

Green Libraries: Introduction

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ABSTRACT

A green library is designed to minimize negative impact on the natural environment and maximize indoor environmental quality using careful site selection, natural construction materials and biodegradable products, conservation of resources (water, energy, paper), and responsible waste disposal (recycling, etc.). In new construction and library renovation, sustainability is increasingly achieved through Leadership in Energy and Environmental Design (LEED) certification, a rating system developed and administered by the U.S. Green Building Council (USGBC). Green libraries are a part of the larger green building movement. Also known as sustainable libraries, green libraries are being built worldwide, with many high-profile projects bringing the concept into the mainstream. Along with library 2.0, green design is an emerging trend, defining the library of the 21st century. Many view the library as having a unique role in the green building movement due to its altruistic mission, public and pedagogical nature, and the fact that new libraries are usually high-profile, community-driven projects..

Keywords: Green, Libraries, LEED, Building, Environment

INTRODUCTION

Green design is an integrated process. No one aspect of a building's architecture makes it green architecture. Without proper integration from the earliest moments of the planning phase, redundancies can occur, eliminating many of the potential benefits of sustainable design. Good sustainable design 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, good design in one category helps another category fulfill its goal.

Site Selection

Before building can start, a site must be chosen. The selection of the site has a large impact on how ecologically friendly the library will be. LEED has a number of guidelines to help the process. There are a number of questions to consider that will help guide the site selection process, including, what kind of impact will construction have on the local environment, will there be erosion, what can be done with storm runoff, and is the site already green? Also, the library should be located in a densely populated area, near a number of other service related buildings. People should be able to reach the building via public transportation and the parking lots should give priority parking to

those driving energy efficient automobiles. The heat island effect can be reduced by shading hard surfaces, putting them underground, or by implementing a vegetative roof.

Water conservation

There are many different ways for libraries to conserve water. A number of them rely on proper site selection. If a site is selected properly strategies can be used to capture rainwater runoff to be used in irrigation. Another strategy is to use low flow fixtures, and waterless urinals.

Energy conservation

Energy efficiency is considered by many to be the most important category in becoming sustainable. In the LEED rating system it is the heaviest weighted of all the categories. Energy efficient design is in many ways a return to passive design principles that evolved over thousands of years, until the advent of air conditioning and cheap energy made those strategies appear to be unnecessary. After air conditioning became widely available, buildings were designed to eliminate influences of the outside environment. Lamis illustrates this point in "Greening the Library" when he compares two libraries built near the turn of the 20th century, the New York Public Library and the Boston Public Library; to two more recently built libraries, the Chicago Public Library and the Phoenix Public Library. The two older libraries have interior spaces that are narrow, so they can be reached by natural light and air. Whereas the two more modern libraries have large floor plans, with interior spaces far removed from the outside environment. Making them more dependent on artificial systems of temperature control.

As environmental awareness increases, as well as the cost of fossil fuels needed to operate giant heating, air conditioning, and ventilation ([HVAC]) systems, building designers are beginning to recognize that the outside environment cannot be ignored, and should be taken advantage of. What 21st-century designers are beginning to do is implement ancient passive design principles, while taking advantage of the most advanced technology available. 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.

Building 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. It is also important to consider where materials are coming from: Resources

have emerged to help guide the material selection process, such as the Forest Stewardship Council (FSC). They rate and certify wood based on a number of factors regarding how it was produced; rights of indigenous peoples, environmental impact, workers rights, efficiency, management, and conservation. Another material option is using quickly renewable materials such as bamboo in place of wood whenever possible. The widening availability of green building materials, along with the development of non-profit watchdog groups are two important factors in the greening of 21st-century library buildings.

Indoor air quality

Along 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, 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.^[4] Therefore, green buildings need to be designed in a way in which the air gets recycled, and does not stay stagnant. 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.

