space.

Museum history in conventional sense dated back to the 17th century, while to some surprise the use of technologies in museums and exhibition spaces had begun not long after that. It began in the 18th century, as Christensen summarized the development of technology in four steps (Christensen, 2011). It was in Boydell Shakespeare Gallery (1789-1805), where for the very first-time artwork were mass-produced using stipple engraving technology. Not only this changes the relationship between the work of art and its audiences, but it is also made possible for the public to experience and own the artwork physically. Using this technology, visitors could have relatively cheap reproduction of the oil paintings at home. It is an early example of how museum exhibition has taken part in the development of technologies, as a new stipple engraving technology was applied and it was the technology that made the mobility of the work of art possible from gallery to the home of the visitors.

In the post-photographic museum (the 1850s), reproduction of work of art continued using photography, however not only as tools for reproduction, but photography can also be an object of the exhibition in its own right or used as museum tools. With a combination of printed and verbal text and photos on graphic panel, then digitally converted and added interactivity using various multimedia such as touchscreens, making it possible for visitors' participation. This digital exhibition mode can be expanded spatially as it may take place outside the walls of the museum through the internet and mobile media. The next step of technology in the museum is the audio guide. The audio guide is a popular, simple, and widely used exhibition technology which facilitates efficient communication of texts to museum visitors. Today, with the fast-growing technological development, the use of technologies in an exhibition space has endless possibilities.

Technology plays an important role in visitor's general meaning-making process about objects and other information they encounter, and that visitors use digital technologies as a vehicle for satisfying one or more personal needs (Myrczik, 2014). Another research regarding the use of technology to create engagement between subject and objects is done in a history museum where an experiment is conducted to compare three visiting modes; visiting with computer interactive guidebook, visiting with a worksheet, and visiting without any supplementary tools. Moreover, the results show that the samples with the computer interactive guidebook have, on average, a longer holding time with exhibits that either sample with paper-based worksheets or without any supplementary materials (Sung et al., 2010). Another research on visitor's learning and engagement with interactive technologies show that when users perceive

the interaction with technology as being intuitive and interactive, they experience higher levels of cognitive engagement (Pallud, 2017).

Although nowadays technology plays an important role to create interactivity between subject and objects, it is not the only method. Forrest (2015) has mentioned that the role of the exhibition environment, including its scale, layout, organization, lighting, and color palette, has become increasingly recognized as being more than just a passive backdrop or decoration for exhibition content.

Furthermore, Forrest (2015) has pointed out that from visitors' perception, there are five environmental implications that give respond to exhibition design. First is the appreciation of signage and other visual hints that gives the visitor some choices of consequence. This alternate option gives the flexibility to choose their path while exploring the exhibitions. Second is a clear and readily labeled object, which will give further information about the objects and create further understanding or even curiosity. The third is the appreciation towards lighting that can make a dramatic effect on the environment within the exhibitions. Fourth is about color that reinforces the interpretive content. Moreover, the last is how the layout of furniture gives the opportunity to get a clearer visual form nearest distance and variety angle (Forrest, 2015). These implications will affect visitors' appreciation and engagement toward the objects and exhibition as a whole.

METHODS

To achieve the aim of the research which is to analyze and compare the engagement between local visitor with display objects in a conventional exhibition space and technology-based exhibition space, the qualitative method with study case approach will be used. By using this approach, an in-depth study about a case or phenomena will be done by collecting detailed information through various data collecting methods within a determined time frame (Cresswell, 2009). Based on the determined approach, data collecting is done in two stages. The first stage is collecting secondary data or desk research. In this stage, all relevant data from various sources, such as books, journal articles, websites, and other previous studies that have been done about the phenomena will be studied and analyze. The purpose of this stage includes giving general information about the topic, analyze previous studies that had been done, as well as to know what other writers think and to have basic theory and understanding about this topic.

