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Green Libraries Effect to the Academic Institutions: A Special Study on US Based Libraries

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ABSTRACT

The spiral concept of Green Library is captivating to the entire library professionals worldwide. This is also called sustainable library. The present paper discusses about overview of the technical development of green libraries of academic institutions in US based libraries and other developing countries i.e. UK, Canada and India. Which also focus on the workflow, features, aims and objectives, scope and limitations, betterment of green libraries and the role of librarians. The paper also focuses on the role of initiatives like UNDP, IGBC and LEED.

KEYWORDS

Green Library, Green Revolution, Sophisticated, LEED, UNDP

INTRODUCTION

The traditional life style of the society was more sophisticated. Due to science, the present society has more developed and lightened in every field from top to bottom. We do not know the development of technology is the boon or curse for the creation of a modern society rapidly. For technology nothing is impossible, it will solve the demands by hook or by crook. Now a day, the word Green has become buzz word in every field. It has a great importance for healthy survives. Green revolutions had been started in every sector to overcome the burdens of the pollution from society and library is one of them many scientists are working in so many projects for the development of universe. The creation of green libraries is most important to develop the users' satisfactions.

DEFINATION

According to the Online Dictionary for Library and Information(ODLIS), Green libraries are "designed to minimize negative impact on the natural environment and maximize 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(recycling, etc.)"

According to the Oxford English Dictionary (1989) defined the term green as "pertaining to, or supporting environmentalism" (p.811). The term "sustainable" relates to "forms of human economic activity and culture that do not lead to environmental degradation, esp. avoiding the long term depletion of natural resources"

IMPORTANCE OF GREEN LIBRARIES

The protection of environment is a necessary part of our human being in the present world which is affected by some reasons i.e. green house effect; ozone depletion, global warming and carbon dioxide are the main cause for environment. Time is changing from day to day so, our natural resources are

limited. We all are responsible to leave a healthy planet for next generations. If the use of the natural resources should not be limited so that the future generation could not survive at all. Now days, people are affected by various natural disasters like flood and drought. These are very much affect the human's health and life. Our government should take steps for the protect green environment in every field of life. The importance of green library is also included in the ongoing green system because library is the central hub for knowledge for future generation which requires significance amount of energy, water and other resources to survive and make a stable environment.

LITERATURE REVIEW

Due to global warming many libraries are initiative for eco friendly green libraries. Today due to global warming green libraries are very much needful for the society for the betterment. So many libraries are thinking about the eco friendly library for global warming and climate change.(McElrath, Eileen & Sutherland, Susan,2015). Green libraries are always sustainable environmental protection libraries. The building of green libraries are modular.Buldings are very much large & have great space for comfortable learning.(V. Malode, Amit, 2014).Nowadays the concept of green library is very much popular due to global warming & climate change. Many countries are taking initiative about green libraries in India as well as out of India.(Thomas, Raysh 2016). Modern libraries are user centric so a well being library is always very much needful for the user development. A green library is a eco friendly library & its structure is different type. The main purpose of creating a green library is to save sustainable energy efficient resources.(Bhattacharya, Anindya, 2017). Creating a green library is very much needful for the development of town, country, institutions etc. It decreases the environmental challenges.(Antonelli, Monika ,2008). Green libraries are the newest invention of modern architecture for the global warming.Now eco-friendly building is very much required for environmental protection.(Rabidas, Sunil 2016). The concept of library is totally changed today because of the modern technological development. Green library concept is a new concept for library for energy saving, the efficiency of resource usage, increasing natural environmental exposure, environmental load reduction etc.(binti Hafit, Amirah & Abdullah, Che Zainab,2017). Green libraries are protecting environment.It gives pleasure to the users.(Vijayalakshmi, B, 2012).

STRUCTURE OF GREEN LIBRARY BUILDING

1.Site Location:-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. The library should be located in a densely populated area, near a number of other services related buildings. People should be able to reach the building.

2. Water Conservation:- There are many different ways for libraries to conserve water. A number of theme rely on proper site selection. If it is a site selected properly strategies can be used to capture rainwater runoff be used in irrigating.

3. Energy efficiency:- 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. It design is in many ways a return to passive design principles that evolved over thousands of years.

4. Building Materials: - It is believed that up to 40% of landfill space is filled with construction waste materials. 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. It is a common marketing practice to exaggerate how green a product is by using misleading statements.

5. Indore Air Quality:- Most modern buildings are temperature controlled. They are designed to be air tight. The lack of ventilation can not only make building expensive to cool. A green library is not just taking care of the environment. It is about taking care of the health and well being of those who work in it and patronized it.

6. Community and Locality: As library is the heart of any institution. It should be in a perfect locality such as away from the noise zone like club, auditorium, entertainment hall etc. to make concentrate on their study.

7. Area: India's diversity is not only on its language, culture and traditions but also it differentiates itself by its locality, weather and area. So before planning for a constructional setup it is most important duty of the institutional head to think about all sides benefit and drawback.