Green Design Elements for Libraries

Green libraries combine the needs of a library, sustainable design, and real cost savings in energy consumption (Brown, 2003). The main goal of green buildings 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 Environmental Design (LEED) rating system. Brown (2003) identifies the following green design elements, which can be incorporated into libraries:

- Community collaboration** – makes sure that community assets are efficiently used and helps to maintain public support
- Daylight** – pair daylight with artificial lighting to reduce energy costs
- Green materials** – use renewable materials like wood, linoleum, bamboo, and cork
- Green roofs**
- Raised floor systems**
- Energy efficiency**
- Natural ventilation**
- Green power and renewable energy**
- Indoor environmental quality**

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 does reliance on the volatile fossil fuels market.

GREEN LIBRARIES AROUND THE WORLD

1. Fayetteville (AR) Public Library.
2. Seattle Central Library.
3. National Library, Singapore.
4. Minneapolis Public Library.
5. Public Library of Charlotte and Mecklenburg County.
6. Children's Museum of Pittsburgh.
7. University of California, Merced Kolligian Library.

Green India

It is become a hustle and bustle concept now and not only library but also every sector and departments are seriously thinking about it. Because by making a green environment International Journal of Digital Library Services in our surroundings individually or collectively, by avoiding deforestation, decreasing carbon dioxide level and increasing clean climate we can make a green, clean and healthy India. There are various projects are under taken by various ministry of government of India to redirect the mode of change to a green India and also big companies in private sectors both nationally and internationally like TERI (The Energy and resource institute), Infosys, IKEA, Adobe, Coca-Cola, Google, HPE (Hewlett Packard Enterprise), Microsoft, Nestle, NIKE, Philips, P&G, Tata Motors aims to play a lead role to reduce the carbon economy level and help to decrease the impacts of climate change. Furthermore some major initiative from ministries like ministry of environment, forest and climate change has started some programs like: Compensatory Afforestation Management and Planning Authority (CAMPA)· Compensatory River Conservation Directorate (NRCD)· Capacity Building for Industrial Pollution Management (CBIPM)· National Green Tribunal (NGT)· National Mission on Himalayan Studies (NMHS)·

The Role of Green Librarian

- ✓ Librarian should always make efforts to promote green library movements by using different online tools like social media.
- ✓ The Librarian constantly willing to work under the Eco-library system and· identify those people who are willing to work in this environment.
- ✓ He can promote green library tools, techniques to encourage others.
- ✓ A Librarian can encourage other librarians towards green library by discussion, seminar, and conferences.
- ✓ The green librarian's role is most dynamic he is also called as eco librarian
- ✓ because he has to handle the budgets to support the organizations.
- ✓ Use wooden furniture and material because these are bio degradable materials
- ✓ Library can use wool brick instead of burnt brick.
- ✓ Solar tiles or panel can be used for roof.

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- ✓ Paper Insulation is also an ultimate trick to make environment friendly building.
- ✓ It is made from newspaper and cardboard which are recyclable.
- ✓ Also it protects wall from fire and insects.
- ✓ More and more use of bamboo by replacing steel.
- ✓ Rooftop planting can be a good idea.

Karnataka University Library Dharwad

The library started working since 1950. The library is eco-friendly library. They facilitate. Give a green space to the students of the University. The library follows the traditional Gurukul system in this view they setup a green library environment. The main motto of the green library is to facilitate students for group discussion. The Library gives a study space for the student with sitting, drinking and WiFi facilities, etc. The green library situated at nearest to all P.G departments so that students can get maximum benefits.

CONCLUSION

The library always facing problems like space and budget in the same way the books has been facing problems from dust, moisture, fungus and it needs special care. The green library or sustainable is a modern library where minimize electricity consumption and maximum use of renewable sources like air, sunlight, woods. Now days it is much more needed for a library to greening the library environment. The librarians should take some decisions to make green library. And also take part in green library movement. Many national and international bodies are helping to make green library. Government should encourage the green library and guide to the all the libraries for making green libraries. Some of the Indian libraries have been trying to make a successful green and Librarians should take initiatives and participate in green library movement.

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