The next stage is the primary data collection using both qualitative and quantitative data collecting method. Data are collected in two exhibition spaces; Riau Islands Province pavilion in Taman Mini Indonesia Indah. It is selected as the conventional model because it has the most adequate conventional exhibition display compares to other pavilions, which still lack design elements, such as lighting, display, and others. While Indonesia Kaya Gallery that is located in the Grand Indonesia shopping mall has chosen as the technology-based model because it is the only exhibition space equipped with technology for its display as well as information. Both exhibition spaces share a similar size and purpose, which is to educate visitors about Indonesia's art, culture, and tradition.

Qualitative data collection is done by observation to find out about the general content, layout, and display from both exhibition spaces. Quantitative data collection through questionnaires aims to find out about the visitors' engagement with objects. For this purpose, closed-questions questionnaires are designed that consist of four parts; general questions about the visit and layout of the exhibition space, visit conventional model, visit technology-based model, and comparison between the two models. As respondents of these questionnaires, a group of students is selected and asked to visit both exhibition spaces and fill in the questionnaire after their visit (purposeful sampling). Both primary and secondary data are analyzed using descriptive analysis method to gain conclusion related to general layout and design, as well as visitors' engagement with objects in the conventional and technology-based model.

RESULTS AND DISCUSSIONS

The results will be discussed in two subsections; general layout and design of both exhibition spaces, and comparison between both exhibition spaces according to the respondents' interactivity and engagement with objects. Riau Islands Province pavilion as the conventional exhibition space model occupies a 10 x 10 meter, two-level building, and exhibits various Riau Islands' art and historical artifacts. Objects such as bride and groom mannequin seat in their bridal stage or *pelaminan* as the focus of the exhibition on the first floor and also available other valuable objects, such as pictures of an important figure in Riau Islands, traditional headdresses, and equipment as well as children toys. The upper floor exhibits various ceremonial equipment, jewelry, textiles, and antique manuscripts (Figure 1).

Figure 1 Second Floor Exhibition Space of Riau Island Province Pavilion
(Source: Wulandari, Fajarwati, & Latif, 2017)

All objects are displayed in conventional display cases and vitrines completed with written information of each object in Bahasa Indonesia and English. Although no special layout or circulation is applied, all display cases are arranged neatly and with limited exhibition objects, thus makes the room appear spacious with lots of space for visitors to move around. Despite its attractive and valuable objects, there is no certain message, narration, or story in the exhibition. It is just a row of displays without any emphasis, point of interest, and of course, the technology available in the exhibition space, thus it makes the room seems flat and rather dull.

While the technology-based exhibition space model, it is not only occupied a bigger space but it also has a small auditorium that can be rented for various traditional performance. If Riau Island Province exhibits objects originated from the Riau Islands, Indonesia Kaya Gallery presents various traditional art and culture from Indonesia through multimedia and interactive display and no real objects (Figure 2).

Figure 2 Indonesia Kaya Gallery Exhibition Space
(Source: Fajarwati, 2018)

Some of the digital presentations are; first is Greetings Indonesia. It is multimedia screens that show Indonesians wear various traditional clothes and greet visitors with their traditional languages. The second is wayang video mapping that shows fragments from Mahabarata stories. The third is Indonesia's smart glass that is presenting a collection of cultural objects from all over Nusantara using the touchscreen. The fourth is Explore Indonesia. It is another digital presentation that uses touchscreen technology, which describes various Indonesia's culture from geographic, custom, and heritage aspect. The visitors can digitally fly around Indonesia's archipelago and see important and iconic objects around Indonesia. The fifth is the traditional clothes in harmony. Visitors can take pictures with digital traditional clothing from some area in Indonesia. This application connects with social media; thus, visitors can directly upload their photos. The sixth is the traditional melody. Various traditional musical instruments are digitally presented in touchscreen. Also, the last is Indonesian children cheers. Here the visitors can play virtual traditional Indonesian games called *congklak*.

