

## Public Library Interior Design with Biophilic Concept in Sleman Regency

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### Abstract

The Sleman Regency Library is an educational facility established by the government to provide educational services and fulfill the government's responsibility to enlighten the nation. It also reflects the vision and mission of Sleman Regency, articulated through the Smart City concept, which aims to manage resources effectively and efficiently, maximize public services, and support sustainable development. However, the library in Sleman still requires design improvements, as it currently has a rigid design, with a need for better space planning, circulation, and additional facilities to meet visitor needs and enhance their comfort. The interior design is based on David K. Ballast's 1992 design method. This public library design incorporates the Biophilic concept, which aims to enhance human well-being both physically and mentally while fostering a positive connection between people and nature. The goal of this interior design is to improve the quality of the library as an educational space, make it appealing to the community, and optimize space planning and facilities to better meet public needs

**Keywords** : *Biophilic Concept, Interior Design, Library, Sleman Regency*

### INTRODUCTION

The establishment of a public library in Sleman Regency is a manifestation of the vision and mission of Sleman Regency, implemented through the Smart City concept and realized under the Sleman Smart Regency initiative. This signifies that both the government and the community must be able to manage various resources effectively and efficiently by utilizing information and communication technology to maximize public services and support sustainable development. The presence of the library in Sleman Regency is part of the government's responsibility to enhance the nation's intelligence and serves as a resource for people from all walks of life to access information and meet educational needs. The library must also provide good service facilities and consider the function of the space to create a comfortable and enjoyable atmosphere, thereby attracting more visitors (Noviani, Rusmana, & Rodiah, 2014).

However, the Sleman library currently needs improvements in its layout and several facilities. Issues include inadequate space in the reading and computer circulation areas, which is too narrow for users to pass by each other and too tight for people with disabilities. The children's reading area is integrated with the meeting area, leading to noise from both the children and the microphone used by

speakers during events. There is also a lack of a designated shoe area for carpeted spaces, and the restroom facilities meant for visitors are used by the general public, requiring differentiation between men and women and accommodations for people with disabilities to enhance comfort.

Additionally, the Sleman Regency Library is currently located on a 594 m<sup>2</sup> plot of village-owned land in Tridadi, which means the library cannot be expanded or developed further. This is also not in line with the standard that a public or regional library should be able to accommodate the population of Sleman Regency, which, according to the Central Statistics Agency of the Special Region of Yogyakarta, is projected to be around 1,168,471 people by 2024. Overall, the interior design of the Sleman Regency Library lacks a coherent concept and still feels rigid. Mr. Khoirul Azizi, a librarian at the Sleman Regency Library, also mentioned that the reality is that the library should be designed to be as attractive and comfortable as possible to enhance user productivity.

Based on the issues mentioned, it is essential to plan an interior design for the library that provides various facilities, ensures visitor comfort, and employs an engaging concept or theme to enhance user productivity. Many people view libraries as places with rigid designs that are outdated and potentially dull if visited for long periods. One solution for the library is to implement the Biophilic concept. This approach involves designing the library to improve human well-being both physically and mentally while fostering a positive connection between people and nature. The concept aims to create a space that supports gathering, reading, playing, and learning in a cool, calm environment that minimizes boredom and boosts user productivity. The goal of this interior design is to offer a fresh atmosphere, improve library services, attract the community, and enhance the positive image of Sleman Regency.

## **DESIGN METHOD**

The interior design of the Sleman Regency Public Library uses the method developed by Ballast (1992). This method consists of three design phases: programming, information gathering, and information analysis. During the programming phase, the design goals are identified, relevant actual and factual data needed for the design process are collected, abstract ideas are developed as solutions to existing problems, needs and desires are determined, and issues are identified from the data

In the information gathering stage, a survey of the Sleman Regency library is conducted to assess the actual conditions. An interview is also conducted with Mr. Khoirul Azizi, the librarian of the Sleman Regency library, along with documentation as supporting data for the research. Once all the necessary data has been collected, the information analysis stage begins before moving on to the design phase. This analysis includes determining zoning and grouping, defining room sizes based on needs and functions, organizing spaces according to zones, determining circulation flow, and creating spatial relationship patterns based on the interconnections between different areas.

## **RESULT AND DISCUSSION**

The Sleman Regency Public Library was established by the government as an educational facility for the general public, including children and adults. The interior design of the library is being developed to address existing issues, such as suboptimal space planning and circulation, as well as the current design, which feels rigid and lacks a clear concept. The aim is to reduce user boredom. The design incorporates the Biophilic

concept, which focuses on creating spaces that enhance human well-being both physically and mentally while fostering a positive connection between people and nature. This concept is intended to create a space that supports gathering, reading, playing, and learning in a cool, calm environment that minimizes boredom and boosts user productivity.

