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The development of concept of green library in the college education system & its implication: A system review

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Abstract

A green library is a concept which minimizes negative impact on the natural environment and maximizes indoor environmental quality by means of careful site selection, use of natural construction materials and biodegradable products, conservation of resources (water, energy, paper), and responsible waste disposal and eco-friendly of Library (recycling, etc.) Purpose of green library is working with the climate, minimizing use of new resources; all the green principles need to be embodied in a holistic approach to the build environment. When ecological imbalance is the burning issue of this era, it is the perfect moment for the Librarians to step up and assist communities to become green and sustainable and also right to sustain and continue to holdup the Green Library Movement. Many Librarians and other information professionals are taking action to ensure that their workplaces will be environment friendly.

Keywords: Green library leadership in energy and environmental design (leed), green library movement, eco-friendly movement

Introduction

A Green library, also known as a sustainable library, is a library built with environmental concerns in mind. Green libraries are a part of the larger green building movement. Libraries, particularly college libraries, are lifelong learning centers for people of all ages in local communities. Libraries are not only repositories of knowledge, but are also important information resources for raising awareness about environmental concerns. Green libraries educate the public about environmental issues through their collections, sustainable and environmentally friendly facilities, and college library programs. Among other things, green libraries maximize the effects of natural sun light and natural air flow; green libraries are thoughtfully designed while taking into account site selection to structural design, energy use, materials used and human health effects. There is no univocal definition of a green library but there are a number of central themes that run through all of them, which seek to minimize the negative and maximize the positive effects the building on the local environment. Green libraries seek to reduce the use of water and energy by designing the building to maximize the use of natural and renewable resources. They also integrate actual plants into the building design, preferably with drought resistant and/or native vegetation. Furthermore, the maintenance of high standards of indoor air quality helps in ensure the health of the people who inhabit the building". (Nikam, 2017, p.191).

Review of Literature

1. There have been many articles on green libraries. A few selected one are reported in this part Nikam Suresh S. (2017) ^[1] Green Library: An Emerging Concept discusses about the elements of green library, CO₂ levels and air quality
2. Thomas Raysh, (2017) ^[2] explain Developments of Green Libraries
3. Malode Amit (2014) ^[3] energy and environment design, Building Materials post-industrial and post-consumer recycled materials are being used gave emerging trends of green libraries
4. Meher Puspanjali & Parabhoi Lambodara (2017) ^[4] discussed about the Developments of Green Libraries in india and international level
5. Shah Leena, Kumar Sudhir & Shah Mukesh Kumar (2015) ^[5] elements of green library, Location, Water, and Energy Conservation described eco-friendly libraries discussed few

green libraries and provided tips for green libraries

Objective

The following objectives of this paper is to:

- To contribute little efforts to make a green earth.
- To make use of those products which can be reusable?
- To proper use of technology to reduce library expenses.
- To make library modern techno savvy and give green service to patrons.
- To save energy by making library compound greenery.
- To create an environmental awareness among people.
- To promote green library movement.

The main goal of green building is to develop and use sustainable energy efficient resources in construction, maintenance and overall life of the structure. Libraries considering green design will often look at the leadership in energy and environment design (LEED) rating system. (Malode, 2014, p.15) [3].

Elements for Green Library

The green library movement has emerged in the early 1990s and it is gaining popularity in the field of library and information science profession. Library professionals of today are working on the idea of green library which will use natural and regional construction material, minimize consumption of water and electricity, and use environment friendly technology. Though it is in initial stage of development we need to understand that green or sustainable library is the structure that is designed, built, renovated, operated, or reused in an ecological and resource efficient manner. There are wide range of ways to promote the idea of green library such as use of environmentally friendly recycled and regionally available materials optimal use and conservation of natural resources, virtual user services and resource saving copy services, waste separation, elimination of plastic bags, no more paper cups and instead use of recycled/private rockery, fair-trade coffee in the library's coffee shop, green events and choosing library suppliers with green certificates. While the term green library is often used specifically to describe a library building that has built by using standards or guidelines like LEED, it can also refer to a library which is becoming more environmentally sustainable in significant ways, whether by using nontoxic cleaning supplies, reducing energy consumption, or collecting and promoting materials with environmental themes. Basically, green design is an integrated process. No one aspect of a building's architecture makes it a green architecture. Without proper integration right from the early stages of the planning phase, redundancies can occur, and can eliminate many of the potential benefits of sustainable design. Good sustainable design always capitalizes on the synergistic relationships that occur between the various design elements. LEED groups these elements into five categories. Buildings can be designed in a way in which, one category helps another category fulfill its goal of good and sustainable design. These five elements can be discussed as under" (Nikam, 2017, p.192) [1].