Here, a straight and direct plan from one digital exhibition to another is applied; thus, visitors will see and interact with each digital exhibition. Some of the digital instruments are attached nicely on the wall, and some others are located on the table with adequate lighting design. Then, some interior treatments are on the ceiling and wall as emphasis, thus creating a comfortable and attractive ambiance for visitors to explore.

In relation with the implications previously mentioned by Forrest (2015), 73 students are asked to visit both exhibition space and fill in the questionnaire. The first five questions ask about the general design and layout of the exhibition; circulation, signage, information, lighting, and display. These questions aim to get the respondents' general experience of the exhibition. Regarding general layout and circulation, more than 50% of respondents agree that they understand the general layout and circulation in both models. This result is also similar when asks about the signage system. In both models, more than 50% of respondents agree that the signage system is clear and can help them explore the space. Relatively small exhibition space and simple circulation path might be the reason why most visitors find it easy to explore the exhibition space.

Next question related to labeling and information, more than 50 % of respondents agree that objects in both models complete with adequate text or information. Related to suitable lighting techniques, in the conventional model, three respondents strongly agree, and 21 respondents agree while 36 respondents answer undecided. While in the technology-based model, 23 respondents strongly agree, and 44 respondents agree that the exhibition space has adequate lighting techniques. The last question about whether the overall display makes visitors want to know more about the displayed objects. Thirty-five respondents in the conventional model have undecided answers, with only six respondents strongly agree, and 28 respondents agree while in the technology-based model, 22 respondents strongly agree, and 41 respondents agree. From these answers, it can be concluded that the overall interior and exhibition design in the technology-based model is better and more engaging for visitors rather than the conventional model. It can be seen in Table 1.

Table 1 Implications that
Shaped Subject-Object Engagement

	Conventional Model	**Technology-based model**
General layout and circulation	v	v
Signage system	v	v
Information label	v	v
Lighting system	-	v
Overall display	-	v

Next set of questions are related to visitors' engagement with objects seen from the time spent inside the exhibition space and for each object (Table 2). Seeing from respondents' time in the conventional model, 82,2% of respondents spend less than 45 minutes inside the exhibition space. While in the technology-based model, 56,2% of respondents spend less than 45 minutes inside, and 42,5% spend 45-90 minutes inside the exhibition space. It is contrary to the conventional model with only 17,8% of respondents who spend 45-90 minutes inside the exhibition space. This number shows that more respondents spend more time in the technology-based model rather than the conventional model.

When asked about objects observation, in the conventional model, 61,6% of respondents spend one to three minutes in observing each object, only 12,3% of respondents spend more than three minutes, and 26% of them spend less than one minutes. While in the technology-based model, 43,8% of respondents spend one to three minutes interact with each display, 28,8% of respondents spend more than three minutes, and 27,4% of respondents spend less than one minute (Table 3).

Table 2 Visitors' Time Spent in the Exhibition Space

Time spent	Conventional model	Technology-based model
Less than 45 min	82,2 %	56,2 %
45 – 90 min	17,8 %	42,5 %
More than 90 min	0	1,4%

Table 3 Time Spent for Each Object

Time spent	Conventional model	Technology-based model
Less than 1 min	26 %	27,4 %
1-3 min	61,1%	43,8 %
More than 3 min	12,3 %	28,8 %

From this result, whether it is in the conventional model or the technology-based model, most respondents spend one to three minutes in observing or interact with each object. However, some respondents show more interest in the display objects and spend longer observation or interaction time. In the technology-based model, 28,8% of respondents spend more than three minutes in observing objects, while in the conventional model, only 12,3% of respondents spend more time. This result shows that respondents' engagement with objects is stronger in the technology-based model than in the conventional model. From the overall time spent inside exhibition space, as well as the time spent for each object can be concluded that the objects and exhibition design in the technology-based are more attractive and engaging thus more respondents spend more time there.