8. Constructional Material: While we think about green library the first thing which comes in to our mind is the library building. There are lots of standards and protocols in India and outside India to make a green building by using recyclable and environment sustained materials.

9. IGBC (Indian Green Building Council) is a part of CII (Confederation of Indian Industry) offers a variety of services which include green building rating programs, training programs, certification service program etc.

10. LEED (Leadership in Energy and Environmental Design) is a nationally accepted program planning environmentally compatible high performances green building for a healthy environment. According to LEED wastes should be minimized at every stage of construction of building.

11. Light A library should have sufficient windows, glass windows and skylights which allow natural light abruptly in to it and there would be no need of any light generated from electricity during day time. Also using of low energy consuming bulbs and lights in non-reading areas during night time indirectly help library financially and save electricity as a whole.

12. Air Today air is a most important factor. Air for breath should be pure and breathable. A proper plantation is needed in the surrounding campus which provides clean and pure air and make library cool (plain area library) also trees gives pleasant air and it control air conditioner operation during summers. In hilly area cases building should be in a sunny place so that it will become little warmer and reduces room heater and blower expenses. The more air ventilator planned the more it reduces the electricity consumption.

13. Electricity:- It can be generated using direct sun light by planting solar system on the roof top of library building. Also the surplus energy can be conserved and helps during summer when library need extra energy consumption because of the use of air conditioner, fan and cooler.

14. Water For the good sanitation system a library should plan in proper water available area which helps library clean, green and healthy. As natural resources are decreasing by its amount, drinking water is also one of them so it's become responsibility of every human being to save drinking water. By looking in to the matter a library can reuse of waste water and rainwater in plantation, harvesting and flushing in toilets. Besides population, reach ability location, parking and local conditions like storms, erosion, moisture and dust, etc. are also to be considered before finalizing site.

15. Water Conservations: - 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.

16. Energy Conservations:- It is most important aspect in green revolution. Use of wind and sun can manage temperature and light in place of electricity. Its saves lot of natural resources like coal and emission of harmful gases like Co2 which will be helpful in reducing global warming.

17. Building Materials:- Use of waste products will reduce damage to natural environment. Use of locally available material will save transport cost and fuel. It also includes use of biodegradable materials, non use of plastics and other such products. Many modern building technologies have emerged which are more eco friendly and should be used in new library buildings.

Green Libraries in US :

Sl.no.	Institutions	Location	Area	Green Initiative
1	Georgetown University Lauinger Library	3700 O St NW, Washington, DC 20057, USA	11 libraries	Environmental concerns campus, Common Agricultural Policy aims to head off the risks of environmental degradation and enhancing the sustainability of agro-ecosystems.
2	Oklahoma State University Libraries	216 Athletic Avenue, Stillwater, OK 74078, United States		Resources are needed to sustain a healthy body, have sufficient capital to maintain themselves and to withstand shocks. Sustainability is achieved when aggregate resource demand to improve quality of life does not exceed the ability of resource .
3	University of Nebraska–Lincoln Libraries	Lincoln, Nebraska, U.S.	613 acres campus	The University has earned recognition for its comprehensive sustainability efforts, its commitment to constructing and renovating existing buildings sustainably and its efforts to establish and sustain healthy community forests.
4	University of Maryland Libraries	7649 Library Ln, College Park, MD 20742, USA	21,000 square feet	Surplus capital accumulated in excess of that needed for maintenance and resilience is available for conversion to other forms as required to satisfy demand for improved quality of life.
5	University of South Carolina Libraries	Columbia, SC 29208	359 acres	The LEED system (Leadership in Energy and Environmental Design) is used around the world to rate green buildings and structures. Conservation

				<p>programs and initiatives help the university in its commitment to preserve the natural environment on campus, across the state and around the world.</p>
6	King County Library System	King County, Washington, US		<p>Sustainability is achieved when aggregate resource demand to improve quality of life does not exceed the ability of resource systems to provide sufficient resource capital.</p>
7	Louisiana State University Libraries	Louisiana State University, Tower Dr, Baton Rouge, LA 70803, USA	95 acres	<p>The Campus Committee on Sustainability (CCS) was formed in order to begin an overall planning process for sustainability at LSU. The Committee's mission is to identify short and long-term goals related to sustainability for LSU in the areas of energy efficiency, green building, landfill diversion/recycling, transportation, food, procurement, forests/grounds, and communication.</p>
8	Brigham Young University Harold B. Lee Library	2060 Lee Lane, Provo, UT 84602, USA	665,000 square feet	<p>Landscaping and walkways cover most of the addition, maintaining the preconstruction character of the major campus quadrangle above.</p>
9	University of Cincinnati Libraries	Cincinnati, Ohio, U.S.		<p>In recent years the University of Cincinnati has made significant strides to include more green initiatives and encourage sustainability among students, faculty, and staff. an expanded recycling program, improved and expanded campus transportation options, the addition of vehicle charging stations, fuel pellet use in place of coal, greatly decreased energy and water use throughout campus, and the addition of 6 Leadership in Energy and Environmental Design (LEED) certified buildings since 2005. As a continued effort to go green, a chilled water thermal energy storage tank was placed under the fields and</p>

