The Application of Green Design in the Interior Room in Terms of Material Selection

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Abstract

Design with the Green Design approach is now starting to get more attention in interior planning in big cities in Indonesia. Human awareness about the environment and healthy living space is a driving factor. In addition, the application of Green Design in the interior provides benefits such as increased employee productivity, soundness, selling points, especially for prospective (corporate) international tenants and various government reliefs for those who have Green certification. Based on research, one of the causes of damage to environmental conditions is due to the presence of buildings / high rise buildings (the interior is part of the building). The use of materials in the interior is often not environmentally friendly and does not pay attention to the health of the people who are active in it. The results of this study, one of which is intended as a guide (initial introduction) in designing specifically for students (interior design program) who will become professionals in the future.

Keywords: Green Design, Material, Interior

1. Introduction

Rapid growth of the number of high-rise buildings occurred in major cities of Indonesia. Environmental damage caused by tall buildings increases from year to year. This damage is caused by, among others, the use of materials for building materials and interiors that come from natural resources that are difficult to renew, the use of materials that are difficult to recycle or reuse, and the use of materials and finishes that contain hazardous substances for building or room users.

These adverse effects not only affect the environment, but also the users (humans) of buildings or rooms. The influence felt by the user is the disruption of health and decreased work productivity. Health problems experienced by these users are known as sick building syndrome. The causes are among others due to the content of hazardous chemicals in the material as well as furniture finishing or interior elements (walls, floors and ceilings).

At present, the above problems have attracted the attention and encouraged designers (architects and interior designers) to create building or room designs that are environmentally friendly (have a minimum negative impact on the environment) and are healthy for human use as users. The design approach 'Green Design' in the design of buildings (exterior) and rooms (interior) began to be widely studied and applied. Buildings that are designed as 'Green Design' have more value especially for foreign companies (potential users / tenants of buildings or rooms). These companies usually require the building or room to be rented to be 'Green Design'. The government, as a form of concern for these issues, has also provided benefits for building owners who are certified 'Green Design' in the form of tax breaks.

As explained earlier, tall buildings today can have 'Green Design' certification. The institution authorized to provide this certification in Indonesia is the Green Building Council Indonesia (GBCI). This institution has the authority to assess and determine whether a building is entitled to "Green Design" certification or not.

For students (interior design), who in the future become professionals in their fields, this introduction to 'Green Design' needs to be done as early as possible, starting with lectures on campus. This introduction to 'Green Design' is not enough to just master basic principles or in broad outline, but it is necessary to apply and master the 'Green Design' evaluation criteria that refer to the Indonesian Green Building Council. When referring to the 'Green Design' criteria according to the Green Building Council Indonesia, the 'Green Design' approach to application in the field can be very varied and broad. Based on these problems, this research was conducted to identify the various applications of the 'Green Design' approach that can be carried out in the field (real conditions) based on criteria issued by the Green Building Council Indonesia (GBCI). The results of this study are expected to increase understanding, become an example and guide for students (interior design) in exploring designs through the 'Green Design' approach. The limitation in this study is the discussion focused on the criteria related to the material. Discussions based on other criteria can be done in subsequent studies.

2. Literature Review

2.1 'Green Design' criteria according to the Green Building Council Indonesia (GBCI)

The material and product criteria are in the environmentally friendly category, namely: (Green Building Council Indonesia Rating and Technology Division, 2012)

a. Used materials that are still suitable for use.
b. Material or products that come from renewable sources with a short-term and biodegradable harvest period.
c. Materials or products originating from the recycling process.
d. Material or product whose production process has an environmental management system.
e. The material is the main raw material and the production process is within a radius of 1000 km from the project site.
f. Materials whose main raw materials and production processes are within the territory of the Republic of Indonesia.
g. Non-toxic and / or dangerous material or product.
h. Materials or products that are the result of prefabricated offsite production so as to reduce construction waste at the project site.
i. Materials that have other advantages in supporting the environment.

