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LIGHTING APPLICATION ON THE COLLECTION DISPLAY OF THE TEXTILE MUSEUM, JAKARTA

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ABSTRACT

Museum is a facility that is used as a public space with the aim of promoting culture and a meeting place for people from various backgrounds as well as being a place to preserve culture, educational and a fun recreation space. One of the well-known museums in Indonesia is the Textile Museum which is an interesting tourist destination even among the international community. The Textile Museum stores fabrics collection which are one of the featured aspects of Indonesian heritage. Display collection arrangement is important to provide proper information to visitors. To support this display design, lighting design should be prioritized as an important aspect in spotting the collection and to create space ambiance in museum. Since visitor visual perspective would create museum image, the emphasis of specific lighting design for museum interior would attract visitors more. This research is intended to obtain a guide for lighting design for Jakarta Textile museum interior design. The research method used is descriptive qualitative with reference to the design theory of Rosemary and Otie W. Kilmer. As a result, Textile museum design apply custom lighting that can provide both aesthetics to the collection and textile safety. This suggestion would support the Jakarta Textile Museum to achieve its goal of being an attractive place of recreation and education.

Keywords: *Aesthetics, security, collection, lighting, standard*

1. PREFACE

Museum means to preserve culture and education, also for being a fun recreation space [1]. Furthermore, the museum functions as a public space that advances culture and a meeting place for residents from various backgrounds [2]. One of the well-known museums in Indonesia is the Textile Museum which is a national tourist spot even now in international circles. The Textile Museum which stores some of these fabrics is one of the rich aspects of Indonesian culture. As a means of recreation and education, it is the duty of the museum to maintain the security of collection displays and pay attention to their aesthetics. Not only aesthetics, but lighting, both natural and artificial, has a relatively large influence on the protection aspect of exhibited objects [3]. Lighting plays an important role in guiding visitors through their museum or gallery experience.

Lighting is also a key element in providing visual information about an environment [4]. For some types of collections such as fabrics and other textiles, it has a very high sensitivity to light. According to Feilo Sylvania, the right light power and according to textile standards is 50 lux. Incorrect lighting or more than 50 lux can damage the textile collections in the museum.

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Figure 1
Initial Lighting Design for Display

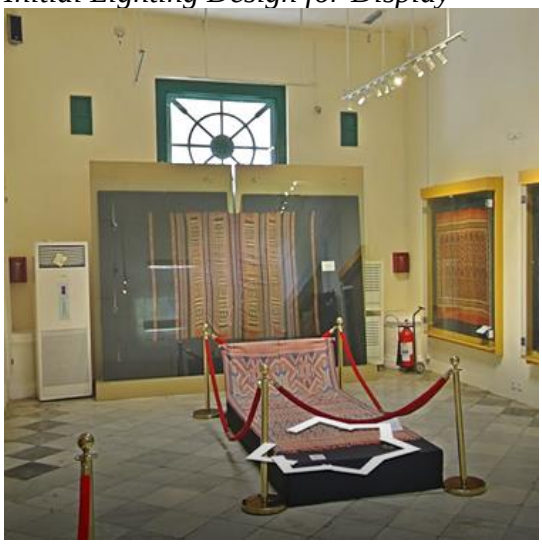


Figure 2
Initial Lighting Design for Display

Figure 3
Initial Lighting Design for Display

Figure 1, Figure 2, and Figure 3 show how the existing lighting conditions at the Textile Museum are. Collection displays do not get sufficient lighting and are not safe with open cloth displays that are directly exposed to light from the lamp. This makes the textiles easily get damaged and the focus of visitors is not directed to the textile collection displays that do not get adequate lighting.

To overcome the things above, the author will design and design the lighting at the Textile Museum to pay more attention to the security of collection displays and also attach importance to the aesthetics of the display.

In 2011 the J. Paul Getty Museum at the Getty Villa were the site for the exhibition "In Search of Biblical Lands: From Jerusalem to Jordan in Nineteenth-Century Photography". The exhibit lighting designer, Scott Hersey, and Kevin Marshall, Head of Preparations, selected the Cree 12W LED PAR38 2700K lamp (brand name "LRP38") for the exhibition lighting after mockups in a test gallery with similar objects and in collaboration with Jim Druzik, Senior Scientist, the Getty Conservation Institute, and Thomas Kren, acting Associate Director of Collections.

