Museum of Works as a Means of Improving Professional Knowledge of Senior High School Students Through Public Intervention

Joshua Alfando, University of Pelita Harapan, Indonesia
Felia Srinaga, University of Pelita Harapan, Indonesia
Undi Gunawan, University of Pelita Harapan, Indonesia

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Abstract
Due to a shortage of technical skills, high school graduates make up 7.92 percent of unemployed Indonesians. This issue can be addressed by a "museum of work" that is immediately integrated into the high school community. This study's main purpose is to learn about various self-actualization techniques and public interventions, as well as the design aspects of a museum of works space and how to establish an exploratory museum of work. This study linked the museum's safe, engaging, and restorative environment (space) theories with the SMA (Senior High School) community's features. At the James Simon Museum and the Rio Arts Museum, researchers compared and contrasted the two collections. In addition to the museum's self-actualization area, the theoretical and precedent analysis produced 9 design concepts and solutions addressing building mass composition, spatial efficiency and integration with the high school community. The 1.03-hectare Immanuel Pontianak Christian High School property was designed as a museum of works. The study's conclusions led to the creation of a 7921 m2 museum masterpiece connected to Immanuel Christian High School Pontianak. The museum of work space program includes an Auditorium, Professional Exhibition Space, Courtyard Park, Museum Store, and Café. The eventual purpose of this museum of work design is to enlighten each student about the types of careers path they should take in the future.

Keywords: Museum of Works, Medium to Increase Professional Knowledge of High School Students, Public Interventions

Introduction

According to a Ministry of Manpower report, persons with a high school graduation are the most unemployed. In 2019, the BPS reported 7.05 million unemployed Indonesians. High school educational institutions should be able to fulfill at least two major duties. This responsibility includes developing the student's personality through self-actualization and preparing them for the professional environment (Schutz, 1999). High school students are a population prone to self-actualization and exploration. High school students strive to develop their individuality in order to mature and pursue a mature/future career. They frequently express this through arts. It's a shame that these kids can't express their adventurous side in high school (Maress, 2018).

A museum is a public exhibition space for artists and scientists. As a result, a museum of work concept might be taught in high school. The museum of works exhibition facilities let high school students to present their work to the public. High school students can make works in any discipline, from art to medicine, for the museum of works (Hirzy & Services., 1996).

Aside from Sulawesi, Kalimantan has the second fewest museums in Indonesia. Kalimantan is an Indonesian island (Harsa, 2020). The local government has welcomed and supported the creative movement in Pontianak and other cities in Kalimantan to contribute to the island's economic success (Angah, 2019). Pontianak has 59 high schools, 37 private and 22 public. This ratio measures the public's willingness to send their kids to better private schools than public schools (supply and demand) (UMM, 2016). Immanuel Christian High School is the most popular and best private high school in the Ministry of Education and Culture's ranking of the best schools (Arjantoh, 2017). Extracurricular activities at Immanuel Christian High School are diverse and cross-cultural. These activities are not successfully accommodated at Immanuel Christian High School due to a lack of specialized work space. This study's purpose is to identify self-actualization activities for high school students, as well as public activities that can help students gain professional knowledge, and then to identify architectural design aspects of the work museum space that can facilitate student-public collaboration. A museum of works promotes the Pontianak Immanuel Christian High School's exploration of space.

Theoretical Reviews

Self-Actualization and Public Interventions in High School Environment

A high school student should be able to calculate profit and loss for a future career. This profit and loss is founded on motivation and guarantees on the future career (Conger, 1977).

Mary Ann claims in her journal "A Study of a Museum-School Partnership" that self-actualization activities are particularly effective when done in a work museum. Ensuring that school assignments are completed intuitively and creatively is a goal of the work museum container. The work museum can be used for activities in the performing arts, visual arts, and science research (Mary Ann Wojton, 2009). Nyoman Sudana explains in his article "Community Participation in the Implementation of Education" that social support from the community is an important factor that is not given enough emphasis in schools. Professionals have a high capacity for job experience. If this ability is shared with high school students, they will learn more about the realities of the workplace, which often contradict educational

assumptions. Professional workshops, counseling workshops, and seminars/socialization can all provide high school students with social support or Job Fair (Razak, 2013).