In relation to respondents' understanding towards the exhibition messages; in the conventional model, only 8,2% of respondents strongly agree that seeing real objects can increase their understanding of the exhibition message, 27,4% of respondents agree, and 39,7% of respondents are undecided. On the contrary with the technology-based model, when asked whether technology can help them understand the exhibition messages, 23,3% of respondents answer strongly agree, 34,2% of respondents agree, and 16,4% of respondents answer undecided. A similar result also appears when asked whether they understand the exhibition messages or narration. In the conventional model, six respondents answer strongly agree, 33 respondents answer agree, and the highest respond of 36 respondents answer undecided. While in the technology-based, 22 respondents answer strongly agree, and 38 respondents as the highest respond answer agree.

From these responses, it can be clearly seen that more than 50% of respondents agree that technology can help them towards a better understanding of the exhibition messages. In addition to this, more than 50% of respondents also agree that the availability of technology increases their curiosity and makes them want to know more about the objects, thus in the technology-based model, once again, visitors' engagement with display objects is stronger than in the conventional model.

The last set of questions are used to find out the actual preference of respondents in the conventional and technology-based model. Previous results show that respondents' engagement in the technology-based model is stronger than in the conventional model. However when they are asked to choose between real objects or digital/ virtual objects; 78,1% of respondents agree that they are more engaged with real objects rather than virtual or digital objects (Figure 3). Moreover, 68,5% of respondents chose real objects when they are asked whether they can have a better understanding and appreciation about Indonesian art and culture. This shows that to learn and understand Indonesia's culture better, visitors actually want to see real objects rather than virtual or digital objects, and by looking at real objects, visitors also expect to have a better appreciation of Indonesia's culture as well.

Contemporary visitors are no longer a passive audience who will be satisfied by observing objects through the glass and reading information labels. They need to be inspired and provoked by the objects. Visitors also need to be part of the exhibition as an active audience. This is why most respondents agree that the availability of technology helps them understand the objects and the exhibition better. However, as part of the exhibition, the audience still wants to see the real objects rather than just the digital substitute. It can be seen from the previous result that more than 50% of respondents choose real objects rather than virtual or digital images. For this purpose, some display showcases are designed that can show real objects with interactive information board attached. Following are the display design for traditional miniature display (Figure 4), traditional clothing display (Figure 5), and musical instrument display (Figure 6). These showcases are designed to meet the needs of contemporary visitors as well as to create a strong engagement between subject and objects, through real object display and interactive information board.

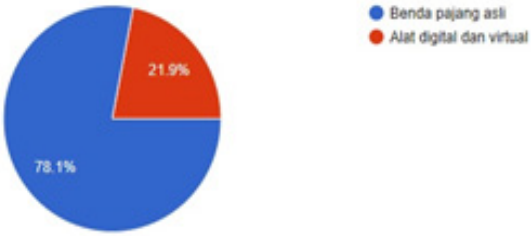

Figure 3 Respondents' Engagement between Real and Digital Objects Result
(Source: Wulandari & Ruki, 2018)

Figure 4 Architectural Miniature Display Case
(Source: Wulandari & Ruki, 2018)

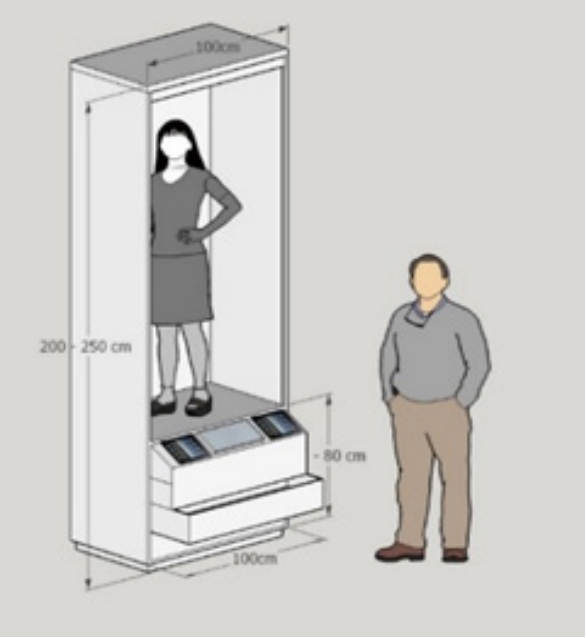

Figure 5 Traditional Clothing Display Case
(Source: Wulandari & Ruki, 2018)