The goal in the lighting selection was to match the color quality of the Museum's standard halogen lamps as closely as possible with no apparent difference between galleries lighted with LEDs and those lighted with halogen. (Both lamp types had a CCT of 2700K–2850K, with a Duv of less than 0.002, indicating they were very close to the black body locus.) The lamps were used in place of (34) Sylvania 60W PAR38 halogen 30° flood lamps, on a one-for-one basis, in three adjacent galleries. Layers of metal screens are typically used for both lamp types to reduce illumination levels to the precise target value on each specific object.

In this gallery space with 34 display lights, the LED replacement lamp compares favourably against the incumbent 60W PAR38 halogen lamp, reducing power use by 83% and recovering the higher initial cost of the LED in year three of operation. In a 10-year life cycle cost analysis, at $0.12/kWh melded electric rate, the total present value (PV) energy savings amount to $4,621, with a total PV life-cycle cost savings of $9,843 including maintenance. Spot-relamping frequency and cost (at $30 per lamp for spot- relamping) are reduced considerably because of the LED's longer expected life.

Similar research conducted of Jakarta Textile Museum was mean to compare it to another museum, not only the lighting aspect but also the functions and interior elements. It was descriptive research, meanwhile this reseach provide guidelines, criticism and suggestions that can be taken by the Textile Museum [5]. Another research as it was a student final project, designing Textile Museum with contemporary style [6]. Similar research of Textile Museum has been conducted by Tandy [7] explain about the application of information technology on interactive and digital display at the main exhibition hall.

As lighting design is crucial aspect of visitors visual perception, the suggestions of the lighting design could increase public interest to visit museum as it has been researched by Yani [8] for Fine Arts & Ceramics Museums at Jakarta. Lighting design consideration for museum depends on the collection. Research on Fine Arts & Ceramics Museum at Jakarta took place on specific area, Traditional & Raden Saleh Painting Room, with collection of paintings hang on the wall.

Research on this paper has a different point of view in lighting design, conducted for interior design of Jakarta Textile Museum. Since the collections are old fabrics that easily damaged by age, the lighting design applied need more consideration to avoid fabrics' color fading or broken cloth fiber.

This paper is structured as follows. Section 1 discusses the introduction of the theme or title taken. Section 2 describes the background of the lighting problem for the display collection in Textile Museum of Jakarta. Continued to section 3 which discusses the design methods used in the

research. Section 4 describes the overall discussion of lighting in the museum and the application into the Textile Museum interior. Continued to Section 5 which contains conclusions from all discussions.

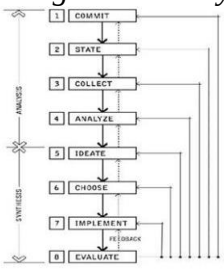
Visitors have quite the same complaints, namely about the lighting that is not enough and create uncomfortable ambiance in the Textile Museum interior. These cases caused a decrease in the interest of public to visit, because they did not get a comfortable atmosphere and could not see the collection display clearly. Lighting, both natural and artificial, has a relatively large influence on the aesthetic aspect of exhibited objects [3].

2. RESEARCH METHOD

The research method used in this research is qualitative, as a holistic process in designing the Textile Museum. This design process refers to Design Process Scheme by Rosemary Kilmer and Otie Kilmer [9].

The design process according to Kilmer's theory consists of 8 (eight) steps, consisting of: (a) commit, which is the commitment stage to complete the interior design process of the Jakarta Textile Museum according to a predetermined schedule; (b) state, which is the stage of determining design problems as well as the strength of the interior design of the Jakarta Textile Museum, namely lighting and ventilation; (c) collect, which is the stage of collecting primary data related to the Jakarta Textile Museum and its location, as well as secondary data on museum interior design in general and the theory of lighting for interiors. museums specifically. The data collected by literature study from physics and digital books, online news, proceedings and journals; (d) analyze, the analysis stage by comparing the existing lighting of the Jakarta Textile Museum, with the theory of lighting standards for the museum interior; (e) ideate the design of lighting for the Textile Museum, the design exploration stage to obtain several alternative layouts and circulation paths, display design, and the lighting alternative design; (f) choose, the stages to determine the best alternative for lighting for Textile Museum interiors; (g) implement museum standards and best alternative, the stage of making working drawings and interior presentation drawings as a form of applying lighting and ventilation to the interior of the Textile Museum at Jakarta; and (h) evaluate Textile Museum Design, namely evaluation phase to get feedback from collagues and research team on the implementation of the design with lighting standards and suggestions for the museum.

