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THE POTENTIALITY OF ECO-LIBRARY DESIGN IN MEDAN CITY TOWARDS SUSTAINABILITY DEVELOPMENT

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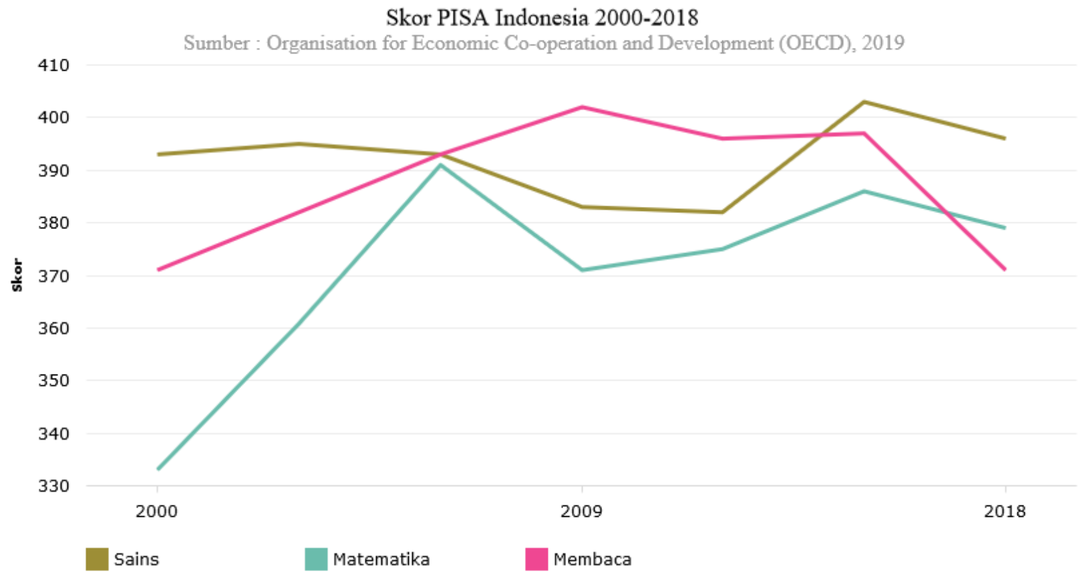
Introduction



- Over the past three decades, sustainable development has emerged as a significant theme of concern. Libraries as the centre of knowledge, play a crucial role in supporting sustainable development by providing access to information.
- Low literacy and lack of educational facilities and infrastructure are still one of the major issues in Indonesia.

- Medan City has two conventional or traditional libraries, both managed by the Medan City Government.
- The 2 libraries are not optimal in terms of facilities, collections, air circulation, lighting, and space design.

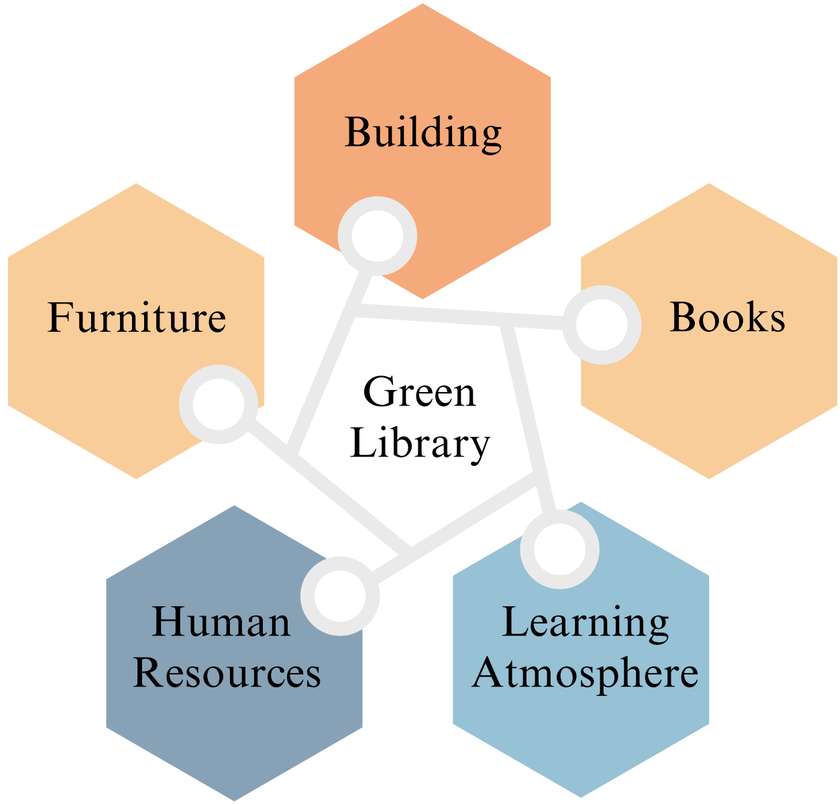
Introduction

- Considering this condition, the development of libraries in Medan City needs to explore the new concept of a library, along with the sustainable development concept namely **Eco-Library**.
- This concept aims to conserve natural resources, reduce energy consumption, and create an eco-friendly environment. By using;