Museum of Works as a Safe Space, Engaging Space and Restorative Space

A museum must have three major spatial features to facilitate high school student-public collaboration: safe, engaging, and restorative. For example, a work museum can promote visitors' mental health, establish new work and activity spaces, foster a sense of attachment to the environment, foster debate over works, and critical reflection. Characters at the museum safe space work up the meaning of display categories (exhibition space) (Morse, 2020). As a result, the museum of work has a dynamic, acoustical, open, and appealing character (welcoming). The meaning of multi-functional space and auditorium in the museum of works is engaging space (Kristiansen & Harslof, 2015). Another important characteristic of a restorative place is its strong link with the surrounding environment, possibilities for relaxation, and high spatial coherence between spatial contexts with varied themes. The work museum's restorative space feature defines its overall spatial environment (Paris, 2002).

Architectural Elements of Museum of Works

Dexter argued in his book "The Manual of Museum Planning" that an art museum is a form of specialization museum that does not prioritize visitors' backgrounds. Rather, it's about extending visitors' (the public's) viewpoint on the artwork on display in the museum. Dexter further mentioned that the Karya Museum has various key functions for its spatial requirements, including collection, documentation, preservation, research, exhibition, and interpretation (Lord & Lord, 1999).

Museum of Works Characteristics	**Space Elements**	**Shaper Elements**
Safe Space	Exhibition Space, Exhibition Preparation, Exhibition Warehouse	Folded partition, Lifted Ceiling, Diffuse Lighting, Obyek Pameran
Engaging Space	Auditorium, Workshop Area, Multi-Functional Room, Public Hall, Terrace/Balcony, Creative Space, Lobby, Facade	*Hidden natural light, Ornament Fixture, Fabric Ceiling, Seating staircase, Opaque walls, Façade Setback*
Restorative Space	Museum of Works Circulations	*Ramp menerus, Semi-transparent partition, Divided Areas*
Ruang Pendukung	Toilet, Technical Room, Deliveries, Securities, Museum Shop, Janitor Room, Café/Restaurant, Cloak Room/ Locker, Administration Office, Pantry, Elevator	-

Table 1: Architectural Elements of Museum of Works. An Analysis based on: (Bernardes, 2014); (Chipperfield, 2018); (Fiederer, 2016); (Kiser, 2016); (Taylor-Foster & Brittain-Catlin, 2017).

Museum of Works Integration in The High School Environment

Renzo Piano presents his notion of Museum Expansion at Harvard, Boston, Los Angeles, and Atlanta in his portfolio of projects named Renzo Piano Building Workshop. Several factors are mentioned in the discussion that might be utilized as a guide when merging the museum's typology with the current building's typology (RPBW, 2013). These criteria include accommodating the need for natural lighting in the gallery, maintaining the need for adequate air circulation, giving the impression of repetition of the old building, not disrupting or eliminating existing activity programs, becoming a new focal point for public arrivals, and having a piazza in the connection between new and old buildings.

School Building Type	Schematic Plan	Proportion	Number of Classrooms	Number of Stories	Orientation	Window to Wall Ratio	Room Depth (m)
Rectangle shape		36%	12–107	3–6	S/E/W/N/SE	20–90%	6.0–11.0
L shape		12%	12–81	3–6	S/W/E/NW	20–60%	6.5–10.5
C shape		20%	6–133	3–6	S/W/E/SW	20–70%	6.0–12.5
H shape		5%	23–90	4–6	S/SW	20–80%	5.0–9.0
H shape with an atrium		1%	18–24	4–6	S	20–30%	6.0–8.0
Courtyard		11%	12–90	2–6	S/W/E/SE	30–80%	5.5–11.0
High-rise		2%	20–81	7–10	S/E	20–40%	7.5–9.5
Irregular shape	-	14%	12–114	2–6	S/E/SE	20–70%	6.5–10.0

Table 2: High School Building Typologies

Source: (Zhang et al., 2017)

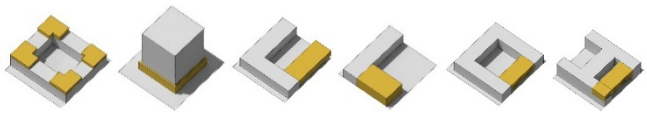

Figure 1: Typology Integration Scheme (1. Open Plan + Rectangle Shape; 2. Open Plan + C Shape; 3. Centralized & Spread + H Shape; 4. Cluster + Courtyard; 5. Centralized + Highrise; 6. Open Plan + L Shape (Sumber: Authors' Analysis)

Research Methods

The James Simon Museum and the Rio Arts Museum's past studies, site location analysis, and a questionnaire survey were utilized in this study to evaluate the forms of self-actualization activities and appropriate treatments applied to the site.