Figure 4
Design Process by Kilmer



The parameters used in designing the Textile Museum to increase visitor interest according to Sari [3] are stated in Table 1 below:

Table 1
Parameter

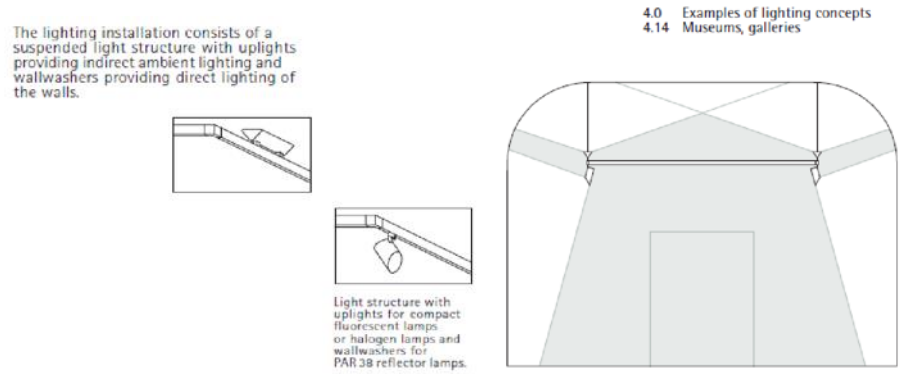
No.	Parameter
1.	Apply lighting design as the main technical aspect that needs to be considered for collection displays.
2.	Applying artificial lighting design techniques to produce the desired light effect on the collection display.

3. RESULT AND DISCUSSION

Lighting for museum interiors has different provisions from lighting for other interiors because it emphasizes lighting for museum collections and not on the room so that there is no distraction [10].

Figure 5
Suggestion of Exhibition Room Lighting

Figure 6
Museum Lighting Theory



Source. Handbook of Lighting Design

The following are some of the lighting requirements for museums: (a) the quality of the surfaces and colors of museum collections will affect the type of lighting required, so it must be considered between using even lighting and accent lighting; (b) lighting for museum interiors must have a good *color rendering index (CRI)* to display the actual color quality in museum collections; (c) the recommended illumination for the museum is 150 lux. The less sensitivity of material from museum collections, the intensity of light can be increased; (d) avoid glare from reflecting light

on the glass surface both horizontally and vertically; (e) high displays can use lighting that is integrated with the display system; (f) transparent displays such as glass can use lighting from below; (g) halogen lamps are usually used as accent lighting; (h) compact fluorescent lamps can be used for lighting on large surfaces; and (h) systems fiber optic can also be considered to reduce risk of increasing temperature or for small display sizes.

From the lighting requirements for the museum mentioned above, it can be concluded that the special requirements related to the display design of museum collections are as mentioned in Table 2 below.

Table 2
Parameter Adjustment and Material

No.	Parameters	Suitability
1.	Apply lighting design as the main technical aspect that needs to be considered for collection displays.	√
2.	Applying artificial lighting design techniques to produce the desired light effect on the collection display.	√

Appling certain lighting for display design would emphasize museum main function as conservation, information and education. Adequate spot light for museum collection would help visitors to recognize and study the collection. It also need spesific techniques to give the collection the right effect. For example spotting museum collection from one side would produce shadow that might disturb visitors in understanding the information.

Figure 7
Suggestion of Exhibition Room Lighting

In the design of the Jakarta Textile Museum, the concept of lighting design is designed in such a way that it follows the lighting standards of the museum. Spotlights are used to make textile collections as the center of attention by visitors. *Spotlight* plays a very big role in the display, to *highlight* the collections and make the exhibition livelier and the attention of visitors will be focused there. The *spotlight* used has a light power of 50 lux, which is in accordance with lighting standards for fabrics or textiles so that textile security is maintained. The colors used in the *spotlights* are different from the general lights to give emphasis and accent to the object or collection that you want to *highlight*.