1. **Location:** "Besides population, reach ability location, parking and local conditions like storms, erosion, moisture and dust, etc. are also to be considered before finalizing site. India has geographically varied

conditions from vast deserts to high hill tops, planes and very vast coastal areas so one norm cannot fit throughout the country. A proper site selection is very necessary for a green library as compared to other types of buildings" (Shah, Kumar, 2015, p.1) [5].

2. **Water Conservation:** Use of roof water harvesting, green toilets, water recycling, etc. can save lot of water for proper landscaping and greenery in and outside the library building. (Shah, Kumar, 2015, p.2) [5].
3. **Energy Conservation:** "It is most important aspect in green revolution. Use of wind and sun can manage temperature and light in place of electricity. It saves lot of natural resources like coal and emission of harmful gases like Co₂ which will be helpful in reducing global warming. It is economic to the institution in electricity bills" (Shah, Kumar, 2015, p.2). The passive strategies vary according to location, but they are always implemented to capitalize on the natural elements, mostly wind and sun, to manage the temperature and to provide ventilation and light. Active strategies are more technologically advanced solutions that include using various forms of renewable energy resources and using sensors to adjust lighting. Using photovoltaic cells that turn sunlight into energy is becoming an increasingly popular way to reduce energy dependence. In order to fully maximize energy efficiency and comfort, libraries are combining passive and active strategies."
4. **Materials:** "It is believed that up to 40% of landfill space is filled with construction waste material. The primary responsibility in selecting materials for the library is to contribute as little waste as possible. Another responsibility is to choose materials that can be produced without causing too much damage to the natural environment. In order to fulfill the first responsibility, post-industrial and post-consumer recycled materials are being used. When purchasing materials claiming to be made from recycled goods it is important to investigate what their claims mean. It is a common marketing practice to exaggerate how green a product is by using misleading statements. Also, materials should be chosen that are going to be able to be reused or recycled 50-100 years down the road when the library building has reached the end of its useful life As non-renewable resources decrease, reusing and recycling are going to become increasingly necessary in the future" (Malode,2014,p.15) [3].
5. **Indoor Air Quality:** "A long with energy inefficiency, poor air quality has been another side-effect of the post air conditioning building design. Because most modern buildings are temperature controlled, they are designed to be airtight. The lack of ventilation can not only make buildings expensive to cool" (Nikam, 2017, p.195) [1]. it also traps harmful toxins that can do serious damage to people's respiratory systems. Toxins come from a variety of sources. Materials that make up the library, including paints and carpeting, have volatile organic compounds (VOC's), which produce a ground-level ozone after reacting with sunlight and nitrogen. The carbon dioxide that people breathe into the atmosphere is another toxin. To improve air quality, materials can

be bought that have a low VOC content, and CO₂ monitors can be installed to ensure that CO₂ levels remain at a safe level. On average, people spend about 90% of their time indoors. Therefore, green buildings need to be designed in a way in which the air gets recycled, and does not stay stagnant. (Nikam, 2017) ^[1]. A green library is not just about taking care of the environment, it is about taking care of the health and well-being of those who work in it and patronize it.

Why are Libraries Becoming Green?

First, libraries have been expanding the scope of their mission statements, to include working for the betterment of humankind, second, technology is no longer a barrier. Third, it is great for the image of the library. Finally, sustainability offers the library a degree of independence, because cost of maintenance goes down, as doe’s reliance on the volatile fossil fuels market.