According to Kellert (2015), biophilic design has three characteristics:

1. Direct experience of nature: This includes adequate lighting, air, water, plants, natural views and ecosystems, fire, and animals.
2. Indirect experience of nature: This involves images of nature, such as paintings that represent the natural world, natural materials, natural colors, simulation of natural light and air, natural forms that evoke nature, natural geometries, and biomimicry.
3. Experience of space and place: This is characterized by providing extensive views of natural life, creating a sense of refuge where spaces or buildings can serve as safe places for their users, transition spaces, mobility, culture, and ecology.

### Application of Biophilic Principles

In the book titled 14 Patterns of Biophilic Design, the application of the biophilic concept can be divided into three principles: Nature in Space, Natural Analogues, and Nature of Space. The Nature in Space principle is defined as the principle that involves creating a connection to nature, either directly or indirectly, within a building. In the library's design, this principle is applied through the use of artificial green walls and potted plants in various areas of the library, including the lobby area (Figure 1).

According to Kellert (2015), green plants that provide visual aesthetics can enhance or stimulate our imagination and creativity. Without direct visual contact with nature, such as plants or window openings, users may experience boredom and fatigue. Ahmed (2014) also notes that green plants in a space can positively affect psychological well-being, making users feel calmer, more relaxed, and brighter, while boosting their positivity and productivity. Additionally, this principle is implemented through wide openings, which ensure optimal air and light circulation throughout the space. Wide openings also help users gain direct views of the natural environment outside the building (Figure 2).

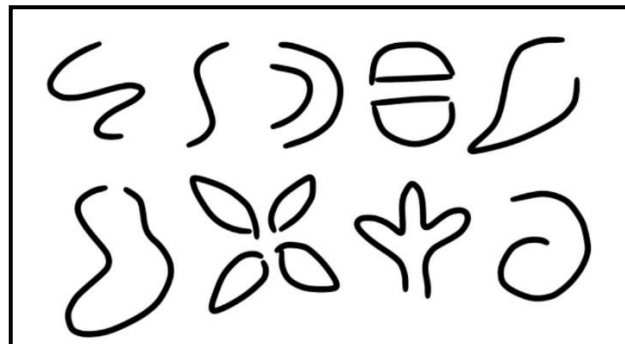


**Figure 1.** Implementation of Potted Plants and Artificial Wall Plants in the Lobby Area  
Source : Vernanda Salsabila Z., 2024

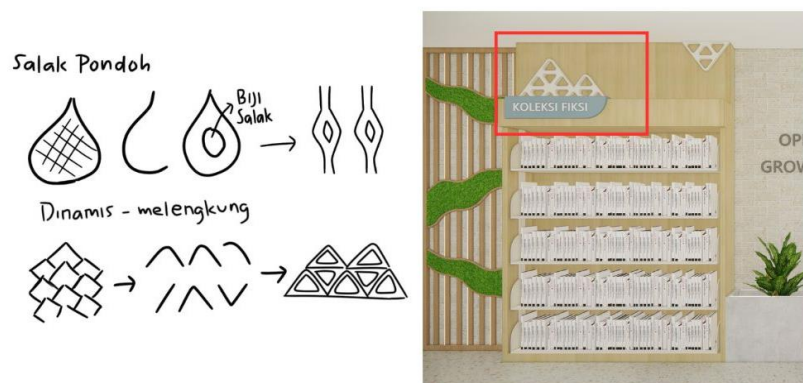


**Figure 2.** Implementation of Wide Windows in the Library  
 Source : Vernanda Salsabila Z., 2024

The principle of Natural Analogues refers to how design can reflect nature within a space. In the design of the library, this principle is applied by incorporating organic shapes and patterns found in nature. These patterns are derived from natural elements such as the shapes of leaves, flowers, trees, and waves, which are then simplified into more abstract forms (Figure 3). To further reinforce the biophilic concept implemented in the regional public library, the design also draws inspiration from the shape of the snake fruit (salak), a distinctive feature of Sleman Regency. The organic forms applied in the interior elements and furniture, such as tables, chairs, seating areas, and bookshelves (Figure 4). This can create a dynamic impression, serves as both a decorative and functional element, and makes the space feel more vibrant and alive.



**Figure 3.** Organic shape transformation from nature  
 Source : Vernanda Salsabila Z., 2024



**Figure 4.** 1. Transformation of the shape of a snake fruit (left) 2. Implementation of design transformation on a bookshelf (right)

Source : Vernanda Salsabila Z., 2024

The Nature of Space principle focuses on how the library space can create an open environment that represents the vastness and openness of nature. Users' views can be oriented towards the outside of the building, and the interior design is open-plan, allowing users to feel connected to nature within the space. This is achieved by incorporating plants as aesthetic elements that also help filter polluted air within the room. The selected plants are indoor-friendly and can thrive without direct sunlight, such as Aglaonema, Palem kuning, Dragon tree, Pakis, Lidah mertua, and Monstera.