The lighting angle of the spotlight also plays a large role in both the aesthetics and the safety of the textile itself. For small collections, a spotlight with a light angle of 10°-20° is used which can form a 3D accent and remains safe because it does not shine directly on the fabric. For large textile collections, spotlights with a beam angle of 25°-35° and a beam angle of >45° can be used. That way, the aesthetics of the collection exhibition will look more attractive and harmless to textiles.

Figure 8
Suggestion of Exhibition Room Lighting

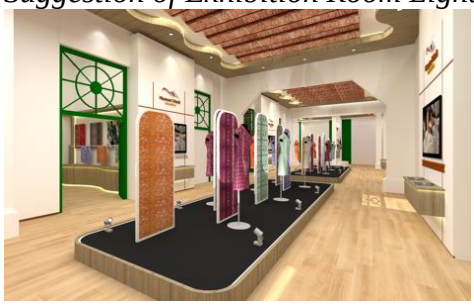


Figure 9
Suggestion of Exhibition Room Lighting

Other lighting used in the design of the Textile Museum is *downlights and indirect lights* which are used as general lighting. The lights are also designed indirectly to keep the collection fabrics safe.

4. CONCLUSIONS AND RECOMMENDATIONS

Museum is a means or facilities for recreation and education for the community. As a means, museums must pay attention to technical interests, one of which is about lighting design. This can be done by designing adequate lighting as the most important technical requirement in a museum. Adequate lighting of 50 lux for 3000 exhibition hours/year or 150 lux for 250 hours/year will provide security for textile collections and create a space atmosphere for visitors. In this way, the goal of providing aesthetics and safety for textile collections can be achieved and the museum can fulfill its function as an educational and recreational facility with standard lighting.

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REFERENCES

A. Agustina, “Perancangan Interior Museum Tekstil Jakarta,” Program Studi Desain Interior, Fakultas Seni Rupa dan Desain, Universitas Tarumanagara, Jakarta, 2019.

G. Suranto dan G. Andry, “infopublik.id,” InfoPublik Portal Berita Info Publik, 13 10 2019. [Online]. Available: https://infopublik.id/kategori/nasional-sosial-budaya/379651/taman-fatahillah-pusat-hari-museum-indonesia-2019. [Diakses 25 02 2022].

M. Fauzi, “Kajian Efek Pencahayaan Buatan untuk Ruang Galeri Batik (Studi Kasus: Museum Tekstil Jakarta dan Museum Batik Pekalongan),” *Inosains,* vol. 10, no. 2, pp. 88-94, 2015.

R. Kilmer dan O. W. Kilmer, Designing Interiors, New Jersey: Wiley, 2014.
R. Ganslandt dan H. Hofmann, Handbook of Lighting Design, Ludenscheid: Vieweg, 1992.
S. Maria, N. Uyana dan N. Andanwerti, "Pengaruh Pencahayaan Restoran Madam Rich terhadap Kenyamanan Pengunjung," *Jurnal Mezanin,* vol. 1, no. 1, pp. 81-88, 2019.
S. P. Sari, "Galeri Seni Rupa Kontemporer di Yogyakarta," Program Studi Arsitektur, Fakultas Teknik, Universitas Atma Jaya, Yogyakarta, 2012.
T. Tandy, A. Tirtaatmadja dan A. I. Widyani, "Attraction of Interactive Display at the Main Exhibition Hall of Jakarta Textile Museum," dalam *The 2nd Tarumanagara International Conference on the Applications of Social Sciences and Humanities (TICASH)*, Jakarta, 2020.
U. I. Team, "magazine.urbanicon.co.id," Urban Icon Magazine, 20 11 2019. [Online]. Available: https://magazine.urbanicon.co.id/kenapa-museum-di-indonesia-sepi-pengunjung/. [Diakses 25 12 2021].
V. F. Yani, B. Deliyanto dan A. I. Widyani, "Lighting Analysis in Tradisional & Raden Saleh Painting Room of Fine Arts & Ceramics Museums," dalam *International Conference on Economics, Business, Social, and Humanities (ICEBSH)*, Jakarta, 2021.