Precedent Studies

The James Simon Museum (2018) and the Rio Arts Museum (2018) are two precedent studies that will be studied in this research (2014). The goal of this case research is to examine the outcomes of implementing direct integration between the mass of the museum building and the mass of other structures. The mass of the James Simon Museum building acts as a revival of the museum's function, as it combines with the ancient museum building. The Rio Arts museum, on the other hand, is the outcome of the integration/unification of two distinct building purposes, contrasting and modifying the functions of the palace and the police station. Internally, the palace was converted into a museum building, with the outer facade remaining the same as before, while the police station was remodeled into a local school building. The two structures are linked by a suspension bridge that runs down the rear of each. The architect David Chipperfield designed the James Simon Museum, while

Bernardes + Jacobsen Arquitetura designed the Rio Arts Museum (Chipperfield, 2018) (Bernardes, 2014).

Study Category	James Simon Museum	Rio Arts Museum
Location and Scale	Located in an existing historic location and has a horizontal longitudinal scale dominance (explorative)	Located in an existing historic location and has a vertical scale dominance (intimidation)
Circulations	Explorative Circulations	Explorative Circulations
Room Programming	Room Program with facility function dominance	Exhibition function-oriented space program
Room's Facilities and Features	*Parking space, elevator, foyer, auditorium, temporal exhibition space, mezzanine, café, information area.*	*Lobby, social corner, elevator, multifunctional room, public hall, auditorium, workshop areas, exhibition space, temporary exhibition space, sculptures area, café, skybridge*
Lighting	Adequate quality of natural lighting	Lack of attention to the quality of natural lighting
Integration with Surrounding Environment	The mass of the building is integrated through the mass of the museum building itself	Massa bangunan terintegrasu dengan ketersediaan ekspansi sirkulasi jembatan.
Structural Elements	Using a bored pile foundation, and the spacing of the beams becomes a lattice for the entry of natural light.	Using a combination structure system of elevator core and concrete column.
Room Capacity Based on Type and Functions	*Temporary Exhibition Space (2%-15%), Exhibition Space (20%), Exhibition Preparation (0,15%), Exhibition Warehouse (0,35%), Toilet (0,2%-1,2%), Cloakroom/Locker (0,3%-2%), Deliveries (0,7%), Ticketing/Lobby(1%-2,5%), Museum Shops (5%), Auditorium (1,2%-4,75%), Terrace/Balcony (5,86%), Café/Restaurant (2,3%-3%), Pantry (0,2%), Elevator (0,3%-0,4%), Workshop Areas (1,4%), Public Hall (0,5%)*	
Facade	38% Void, 62% Solid	50% Void, 50%Solid
Circulations character	Tilted hidden turn, perimeter turn, progressive scaling in between, perpendicular turn, meeting point, directional turn, core service, checkpoint service, technical clusters	
Material	Warm materials, sound insulation materials, cold&hard materials, local stone materials	

Table 3: Precedent Study Results

Source: Based on analysis from: (Bernardes, 2014); (Chipperfield, 2018)

Site Analysis

The site is located on Lieutenant General Sutoyo's major route, Jalan Gajahmada Pontianak Kota, which is 1.23 kilometers southwest of the city center. The property also connects with the Pontianak regional city plan's "projection zone for commercial and tourism districts." The percentage of KDBs in the area is 70-80 percent (BAPPENAS, 2002). The existence of the function of the mass of work museum building can help to support the cultural and tourism sector's urban planning projections.

Kategori Analisa	Hasil Analisa
Accesibilty	Has 2 main road hierarchy that contrast to each other
Horizontal-Vertical Connection	Linear/continue the access horizontaly
Activities type	Administrative activities, High school flag ceremony, cafetaria, Small shops, Housing.
Building Type	Low rise 2-3 level
Neighborhood Programs	Dominated by government offices
Neighborhood Density	Apart/loose
Site's View Axis	Tend to have a beautiful atmosphere and adequate infrastructure
Environment Shadow	The site is not too covered by the shadow of the surrounding buildings.