3. Methodology

The research methodology used in this research is analytical descriptive. The first stage is explaining theories related to 'Green Design' and the influence of climate on existing buildings. The second stage is that the two theories are combined and used as parameters in analyzing various examples of the application of the 'Green Design' approach related to materials that occur in the field, based on various material information and its application obtained from the website. The analysis is presented in the form of pictures, descriptions and tables. After analysis, the last step is to draw conclusions from the results of the analysis.

4. Discussion Results

The application of the 'Green Design' approach in office interior design, based on criteria established by the Green Building Council Indonesia, can be done in the following ways:

Table:

No	Illustration of Application Example	Material Explanation and Application
	 Source: https://delightfull.eu/inspirations/2016/07/06/creative-home-designs-pallets/	Used wood pallets that were previously used as boxes to package goods can be used in interior spaces. Utilization can be in the form of: • Utilization of wooden pallets as wall covering (decorative). • Utilization of wooden pallets as a floor (split level) in the room.
		The use of bamboo and rattan as materials for making interior elements such as:

	 Source: https://id.pinterest.com/pin/380061656037098003/?autologin=true	furniture, lamp houses, potted plants and carpets. Bamboo and rattan are types of plants whose growth period is fast, easily planted and cultivated (easily renewed). Bamboo and rattan also when they are not used (become trash) are easily broken down in nature.
	 Source: https://www.recyclingtoday.com/article/isri2019-kirei-recycled-pet-acoustic-building-materials/	The use of soundproofing panels on walls and ceilings from recycled plastic.
	 Source: https://www.hbf.com/discover/sustainability	The use of furniture products that are environmentally certified related to the pre-production process to post-production. The advantages of these products can be: (https://www.hbf.com/discover/sustainability) • Production facilities, organizational policies and component materials of the products themselves met the qualifications to comply with the industry's furniture sustainability standards. • Lean manufacturing processes for eliminating waste and minimizing environmental impact. Lean seeks to eliminate waste from every business process. Lean drives continuous improvement and provides ongoing opportunities to implement new environmentally conscious alternatives to traditional methods. • Disposal of wood finishing waste and wood waste. Example: liquid waste from wood finishing process is sent offsite to be fuel blended and used by cement kilns. Solid waste is also sent offsite to generate electricity. Most sawdust and some wood waste are used as industrial fuel boilers by third parties.
	 Source: http://venindo.co.id/portfolio/sincol-indonesia/	The use of locally produced cover material (parquet) (made in Indonesia), for example the use of wood parquet material. The benefits include: (http://venindo.co.id/portfolio/sincol-indonesia/) • Lower material prices because they are not subject to import taxes. • The cost of accommodation (shipping from producers to the field) is faster and cheaper. • Improve the local economy.

	 Source: https://safespacebuildings.com/products/modular-buildings/interior-enclosures/	Semi-permanent enclosure which is made in a modular (certain size) and made in a factory (not made on site / field) provides an advantage in the speed of construction and does not pollute the location / field during the work process.
	 Source: https://www.creamhaus.com.au/products/non-toxic-folding-play-mat-snow-palette-nature-cutie?variant=16413012557914	Use of Folding Play Mat, which does not contain toxic chemicals, as a children's playground. This Play Mat can have several advantages including: (https://www.creamhaus.com.au/products/non-toxic-folding-play-mat-snow-palette-nature-cutie?variant=16413012557914) • Safer and Cleaner with plant ingredients. • Softer and smoother to sensitive baby skin. • Stronger and more durable.

5. Conclusion

The application of the 'Green Design' approach in building interior design is not only limited to the use of materials that come from nature or do not contain harmful chemicals, but can be even more extensive. The 'Green Design' approach in terms of material can also be based on the production process before it reaches the consumer (material user), the process of packing and shipping goods (material) from source to the consumer's hand, the durability of the material when used, the process after the goods (material) expires use (can be recycled, reused for other functions or easily decomposed by nature), does not contain chemical pollutants (VOCs) are dangerous, comfortable to use and free from allergies to users, based on natural ingredients, easy to install and use, made from sources renewable and easily renewable natural resources (eg bamboo or rattan), made from materials taken from cultivation sites (eg certified wood taken from production forests), made from local materials (available close to the location), locally produced (close to the location), fabricated, made modular and the use of existing materials (already on site).

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