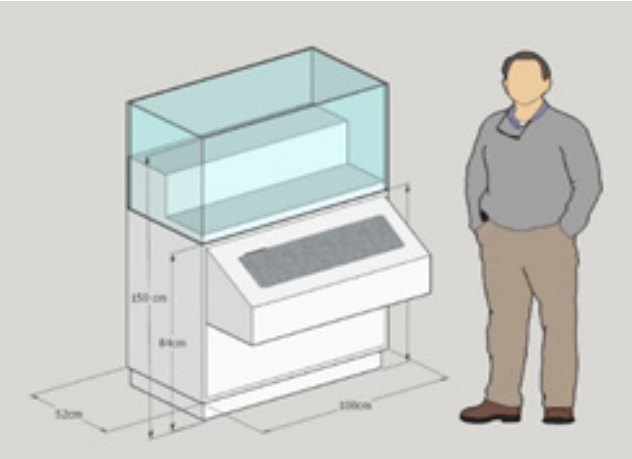

Figure 6. Traditional Instrument Display Case
(Source: Wulandari & Ruki, 2018)

CONCLUSIONS

Museum visits should not all about looking at objects, but also experience. With the growth of technology and to make museum learning more flexible, modern museum starts to apply technology as part of the exhibition. Some museums also start to change their objects into digital or virtual objects. If objects, which should inform, moved or inspired visitors are changed into digital objects, it will change the relationship or engagement between subject and object as well.

To find out about visitors' engagement with objects, the group of students is asked to visit two exhibition spaces; a conventional model and technology-based model, and fill in a questionnaire. Both exhibition space models occupy a similar size area and display various art, culture, and traditions from Indonesia. Forrest states five implications of exhibition design that give respond and affect visitors' engagement with objects and exhibition as a whole; such as signage, path, label, lighting, and so on. These implications are asked in the first set of question and resulting in the technology-based exhibition space as the better space design that is more engaging for visitors. Other factors in relation to visitors' engagement include the time spent in the exhibition area and respondents' understanding toward exhibition message. Results for both factors show that more respondents spend more time and have a better understanding of exhibition message in the technology-based model. From these results can be concluded that technology plays a big part in shaping respondents' interest to learn more about Indonesia's culture, and visitors have stronger engagement with objects in the technology-based model.

However, the opposite result emerges when asked to choose between real objects or virtual objects. Most respondents agree that they are more engaged with real objects rather than digital/virtual. Furthermore, respondents also agree that with real objects, they can have a better understanding and appreciation about Indonesian art and culture. Technology is indeed very attractive, however as the result shows, to be engaged with exhibition objects visitors still need to see and observe the real objects.

Visitors' engagement emerges not only because of the objects itself but also of its surroundings. The path and signage of the whole exhibition, whether it tells a story or not, the lighting design and how the objects displayed and labeled, will create certain engagement with its audience. Technology will also give great help to create subject-object engagement by presenting the objects' past history, for example, or as an interactive tool. It makes objects come to life like this will make the learning process in the exhibition more attractive and interactive, especially for today's contemporary visitors. However, to appreciate and really engaged with the objects, the audience still wants to see real objects and not the digital substituted. Thus, to make education in the museum more attractive, today's museum needs to start to implement the suitable easy to use technology according to its object and visitor's needs.

Limited research on digital technologies in museums in Indonesia has become a limitation of this research. This might be as a result of limited number museum in Indonesia that has applied technology in their museum. Another limitation of this research is that the quantitative collection data method does not give in-depth answers about subject-object engagement; it only gives a general view of the visitors. For further research, another qualitative data

collection method, such as a focus group should be applied to acquire more in-depth answers. However still in its infancy, with the fast-growing technology in various sector, research in museum and technology field is still open for further research.

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