				at night water is chilled and then used to air-condition buildings on campus.
10	Arizona State University Libraries	Tempe, Arizona, U.S.		ASU's School of Sustainability is part of the Wrigley Global Institute of Sustainability. ^{[The School of Sustainability has been essential in establishing the university as "a leader in the academics of sustainable business.}
11	Northwestern University Library	Evanston, IL		The Excellence in Sustainability Awards recognize members of the Northwestern Community who have displayed outstanding leadership and dedication in promoting sustainability on campus. Northwestern is committed to fostering environmental and ethical stewardship. The Northwestern Strategic Sustainability Plan is a comprehensive planning resource that supports and guides the University's sustainability programs.
12	Chicago Public Library	Chicago, Illinois, United States		This West Englewood Branch opened on August 23rd, 2003 as part of Chicago's Street Revitalization Project. It was one of the first "green" libraries in the Chicago Public Library system, featuring an energy efficient and environmentally sustainable construction. It is one of CPL's busiest branches, averaging over 10,000 visits per month.
13	New York University Libraries			
14	Duke University Libraries	411 Chapel Dr, Durham, NC 27708, USA	8,691 acres	Duke University is committed to leadership in environmental stewardship and sustainability on our campus, The majority of Duke students don't bring a car to campus.

15	University of Minnesota Libraries	Minneapolis, MN 55455		Harvesting or using a resource so that the resource is not depleted or permanently damage, or relating to a lifestyle involving the use of sustainable methods.
16	Cornell University Library	about 2,300 acres	Ithaca, Newyork	This garden was designed and constructed to convert a roof into a human-occupiable landscape that also provides ecosystem services. This was an effective way to add social space on campus where space is limited. It is a beautiful addition to the built environment around Mann Library, and to the collection of gardens throughout Cornell's Ag Quad
17	Stanford University Libraries	Stanford, CA	8,180-acre	The Cecil H. Green Library (commonly known as Green Library) is the main library on the Stanford University campus and is part of the SUL system. It is named for Cecil H. Green.Green Library houses 4 million volumes, most of which are related to the humanities and social sciences. Libraries elsewhere on campus cover specialized areas such as Business, Law, Medicine, or Engineering.Books from Green and other Stanford libraries are being scanned as part of the Google Books project.
18	Yale University Library	New Haven, Connecticut	13,000 square	Centerbrook's sustainable portfolio includes 20 LEED-certified designs with five that are slated for accreditation, highlighted by five LEED Platinum buildings and a Living Building Challenge project on the boards. Centerbrook and Hopkins Architects designed Yale University's Kroon Hall, which was chosen in 2010 as one of the top ten examples of sustainable architecture worldwide by the AIA Committee on the Environment.

19	New York Public Library	Fifth Avenue at 42nd Street, New York, NY	646,680 square feet	NYLA's Sustainability Initiative provides New York's library leaders with time and resources to articulate how libraries adapt to our changing world while, as co-creators, shape strategies that ensure libraries remain vital, rebound from disruption, and provide on-going value to the communities they serve.
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CONCLUSION

Libraries are an asset to the future of the society. Libraries are discovering that green building gives them a great opportunity to educate citizenry. Library professionals should adopt the strategies of new smart technologies to promote the Green Library movements to make them as Green. In evaluating the environmental impact of monographs of electronic resources it becomes clear that books are ultimately more than earth friendly by using all kinds of smart technologies. Green Buildings has very important role in the environmental protection. Libraries and librarians are directly related to the society and their green buildings are giving them great opportunities to educate the citizen. The duty of a Librarian is not only to provide information to the users but they should play a role of leader to construct modern Green Buildings to save our natural environment. For the next generation, library professionals should move beyond environmental sustainability exemplified by various practices of "Greening Libraries" and focus on proactive steps to guarantee future sustainable development of libraries. With the rises of pollution and increases of greenhouse effect at the global level, actions must be taken to prevent the current problems become worst. With the first steps taken by the library to be a role model to the community, this efforts will be fruitful at least for the young generations to start realized and appreciated the importance of the resources given as well as not to repeat the mistakes made by the previous generations. The current important issue of the world is environment issue that is to save earth & save life of the earth. Libraries can take good initiative to inspire people, individuals to work towards environment protection. Libraries are in an excellent position to be both an ecological operator and promoter of environmental awareness. Green libraries are related to the overall green building movement, libraries have specific needs that raise some extra challenges for their preservation books must be kept away from sunlight as well as moisture and temperature change. Libraries need to be built flexibly, in order to make room for expansions in size and in wiring capabilities. Library building are long term investments made to benefit the community so when designing them architects need to be looking so or 100 years into the future.

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