Color also plays a significant role in biophilic design, where it serves as an indirect natural experience within interior spaces. In libraries, the application of color should support natural characteristics such as earth, stone, water, sky, sun, and greenery. The use of various colors helps create a pleasant and dynamic atmosphere, reducing monotony and minimizing user fatigue. Colors like brown, blue, yellow, green, white, and gray can achieve this effect (Figure 5). In the book *Colour Psychology and Colour Therapy*, it is explained that colors evoke a wide range of moods. Blue and green can create a calming, refreshing, and peaceful atmosphere, bringing the space to life. Yellow and orange, which represent the sun as a natural element, convey warmth and joy. Brown, derived from wood textures, also contributes to a sense of warmth and enhances the natural feel of the space. White is used to convey a clean and neutral impression, balancing the diverse palette used within the library.



**Figure 5.** Color Composition  
Source : Vernanda Salsabila Z., 2024

### Application to Design Elements

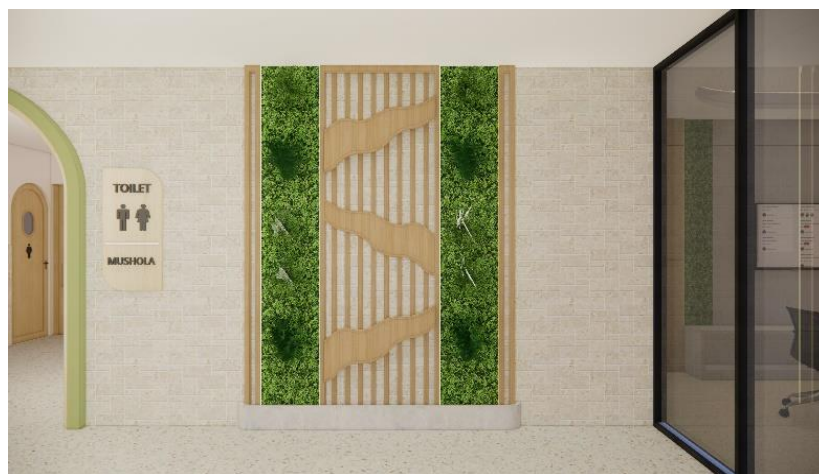
The Biophilic concept is further enhanced by applying its characteristics to design elements such as the floor, walls, and ceiling. The library's flooring features terrazzo in dark and light gray with circular patterns, which create a natural and dynamic effect (Figure 6). In the children's area, rubber flooring in green, blue, and cream colors is used to add a cheerful touch, allowing kids to play and explore while choosing books. The choice of rubber flooring is due to its safety and comfort features. Additionally, it helps to reduce noise, which is important given the potential for significant noise in the children's area.





**Figure 6.** Application of Terrazzo Floors in Library Design  
Source : Vernanda Salsabila Z., 2024

The walls are generally painted in natural colors that evoke the outdoors, such as green and cream, and feature textured paint combined with wood-patterned wall panels on some sections. The design of the wall panels in the reading area is inspired by the shape of tree branches that rise and branch out. Additionally, wall-mounted plants are used in conjunction with dynamic wooden elements and natural stone to create a fresh, natural, and vibrant atmosphere in the space (Figure 7). In the meeting room, which caters to potentially noisy library visits, perforated acoustic panels are installed to minimize disruption to other library users.



**Figure 7.** Application of the Biophilic Concept to Walls  
Source : Vernanda Salsabila Z., 2024

In addition, the ceiling is designed with an up ceiling to create a sense of a larger and higher space using clean-looking gypsum material. It highlights dynamic curved designs that represent the natural wave forms (Figure 8). The up ceiling is applied in the reading area and collection area, children's reading area, discussion area, and reference collection area. In the reference collection area, a three-layer up ceiling is used to represent sea waves. Similarly, the children's reading area features a nature-themed design with wavy ceilings and blue paint accents resembling the sky. The gypsum ceiling design is also combined with wooden ceilings in the library's reading area and the children's area to enhance the natural atmosphere and give the room a warm feel.



**Figure 8.** 1. Application of wave-shaped up ceiling in the reference room (left) 2. Application of wave-shaped up ceiling in the children's reading area (right)  
Source : Vernanda Salsabila Z., 2024

## CONCLUSION

The Sleman Regency Library is a public library established to support the educational needs of the community and is accessible to the wider public. However, issues with space organization and inefficient circulation need to be addressed through the development of a well-conceptualized, attractive design that can enhance user productivity.

The interior design of the library incorporates a biophilic concept, offering a solution to the rigid and unstructured feel often associated with library spaces, particularly in areas where productivity is essential. The intense concentration required from users while in the library can sometimes lead to fatigue and boredom. This design concept introduces nature into the space, both directly and indirectly, through the use of natural materials like wood and stone, natural colors that reflect the elements of nature, ample lighting from large windows, greenery on walls or in potted plants in various areas, and dynamic forms that represent nature. The organic shapes incorporated into the design, along with the addition of plants, create a fresh and dynamic atmosphere that helps minimize user fatigue and boredom.

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