  a) solar energy

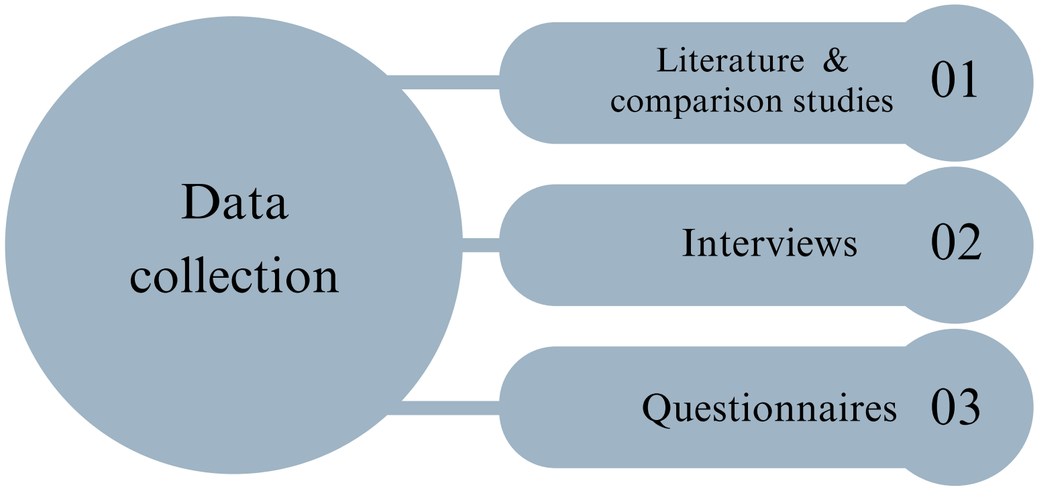
  b) maximum use of natural light and air

  c) implementation of green building concept



Methods

- The research used **mixed methods**, combining quantitative and qualitative approaches to obtain data results that are more comprehensive, valid, reliable, and objective.



Theoretical references relevant to the case found in order to have strong empirical basis.

Interviews were carried out before the field survey with an architect and library staff.

Distributing questionnaires to 100 respondents to get information on the needs of literacy facilities in Medan city.

Result and Discussion

- The interview resulted in the **library** design being categorized **as a public facility** that **must fulfill** the **Functional Eligibility Standard**, which included **4 aspects**, in terms of **safety**, **comfortability**, **health**, and **accessibility**.

- Thus, the questionnaire focusing on the evaluation of the existing library of North Sumatera province, reveals;

  a) Library is accessible to all communities, with reading rooms for the disabled and braille book collections.

  b) Average daily visitor count is 85, with majority being students.

  c) Decrease in library visitors in 2023 compared to 2020.

  d) Government efforts include mobile library services, increased book collections, and extended operating hours.

  e) Operational cost exceeds electricity fee due to thermal conductivity maintenance.

Result and Discussion

a) a large overhanging roof

b) solar photovoltaic panels

c) rainwater harvesting system

The concept of a green library or eco-library is applied by designing a library that has minimal negative impact on the environment and improves environmental quality in the environment, as applied at the School of Design and Environment 4 (SDE4), National University of Singapore.

SDE4 is a lighthouse project. A net-zero energy building that is a true synthesis of architecture. Opened in 2019, SDE4 was designed as a hub for the test-bedding of green building technology. Its innovative design features include a hybrid cooling system to reduce energy consumption and over 1,200 solar panels on its roof to provide power. The building's airy and light interiors are designed to maximise ventilation and natural lighting.

d) natural lighting

e) double facades

Conclusion

- The development of Eco-Library design has become a potential solution to meet the limitation of the government, particularly North Sumatra Provincial government in financial problems.
- The design aims to be low operational and maintenance-cost, incorporating green building principles and modern tropical architecture.
- Despite initial challenges, this combination concept is valuable and warrants further research. Initial challenges include;

  a) technical design for rain harvesting, and

  b) floating boxes.

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