Table 4: Site Analysis Results

Source: Authors' analysis

Questionnaire Survey

There were 61 respondents from high school students who responded to a survey that was performed utilizing the questionnaire distribution method. The purpose of this survey was to learn about people's opinions on the importance of self-actualization activities and profession knowledge in high school, as well as what kinds of activities can be done to realize self-actualization activities in high school and what kinds of activities can be done to distribute knowledge in the professional world. The results of the survey, which were acquired from 65 people, are provided in the following table:

Self-Actualization Activities in High School Environment	Extracurricular, Produce painting, Participate in Student Council, Participate in Scouting, Outbound, Participate in Pensi activities, Drama Performance, Cooking, Sports(Badminton, Futsal), Fashion Arts, Painting, Performing Arts, Photography, Part Time Work in Computer Stores .
Types of Profession Expected to be introduced in the High School Environment	Entrepreneur, Tourism, Linguist, Teacher, Medicine, Programming, Technician, *Architecture, Presenter, Chef*, Artist, Accountant, Comic, Voice Acting, Radio Broadcaster, Law.
Forms of Distributing Professional	Seminar, Industry Socialization, Teacher Guidance, *Pre-College*, Workshop, Internship, Counselling Workshop, Ekstrakulikuler, *Job Expo, Job Fair.*

Knowledge Techniques in the High School Environment	

Table 5: Quetionnaire Survey Results

Source: Authors' analysis

Results

The design process for the museum of works will be carried out in several stages, based on the results of learning the theories of the museum of works that have the characteristics of safe space, engaging space, and restorative space, then learning and analyzing the precedent studies James Simon Museum and Rio Arts Museum, as well as site analysis and questionnaire surveys. The research of mass composition comes first, followed by site planning and programming of space functions and characteristics.

Massing Explorations

The process of investigating the composition of the mass of the museum of works building begins with a consideration of the structure of the mass of the building's function, which includes safe space, engaging space, and restorative space. After that, you should align the accessibility of the surrounding surroundings. This alignment is achieved by combining the work of museum's internal and outdoor circulation patterns, allowing for flexibility in both the outer and inner areas. The mass exploration process is then carried out by taking into account the lighting circumstances at the location by installing a skylight doorway that allows natural indirect illumination to enter.

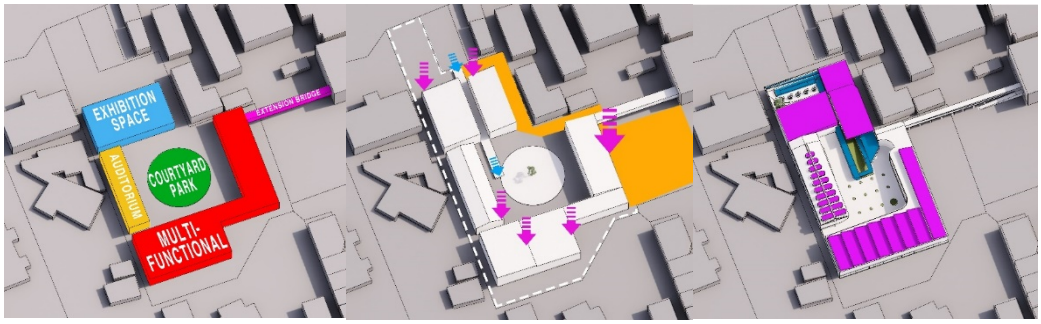

Figure 2: Museum of Works' Building Mass Design Explorations

Source: Joshua Alfando's Explorations

Site Planning

In general, the circulation established in the work museum setting is the result of a firm perimeter element around it that focuses visitors to the museum of work's internal events. There is also an additional parking lot to accommodate the capacity of new automobiles brought in by visitors to the museum of works.

Figure 3: Immanuel Christian High School's Museum Site Plan
Source: Joshua Alfando's Explorations

Museum of Works' Room Programming and Features

There are numerous essential characteristics to this museum of work's design. The progressive spatial transition from the works museum's entrance to the content of the works museum's program space is the first feature. This transition attempts to gradually unveil the contents of the works museum in order to stimulate visitor interest and participation.