Developments of Green Libraries in India



Fig 1: Anna Centenary library

Green libraries are quite popular all over the world and librarians are transforming their library buildings into green library buildings. The two most important things for making green sustainable libraries are economy and ecology. There are few green library initiatives already working in India and World (Thomas, 2017,) ^[2]

- **Anna Centenary Library (ACL):** The library was established in 2010 by Government of Tamilnadu situated at Kotturpuram, Chennai. (Mehera & Parabhoi, 2017) ^[4] The buildings occupy an area of 8 acres this has been awarded the LEED Gold Rating (new construction) by the Indian Green Building Council in recognition of its energy-efficient design with a rating of 43 points. The detailed and accurate planning principles implemented during the construction of the library have played a key role in determining its sustainability and energy-efficiency. (Anna Centenary Library, n.d.)

- **Karnataka university library Dharwad:** University’s vision is to reinvent a green space for students and culture. A clean area for students with new dimensions, informative signage boards, corners for deep studies & group discussions, a space for heritage walks, a centre for photographs, paintings and water colours. This concept of Green Library provides a study atmosphere in a natural-green environment with lush greenery. This system is a blend of heritage and modern aesthetics

with all facilities, including scope for group discussions in the silence of the green space. Keeping this in view, the University has taken every care to see that the Green Library is given a facelift both in terms of maintenance and infrastructure, incorporating modern pergolas, Gurukul Huts, open granite mantaps, granite tables with benches beneath the trees, solar lightings, etc. (Karnataka university Dharwad, n.d)



Karnataka university library



Karnataka university library

- **Madras University National Library:** Madras University Library was established in 1907 in the Connemara Public Library. The existing library building, built in Indo-British style was opened on 3rd

September 1936. The library use wood material in stack areas and reference hall, periodical section reading hall. The windows are big and wide and proper lights come to the reading area and fresh air came. This Building is

built with the pointed arches in granite, domes with octagonal base. The kiosks resemble the Islamic Architecture in India. (Madras University, n.d)

- **Calcutta University Library:** This central library, at the Asutosh Siksha Building, started functioning around the 1870s. Apart from 39 departmental libraries it has a central library, two campus libraries, and two libraries of the advanced centers spread across the seven campuses. Students of affiliated colleges can also access the central library. The university library has over 10 million books and more than 200,000 bound journals, proceedings, manuscripts, and patents. (Calcutta University, n.d)
- **Mumbai University Library:** University of Mumbai (Bombay) was established in 1857. In August, 1864, Premchand Roychand, a merchant prince of Bombay, offered to the University a donation of Rs. 2,00,000 "towards the erection of a university library which may be an ornament to the city, and by becoming a storehouse of the learned works, not only of the past but of many generations to come, may be the means of promoting the high ends of the University (Mumbai University, n.d) The library are made with eco-friendly equipment's with wood the size of the windows are wide so that proper light get in to the library. The library gives a big open space area for the readers. The library use wood as stack materials. (Wikipedia.Org)
- **Delhi University Library:** The Delhi University central Library began in 1922 with a collection of mere 1380 gift books. The Library moved to its present locale in the heart of the Campus on December 01, 1958. (Delhi University, n.d)

Indian Standards to assess Green Libraries

In India we have GRIHA and IGBC. GRIHA has been adapted by the government of India as the National rating system. Indian Green building Council (IGBC) was established in the year 2001 to promote and rate Green buildings in India.

- a) GRIHA has been adapted by the government of India as the National rating system. Keeping in view of the Indian agro-climatic conditions and in particular the preponderance of non-AC buildings, GRIHA has been developed as a rating system which is suitable for all kinds of buildings in different climatic zones of the country. (Thomas,2017)^[2]
- b) Indian Green building Council (IGBC): Indian Green Buildings Council (IGBC) established in the year 2001 to promotes and rate Green buildings in India. There are about 2190 registered buildings, 398 rated buildings and also 1082 IGBC aggregated professionals. (Thomas, 2017)^[2]

Conclusion

“Going green” and environment friendly, sustainable information systems and services are crucial issues which call for immediate attention a green library design is less expensive because of reduced upfront costs energy, water conservation and increased efficiency. The role of the library is to serve its community. Communities need libraries and librarians to act as role models for

sustainability by providing accurate information on manner of green topics from alternative building practices to renewable energy options. Librarians should encourage and support the movement of green libraries and help communities to understand green and sustainable concepts. More and More eco-friendly solutions should be implemented to make our mother earth a better place to live in. All Library professionals must take initiatives and participate in green library movement for achieving our mission sustainability.

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