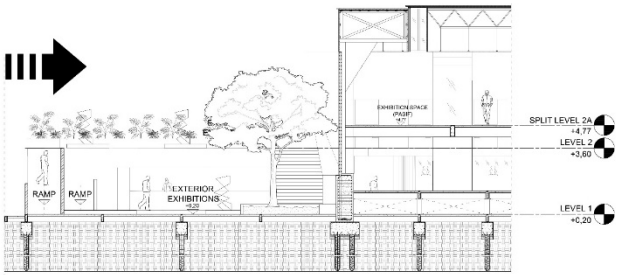

Figure 4: Exhibition Space Detailed Section
Source: Joshua Alfando's Explorations

The feature extension bridge, which connects the Immanuel Christian High School room to the museum of works space spatially, has these following features. This bridge has LED flashing lights that guide tourists from the high school entrance to the art museum. In addition, there is a circular feature gate that depicts the exhibition space's orientation of spatial openness. Then there's the open space mezzanine, which highlights the depth of the exhibition room's mood.

Figure 5: Museum of Works Building Features (1. Extension Bridge, 2. Circular Gate; 3. Open Space Mezzanine)
Source: Joshua Alfando's Design

This museum of works is divided into two stories, with the first floor dominated by a professional office and the second floor housing professional display activities. The function display space, which occupies 40% of the floor area on the second floor, dominates the floor area. With the use of voids in particular areas it seeks to present a greater perception of depth of fields.

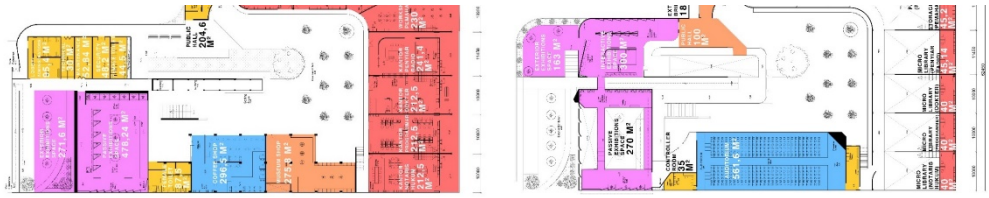

Figure 6: Museum of Works Capacities
Source: Joshua Alfando's Design

Conclusions

Several architectural aspects of the "Museum of Works" contribute to the creation of an adventurous spatial ambiance. Opaque walls, sliding frames, indirect natural lighting, open plan circulations, welcoming facades, sliding frames, and ramp circulations are among the architectural elements. The availability of parking space facilities, elevators (optional), foyer, auditorium, temporal and permanent exhibition space, mezzanine, café, information area, social corner, sculptures area, multi-functional room, and skybridge were then added as learning outcomes from the James Simon Museum and Rio Arts Museum precedent studies. The design of the museum works was also applied to the site environment of the Pontianak Immanuel Christian High School based on the learning results of these architectural features.

The Museum of Works at Pontianak Immanuel Christian High School has a total floor area of 7921 m2 and a footprint of 4,509 m2. An auditorium, outside exhibition space, passive exhibition space, interactive exhibition space, café, professional exhibition room, mural walls, climbing walls, balcony, lobby, mezzanine, and museum shop are all available at this museum. The principal activity mechanism in this museum is a mutualistic symbiotic cycle. This arrangement allows members of the public, such as professionals, to rent an office at the Immanuel Christian High School's museum for a reasonable fee in exchange for providing periodic seminars and intern programmes to high school students based on their different professional specialties as a donation to the school. At addition, Immanuel High School students have the opportunity to perform an internship in one of the museum's newly opened offices. Immanuel Christian High School students will gain more professional knowledge as a result of the opportunity to test out a true professional simulation in a setting that is extremely close to and directly related to the high school environment. Several types of professional activities that take place at the works museum can also result in physical products/works such as comics, sculptures, paintings, games, and architectural mockups that can be displayed in the Immanuel Christian High School Pontianak's exterior, passive, and interactive exhibition halls. Finally, the outcomes of this research are the results of Immanuel Christian High School Pontianak's museum design. Of course, this research isn't flawless and doesn't include all aspect required for design; as a result, the authors hope that this research can be used in other studies that require similar references.

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Contact email: felia.srinaga@uph.edu